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AIMS AND SCOPE

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BEST ORAL

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Best Oral (BO1)
Ovarian Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.BO1>

A single-arm phase II study of olaparib maintenance with pembrolizumab and bevacizumab in *BRCA* non-mutated patients with platinum-sensitive recurrent ovarian cancer (OPEB-01): first efficacy results of a 2-stage Simon's design

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Objective: The optimal treatment of *BRCA* wild-type patients with platinum-sensitive recurrent ovarian cancer remains unknown. Recently, there is an increase in the evidence to support the role of the combination of a poly (adenosine diphosphate-ribose) polymerase inhibitor, anti-angiogenic agents, and immunotherapy as maintenance therapy in *BRCA* wild-type patients with platinum-sensitive recurrence. We hypothesized that adding pembrolizumab and bevacizumab to olaparib maintenance can increase progression-free survival (PFS) in *BRCA* wild-type patients with platinum-sensitive recurrent ovarian cancer.

Methods: *BRCA* wild-type patients who received two previous courses of platinum-containing therapy, achieved complete or partial response to last treatment, and the treatment-free interval is >6 months after the penultimate platinum-based chemotherapy offered olaparib maintenance with pembrolizumab and bevacizumab. Forty-four patients will be included from 4 sites across Singapore and Korea. The primary endpoint of the study is 6-month PFS rate. An interim statistical analysis was performed after 22 patients were enrolled. According to Simon's 2-stage optimal design, if 10 or more progressive diseases are observed, the trial will be terminated. If 13 or more non progressive disease at 6 months, the trial will continue to the second stage.

Results: Median age was 60 years old and most of patients (90.9%) had high-grade serous carcinoma. Secondary debulking operation was performed in 6 (27.3%) patients. The objective response rate (ORR) was 72.7% and disease control rate (DCR) was 86.4%. At the time of data analysis (data cutoff Nov 6 2021), 13 had non-progressive disease at 6 months. No grade 4 adverse events were reported and no treatment related adverse events leading to treatment discontinuation were observed. Additional correlative data regarding homologous recombination deficiency will be presented at the meeting.

Conclusion: This is the first report of maintenance therapy with triplet combination in ovarian cancer. Based on the efficacy result of the interim analysis, it is worth moving on to the second stage. These combinations showed a manageable safety profile.

Best Oral (BO2)
Gynecologic Cancer Screening

<https://doi.org/10.3802/jgo.2021.32.S1.BO2>

Diagnostic value of circulating tumor DNA for ovarian cancer based on high-throughput sequencing technology

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Objective: Ovarian cancer is the cancer with the highest fatality rate among gynecological tumors. And currently, strategies for screening and early diagnosis are limited. Circulating tumor DNA (ctDNA) carries tumor mutation information and has potential applications in the diagnosis and treatment of a variety of cancers. However, its role in the early diagnosis of ovarian cancer remains unclear.

Methods: We enrolled 54 patients with epithelial ovarian cancer and 50 patients with benign ovarian diseases from 4 medical centers in Beijing, China. Detailed clinicopathological information was then collected. High-throughput targeted capture sequencing was conducted using a panel containing 338 cancer-related genes. Information about cell-free DNA (cfDNA) concentration and characteristics of ctDNA mutation profiles were collected. Logistic regression models were built combining characteristics of ctDNA and clinical data.

Results: A total of 16, 8, and 30 FIGO stage I, II, and III ovarian cancer patients were enrolled, respectively, including 27 high-grade serous carcinomas. Control group included 9 cases of borderline ovarian tumors. The cfDNA concentration was not significantly different between the 2 groups ($p=0.073$), but stage II and III ovarian cancer had significantly higher level of cfDNA than stage I ($p=0.017$). High-grade serous cancer had significantly higher level of cfDNA than non-high-grade serous cancer ($p=0.006$). The ctDNA somatic mutation was not detected in the control group. The overall detection rate in the case group was 85.2%, and 75.0%, 87.5%, and 90.0% for stage I, II, and III, respectively. The mutation burdens of ctDNA were not related to stage and pathological type. However, a linear correlation was discovered between mutation burden in ctDNA and tissue ($y=0.215x+1.235$). The Kappa values of TP53, ARID1A, PIK3CA, KRAS in tissues and ctDNA were 0.82, 0.82, 0.71, and 0.92, respectively. The allele mutation frequency and ctDNA concentration of stage I ovarian cancer was significantly lower than those of stage II and III. The sensitivity and specificity of ctDNA somatic mutation was 85.2% and 100.0%, respectively. By combining with other indicators, the sensitivity could be improved, compared with ctDNA alone. However, the Youden index decreased. The sensitivity and specificity of ctDNA combined with cfDNA concentration, CA125, and imaging manifestations was 100.0% and 82.0%, respectively. The diagnostic sensitivity and specificity of ctDNA combined with cfDNA concentration and CA125 were 96.3% and 74.0%, respectively.

Conclusion: cfDNA concentration has no significant difference between ovarian cancer and ovarian benign diseases, but it still has the potential value to distinguish pathological types and tumor stages in ovarian cancer. The detection of ctDNA mutations in ovarian cancer is consistent with major tissue mutations to some extent. Allelic mutation frequency and ctDNA concentration are different in different pathological types and stages. ctDNA is not detected in benign ovarian diseases, and the detection rate is relatively high in ovarian cancer, especially among early ovarian cancer. The diagnostic specificity of ctDNA is extremely strong. Based on high-throughput targeted capture sequencing of ctDNA, combining indicators of ctDNA, cfDNA concentration, CA125 and imaging manifestations has high diagnostic value for ovarian cancer.

Best Oral (BO3)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.BO3>

Phase 3 study (Study 309/KEYNOTE-775) of lenvatinib plus pembrolizumab vs treatment of physician's choice in advanced endometrial cancer: Japanese subset

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Objective: The primary objectives of Study 309/KEYNOTE-775 were to demonstrate that lenvatinib + pembrolizumab was superior to treatment of physician's choice (TPC) in improving PFS and OS in patients with advanced endometrial cancer (aEC). We present results for the overall population and Japanese patients.

Methods: Patients were randomized to lenvatinib 20 mg/d + pembrolizumab 200 mg/Q3W or TPC (doxorubicin 60 mg/m² Q3W or paclitaxel 80 mg/m² QW [3-weeks-on; 1-week-off]). Randomization was stratified by mismatch repair status (proficient vs. deficient). Patients had confirmed advanced/recurrent/metastatic EC with progression after 1 prior platinum-based regimen. Tumors were assessed by BICR per RECIST v1.1.

Results: The 827 patients were enrolled including 104 Japanese patients. In the overall population, lenvatinib + pembrolizumab improved overall survival (OS) and progression-free survival (PFS) versus TPC in proficient mismatch repair (pMMR) and all-comer patients (OS hazard ratio [HR], [95% confidence interval; CI]: pMMR, 0.68 [0.56–0.84], p=0.0001; all-comers, 0.62 [0.51–0.75], p<0.0001; PFS HR [95% CI]: pMMR, 0.60 [0.50–0.72], p<0.0001; all comers, 0.56 [0.47–0.66], p<0.0001). Among Japanese patients, HRs (95% CI) for OS were 0.74 (0.41–1.34) for pMMR patients and 0.59 (0.33–1.04) for all-comers. HRs (95% CI) for PFS were 1.04 (0.63–1.73) for pMMR patients and 0.81 (0.50–1.31) for all-comers. Among Japanese patients, incidence of grade ≥3 adverse events was 90.4% for pembrolizumab and 82.4% for TPC.

Conclusion: Lenvatinib + pembrolizumab showed clinically meaningful improvements inefficacy outcomes versus TPC in patients with aEC. Although the study was not designed to demonstrate superiority in Japanese patients, this subgroup analysis suggested favorable efficacy of lenvatinib + pembrolizumab. Lenvatinib + pembrolizumab is a potential treatment option for Japanese patients with aEC.

Best Oral (BO4)
Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.BO4>

Newly developed adoptive cell therapy using autologous tumor-infiltrating lymphocytes in cervical cancer

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Objective: Adoptive cell therapy using tumor-infiltrating lymphocytes (TIL-ACT) is a promising immunotherapy using autologous lymphocytes ex vivo expanded from patient's tumor. We are performing a phase I study for malignant melanoma and then perform a phase II study for recurrent cervical cancer as to evaluate the safety and efficacy of TIL-ACT.

Methods: Three patients with malignant melanoma received TIL-ACT. Tumor fragments were cultured in outgrowth medium to produce TIL. Then T cell populations with tumor reactivity were selected for rapid expansion, generating over 1,000-fold TILs within 2 weeks and finally reinfused into the patient who received preparative lymphodepleting. IL-2 regimens after cell transfer were conducted to promote TIL growth and antitumor activity. The primary endpoint was to define treatment feasibility as completion of TIL-ACT without early cessation due to unacceptable adverse events. The secondary endpoints were safety assessed using CTCAE v. 4.0, clinical response; objective response rate based on the RECIST v.1.1.

Results: Three cases of TIL-ACT treated melanoma patients were successfully completed without unacceptable adverse events including one partial response, one stable disease and one progression disease case. Next, we manufactured a TIL products from specimens of three cervical cancer patient, and succeeded in producing TIL that meets the standards of TIL-ACT. Based on this result, TIL-ACT for cervical cancer was approved by the Japanese Ministry of Health, Labour and Welfare as advanced medical treatment.

Conclusion: TIL-ACT could be safely performed for Japanese patients with malignant melanoma. Currently, we are implementing TIL-ACT for recurrent cervical cancer.

Best Oral (BO5)
ERAS

<https://doi.org/10.3802/jgo.2021.32.S1.BO5>

Effectiveness of Enhanced Recovery After Surgery protocol in open gynecologic oncology surgery: a randomized controlled trial

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Objective: Standard guidelines strongly recommends Enhanced Recovery After Surgery (ERAS) protocol implementation into each institution since studies have shown its effectiveness in reducing length of hospital stay (LOS) and rate of postoperative complications. In order to extend the benefits of ERAS globally especially to the low- and middle-income countries, where healthcare resources are limited, it is necessary to tailor the ERAS protocol to make it practical and cost-effective for each region. To examine the effectiveness and feasibility of fully applying the recommended ERAS protocol in comparison to our usual care in women diagnosed with gynecologic malignancy undergoing elective laparotomy.

Methods: This is a randomized controlled trial in women with gynecologic cancers (cervix, endometrium, and ovary), age 18–75 years, undergoing elective laparotomy at our institution. The participants were randomly assigned into 2 groups: intervention (ERAS protocol) and control (usual care). For the intervention group, each woman was brought through the pre-specified protocol step by step starting from preoperative counseling and preparation to intraoperative and postoperative management according to the recommended ERAS pathway. For the control group, each woman was cared for using routine standard care. The primary outcomes were LOS and postoperative pain. The secondary outcomes were narcotic use, mobility, return of gastrointestinal function, postoperative complications, and quality of life. Furthermore, the compliance with each ERAS component was examined.

Results: From June 2020 to May 2021, 93 women (46 in the intervention group and 47 in the control group) participated in the allocated study groups through the study completion and were included in the final analysis. The intervention group demonstrated shorter hospital stay by approximately 20 hours (47.48 hours vs. 67.17 hours, $p=0.02$) with lower postoperative pain score at postoperative day 0 (1.58 vs. 4.00, $p<0.01$) and day 1 (1.00 vs. 2.67, $p<0.01$) while having decreased opioid consumption ($p<0.01$). Also, the intervention group had faster postoperative recovery of gastrointestinal function represented by significantly shorter interval from surgery to first flatus ($p<0.01$), first defecation ($p=0.02$), and soft diet feeding ($p<0.01$). Postoperative 6-minute walking distance, postoperative complications, and quality of life were comparable between the study groups. Good compliance to most of the ERAS pathway domains was obtained. Still, 34.8% of participants in the ERAS group had bowel preparation and 10.9% had preanesthetic sedatives.

Conclusion: The ERAS protocol appeared feasible in our population with demonstrable benefits on shortening hospital stay, reducing pain, and promoting bowel function recovery without increasing complications.

Trial Registration: ClinicalTrials.gov Identifier: [NCT04201626](https://clinicaltrials.gov/ct2/show/study/NCT04201626)

ORAL

| | |
|-----------------------|-------------|
| Cervical Cancer | OC1 – OC7 |
| Uterine corpus cancer | OM1 – OM9 |
| Ovarian cancer | OO1 – OO8 |
| Miscellaneous | OMi1 – OMi9 |

Cervical cancer

Oral (OC1)

Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.OC1>

Clinical practice patterns in the management of cervical, ovarian, and endometrial cancers in Asia-Pacific: a survey of the KSGO, JSGO, GCGS, and ANZGOG

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Objective: To investigate current clinical practice patterns in surgical and adjuvant treatment of cervical, ovarian, and endometrial cancers in Asia-Pacific.

Methods: We conducted a survey of physicians actively treating patients with gynecologic malignancies from the Korean Society of Gynecologic Oncology (KSGO), Japan Society of Gynecologic Oncology (JSGO), Gynecologic Cancer Group Singapore (GCGS), and Australia New Zealand Gynaecological Oncology Group (ANZGOG) between January and April 2021. For each cancer type, a questionnaire set designed to identify how they would manage various case scenarios was used. Data were collected using an internet survey database.

Results: In total, 181, 79, and 90 physicians responded to the survey for cervical, ovarian, and endometrial cancers, respectively. The proportion of gynecologic oncologists ranged from 70.0% to 84.8%. In the cervical cancer survey, 40.7% responded that phase III LACC trial profoundly affected their practice patterns. During a minimally invasive radical hysterectomy, 46.3% stated that they did not use any manipulator, while 35.8% still used insertion-type uterine manipulators. Of respondents, 69.1% did not conduct sentinel lymph node biopsy (SLNB), most commonly owing to no equipment for SLNB (56.6%), followed by concerns about diagnostic inaccuracy (19.3%). For 2018 International Federation of Gynaecology and Obstetrics stage IB1, if pelvic lymph node metastasis was confirmed by frozen biopsy, 30.7% abandoned radical hysterectomy. In the ovarian cancer survey,

respondents defined optimal cytoreductive surgery differently. For patients with presumed stage I ovarian cancer, 52.8% considered laparoscopic staging surgery. After cytoreductive surgery, 46.9% routinely checked computed tomography scans before starting adjuvant chemotherapy. The use of intraperitoneal chemotherapy was low, prescribed by only 8.8% of respondents. For patients with platinum-sensitive recurrent ovarian cancer who were treated with poly(ADP-ribose) polymerase (PARP) inhibitors before, 42.6% responded that they considered re-treatment with PARP inhibitors. In the endometrial cancer survey, laparoscopy (64.1%) was the most commonly used mode of surgery for the early stage, followed by robot-assisted surgery (32.8%). Of all the respondents, 26.6% stated that lymphadenectomy could be omitted and 43.8% recommended selective lymphadenectomy based on sentinel biopsy or frozen results for patients with presumed stage IA/grade 1 disease. On the other hand, 51.5% recommended para-aortic lymphadenectomy for patients with presumed stage IB/grade 1 disease and 78.5% recommended this treatment for presumed stage IB/grade 3 disease. All respondents administered adjuvant therapy when node metastasis was found, and concurrent chemoradiotherapy (79.6%) was the most preferred option for stage IIIC1 disease.

Conclusion: We observed differences in the surgical and adjuvant treatment of cervical, ovarian, and endometrial cancers among physicians from the Asia-Pacific region.

Oral (OC2)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OC2>

Impact of hemodynamic instability during radical hysterectomy on survival outcome in early cervical cancer

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Objective: To evaluate the impact of intraoperative hemodynamic instability on the prognosis in patients with early cervical cancer who underwent primary radical hysterectomy (RH).

Methods: We retrospectively identified patients with 2009 International Federation of Gynaecology and Obstetrics stage IB1–IIA2 cervical cancer who underwent primary type C RH by either open surgery or minimally invasive surgery (MIS) between January 2006 and June 2020. Patients' clinicopathologic characteristics and anesthesia-related variables, including the arterial blood pressure measurements

(at 1-minute interval) during surgery, were collected. Using the preoperative noninvasive and intraoperative invasive systolic blood pressure values, we calculated the average real variability (ARV), known as a reliable representation of time series blood pressure variability. Associations between the ARV index and survival outcomes were investigated.

Results: In total, 441 patients were included. Using the integer close to the median as a cut-off value for the ARV, we found that the high-ARV group (≥ 8 ; $n=220$) showed worse progression-free survival (PFS) than the low-ARV group (< 8 ; $n=221$) (median=82.8% vs. 89.6%; $p=0.020$). In multivariate analysis adjusting for confounders, $ARV \geq 8$ was identified as an independent poor prognostic factor for PFS (adjusted hazard ratio [HR]=1.887; 95% confidence interval [CI]=1.158–3.076; $p=0.011$). In the subgroup of open RH ($n=238$), $ARV \geq 8$ was associated with significantly worse PFS (adjusted HR=2.402; 95% CI=1.119–5.155; $p=0.024$). In contrast, in the subgroup of MIS RH ($n=238$), PFS did not differ by the ARV index.

Conclusion: The ARV index, indicating intraoperative hemodynamic instability, might be a novel prognostic biomarker for disease recurrence in early cervical cancer patients who receive primary open RH, not MIS RH.

Oral (OC3)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OC3>

Comparison of locally advanced cervical cancer treatment guidelines in Asia

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Objective: A previous global systematic literature review (SLR) assessing recommended treatment for locally advanced cervical cancer (LACC) revealed international consensus on the use of concurrent chemoradiotherapy (cCRT) as standard of care (SoC) for stage IIB–IVA LACC. However, recommendations for stage IB2–IIA LACC varied. We present a subanalysis of Asian guidelines to determine if recommended LACC treatment is consistent across Asia.

Methods: The most recent English-language cervical cancer treatment guidelines and consensus statements were identified

from literature databases (1999–2020), national authority websites, and bibliographies. For comparison, additional, non-English, Asian country guidelines were translated.

Results: Eleven guidelines from 5 Asian countries were reviewed; 10 were last updated between 2013–2021, 1 was undated. Seven guidelines provided treatment recommendations by disease stage using International Federation of Gynecology and Obstetrics (FIGO) 2009 staging criteria. For stage IB2–IIA2 disease, surgery, cCRT, or RT alone was recommended. Cisplatin-based cCRT followed by brachytherapy was SoC for suitable patients with stage IIB–IVA LACC among all Asian guidelines, except Japan, where radical hysterectomy or cCRT was recommended for stage IIB. For stage IVA disease, 2 Indian guidelines (ICMR and NCGI) discussed the use of palliative treatments versus curative intent therapy. Non-SLR guidelines from Vietnam and Malaysia were consistent with this consensus.

Conclusion: In line with global SLR findings, consensus on cCRT as primary treatment for stage IIB–IVA LACC was recommended by Asian guidelines. For stage IB–IIA LACC, recommendations varied between radical hysterectomy and cCRT, or cCRT/RT alone. Alignment of guidelines with FIGO 2018 staging criteria may reduce variation in recommended treatment for early-stage LACC.

Funding: AstraZeneca.

Oral (OC4)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OC4>

Adjuvant pelvic radiation versus observation in intermediate-risk early-stage cervical cancer patients following radical surgery: a propensity score analysis

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Objective: To compare survival outcomes, posttreatment complications, and quality of life of early-stage cervical cancer patients classified as intermediate-risk group following primary radical surgery between the patients who received adjuvant pelvic radiation and those without adjuvant treatment.

Methods: Two hundred and thirty stage IB–IIA cervical cancer patients who had radical hysterectomy and pelvic lymphadenectomy from January 2003 to December 2018 and were classified as having intermediate-risk according to the Sedlis's criteria were included. The participants were divided

into two groups—adjuvant pelvic radiation (116 patients) and no adjuvant treatment (114 patients). The propensity scores were employed to balance the 2 study groups with respect to distribution of confounding factors. The primary outcomes were disease-free survival (DFS) and overall survival (OS). The secondary outcomes included treatment complications and quality of life.

Results: The DFS were comparable between the groups with the adjusted hazard ratio (aHR) 0.46 (95% confidence interval [CI]=0.18–1.16; $p=0.1$) for adjuvant radiation. Similarly, the OS were not significantly different with the aHR 1.75 (95% CI=0.63–4.90; $p=0.3$) for adjuvant radiation. Serious side effects were reported in 4 patients, 3 in the adjuvant radiation group (2 lymphedema and 1 enterovesical fistula) and 1 in the no adjuvant treatment group (lymphedema). Quality of life scores were not significantly different.

Conclusion: The survival benefit of adjuvant pelvic radiation for intermediate-risk early-stage cervical cancer could not be demonstrated in this study.

Oral (OC5)
Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OC5>

Therapeutic role of conization before radical hysterectomy in patients with early cervical cancer

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Objective: The aim of this study is to investigate the role of conization prior to radical hysterectomy in patients with early cervical cancer.

Methods: Patients who had radical hysterectomy for early cervical cancer at Samsung medical center from 2001 to 2020 were eligible. Patients were divided into 2 groups; patients with pre-operative conization or patients who had biopsy.

Results: A total of 1,826 patients were included; 294 patients with pre-operative conization (16.1%, group 1), and 1,532 patients without conization (83.9%, group 2). 255 patients in group 1 showed resection margin positives after conizations. Patients in group 1 were younger (46 years vs. 48 years, $p<0.001$). Non-squamous histology (29.9% vs. 22.8%, $p=0.014$) and bulky cervical mass (>4 cm, 16.9% vs. 4.1%, $p<0.001$) were more frequent in group 2. Laparotomy was more popular in group 2 (70.5% vs. 51.4%, $p<0.001$), the proportion of type of radical hysterectomy was similar (type 3, 98.2% vs. 97.6%,

$p=0.472$). On final pathology after radical hysterectomy, larger tumor size, depth of invasion more than 1/2, lymphovascular space invasion positive, pelvis lymph node (LN) positive, para-aortic LN positive, microscopic parametrial invasion were more frequently observed in group 2. When adjusting these factors in Cox model, patients with pre-operative conization showed survival benefit in progression free survival (hazard ratio [HR]=0.709; 95% confidence interval [CI]=0.480–1.045; $p=0.082$) and in overall survival (OS; HR=0.449; 95% CI=0.276–0.278; $p<0.001$).

Conclusion: Our data suggest the therapeutic role of conization before radical hysterectomy in early cervical cancer which showed better OS.

Oral (OC6)
Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OC6>

Definitive radiotherapy for cervical adenocarcinoma: outcomes and immune-related factors

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Objective: Data on prognosis and immune-related factors specific for cervical adenocarcinoma (CA) treated with definitive radiotherapy (RT) were insufficient. To evaluate these, we conducted a multi-institutional retrospective analysis.

Methods: Patients with CA treated with definitive RT comprising external beam RT and intracavitary brachytherapy were included. Pretreatment biopsy samples were stained with programmed death-ligand 1 (PD-L1) and CD8 antibodies. Associations of these molecules with clinical outcomes were evaluated.

Results: A total of 71 patients were included in this study. Median follow-up period was 37 months (range, 5–194).

Platinum-based chemotherapy was concurrently administered for 44 (62%) patients. 3/5-year overall survival (OS) rate and progression-free survival (PFS) rate were 64/50% and 40/37%, respectively. Membranous expression of PD-L1 was positive in 8.5% of patients, and not associated with prognosis. The presence of tumor-infiltrating T cell positive for CD8 (CD8+TILs) in the tumor nest was positive in 83% of patients, and associated with favorable OS ($p=0.037$) but not with PFS ($p=0.52$). A Cox regression analysis showed that the presence of CD8+TILs was an independent predictor of favorable OS (hazard ratio=0.19; 95% confidence interval=0.065–0.57) as well as lower International Federation of Gynecology and Obstetrics stage (2008, I–II vs. III–IVA), maximum tumor diameter smaller than 40 mm, and use of concurrent chemotherapy.

Conclusion: We reported clinical outcomes of CA after definitive RT and expression of immune-related molecules using biopsy sample. Our findings suggested that CD8+TILs in the tumor nest was a potential predictor of favorable prognosis, although prognostic impact of membranous PD-L1 expression was unclear.

Oral (OC7)

Preinvasive Disease of Cervix, Vulva, and Vagina
<https://doi.org/10.3802/jgo.2021.32.S1.OC7>

Prognostic outcomes and risk factors for recurrence after laser vaporization for cervical intraepithelial neoplasia: a single-center retrospective study

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Objective: Cervical intraepithelial neoplasia (CIN) is a precancerous lesion that may progress to invasive cervical cancer without intervention. We aim to examine the prognostic outcomes and risk factors for recurrence after laser vaporization for CIN 3, CIN 2 with high-risk human papillomavirus (HPV) infection, and CIN 1 persisting for more than 2 years.

Methods: Between 2008 and 2016, a total of 1,070 patients underwent cervical laser vaporization using a carbon dioxide laser. We performed a retrospective review of their medical records to assess their clinical characteristics, pathologic factors, and prognostic outcomes.

Results: The mean patient age was 34 years (range, 18–64 years). The preoperative diagnosis was CIN 1 in 27 patients, CIN 2 in 485 patients, and CIN 3 in 558 patients. Over a median

follow-up period of 15 months, the 2-year recurrence rate was 18.9%, and the 5-year recurrence rate was 46.5%. The 2-year retreatment rate was 12.6%, and the 5-year retreatment rate was 30.5%. We diagnosed 9 patients with invasive cancer after treatment; all patients underwent combined multidisciplinary treatment, and there were no deaths during follow-up. The recurrence-free interval was correlated with patient age (hazard ratio [HR]=1.028; 95% confidence interval [CI]=1.005–1.051; $p=0.0167$), body mass index (HR=1.052; 95% CI=1.008–1.098; $p=0.0191$), and glandular involvement (HR=1.962; 95% CI=1.353–2.846; $p=0.0004$).

Conclusion: Cervical laser vaporization is effective and useful for patients with CIN who wish to preserve fertility. However, patients with glandular involvement, older age, and higher body weight require close follow-up for recurrence.

Uterine corpus cancer

Oral (OM1)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.OM1>

The real-world experience of pembrolizumab and lenvatinib in recurrent endometrial cancer: a multicenter study in South Korea

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Objective: To investigate real-world experience of pembrolizumab and lenvatinib (PEMBRO+LEN) in patients with recurrent endometrial cancer in South Korea.

Methods: This retrospective cohort study included patients with recurrent endometrial cancer who received PEMBRO+LEN from January 2020 to May 2021 in three tertiary hospitals in South Korea. We summarized patient characteristics and evaluated response rates, survival outcomes, and treatment-related adverse events (AEs).

Results: In total, 48 patients were included in the study. The median age was 62.5 (42–78) years. The most common histologic subtype was endometrioid (43.8%) followed by serous (25.0%). Most patients were MMR proficient (91.7%). Programmed death-ligand 1 and P53 status were positive

in 29.2% and 18.8%, respectively. Best objective response rate was 20.8% and disease control rate was 66.6%. Median progression-free survival (PFS) was 5.3 (95% confidence interval=3.9–6.6), respectively. The median number of cycles for PEMBRO+LEN was 4.5. More than half of patients (56.2%) received LEN dose reduction was once or more but it did not affect survival outcomes. Common AEs of LEN was fatigue (18.8%), hypertension (16.7%) and hypothyroidism (14.6%). Treatment-free interval (TFI) was the only statistically significant factor associated with PFS ($p=0.017$). In a subgroup analysis, TFI 5 months showed statistically higher in best overall response ($p=0.042$) and in the number of the cycle of AEs first encountered during PEMBRO+LEN treatment ($p=0.017$).

Conclusion: In Korean patients with recurrent endometrial cancer, PEMBRO+LEN treatment showed acceptable response rates with tolerable AEs when treatment was supported with optimal LEN dose reduction.

Oral (OM2)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM2>

Menopausal status combined with serum CA125 level significantly predicted concurrent endometrial cancer in women diagnosed with atypical endometrial hyperplasia before surgery

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Objective: About 10%–60% of patients with atypical endometrial hyperplasia diagnosed before surgery (preoperative-AEH) are found to have concurrent endometrial cancer (EC) at definitive hysterectomy, leading to incomplete primary surgery and delayed adjuvant treatment. This study aims to investigate the potential risk factors of concurrent EC in preoperative-AEH patients in a clinical setting with gynecological pathology review.

Methods: All patients diagnosed with AEH by endometrial biopsy or curettage and then underwent definitive hysterectomy from January 2016 to December 2019 were analyzed. All diagnoses were reviewed by gynecological pathologists.

Results: Totally 624 preoperative-AEH patients were included, 30.4% of whom had concurrent EC. In multivariate analysis, postmenopausal status and cancer antigen 125 (CA125) ≥ 35 U/mL significantly correlated with concurrent EC (odds ratio

[OR]=3.33, 95% confidence interval [CI]=1.76–6.30; OR=2.12, 95% CI=1.13–3.98). Similar findings were showed in predicting intermediate-high-risk EC. The combined predicting value of postmenopausal status and CA125 ≥ 35 U/mL were remarkably increased for concurrent EC (OR=14.10, 95% CI=1.59–125.22) and intermediate-high-risk EC (OR=30.2, 95% CI=2.44–374.40). Notably, concurrent intermediate-high-risk EC was more commonly seen in preoperative-AEH women with postmenopausal time ≥ 5 years (OR=7.83, 95% CI=2.44–25.18, $p=0.001$), with no difference in this risk among subgroups of premenopausal status, postmenopausal time <2 years or between 2–5 years.

Conclusion: Preoperative-AEH patients with postmenopausal status and elevated level of CA125 may have high risk of concurrent EC. Adequate pre-surgical evaluation and sentinel lymph node sampling should be suggested for such patients.

Oral (OM3)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM3>

Clinical implications of neoadjuvant chemotherapy in advanced endometrial cancer: a multi-center retrospective cohort study

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Objective: In a portion of patients with advanced endometrial cancer, upfront complete cytoreduction is not possible. Hence, we aimed to assess the feasibility and effectiveness of neoadjuvant chemotherapy followed by interval debulking surgery (NAC-IDS) in unresectable, metastatic endometrial cancer. We also investigated factors which related to the favorable conditions for NAC-IDS in endometrial cancer.

Methods: From the four institutions in Korea, we identified stage IIIC–IVB endometrial cancer patients who received NAC-IDS between 2008 and 2020. We collected patients' baseline characteristics, NAC regimens, response to NAC, and surgical details. Both progression-free survival (PFS) and overall survival (OS) were calculated, and factors affecting survival outcomes were investigated.

Results: In total, 32 patients were included: endometrioid (n=18), serous (n=5), carcinosarcoma (n=6), and others (n=3). Among them, 25 (78.1%) had stage IVB disease. The most common NAC regimen was paclitaxel-carboplatin (n=25, 78.1%), administered with median of 6 cycles. While 26 (81.3%) showed an objective response, 2 (6.3%) progressed despite NAC. At the time of IDS, 23 (71.9%) achieved complete cytoreduction. During 30.5 months of the median follow-up, there were 23 recurrences and 7 deaths, corresponding to 19 months of median PFS and 46.7% of 3-year OS rate. In multivariate analysis, endometrioid histology was associated with better PFS (hazard ratio [HR]=0.181; p=0.001) and OS (HR=0.112; p=0.029), while complete cytoreduction significantly improved PFS (HR=0.258; p=0.008).

Conclusion: We found NAC-IDS is feasible and effective in unresectable, metastatic endometrial cancer. Tumor histology and the possibility of complete cytoreduction would be the primary considerations for NAC-IDS.

Oral (OM4)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM4>

Comparison of sentinel lymph node biopsy alone to complete lymphadenectomy in endometrial cancer patients: a retrospective study

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Objective: Sentinel lymph node (SLN) biopsy allows to spare node negative patients from surgical comorbidities. Our objectives were evaluation of outcomes of SLN biopsy only compared to additional lymph node (LN) dissection in endometrial cancer patients.

Methods: Single institutional retrospective study of endometrioid type of endometrial carcinoma patients at Yonsei Cancer Center who underwent minimally invasive surgical staging with SLN biopsy with or without additional LN dissection between January 2015 to December 2019.

Results: A total of 301 patients were included in this study. Eighty-two underwent SLN biopsy only and were compared to 219 with extra LN dissection. The median age was 53 years and median body mass index was 25 kg/m². In terms of

operative outcomes, SLN biopsy only group showed statistically significant decreased surgical time (p=0.001). However, estimated blood loss during operation did not show any statistically significant difference. The sites and numbers of SLN did not show statistically significant difference. There was one case with LN metastasis from whom SLN metastasis was not detected. This case reflects false negativity of SLN biopsy and overall false negative rate of SLN biopsy was 0.45%. Recurrence and death events did not show any statistically significant difference between the two groups during the follow-up period.

Conclusion: This study showed similar prognosis among the 2 included groups with acceptable diagnostic accuracy of SLN biopsy with small detected false negative rates. Thus, LN assessment can be considered as valuable and could safely replace LN dissection.

Oral (OM5)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM5>

The fluorescence imaging for laparoscopic and laparotomic endometrial sentinel lymph node biopsy (FILLER) trial: Siriraj Gynecologic sentinel Node of endometrial cancer (SiGN-En) study

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Objective: To establish the detection rate of sentinel lymph node (SLN) biopsies and to determine the sensitivity and false-negative rate of SLN biopsies compared with those of systematic pelvic and para-aortic lymphadenectomies in endometrial cancer.

Methods: This prospective cohort study enrolled patients with endometrial cancer who were scheduled for surgical staging. Patients with a history of chemotherapy or radiotherapy, an abnormal liver function test, or an allergy to indocyanine green (ICG) were excluded. All patients underwent surgical staging with an ICG injection at the cervix. SLNs were identified by a near-infrared fluorescent camera. All SLNs were sent to a pathologist for ultra-staging.

Results: From November 2019 to March 2021, 101 patients underwent SLN mapping and surgical staging. SLNs were not detected bilaterally in 2 patients. The detection rate of the SLN biopsies in this study was 97.9%. Thus, the accuracy of the SLN biopsies was 98.9%. The sensitivity for finding metastatic SLNs

was 92.3%, with a negative predictive value of 98.8%.

Conclusion: A SLN biopsy in endometrial cancer has a high detection rate and high accuracy. However, surgical expertise and a learning curve are required.

Oral (OM6)

Uterine Sarcoma

<https://doi.org/10.3802/jgo.2021.32.S1.OM6>

Impact of power morcellation and tissue extraction technique in women with unexpected uterine cancer after uterine-conserving surgery

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Objective: Although there is a concern about laparoscopic uterus-conserving surgery (UCS) including power morcellation which may adversely affect outcome in patients with unexpected uterine cancer, the impact of power morcellation and tissue extraction technique on prognosis is still indeterminate based on existing evidence. The aim of this study is to evaluate the impact of type of surgery on prognosis with interest in the change of morcellation technique.

Methods: Using Korea National Health Insurance (KNHI) database, we identified 1,788 women with unexpected uterine cancer who underwent a hysterectomy or UCS for presumed benign disease from January 2003 to December 2018. The comparison of mortality between hysterectomy and UCS was assessed according to laparoscopic and open surgery. Cox proportional hazards models were used to estimate the adjusted hazard ratios (aHRs) and 95% confidence intervals (CIs) for the mortality of patients.

Results: Laparoscopic UCS was associated with a higher risk for mortality than laparoscopic hysterectomy (aHR=3.03; 95% CI=1.25–7.34), whereas there was no significant association between open hysterectomy and UCS. The survival of laparoscopic UCS after Food and Drug Administration warning in 2014 was higher than that of laparoscopic UCS before 2014 (4-year survival rate: 100% [7/7] vs. 77.4% [24/31]). There was no significant difference of survival rate between open UCS before and after 2014.

Conclusion: Uncontained power morcellation could be associated to increased risk of mortality in women with unexpected uterine cancer. Preoperative evaluation of patients is required to reduce the effect of unexpected uterine cancer. For women who incidental uterine cancer is suspected, careful surgical procedures that can prevent tumor dissemination may improve the prognosis.

<https://asgo2021.org>

Oral (OM7)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM7>

Clinicopathological factors and IHC markers predicting survival outcomes of uterine endometrial carcinoma: experience of a gynaecologic oncology unit from India

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Objective: To study the clinicopathological factors and immunohistochemistry (IHC) markers in predicting survival outcome of women with endometrial carcinoma undergoing primary surgery.

Methods: All cases of carcinoma endometrium diagnosed and treated at our hospital from 1st July 2013 to 30th June 2020 were studied and retrospectively reviewed for demographic profile and survival analysis. The factors influencing survival were critically evaluated. All histopathology slides were made to undergo IHC staining with p53 marker and microsatellite instability (MSI) markers (MLH1, MSH2, MSH6) and its correlation with survival was analyzed.

Results: A total of 84 cases of carcinoma endometrium were evaluated. More than 50% patients belonged to age group of 60 years and above and were postmenopausal. The factors influencing survival were evaluated using multivariate analysis. These factors were age, stage, myometrial invasion and lymph node metastasis. The overall survival of our study population was 91.5%. IHC markers like p53 and MLH1, MSH2, MSH6 were useful in predicting survival outcomes and prognosis in our study population.

Conclusion: Endometrial cancer have good survival outcomes when diagnosed and treated at an earlier stage. Factors influencing survival include age, myometrial invasion and lymph node metastasis. IHC markers; p53 and MSI markers like MLH1, MSH2, MSH6 are helpful in not only predicting survival outcome but also in guiding adjuvant treatment in these patients.

Oral (OM8)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM8>

Retreatment with progestin for recurrence after achieving complete response with fertility sparing hormonal treatment in patients with early endometrial cancer

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Objective: To assess the outcomes of retreatment using progestin in patients with recurrent endometrial cancer (EC) after achieving complete response (CR) with fertility sparing hormonal treatment.

Methods: We reviewed retrospectively patients who had recurrence after achieving CR by fertility sparing treatment using progestin with presumed stage IA, grade 1, endometrioid EC. All recurrent patients were given medroxyprogesterone acetate or megestrol acetate with concurrent LNG-IUD. The primary end point was the response rate. The secondary end points were pregnancy outcome, pathologic disease progression, and 2nd recurrence rate.

Results: Of 55 recurrent patients, 50 received progestin retreatment. With median retreatment duration of 8 (3–56) months, the CR rate of the retreatment group was 78% (39/50); 76.2% in EC group and 87.5% in endometrial intraepithelial neoplasia group. Of 11 patients not achieving CR to progestin retreatment, 3 patients underwent surgical treatment and none had extrauterine spread of disease. Of 20 patients who attempted to conceive after achieving CR, 8 patients became pregnant. Of the 39 patients achieving CR after 1st recurrence, 20 (51.2%) patients had 2nd recurrence with a median follow-up duration of 15 (9–146) months. Of those, 16 patients received second-line progestin retreatment and 11 (68%) of these patients achieved CR. All patients who underwent retreatment are alive without evidence of disease.

Conclusion: First-line and second-line progestin retreatment in patients with recurrent EC are as effective and safe as initial fertility sparing treatment. Therefore, it may provide an opportunity for young patients who still want to preserve fertility after recurrence.

Oral (OM9)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OM9>

Indirect Excess Dose Volume Ratio (iRex): a potential toxicity controlling parameter for image-guided adaptive brachytherapy in inoperable endometrial cancer

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Objective: Radiation toxicities still occurred despite achievable dose constraints in image-guided adaptive brachytherapy (IGABT) of inoperable endometrial carcinoma. Indirect Excess Dose Volume Ratio (iRex; doi: 10.5114/jcb.2020.100377) was explored for its potential toxicity restriction.

Methods: All inoperable endometrial cancer cases receiving IGABT with/without external beam radiation therapy (EBRT) in 2013–2017 were reviewed for loco-regional control, distant metastasis-free, cancer-specific, and overall survival (OS) rate. iRex60 were genuinely generated for radiation toxicity analysis, in addition to conventional brachytherapy constraints (D_{2cc}). Descriptive, Kaplan-Meier, Mann-Whitney U test, and net reclassification index (NRI), were utilized.

Results: Thirteen inoperable endometrial cancer patients (median age 74 years old, follow-up time 43 months) underwent IGABT alone and IGABT+EBRT for 1 and 12 patients. Four-year locoregional control, distant metastasis free survival, cause-specific survival were all 100%, but OS was 83.9%. Crude grade ≥ 3 gastrointestinal (GI) toxicity occurred in 3 (23.1%) patients, yielding accrual 4-year incidence of 15.4%, whereas late-persistent toxicity was presented in only 1 (7.7%) patient. No high-grade genitourinary toxicity occurred. For dosimetric data (12 patients), comparing grade 3–5 with 0–2 late GI toxicity group, mean D_{2cc} rectum were 62.0 (range 51.7–76.1) and 58.7 (52.2–73.3) Gy EQD_{2,3} ($p=0.78$), while mean iRex60 were 2.86 (2.02–4.03) and 1.94 (1.13–2.96) ($p=0.12$), respectively. iRex- D_{2cc} scatter plot showed lower toxicity incidence underneath iRex cut-point of 2. However, absolute and additive NRI of -8.3% ($p=0.93$), 33.3% ($p=0.51$) showed no significant improvement of toxicity prediction with iRex60 incorporation.

Conclusion: iRex60 showed potential cut-point of 2 from iRex- D_{2cc} scatter plot, lower iRex60 seems to be associated with lower toxicity incidence, yet not statistically significant. Larger sample is required for validation.

Ovarian cancer

Oral (OO1)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.OO1>

Efficacy and safety of niraparib combined with oral etoposide in platinum-resistant/refractory ovarian cancer (PROC): a single arm, phase 2 study

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Objective: Treatment options for platinum-resistant/refractory ovarian cancer (PROC) are few and efficacies are limited especially for primary platinum-resistant/refractory disease. PARP inhibitor (PARPi) combined with chemotherapy could improve the treatment outcome. So, we designed a phase 2 study to evaluate the efficacy and safety of niraparib combined with oral etoposide in PROC.

Methods: Eligible patients had PROC with histologically confirmed non-mucinous epithelial ovarian, fallopian tube, or primary peritoneal cancer. They must have had 1–2 prior lines of platinum-based chemotherapy, and no prior therapy with PARPi. Patients received niraparib 200 mg or 100 mg alternate once daily and oral etoposide 50 mg on day 1–20 of a 30-day cycle. Oral etoposide was administered for a maximum of 6–8 cycles. Treatment was continued until disease progression, patient withdrawal or unacceptable toxic effects. The primary endpoint is progression free survival evaluated by RECIST v1.1.

Results: Recruitment began on 22 May 2020. The 20 patients were enrolled to date. The mean number of prior lines of chemotherapy was 1.3 for these patients, which means almost all of them had primary platinum-resistant/refractory disease. Median follow-up period was 3.2 months (1.1–6.5). One patient achieved a partial response, 6 had stable disease (RECIST v1.1). The 15 patients had discontinued the study treatment due to disease progression or intolerable gastrointestinal toxicity. The 5 patients remained on treatment. No new safety signals were identified.

Conclusion: Niraparib combined with oral etoposide had a manageable toxicity profile and showed promising antitumor activity in PROC with 1–2 prior lines of platinum-based chemotherapy. Study recruitment is ongoing.

Trial Registration: ClinicalTrials.gov Identifier: [NCT04217798](https://clinicaltrials.gov/ct2/show/study/NCT04217798)

Oral (O02)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O02>

Factors predict postoperative morbidity in advanced stage ovarian cancer patients who underwent cytoreductive surgery: a systematic review and meta-analysis

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Objective: The cornerstone treatment for advanced stage epithelial ovarian cancer (EOC) is cytoreductive surgery followed by adjuvant chemotherapy. An independent prognostic factor for advanced stage EOC is the amount of residual disease following cytoreductive surgery. Recently, more extensive surgery has been performed in order to achieve complete cytoreduction. The aim of this study was to evaluate adjustable predictive factors for postoperative morbidity after extensive cytoreductive surgery for advanced stage EOC.

Methods: The Embase, MEDLINE, Web of Science, Cochrane Library and Google Scholar databases were searched for articles from the database inception to May 2021. Meta-analysis was conducted to determine factors associated with postoperative complication by using random-effects models.

Results: The 1,953 citations were retrieved from searching strategy. Fourteen relevant studies, involving 15,219 ovarian cancer patients, were included in the review. Severe 30-day postoperative complication occurred in 2,338 (15.4%) patients. Postoperative mortality rate was 1.93%. Meta-analysis demonstrated that patient with following risk factors; age ($p < 0.001$), Eastern Cooperative Oncology Group score > 0 ($p = 0.001$), albumin level < 3.5 g/dL ($p < 0.001$), presence of ascites on computed tomography scan ($p = 0.013$), stage IV disease ($p < 0.001$) and extensive surgical procedure ($p < 0.001$) has a significant increase risk of developing postoperative complication. Surgical procedures including peritonectomy ($p = 0.012$), splenectomy ($p < 0.001$) and colon surgery ($p < 0.001$) were significant predictors for postoperative complication.

Conclusion: Our study demonstrated that patient's performance status and hypoalbuminemia were the only significant adjustable preoperative risk factors associated with postoperative complication. Preoperative assessment of serum albumin is essential to identify patients at risk for complication after cytoreductive surgery. A future randomized controlled trial on preoperative nutritional support and physiotherapy prehabilitation should be conducted to evaluate the impact on postoperative complication outcome.

Oral (O03)
Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O03>

Effect of cytoreductive surgery and hyperthermic intraperitoneal chemotherapy on epithelial ovarian, fallopian tube and peritoneal cancer: an institutional review of outcomes and its clinical implications

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Objective: The study aimed to determine the efficacy and safety of cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC) vs. CRS for patients with epithelial ovarian, fallopian tube and peritoneal cancer.
Methods: This retrospective cohort study included 50 patients (20 CRS with HIPEC, and 30 patients who underwent CRS). Records of these patients from 2014–2020 were reviewed and tabulated.
Results: Recurrence rate between CRS with HIPEC and CRS alone was not statistically significant (50% vs. 43%, $p=0.774$). Median time to recurrence was 10 and 9 months ($p=0.636$). Five percent expired in the HIPEC group, and 13% expired in the CRS ($p=0.636$). More post-operative complications were noted in the HIPEC group ($p=0.007$), but only 2 cases had grade 3 to 4 complications (10%). HIPEC patients had longer operative time ($p<0.001$) and post-operative hospital stay ($p=0.026$). There were no intra- or peri-operative mortalities in both groups.
Conclusion: CRS with HIPEC and CRS alone showed similar time to recurrence and recurrence rate. CRS with HIPEC had low risk of grade 3–4 complications and may still be considered as a treatment option for advanced and recurrent epithelial ovarian, fallopian tube and peritoneal cancer.

Oral (O04)
Surgical Techniques Perioperative Management
<https://doi.org/10.3802/jgo.2021.32.S1.O04>

Cytoreductive surgery after neoadjuvant chemotherapy in ovarian cancer: Does Neoadjuvant chemotherapy really ease the burden?

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Objective: Neoadjuvant chemotherapy (NACT) is used in most advanced ovarian cancer cases, not amenable to upfront surgery.

Apart from the anesthetic implications of chemotherapy, the desmoplastic reaction to chemotherapy also poses a difficulty to surgical resection compared to upfront surgery. Interval cytoreductive surgery (CRS) requires surgical expertise, knowledge about the disease recurrence pattern after NACT, and diligent perioperative care to minimize complications. The present study describes the standardized surgical technique to reduce complications and increase recurrence free survival (RFS), as practiced by the author routinely.

Methods: An audit of a prospectively maintained computerized database in the department of surgical oncology was done. Intraoperative and immediate postoperative outcomes and patterns of recurrence and RFS were analyzed. We described our surgical technique perfected over 106 cases of post-NACT, CRS and hyperthermic intraperitoneal chemotherapy (HIPEC).

Results: In 516 cases of ovarian cancer operated from January 2014 to November 2020, CRS and HIPEC was performed after NACT in 106 patients. Nerve-sparing hysterectomy and nerve-sparing retroperitoneal lymph node dissection were performed in 33% (31/106) cases. The mean duration of surgery was 310.8 minutes. The mean duration of hospital stay was 6.82 days, and the mean intensive care unit stay duration was 1.7 days. The predominant pattern of recurrence was peritoneal, followed by nodal recurrence.

Conclusion: Interval CRS + HIPEC is a unique challenge with increased surgical complexity. Standardization of the surgical technique can reduce associated complications and optimizes outcomes.

Oral (O05)
Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O05>

Effect of BRCA mutational status on survival outcomes after secondary cytoreduction in platinum-sensitive relapsed ovarian cancer

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Objective: To investigate impact of BRCA1/2 mutational status on survival outcomes after secondary cytoreduction in platinum-sensitive relapsed (PSR), epithelial ovarian cancer (EOC).

Methods: We identified patients who underwent secondary cytoreductive surgery for PSR EOC between January 2009 and March 2021 and who received BRCA1/2 gene testing by either germline or somatic methods. Patients were divided into BRCA mutation and wild-type groups, followed by comparisons of clinicopathologic characteristics and survival outcomes after secondary-line treatment.

Results: In total, 22 and 53 patients were assigned to BRCA mutation and wild-type groups, respectively. Between the 2 groups, no differences in patient age, proportions of high-grade serous carcinoma and bevacizumab users, and the use of maintenance therapy were observed. However, the BRCA mutation group had a significantly longer platinum-free interval ($p=0.021$) and a higher rate of complete cytoreduction with borderline statistical significance (95.5% vs. 73.6%; $p=0.053$), compared to the BRCA wild-type group. Of 22 patients in the BRCA mutation group, 8 (36.4%) received PARP inhibitor maintenance therapy after completion of second-line platinum-based combination chemotherapy. After a median follow-up of 38.2 months, the groups showed similar overall survival; however, the BRCA mutation group displayed better progression-free survival (PFS; median, 28.4 vs. 18.4 months; $p=0.012$). Multivariate analyses identified BRCA1/2 mutation as an independent favorable prognostic factor for PFS (adjusted hazard ratio=0.419; 95% confidence interval=0.218–0.806; $p=0.009$). Consistent results were observed among 60 patients who achieved complete cytoreduction.

Conclusion: In the case of secondary cytoreductive surgery for PSR EOC, patients with BRCA1/2 mutations have a better prognosis with longer PFS than those lacking BRCA mutations. Further studies with a large sample size are warranted to confirm our findings.

Oral (OO6)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.OO6>

Clinical characteristics of early-stage clear cell ovarian cancer: a 10-year retrospective experience in Ren Ji Hospital

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Objective: Ovarian clear cell carcinoma (OCCC) is a distinct subtype of epithelial ovarian cancer with unique clinical and molecular characteristics. It is likely to be found at an early-stage and its prognosis is relatively good. However, it has recently been reported that in early-stage OCCC, some recur more frequently and become chemoresistant according to subtypes, due to occult metastasis. This study was conducted to learn more about the clinical characteristics and outcomes of early-stage OCCC, as well as to provide more information to help with clinical diagnosis and therapy.

Methods: The clinical features such as age, preoperative cancer antigen 125 (CA125), CA19-9, platelet, plasma D-dimer,

systemic inflammatory response (SIR) markers, treatment and survival outcomes of 70 patients with International Federation of Gynecology and Obstetrics I–II OCCC treated at our center between August 2010 and April 2020 were investigated in this retrospective analysis. Initially, receiver operating characteristic curve analysis for overall survival (OS) was used to determine optimal cut-off values for preoperative parameters (CA125=52.65, CA19-9=21.3, platelet=223.5, SIR index [SIRI]=1.289). Kaplan-Meier curves were used for the analysis of OS and progression-free survival (PFS). The p -values were calculated by a log-rank test. Multivariate Cox-regression analysis was used to further assess the variables proved significant in univariate analysis. $p<0.05$ was considered statistically significant.

Results: Overall, the mean age of participants was 57.46 ± 9.41 years old. All patients underwent hysterectomy with bilateral salpingo-oophorectomy, and 87.1% of them underwent lymphadenectomy. Of the 62 women with available chemotherapy data, 42 (67.7%) received one cycle intraperitoneal chemotherapy with cisplatin and 59 (95.2%) underwent more than 3 cycles of chemotherapy. The 48 patients received open procedures and the rest underwent laparoscopy. There were 14 recurrences and 3 deaths during the median follow-up duration of 55.2 months. The median CA125 level was 56.27 IU/mL (range 5.81–602.8 IU/mL), with normal CA125 levels seen in 20 patients. Almost three quarters of patients (77.1%) assayed had a normal CA19-9, with a median level of 15.6 IU/mL. In this study, no statistically significant correlations between the differential pretreatment levels of CA125 ($p=0.87$ for OS, $p=0.71$ for PFS)/CA19-9 ($p=0.05$ for OS, $p=0.95$ for PFS) and clinical outcomes in patients with early-stage OCCC were found. SIRI ($p=0.008$) and platelet ($p=0.002$) levels were identified as prognostic factors for OS. SIRI ($p=0.024$) was also prognostic factor for PFS. Patients who received one cycle intraperitoneal chemotherapy were related to an obviously better prognosis ($p=0.032$ for OS, $p=0.048$ for PFS). Furthermore, multivariate analysis showed that an increase in SIRI is a significant independent prognostic factor for poor prognosis (hazard ratio=3.192, $p=0.00215$).

Conclusion: Early-stage OCCC often presents with mildly elevated CA125 and adding one cycle intraperitoneal chemotherapy can offer additional survival benefit to patients. Pretreatment evaluated SIRI might be potential biomarkers for worse response to first-line chemotherapy and poorer clinical outcomes. Therefore, more specific treatment strategies and a rigorous follow-up plan can be formulated for patients with early-stage OCCC based on clinical characteristics and preoperative parameters.

Oral (O07)

Gynecologic Cancer Screening

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Diagnosis of early-stage epithelial ovarian cancer (EOC) using comprehensive serum glycopeptide spectra analysis combined with artificial intelligence (CSGSA-AI)

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Objective: We aimed to develop an artificial intelligence (AI)-based comprehensive serum glycopeptide spectra analysis (CSGSA-AI) method in combination with convolutional neural network (CNN) to detect aberrant glycans in serum samples of patients with epithelium ovarian cancer (EOC).

Methods: A total of 97 serum samples were collected from patients with early-stage EOC at the time of ovarian mass detection prior to the initiation of any treatment (stage I). The non-EOC control group (n=254) comprised both healthy women (n=220) and women with gynecologic benign diseases (n=34). We used AlexNet, the latest CNN-based technology, as a discrimination tool for CSGSA to identify early-stage EOC. To facilitate CNN training, we converted numerical data of glycopeptide expression to 2D barcode images and let CNN learn and distinguish early-stage EOC. CNN was trained using 60% samples and validated using 40% samples. To further enhance the learning efficacy and diagnostic performance of CNN, we added cancer antigen 125 (CA125) and HE4 information into the 2D barcode by changing the color (multicolored model).

Results: The sensitivity, specificity, positive predictive value, negative predictive value and area under the curve (AUC) of CSGSA-AI were 79%, 96%, 89%, 92%, and 88%, respectively. When CNN was trained with 2D barcodes colored on the basis of serum levels of CA125 and HE4 (multicolored model), AUC of 95% was achieved.

Conclusion: CSGSA-AI has the potential to be a useful tool for diagnosis of early-stage epithelial ovarian cancer.

Oral (O08)

Epithelial Ovarian Cancer including Borderline Tumor

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Quality-adjusted time without symptom or toxicity and quality-adjusted progression-free survival of first-line maintenance niraparib in patients with advanced ovarian cancer

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Objective: This post hoc analysis of the phase 3 PRIMA trial examined quality-adjusted time without symptom or toxicity (QA-TWiST) and quality-adjusted progression-free survival (QA-PFS) of patients with ovarian cancer on first-line maintenance niraparib vs. placebo.

Methods: QA-TWiST analyses were performed, defining TOX as the mean duration where patients experienced grade ≥ 2 adverse events (fatigue/asthenia, nausea, vomiting, abdominal pain, and abdominal bloating) from randomization to disease progression/censoring. Mean QA-TWiST was calculated as

$U_{TOX} \times TOX + U_{TWiST} \times TWiST$, where U_{TWiST} and U_{TOX} represent utilities applied to time spent in TWiST and TOX health states, respectively. U_{TWiST} was considered 1.00, i.e., the best possible quality of life for patients. U_{TOX} was calculated using EQ-5D index scores from the PRIMA trial. Restricted mean QA-PFS was calculated from the area under the quality-survival product function up to the last PFS of patients randomized to niraparib. **Results:** Maximum PFS was 27.8 months with niraparib. There were improvements in mean QA-TWiST for niraparib vs. placebo in the intention-to-treat (ITT) and homologous recombination deficient (HRd) cohorts, with mean (95% confidence interval [CI]) gains of 3.5 (1.7–5.6) and 5.9 (3.5–8.6) months, respectively. Similarly, QA-PFS was significantly longer with niraparib vs. placebo, with mean (95% CI) differences of 4.1 (2.2–5.8) and 6.5 (3.9–8.9) in the ITT and HRd cohorts, respectively. **Conclusion:** In patients with ovarian cancer, first-line niraparib maintenance was associated with significant gains in QA-TWiST and QA-PFS vs. placebo, confirming the benefit of niraparib in the ITT population and HRd cohort.

Miscellaneous

Oral (OMi1)

Gestational Trophoblastic Neoplasia

<https://doi.org/10.3802/jgo.2021.32.S1.OMi1>

Phase II trial for Chemo-Resistant Gestational Trophoblastic Neoplasias with Pembrolizumab (CR-GTP)

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Background: Gestational trophoblastic neoplasia (GTN) represents a group of rare tumors that accounts for less than 1% of gynecologic cancers which arising from malignant transformation of trophoblast, a cell originating from placenta. Most patients with GTN are cured with chemotherapy, however 0.5%–5.0% of them die as a result of multi-drug resistance, necessitating novel approaches. Placental expression of paternal antigens make placenta a target for maternal immune recognition during pregnancy, and programmed death-ligand 1 (PD-L1) expression maintains gestational immune tolerance. Not known the exact mechanism, there is possible explanation by immune tolerance associated/derived from pregnancy. Therefore, targeting programmed cell death protein 1 (PD-1) inhibitory signaling with PD-1 inhibitor might be effective in

chemo-resistant GTN.

Methods: Participants are eligible to be included in the study. Female participants who are at least 18 years of age with histologically confirmed diagnosis of gestational trophoblastic neoplasia (hydatidiform-mole, invasive mole, gestational choriocarcinoma, placental site trophoblastic tumor, and epithelioid trophoblastic tumor) refractory or chemo-resistant to multi-agent chemotherapy (such as EMA-CO, EMA-EP, BEP, TP-TE, etc.) status will be enrolled in this study. Pembrolizumab 200 mg will be administered as a 30-minute intravenous infusion every 3 weeks. Radiological response assessed by the overall response according to iRECIST criteria every 3 cycles, and serologic response assessed by serum b-hCG at every 3 weeks. The serologic response is expected to show a decrease at least 50% of patients. We will test for four immunohistochemistry mismatch repair deficiency (MLH1/MSH2/MSH6/PMS2), microsatellite instability test, and PD-L1 expression, and we will further analyze the other immune response proteins (CD3, CD8, Granzyme B).

Oral (OMi2)

Gestational Trophoblastic Neoplasia

<https://doi.org/10.3802/jgo.2021.32.S1.OMi2>

Comparison of immuno-histochemical staining of programmed cell death ligand-1 (PD-L1) in placental site trophoblastic tumor and epithelioid trophoblastic tumor using 22C3, SP263, and SP142

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Objective: This study aims to evaluate programmed death-ligand 1 expression and concordance between 3 commercially available antibodies in placental site trophoblastic tumor (PSTT)/epithelioid trophoblastic tumor (ETT).

Methods: Serial histology sections from 14 patients diagnosed with PSTT or ETT underwent following immunohistochemistries; 22C3, SP263, SP142 on Ventana

Benchmark. Slides were scanned and counted for the number of tumor and immune cells expressing PD-L1 in 3 parts in each slide by one pathologist. Tumor cell proportion score (TC) and immune cell proportion score (IC) were calculated.

Results: Median of TC in 22C3, SP263, and SP142 was 35.0%, 50.7%, and 9.1%, respectively. Median of IC in 22C3, SP263, and SP142 was 1.7%, 1.8%, and 1.8%, respectively. Those 3 antibodies showed a high correlation in TC of PD-L1 staining. The percentage agreement was 85.7% between 22C and SP263 ($\kappa=0.440$, $p=0.047$). The percentage agreement was 92.9% and 85.7% between 22C3 and SP142 using 1% ($\kappa=0.811$, $p=0.002$) of TC, respectively. Using clinically relevant cut-off, the percentage agreement between SP263 and 22C3, and 22C3 and SP142 was 71.4% ($\kappa=0.152$, $p=0.571$) and 92.9% ($\kappa=0.811$, $p=0.002$), respectively. Intratumoral agreement of positivity of PD-L1 expression among different 3 parts in the same slide was 100% in 22C3 and SP263.

Conclusion: Those 3 antibodies showed a good correlation in TC of PD-L1 expression. 22C3 and SP142 may be interchangeable to determine PD-L1 due to its high agreement to evaluate the positivity for PD-L1 in PSTT/ETT. SP263 showed a higher positivity rate than others, and the agreement was acceptable with 22C3.

Oral (OMi3)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.OMi3>

Feasibility of identifying circulating tumor DNA based on cervical smear samples in endometrial cancer patients

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Objective: Cervical smear samples are easy to obtain and may effectively reflect the tumor environment in the pelvis due to anatomic proximity. Thus, we have investigated the feasibility of using cervical smear samples for tumor DNA analysis in endometrial cancer patients.

Methods: Patients undergoing endometrial cancer staging were prospectively enrolled since January 2021. Cervical smear samples were obtained preoperatively via vaginal sampling. Cell-free DNA was extracted and analyzed with a custom panel which covers 101 endometrial cancer-related genes. Prepared

libraries were sequenced using NovaSeq 6000 System (Illumina) and analyzed using Piseq analysis (Dxome).

Results: Cervical smear samples were obtained from 13 patients, and among them whole blood was available for ctDNA analysis in 12 patients. This predominantly early-stage cohort consisted of stage IA (n=7), stage IB (n=3), and stage II, III, and IV patients (n=1 for each). Overall, the detection rate for cervical cytology-based tumor DNA was 8 out of 13 patients (62%), whereas only 2 out of 13 patients (15%) had detectable ctDNA based on blood. Specifically, for stage IA patients, ctDNA was detected in 3 out of 7 patients, despite that all 7 patients had normal PAP smear result. Based on cytology-based tumor DNA analysis of cervical smear samples, the most frequently identified gene mutations were PTEN (n=6), PIK3CA (n=4), ARID1A (n=3), KRAS (n=3), TP53 (n=2), MSH6 (n=2), and ATM (n=2).

Conclusion: In this pilot study with predominantly early-stage endometrial cancer patients, cervical smear was more sensitive than whole blood or conventional PAP smear in terms of detecting tumor DNA.

Oral (OMi4)

Gynecologic Cancer Screening

<https://doi.org/10.3802/jgo.2021.32.S1.OMi4>

Pilot study on biomarkers for screening endometrial hyperplasia and early-stage endometrioid cancer

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Objective: Endometrial cancer is the most common malignancy of the female reproductive system in developed countries including Taiwan. Ways to screen precancerous endometrial lesion and early-stage endometrial cancer are mandatory. We performed proteomics study on endometrioid endometrial cancer and proteinase-3 (PRTN-3) showed significant expression in cancerous tissue compared with normal endometrial tissue. High expression of vascular endothelial growth factor (VEGF) and interleukin-6 (IL-6) was noted through literature review. We then conducted a pilot study to check if these are effective markers in vaginal discharge for the detection of early-stage endometrial cancer and its precancerous lesion.

Methods: After granted by Institutional Review Board, vaginal discharge samples of 133 patients between 2015 and 2017 at

Linkou Chang Gung Memorial Hospital were collected. Study subjects were those: 1) with known endometrial lesions, which including any type of endometrial hyperplasia and any stage of endometrioid carcinoma of the endometrium, 2) with symptoms/signs of endometrial hyperplasia or endometrial cancer, including abnormal uterine bleeding with thick endometrial stripe or medically uncontrollable uterine bleeding, as study group. Patients with benign uterine/ovarian tumors were invited as the control group. The sample was collected using a designed cotton swab by study physician and was stored in 20°C until ELISA analysis.

Results: Statistically significant elevation of IL-6 titer and VEGF titer but not PRTN-3 among endometrial cancer patients, compared with those with normal uterus or with benign tumors, were noted. No significant differences were observed for PRTN-3 level within the groups. Algorithm for endometrial hyperplasia and endometrial cancer screening is established accordingly.

Conclusion: This study represents the first evaluation of IL-6, PRTN-3 and VEGF level extracting from vaginal fluid as potential markers in screening for endometrial cancer. As a noninvasive measure, further validation study is needed.

Oral (OMi5)

Gynecologic Pathology, Genetics and Epidemiology
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Association between hospital treatment volume and survival of surgical cases with gynecologic malignancy in Japan

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Objective: Associations between hospital treatment volume and survival outcomes for surgical cases with 3 types of gynecologic malignancies, and the trends and contributing factors for high-volume centers were examined.

Methods: The Japan Society of Obstetrics and Gynecology tumor registry data based retrospective study examined 167,642

women with 76,255, 41,187, and 45,200 of endometrial, cervical, and ovarian tumor, respectively, who underwent primary surgery in Japan between 2004 and 2015. Associations between the annual treatment volume and overall survival (OS) for each tumor type were examined. Institutions were categorized into 3 groups (low-, moderate-, and high-volume centers) based on prior study.

Results: Among the high-volume centers, the median surgical treatment volumes were 67 (interquartile range [IQR], 59–82), 68 (IQR, 59–91), and 35 (IQR, 31–41) cases/year for endometrial, cervical, and ovarian tumors, respectively. On multivariate analysis, younger age, rare tumor histology, and lymphadenectomy were contributing factors for women at high-volume centers (all, $p < 0.001$). During the study period, the proportion of high-volume center treatments was decreased, whereas that of low-volume center treatments was increased for the 3 tumor types (all, $p < 0.001$). Surgical treatment at high-volume centers improved OS than that at other centers (adjusted-hazard ratio [95% confidence interval]: 0.82 [0.76–0.88], 0.83 [0.76–0.91], and 0.88 [0.84–0.93] for endometrial, cervical, and ovarian tumors, all, $p < 0.001$).

Conclusion: For women with gynecologic malignancy in Japan, surgical treatments at high-volume centers conferred survival benefits. The practice pattern shifted with scattering of patients and treatments at high-volume centers were decreasing.

Oral (OMi6)

Gynecologic Pathology, Genetics and Epidemiology
<https://doi.org/10.3802/jgo.2021.32.S1.OMi6>

Mutations of DNA damage repair pathway-related genes in ovarian cancer detected by next-generation sequencing

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Objective: To study the mutations occurred in related genes in DNA damage repair pathway (DDR) in ovarian cancer (OC) patients detected by next-generation sequencing (NGS).

Methods: After NGS of tissue samples from 205 ovarian cancer cases, the mutation types and mutation frequencies of DDR pathway-related genes were classified and analyzed. Two-hundred five female Chinese patients with OC (including primary peritoneal cancer and fallopian tube cancer) were involved and detected by OncoDrug-Seq™ 603-gene panel assay through NGS using Illumina NovaSeq 6000.

Results: The mutated genes in the 205 OC patients were

related to various physiological activities of cells such as ERK (14.9%), PI3K (12.9%), RTK-RAS (20.9%) and other signaling pathways. There were 514 altered genes among all 205 patients: 491 mutations, 4 fusions, 10 copy number variants, and 9 deletions were found. The top 5 genes were *TP53* (25.1%), *BRCA1* (7.4%), *ARID1A* (5.4%), *KRAS* (4.7%), and *PIK3CA* (3.5%), etc. Ninety patients had homologous recombination repair (HRR) mutations and 71 patients had DDR mutations. *RAD50* (n=4) or *PALB2* (n=3) mutations were associated with tumor mutational burden (TMB).

Conclusion: Mutations in genes of DDR pathway were closely associated in Chinese gynecological cancers patients, particularly the HRR pathway. The landscape of gene alteration and TMB among Chinese OC populations in this study will further assist the utilization of these biomarkers to individualized therapy strategies.

Oral (OMi7)

Gynecologic Cancer Screening

<https://doi.org/10.3802/jgo.2021.32.S1.OMi7>

The short-term impact of COVID-19 pandemic on cervical cancer screening: a systematic review and meta-analysis

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Objective: A systematic review and meta-analysis was performed to evaluate the short-term impact of severe acute respiratory syndrome coronavirus 2 on cervical cancer screening based on the number of eligible women screened before the pandemic and during the pandemic.

Methods: After ruling out registered or ongoing systematic review regarding the impact of coronavirus disease 2019 (COVID-19) infection in cervical cancer cases in PROSPERO database, the systematic review and meta-analysis protocol was registered in PROSPERO (CRD42021279305). The electronic databases were searched for articles published in English between January 2020 and September 2021 and the study was designed based on Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines updated in 2020. The meta-analysis component was modified appropriately to synthesise the pooled proportion of women attending cervical cancer screening before and during the pandemic. Studies reporting the number of women undergoing cervical cancer screening by cytology, human papillomavirus DNA testing or co-testing before the pandemic and during the pandemic

were included. The studies reporting only the reduction in test volume or test rate per 100-person months were excluded. To assess the risk of bias in individual studies (quality assessment), chosen after the abstract and content review, the National Institutes of Health checklist for observational, cohort and cross-sectional studies was used. Meta-analysis was accomplished in STATA version 13.0 (College Station, TX, USA). The forest plots were constructed using metaprop package in STATA. A considerable amount of heterogeneity across the studies was anticipated as the included studies were mostly observational. The pooled proportion of women undergone cervical cancer screening was reported with 95% confidence interval (CI) along with χ^2 statistic (Q statistic) and I² index to quantify the heterogeneity.

Results: There are studies reporting the effect of COVID-19 on cervical cancer screening rate from Slovenia, Italy, Ontario (Canada), Scotland, Belgium, USA. The pooled proportion of women screened in 2019 was 8.79% (95% CI=6.12%–11.47%). During the pandemic period, the pooled proportion of women undergone screening was 3.22% (95% CI=2.48%–3.96%).

Conclusion: The decline in cancer screening rates has to be addressed to facilitate timely detection and management of precancerous lesions as well as cervical cancers. Scaling up of cervical cancer prevention strategies during the pandemic is essential to prevent the long-term effect of cervical cancer burden.

Oral (OMi8)

Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.OMi8>

Which risk of malignancy index (RMI-1, 2, 3, 4) is better for differentiating adnexal masses: a diagnostic dilemma

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Objective: To know the sensitivity and specificity of risk of malignancy index (RMI)-1, 2, 3, 4 to predict the nature of adnexal masses and to compare their areas under the curve (AUCs) and accuracy.

Methods: This is a prospective comparative study conducted in the Department of Obstetrics and Gynaecology at All India Institute of Medical Sciences, Jodhpur for 2 years from 2018 to 2020. This was the secondary objective of our study. All the women in the reproductive and post-menopausal age group presenting with adnexal masses, planned for surgery were

included in the study. Following the clinical assessment of the patient, serum cancer antigen 125 levels and an ultrasound pelvis/abdomen were done along with the other investigations needed for management. The findings were then classified as benign or malignant as per the various RMI classification systems using a cut-off of 200 for RMI-1, 2, 3 and that of 450 for RMI-4. The results were compared with the histopathology report obtained postoperatively.

Results: RMI-1 has a sensitivity of 70%, specificity of 85.42% and AUC was 0.85, and accuracy of 82.76. RMI-2 had a sensitivity of 80%, specificity of 82.64% with AUC of 0.856, and accuracy of 82.18. RMI-3 had findings similar to that of RMI-1 despite their University System of Georgia scores being different. But a had an AUC of 0.84. RMI-4 had a sensitivity of 90%, Specificity of 77.08%, and highest AUC of 0.87, and lowest accuracy of 79.31.

Conclusion: All the RMI scores showed comparable sensitivity and specificity. However, RMI-2 had slightly better sensitivity and specificity as compared to the rest. The addition of tumor size to the RMI-4 classification increases the sensitivity at the cost of specificity. In low-resource settings or developing countries, RMI is the most commonly used system for classifying adnexal masses as benign or malignant.

Oral (OMi9)

Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.OMi9>

Peripheral lymphocytes reflect exhausted immune phenotypes of tumor-infiltrating lymphocytes in endometrial cancer patients

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Objective: The aims of this study was to characterize exhausted immune phenotypes of tumor-infiltrating lymphocytes (TILs) in endometrial cancer patients and investigate their clinical relevance.

Methods: We isolated peripheral blood mononuclear cells (PBMCs) and TILs from 36 patients with newly diagnosed endometrial cancer and examined their composition, differentiation, and exhaustion status (expression of immune checkpoint receptors and T-cell transcription factors) using multicolor flow cytometry.

Results: The percentage of CD3 T cells in CD45⁺ hematopoietic cells were increased in TILs. Unlike CD4 T cells, the proportion of CD8 T cells and regulatory T cells (Treg) were significantly increased in TILs. Considering the CD8/Treg ratio, the increase in Tregs was more pronounced. When analyzing differentiation subsets using the markers CCR7 and CD45RA, effector memory T cells (CCR7⁺ CD45RA⁻) were enriched in TILs. Immune checkpoint receptors (PD-1, CTLA-4, TIM-3, and TIGIT) were expressed more on CD8 T cells and Tregs in TILs than in PBMC. Intriguingly, although TIGIT⁺ cells were increased in CD8 TILs, the percentage of CD226⁺ TIGIT⁺ cells among CD8 T cells were significantly decreased in TILs. Comparing proliferation marker (Ki-67), stem-like property (T cell factor-1; TCF-1), and exhaustion marker (TOX) between peripheral CD8 T cells and CD8 TILs, CD8 TILs showed higher expression of Ki-67 and TOX, and lower expression of TCF-1. In the case of Tregs, tumor-infiltrating Tregs showed higher expression of activation marker CD39, antigen-reactive marker 4-1BB, and proliferation marker Ki-67 than peripheral Tregs. Next, we analyzed correlation of immune profiles between peripheral T cells and TILs. The expression of PD-1, CTLA-4, 4-1BB, and CD39 showed significant correlation between peripheral and tumor-infiltrating Tregs. In the case of CD8 T cells, only PD-1 expression showed a significant correlation between PBMCs and TILs.

Conclusion: In endometrial cancer, tumor-infiltrating lymphocytes were exhausted and had suppressive properties. CD4 and CD8 TILs showed exhausted immune-phenotypes and tumor-infiltrating Tregs. Furthermore, peripheral lymphocytes reflect these immune-phenotypes of TILs in endometrial cancer patients.

SURGICAL FILM

F1 – F6

Surgical film

Surgical Film (F1)
Surgical Techniques & Perioperative Management
<https://doi.org/10.3802/jgo.2021.32.S1.F1>

Removal of metastatic nodes para-aortic area

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US guideline for cervical cancer recommends CCRT + brachytherapy for IB2 IVA disease if pelvic or para-aortic nodes are positive by radiological imaging or surgical staging. There is no description of lymphadenectomy. ESGO guideline describes that para-aortic lymphadenectomy may be considered in locally advanced cervical cancer with negative paraaortic lymph nodes on imaging for staging purposes and that debulking of suspicious pelvic nodes may be also considered. There is a big difference between the treatment policies for metastatic nodes for cervical cancer. LION trial for advanced ovarian cancer (AOC) concluded systematic pelvic and para-aortic lymphadenectomy, in patients with AOC who had undergone intraabdominal macroscopically complete resection and had normal lymph nodes both before and during surgery, was not associated with longer overall or progression free survival than no lymphadenectomy, and was associated with a higher incidence of postoperative complications. Two randomized controlled trials did not show a survival benefit of lymphadenectomy for patients with low-risk endometrial carcinoma. For patients with intermediate risk, data also has not shown a survival benefit. However, in Japan, Dr. Todo reported from retrospective cohort analysis that combined pelvic and para-aortic lymphadenectomy should be recommended as treatment for patients with endometrial carcinoma of intermediate or high risk of recurrence (Lancet 2010). As described above, especially therapeutic significance of systemic lymphadenectomy is still controversial in gynecological malignancies. What do you think about removing bulky nodes after completing the resection of primary tumor or optimal surgery? In this video, I am going to focus on Bulky nodes, which means clearly identified metastatic nodes. We will try to show you the “meticulous” and “awesome” lymph node dissection by our original video.

Surgical Film (F2)
Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.F2>

Laparoscopic para-aortic lymphadenectomy in endometrial cancer

<https://asgo2021.org>

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A 46-year-old female underwent total abdominal hysterectomy with right salpingo-oophorectomy and left salpingectomy for her provisionally diagnosed myoma uteri. The pathology report revealed myoma uteri with grade 1 endometrioid carcinoma of endometrium. Myometrial invasion was less than half of the thickness. However, the left fallopian tube had mucosal invasion of cancer. She was referred to our hospital. Six weeks after first operation, she underwent laparoscopic left oophorectomy, pelvic and para-aortic lymphadenectomy. The camera port was set at Li-Huang point with 3 ancillary diamond shaped ports. The procedure started with lysis adhesion and bilateral lymphadenectomy. Para-aortic lymphadenectomy began with opening the peritoneum covering right ureter along common iliac artery and aorta to the level of third part of duodenum. Both sides of peritoneum were sutured with vicryl no 0, hanging with abdominal wall at camera port level. The para-aortic lymph node (LN) was dissected in 4 groups; right below inferior mesenteric artery (IMA), right above IMA, left below IMA and left above IMA, respectively. The postoperative period was uneventful. The patient can be discharged in 2 days. The final pathology was negative of carcinoma in all specimens (0/17 right pelvic LN, 0/30 left pelvic LN, 0/12 right para-aortic below IMA, 0/6 right para-aortic above IMA, 0/11 left para-aortic below IMA and 0/10 left para-aortic above IMA). The pelvic and para-aortic lymphadenectomy in endometrial cancer patient can be achieved. However, this procedure takes times and complication such as; vascular injury, ureteric injury, lymphocyst and lymphedema. We conduct the sentinel LN biopsy study to detect the false negative rate compared to full lymphadenectomy. If this false negative rate is acceptable, we will not do the full lymphadenectomy anymore.

Surgical Film (F3)
Surgical Techniques & perioperative Management
<https://doi.org/10.3802/jgo.2021.32.S1.F3>

Robotic radical hysterectomy without uterine manipulator or vaginal tube

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The purpose of this study is to introduce robotic radical hysterectomy with tagged uterine suture instead of using a uterine manipulator or vaginal tube. A total of 4 ports were used; first

port was located left at 8 cm from umbilicus, second port was 20 mm sized at umbilicus, third port was located right at 8 cm from umbilicus, and fourth was located right at 8 cm from the third port (near the right flank). Uterus was tied with needle-straightened multifilament Vicryl 2-0 and tagged uterus was manipulated by fourth arm of the robot. If additional traction is required, instrument was inserted through the umbilical trocar site. During operation, the tagged uterus was successfully manipulated and appropriate parametrial space was exposed. Pathologically, all surgical margins were not involved with cancer. No tumor cells were seen in cytologic exam before and after the colpotomy. Robotic radical hysterectomy can be easily and safely done with the traction of tagged uterine suture.

Surgical Film (F4)
Surgical Techniques & Perioperative Management
<https://doi.org/10.3802/jgo.2021.32.S1.F4>

Vaginal assisted laparoscopic radical hysterectomy (nerve sparing) after LACC era

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From Laparoscopic Approach to Cervical Cancer (LACC) trial, patients who underwent minimally invasive radical hysterectomy for early-stage cervical cancer had lower rates of disease-free survival and overall survival and a higher rate of locoregional recurrence. There are potential reasons for the inferior oncologic outcomes, that the routine usage of a uterine manipulator and intracorporeal colpotomy might increase the propensity for tumor spillage, effect of the insufflation gas (CO₂) on tumor-cell growth or spread. We use selection criteria and change some steps of procedure to reduce risk of recurrent disease, such as: 1) tumor size <2 cm, 2) no lymph-vascular space invasion, 3) not using uterine manipulator, 4) transvaginal colpotomy, and 5) closing vaginal cuff transvaginally. Steps of procedure divided into laparoscopic and vaginal parts. Laparoscopic part steps are as follows: 1) after starting pneumoperitoneum with CO₂ pressure 10–12 mmHg, abdominal exploration is performed; 2) bilateral pelvic lymphadenectomy is performed then frozen section; 3) creating paravesical and pararectal space then identifying hypogastric nerve; 4) radical hysterectomy performed as conventional; 5) cutting uterine branch of hypogastric nerve then dissecting laterally; and 6) suturing to mark vaginal wall. Vaginal part follows as: 1) identifying suture marker; 2) opening vaginal cuff by scalpel; 3) removing specimen then painting with povidone

solution; and 4) closing vaginal stump transvaginally. The advantages of minimal invasive surgery should not be abandoned because of the unexpected findings of the LACC trial. We continue to be critically assessed by discussion with patients before surgery. Ongoing and future randomized controlled trials are needed and should be strongly supported.

Surgical Film (F5)
Cervical Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.F5>

Robotic assisted radical vaginal trachelectomy (fertility sparing surgery)

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A 32-year-old nulliparous woman with early-stage invasive cervical adenocarcinoma underwent robotic assisted radical vaginal trachelectomy (fertility sparing surgery). Steps were followed as: 1) Sentinel lymph node biopsy, 2) Paravesical and Pararectal spaces dissection, 3) Ureter & uterine artery identification, 4) Division of anterior vesico-uterine ligaments (bladder pillars), 5) Recto-vaginal space dissection (uterosacral ligaments division), 6) Colpotomy, 7) Cervical amputation, 8) Frozen biopsy, 9) Cervical cerclage, and 10) Utero-vaginal anastomosis.

Surgical Film (F6)
Uterine Sarcoma
<https://doi.org/10.3802/jgo.2021.32.S1.F6>

vNOTE hysterectomy for adenosarcoma in patient with complicated abdominal surgical history

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This is a 72-year-old with postmenopausal bleeding underwent a hysteroscopic dilation and curettage which revealed adenosarcoma. Her underlying medical problems included chronic kidney disease (glomerular filtration rate 19); obesity (body mass index 38) with associated comorbidities; also an abdominal aortic aneurysm (AAA) with a diameter 7.4 cm. Due to newly diagnosis of cancer and vaginal bleeding, her AAA repair process was put on hold. She had a complicated surgical history. In 2016, she had large bowel obstruction due to underlying

diverticulitis requiring laparotomy sigmoid colectomy, right hemicolectomy, ileocolic anastomosis and sigmoid end colostomy. She subsequently had closure of colostomy, but had a leak with a washout procedure with diverting loop ileostomy. She eventually had closure of ileostomy. A preoperative positron emission tomography scan revealed no distant or locoregional metastasis. Due to her complex abdominal surgery history, decision made to attempt a vaginal approach to avoid extensive adhesions documented. She then underwent vNOTE hysterectomy and bilateral salpingo-oophorectomy (BSO). Intraoperatively extensive laparoscopic lysis of adhesions were able to be performed,

which allowed successful vNOTE hysterectomy and BSO. Due to extensive adhesions a serosal laceration of small bowel was noted and repaired. The entire procedure was completed vaginally. Estimate blood loss was 50 mL. She developed pneumonia on postoperative day (POD) #3 and also congestive heart failure but eventually able to recover and discharge home on POD#10. Her pathology revealed stage IC adenosarcoma of uterus. She has not received post operative adjuvant treatment and now free without disease. vNOTES is a feasible alternative route in oncology patients with complex surgical history requiring hysterectomy.

POSTER

| | |
|-----------------------|-----------|
| Cervix Cancer | C01 – C27 |
| Uterine corpus cancer | E01 – E30 |
| Ovarian Cancer | O01 – O42 |
| Miscellaneous | M01 – M25 |

Cervical cancer

Poster (C01)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C01>

Dosimetric comparison of single 6MV, single 10MV, and mixed 6MV plus 10MV energy volumetric modulated arc therapy for cervical cancer

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Objective: Volumetric Modulated Arc Therapy (VMAT) in the pelvic and groin lymph node irradiation is generally employed with single energy photon. Due to the different depth of target volumes, the mixed energy photon VMAT could produce better dose distribution since the higher dose energy photon penetrates more to deep-seated tumors and the lower dose energy photon better covers superficial targets. This pilot study compares the dosimetric parameters generated from mixed energy 6MV plus 10MV VMAT plan and single energy of 6MV and 10MVMAT plan.

Methods: Ten cervical cancers with lower one-third vaginal involvement patients were selected. The dose of planning target volume (PTV)-pelvis and PTV-gross lymph node was 45 Gy (PTV-45) and 55 Gy (PTV-55), respectively. VMAT using 6MV, 10MV, and mixed energy 6MV plus 10MV were generated with identical plan objectives. Dosimetric parameters of PTV and organ at risks were compared.

Results: Almost parameters showed no statistically significant difference among three different energies. For exception, the dose coverage 98% of PTV-45 of mixed energy was significantly higher than of 10MV. The dose coverage 98% of PTV-55 of mixed energy was significantly higher than of 10MV. The Homogeneity Index of PTV-45 of 6MV was significantly better than of 10MV. The mean dose of external genitalia of 6MV was significantly less than of mixed energy.

Conclusion: The mixed energy 6MV plus 10MV VMAT plan in the pelvis with inguinal lymph nodes irradiation for cervical cancer did not show explicit benefit in term of dosimetric outcomes, compared to single energy.

Poster (C02)

Preinvasive Disease of Cervix, Vulva, and Vagina

<https://doi.org/10.3802/jgo.2021.32.S1.C02>

Epigenetic and genetic characteristics of intraepithelial neoplasia of cervix

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Objective: The aim is to identify the genetic and epigenetic factors of intraepithelial neoplasia atypical squamous cells of undetermined significance (ASC-US) or low-grade squamous intraepithelial lesions (LSIL) with high-risk human papilloma virus (HPV) that lead to cancer.

Methods: We selected the patients who diagnosed ASC-US or LSIL of cytology with high-risk HPV infection and followed up at every 6-months intervals. According to the final cytology and HPV test results, the patient group was divided into regression, persistence, and progression and analyzed. DNA extracted from initial and final cytology and matching normal DNA (peripheral blood) were conducted Microsatellite instability (MSI) and MLH1 methylation by real time polymerase chain reaction kit (U-TOP MSI Plus Detection Kit, Epi-TOP mMLH-1 detection Kit, Seasun Biomaterials, Daejeon, Korea). If the sample was insufficient, analyzing of the final sample was omitted.

Results: Of 34 patients, 19 patients were regressed their lesion, 10 patients were noted persistent HPV infection. The average age at first diagnosis was 39.8±10.6 years. Among 5 patients, their lesions had been progressed and got surgical resection to be removed. The final pathology results were reported high-grade squamous intraepithelial lesions. All 63 cervical cytology samples went through MSI and MLH1 methylation analysis. Regardless of patients group, all samples were microsatellite stable and negative of MLH1 methylation.

Conclusion: Whether the outcome of HPV infection was progression, persistence or regression, there were no significant difference of MSI, MLH1 methylation in DNAs extracted cytology. More studies conducted in tissues other than cytology and studies with expanded number of patients are needed.

Poster (C03)

Gynecologic Pathology, Genetics and Epidemiology

<https://doi.org/10.3802/jgo.2021.32.S1.C03>

HER2 overexpression and PD-L1 expression in vulvar Paget disease in Thai population: role of potential targeted and immune therapy

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Objective: To determine the proportion of human

epidermal growth factor receptor 2 (HER2) overexpression and programmed death-ligand 1 (PD-L1) positive immunohistochemistry in vulvar Paget disease in Thai women.

Methods: A cross-sectional study was conducted in King Chulalongkorn Memorial Hospital, Bangkok, Thailand. Histologically diagnosed patients with vulvar Paget disease from January 2000 to April 2020 were identified. Clinical data were collected from medical records and histologic data were verified by pathological review. Pathologic specimens were collected. HER2 and PD-L1 immunohistochemistry were performed. The results of staining were reported by two pathologists. Data were analyzed using descriptive statistics and reported as percentage and 95% confidence interval (CI). Clinical outcomes were correlated with immunohistochemistry expression.

Results: Thirty-three vulvar Paget disease cases were included in the study. Twenty patients (60.6%, 95% CI=42.1-77.1) had HER2 overexpression. All patients were negative for PD-L1 immunohistochemistry. HER2 positive patients had hazard of death 2.94 (95% CI=0.61-14.23) times compared with HER2 negative patients. HER2 positive status had relative risk 1.95 and 1.73 for invasive and metastatic disease respectively.

Conclusion: More than half of vulvar Paget disease patients had HER2 overexpression and might benefit from anti-HER2 targeted therapy. A higher proportion of HER2 overexpression was found in invasive and metastatic vulvar Paget disease. PD-L1 was not expressed in vulvar Paget disease.

Poster (C04)

Preinvasive Disease of Cervix, Vulva, and Vagina
<https://doi.org/10.3802/jgo.2021.32.S1.C04>

Is human papillomavirus genotype important in predicting disease progression in women with biopsy-proven negative or CIN1 of LSIL cytology?

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Objective: Our aim was to estimate the risk of disease incidence in women with low-grade squamous intraepithelial lesion (LSIL) without histology-proven cervical intraepithelial neoplasia grade 2 or worse (CIN2+) by human papillomavirus (HPV) genotype.

Methods: Between January 2002 and December 2010, incidence of CIN2+ in 1,580 women including 575 with LSIL and histology-proven negative and 1,005 with LSIL with histology-proven CIN1 was investigated. Baseline high-risk-HPV status was determined by the hybrid capture II assay and high-risk-HPV genotype by

the HPV DNA chip test. Cumulative incidence and hazard ratios (HRs) were estimated to explore differences between index data and associations with CIN2+.

Results: Of the 1,580 women, 139 (8.8%) patients developed CIN2+. The 5-year cumulative incidence rate of CIN2+ in HPV-16, HPV-18, and HPV-58 were 18.7%, 16.1%, and 12.9%, respectively. On multivariate analysis, being positive in HPV-16 (HR=2.324; p<0.01), HPV-18 (HR=2.315; p<0.01), and HPV-58 (HR=2.051; p<0.01) were significantly associated with developing CIN2+ compared to being negative for that type.

Conclusion: Among women with LSIL, HPV-16, HPV-18, or HPV-58 positive women may need intensified follow-up as they have the highest risk of becoming CIN2+.

Poster (C05)

Gynecologic Cancer Screening
<https://doi.org/10.3802/jgo.2021.32.S1.C05>

Liquid-based cytology for cervical cancer screening compared between spatula-cotton swab and spatula-cytobrush: a randomized controlled trial

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Objective: The presence of endocervical cell/transformation zone (EC/TZ) component is still described as a quality indicator in the 2014 Bethesda System. In addition, the presence or absence of EC/TZ component is a useful quality assurance measurement. The aim of this study was to compare the percentage of satisfactory samples with presence of EC/TZ components between samples collected by spatula-cotton swab and by spatula-cytobrush for cervical cancer screening using Siriraj liquid-based cytology.

Methods: This randomized controlled trial was conducted during January 2020–March 2020. A total of 1,400 women were recruited. Study women were randomly allocated to either the spatula-cotton swab group or the spatula-cytobrush group (700 women per group). All samples were sent for cytologic interpretation and determination of satisfactory sample with presence of EC/TZ component.

Results: There were no significant differences in baseline characteristics between groups. The percentage of satisfactory samples with presence of EC/TZ components was significantly higher in the spatula-cytobrush group than in the spatula-cotton swab group (87.1% vs. 75.9%, respectively, p<0.001). There were no significant differences between 2 groups relative

to the percentage of satisfactory smears or the rate of detection of abnormal cells.

Conclusion: Our results support the efficacy of spatula-cytobrush for cervical cancer screening.

Poster (C06)
Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C06>

Utility of radiomics for predicting patient local control in cervical cancer with chemoradiotherapy

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Objective: The aim of this study was to develop a predictive model combining radiomic features with clinical characteristics for predicting local control (LC) in cervical cancer patients receiving intensity modulated radiotherapy (IMRT).

Methods: This was a retrospective analysis of 161 patients with cervical cancer treated with IMRT, using data acquired between May 2012 and March 2017. We extracted the radiomic features from computed tomography (CT) scans. Least absolute shrinkage and selection operator regression was used to filter the extracted radiomic features and reduce the dimensionality of the data. Rad-score was calculated by the selected radiomic features. Multivariate Cox-regression hazard models was established to analyze the LC of cervical cancer patients, and a Nomogram prediction model based on Rad-score and clinical characteristics was used to demonstrate the prediction model. The prediction reliability was evaluated by the area under the receiver operating characteristic curve and Harrell's concordance index. Decision curve analysis evaluates the application value of the Nomogram. The heat map shows the relationship between radiomics features and clinical characteristics. According to the cut-off value of Rad-score, all patients were classified as low-risk or high-risk.

Results: A total of 5 radiomic features and 2 clinical characteristics were extracted for analysis. A combination of the Rad-score and clinical characteristics resulted in better performance for the estimation of 5-year LC (area under the curve [AUC]=0.780; confidence interval [CI]=0.690–0.870) than that with clinical characteristics alone (AUC=0.680; CI=0.590–0.770). These patients were divided into high-risk and low-risk groups according to the cut-off value of Rad-score.

Conclusion: This study shows that the combination of CT extracted radiomic features and clinical characteristics has a good potential for evaluating LC in patients with cervical cancer treated with IMRT.

Poster (C07)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C07>

Pretreatment lymphocyte counts as independent prognostic factors in patients with locally advanced cervical cancer treated with concurrent chemoradiotherapy

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Objective: To evaluate the association between pretreatment total lymphocyte counts (TLC) and survival in locally advanced cervical cancer patients treated with concurrent chemoradiation (CCRT).

Methods: A Retrospective analysis of 789 patients diagnosed cervical cancer stage IIB to IVA who treated with primary CCRT from January 2011 to December 2015 was performed. Pretreatment TLC was evaluated for an association with 5-year disease free survival (DFS) and overall survival (OS) rates.

Results: Seven hundred and eighty-nine patients were included in the study. There were 52 patients had pretreatment TLC <1,000 cells/mm³. The median pre-treatment TLC in groups TLC <1,000 cells/mm³ and >1,000 cells/mm³ were 573.9 cells/mm³ (range=350.9–827.7 cells/mm³) and 2,211.3 cells/mm³ (range=1,751.3–2,785.8 cells/mm³) respectively. Patients in pretreatment TLC<1,000 cells/mm³ group had fewer number of treatment response and trend to present in more advance stages of disease and larger tumor size. The 5-year DFS and OS rates were significantly higher in patients with pretreatment TLC>1,000 cells/mm³ than the counterparts (67.7% vs. 35.4% [p<0.0001], 57.6% vs. 25.7% [p<0.0001]). Multivariate analysis showed pretreatment TLC >1,000 cells/mm³ was independent predictors of DFS (hazard ratio [HR]=0.39; 95% confidence interval [CI]=0.26–0.59; p<0.001) and OS (HR=0.59; 95% CI=0.42–0.84; p=0.006) after adjusted with age, stages of disease and tumor size.

Conclusion: Pretreatment TLC were associated with treatment response, and also the survival outcome in patients with locally advanced stage cervical cancer treated with definite CCRT.

Poster (C08)

Rare Tumors & Metastatic Tumors

<https://doi.org/10.3802/jgo.2021.32.S1.C08>

Primary diffuse large B-cell lymphoma of uterine cervix presenting with bulky cervical mass: a case report ana review

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Objective: Primary lymphoma of female genital tract is rare and only 0.3%–1.5% of extra-nodal non Hodgkin' lymphomas. The cervix is the second common site in literatures review. The diagnosis is difficult due to submucosal stromal lesion and non-specific manifestation without constitutional 'B-cell' symptoms. Combined chemotherapy (CHOP) is mainstay for treatment.

Methods: Review of a case and literatures.

Results: A 39 years-old woman presented to the gynecological clinic with repeated vaginal discharge, pelvic discomfort for 4 months. Her annual Pap test was low-grade squamous intraepithelial lesion. During pelvic examination, a large 6×6 cm. Infiltrative bulky cervical mass was visualized. Rectovaginal examination found cervical tumor extended to parametrial tissue both sides, fixating to the left pelvic sidewall. The colposcopic biopsy result was cervicitis. The deep excisional procedure was performed and result was atypical lymphoid proliferation. Immunohistochemistry (IHC) were positive for CD20, BCL6 (90%), Ki 67 (50%–60%). IHC were negative for AE1/AE3. The diagnosis was diffuse large B-cell lymphoma (WHO Classification 2008). The magnetic resonance imaging show large cervical mass 4.7×4.9×5.3 cm at posterior cervix with invasion to stroma, left parametrium and protrusion into upper vagina. No upper abdominal metastasis and lymphadenopathy were observed. Bone marrow biopsy result was hypocellular and compatible with Ann Arbor stage I. The patient was sent to hematologist and received R-CHOP (Cyclophosphamide, Doxorubicin, Vincristine, Prednisone, and Rituximab) for 8 cycles and achieved CR. The patient is remaining remission after 55 months follow up.

Conclusion: Primary lymphoma of cervix is extremely rare and deep excisional procedure was useful for diagnosis. CHOP is primary treatment and improved survival outcome.

Poster (C09)

Gynecologic Cancer Screening

<https://doi.org/10.3802/jgo.2021.32.S1.C09>

Temporary elevation of serum squamous cell carcinoma antigen during follow-up and its clinical significance

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Objective: We evaluated the role of serum squamous cell carcinoma antigen (SCC-Ag) in predicting recurrence after primary treatment.

Methods: Of 4,814 cervical cancer patients at Chang Gung Memorial Hospital Linkou Medical Center in 2000–2018, 2,206

patients had SCC-Ag testing at diagnosis.

Results: Excluding 27 patients with incomplete medical documents, 1,091 (50.1%) showed elevated SCC-Ag, in whom 1,016 was squamous cell carcinoma. 81.8% cases with advanced stage (FIGO IIB or more), and 61.6% with a large tumor in early stage (IB3, IIA2) had elevated SCC-Ag. Seven hundred sixty-nine (75.7%) of the 1,016 patients had CR to primary treatment, and their SCC-Ag returned to normal. A total of 207 patients had re-elevation of SCC-Ag at follow-up, in which 110 cases had recurrence. SCC-Ag re-elevation before imaging diagnosis was noted in 79 (71.8%) of the recurred, 14 (12.7%) patients had concurrent SCC-Ag re-elevation and imaging diagnosis of recurrence, another 11 (10.0%) had recurrence before SCC re-elevation. Four had recurrences with normal SCC-Ag. 97 of the 207 patients with re-elevated SCC showed NED throughout follow-up, and their SCC-Ag returned to normal within six months. Forty-four (45.3%) of the SCC elevation may be attributed to impaired renal function. Four patients had skin lesions. The cause of elevation in another 47 (48.5%) could not be recognized. The overall sensitivity of SCC-Ag for detecting recurrence is 86.8%, specificity 85.2%, PPV 50.8%, and NPV 97.4%.

Conclusion: Serum SCC-Ag levels can be a useful tool for screening for cancer recurrence after primary treatment in patients with cervical squamous cell carcinoma.

Poster (C10)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C10>

Transcription factor homeobox D9 drives the malignant phenotype of HPV18-positive cervical cancer cells via binding to the viral early promoter

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Objective: Transcription factor homeobox D9 (HOXD9) is highly expressed in cervical cancer. Previously we reported HOXD9 bound to the P97 promoter of HPV16, and regulated early oncogenes E6 and E7. In this study, we investigated whether HOXD9 regulated the P105 promoter of HPV18 and examined the role of HOXD9 in intracellular signaling of cervical cancer.

Methods: HOXD9 knockdown HPV18 positive cervical cancer cell lines SKG-1 and Hela were used in this study. Cell cycle

and apoptosis analysis was performed by flow cytometry. Gene expression in mock and shHOXD9 SKG-I cells was analyzed by microarray.

Results: HOXD9 inhibition suppressed P105 promoter activity and E6/E7 gene expression in HPV18 positive cervical cancer cell line. Cell cycle analysis indicated that HOXD9 blocking increased the ratio of G1 phase cells, decreased cell proliferation and enhanced apoptosis. HOXD9 suppression did not change the P53 gene level, but restored the P53 protein expression. Furthermore, the expression of MCM2 and PCNA, the target genes of transcription factor E2F, was decreased in HOXD9 inhibited cells. Finally, promoter assay and chromatin immunoprecipitation assay showed that HOXD9 directly bound to the P105 promoter and activated its function.

Conclusion: HOXD9 played an important role in cell proliferation and immortalization by regulating the P105 promoter in HPV18 positive cervical cancer. These findings indicated that HOXD9 might be a promising therapeutic target in cervical cancer.

Poster (C11)

Preinvasive Disease of Cervix, Vulva, and Vagina
<https://doi.org/10.3802/jgo.2021.32.S1.C11>

The overtreatment rate of “see and treat” approach in high-grade squamous cervical cytology at Ramathibodi hospital

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Objective: To evaluate an overtreatment rate of “see and treat” (S&T) approach in patients with high-grade squamous intraepithelial lesion (HSIL) cervical cytology and identify the clinical factors associated with the overtreatment.

Methods: Patients with HSIL cytology undergoing colposcopy and loop electrosurgical excision procedure (LEEP) in a single visit or S&T approach between January 2005 to December 2019 at colposcopic clinic, Ramathibodi hospital were retrospectively reviewed. Overtreatment was defined as the pathological examination of LEEP specimen reported cervical intraepithelial neoplasia 1 or normal results. The overtreatment rate and complication event from LEEP was explored. Clinical factors affecting the overtreatment were analyzed with a logistic regression model.

Results: There were 220 cases identified. The overtreatment rate was 11.4%. The surgical complications composed of 3 cases

with hemorrhage (1.36%) and 9 cases with infection (4.09%). In univariable analysis, factors associated with the overtreatment were present cytology and colposcopic diagnosis with p-value of 0.006 and 0.001, respectively. In multivariable analysis, present cytologic results of non-HSIL compared to HSIL and colposcopic diagnosis (low-grade lesion or normal finding compared to high grade lesion or cancer) were presented adjusted odds ratio of 13.81 and 3.58 (95% confidence interval [CI]=1.23–155.20; p=0.033 and 95% CI=1.32–9.74; p=0.013, respectively).

Conclusion: The overtreatment rate in S&T approach was 11.4%. The independent factors associated with overtreatment rate were the present cytology and colposcopic diagnosis.

Poster (C12)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C12>

To compare the pre-operative and post operative staging in early stages of cervical cancer on the basis of changes made in FIGO 2018 staging

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Objective: To compare the pre-operative and post operative staging in early stages of cervical cancer on the basis of changes made in International Federation of Gynecology and Obstetrics (FIGO) 2018 staging.

Methods: An observational hospital-based study was conducted in which 57 cases were included who were surgically staged. Cases were re-staged on the basis of the 2018 FIGO staging and clinico-radiological and surgico-pathological factors were considered. Data was collected to identify patients who were upstaged or downstage, need of adjuvant treatment were analysed.

Results: The 86.2% patients had undergone preoperative imaging. Ultrasound was the most commonly done follow by magnetic resonance imaging and computed tomography scan. The 20 patients were upstaged and 5 patients were downstage on the basis of final histopathological report. The 27% patients were given adjuvant treatment. The most common factor was the change in tumor size followed by parametrical invasion and the least common was lymphovascular space invasion.

Conclusion: The new FIGO 2018 staging system led to an upstage in 35.08% patients and helps in better delineation of treatment both primary and adjuvant, if needed.

Poster (C13)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C13>

Treatment outcomes in early stage cervical cancer: experience of a gynecological oncology unit from India

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Objective: To analyze and critically evaluate the clinico-pathological features and survival outcomes of early stage cancer cervix patients and to reclassify all histopathology reports according to new International Federation of Gynecology and Obstetrics (FIGO) 2018 staging classification and compare their survival outcome.

Methods: A retrospective observational analysis was done from 1st June 2013 to 31st May 2018; over a period of 5 years for patients who underwent radical hysterectomy followed by risk-based adjuvant therapy in our center and later patients were analyzed and evaluated for clinic-pathological features and survival outcome. Patients were reclassified as per histopathology reports according to new FIGO 2018 and their survival outcome were compared with old FIGO staging.

Results: The 100 patients of early-stage cancer cervix were studied. All patients underwent open radical hysterectomy with bilateral pelvic lymph node dissection. The median age of the study population was 52.5 years with median follow up of 62.1 months. The overall survival and relapse free survival were 87.5% and 91.4%, respectively. The study population was then reclassified according to new FIGO 2018 staging. It was seen that the patients with stage IB1 and IB2 cervical cancer had overall survival of 91.1% and 90%, respectively. The overall survival of stage IB3 was 80% and the survival of stage IIIC1 was only 60%.

Conclusion: Early stage cancer cervix have good overall survival outcome when treated appropriately with surgery and risk based tailored therapy.

Objective: The aim of this study was to compare minimally invasive surgery (MIS) with open abdominal radical hysterectomy (RH) in patients with early-stage cervical cancer after major prospective study called laparoscopic approach to cervical cancer trial in November 2018.

Methods: A retrospective data analysis was performed on patients who underwent surgery at our hospital for early-stage cervical cancer from January 2019 to September 2020. Surgery was compared with classical RH and MIS (laparoscopic, robotic). The patient's stage was IA2–IB2 based on the 2018 International Federation of Gynecology and Obstetrics stage, and the pathology was squamous cell carcinoma, adenocarcinoma, and adenosquamous type.

Results: A total of 149 patients with stage IA2–IB2 cervical cancer were analyzed retrospectively. The 76 patients (48.1%) received MIS (laparoscopic: 56, robotic: 20) and 82 patients (51.9%) underwent open RH surgery. Median follow-up was 23.5 months (range: 13–33). One person who received laparoscopic RH out of a total of 149 people recurred. Complications occurred in 1 case during surgery and 4 case after surgery for open RH, 0 during surgery and 2 after surgery for MIS. There were no other significant differences in the amount of bleeding or length of hospital stay.

Conclusion: Despite of short-term follow up period in our data, there was no difference in the oncological outcome between the 2 groups. Microinvasive surgery can be considered through sufficient discussion with the patient in the case of early stage.

Poster (C15)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C15>

Association of pattern-based classification system to survival outcome in women with cervical adenocarcinoma

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Objective: To assess the survival outcome and recurrence according to pattern-based classification system of cervical adenocarcinoma.

Methods: A retrospective cohort study was conducted in women pathologically diagnosed of endocervical adenocarcinoma (ECA) underwent primary surgery at Rajavithi Hospital during January 2012 and December 2017. Post-operative pathologic slides were reviewed according to the pattern-based classification system. Survival outcome and recurrence were

Poster (C14)

Cervical Cancer

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After the laparoscopic approach to cervical cancer (LACC) trial: minimally invasive surgery for early cervical cancer

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calculated and analyzed.

Results: A total of 66 patients was eligible for analyses, including 53 patients with usual type and 13 patients with mucinous type of ECA. Patients were classified according to the pattern-based system into pattern A of 21.2%, pattern B of 22.7% and pattern C of 56.1%. Lymph node metastasis were detected 0.0%, 6.7% and 27% in pattern A, B and C, respectively. No recurrence transpired in pattern A and B. However, 5 patients (13.5%) with pattern C recurred during median follow up time of 49.5 months. The 5-year recurrence-free survival rates were not significantly different (pattern A 100%, B 100% and C 86.3%). On the contrary, the 5-year overall survival rates were significantly different among the 3 patterns (pattern A 100%, B 93.3% and C 72.9%) ($p=0.039$). The Silva Pattern-based classification is the significant prognostic factors for overall survival (hazard ratio=5.36; 95% confidence interval=1.26–25.76; $p=0.021$).

Conclusion: ECA patients with pattern A, according to the pattern-based classification system, have excellent prognosis without lymph node metastasis. Contrastingly, pattern C tumor associated with the worse overall survival, higher rate of recurrence and lymph node metastasis.

Poster (C16)
Cervical Cancer
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Diagnosis and treatment cervical cancer in early pregnancy: one case report

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Objective: Recently, the incidence of gynecological malignant tumors during pregnancy has increased, mainly due to increased age of pregnant. The most common gynecological malignancy in pregnancy is cervical cancer, accounting for 71.6%, followed by ovarian malignancy, accounting for 7.0%. Cervical cancer during pregnancy fortunately is diagnosed at an early stage. It is important to highlight that the oncologic outcome of cervical cancer during pregnancy is not different from nonpregnant patients, noting that the impact of pregnancy on tumor biology remains unclear. A delay in treatment to achieve fetal viability or to improve outcome of the fetus may be an option for patients with early-stage cervical cancer.

Methods: A 38-year-old patient G4P3 presented to Maternity and Neonatology Cipto Mangunkusumo National General Hospital Jakarta with a subsequent diagnosis of a squamous cell

moderately differentiated cervical invasive carcinoma confirmed by biopsy. A 2×1.5 cm tumor on the anterior lip of the cervix spread to left fornix with no evidence of parametrial or vaginal involvement was found on physical examination (International Federation of Gynaecology and Obstetrics 2018 stage IIAI). An abdominal and pelvic magnetic resonance imaging (MRI) was ordered. The study revealed heterogeneity in the anterior aspect of the uterine cervix (dimensions not provided by radiologist). No suspicious lymph nodes or parametrial involvement and no evidence of tumor infiltration in the vagina was noted. Given the results of the MRI and the last menstrual period, an ultrasound was requested which confirmed that the patient was intra uterine 7 weeks pregnant. The case was discussed in the Ethics and Law Committee of the Cipto Mangunkusumo National General Hospital and the forensic and medicolegal departments. Tumor Committee and the following options were entertained. If the patient wished to preserve her pregnancy, our recommendation would be to proceed an option of neoadjuvant chemotherapy after 15 weeks and Cesarean section at 32 weeks followed by radical hysterectomy. We also discussed that if the patient decided to end her pregnancy, then proceed with recommendation of pregnancy termination plus type C1 radical hysterectomy with ovarian preservation. The decision was made with the patient who decided to undergo a radical hysterectomy with bilateral lymphadenectomy with ovarian preservation and this was performed at 11 weeks' gestation. Histologically consistent with nonkeratinizing, moderately differentiated squamous cell carcinoma. No lymphovascular invasion was found. The deepest invasion was found to reach 5 mm of the 10 mm thickness of the cervical wall. There was no tumor mass found at the vaginal incision margin. The right and left parametrial preparations did not reveal a tumor mass. Found 21 right pelvic lymph nodes, all found no tumor mass. Found 15 left pelvic lymph nodes, all found no tumor mass. The patient did not require adjuvant therapy.

Results: Analysis of prognosis of cervical cancer during pregnancy shows no negative impact of pregnancy on the outcome of patients; therefore, pregnancy-preserving management should be considered initially. Pregnancy non-preserving management is chosen in advanced disease (stage IIB or higher or lymph node metastases) or in cases when the patient chooses not to preserve her pregnancy (based on local legislation and usually until the 24th week of gestation). Treatment is thus planned without intention to preserve the fetus. In case of an operable disease (IA2–IB2), a radical hysterectomy with fetus in utero (during the 1st or early-2nd trimester) or after hysterotomy (during the late 2nd trimester) can be performed. In IB3 and higher stages, during first trimester chemoradiation can be applied with the fetus

in utero (the death of the fetus occurs within few days), while during second trimester a hysterotomy as a first step is advised. This reduces the risk of obstetrical complications (bleeding, rupture of the cervix, diffuse intravascular coagulation) and psychological impact on the patient. Alternatively, before chemoradiotherapy is initiated, feticide can be considered for ethical and psychological reasons.

Conclusion: Radical hysterectomy is the treatment of choice for pregnant patients with early cervical cancer. It affords termination or delivery of the pregnancy at the same time of the treatment is provided. Radical hysterectomy during pregnancy can be safely performed even with the fetus in situ and a subsequent cesarean section.

Poster (C17)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C17>

Establishment of a novel cell line from glassy cell carcinoma of the cervix and analysis of genomic landscape

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Objective: Glassy cell carcinoma (GCC) of the cervix is an extremely rare subtype of cervical cancer with poor prognosis, and the molecular characteristics remain unclear. In this study, we investigated the landscape of genomic alterations of GCC.

Methods: We established a novel GCC cell line (HU-6) and analyzed genomic alterations of 160 cancer-related genes (GeneRead Human Comprehensive Cancer Panel, Qiagen) in comparison with the parental tumor and 2 existing GCC cell lines available (TOM-2, HOKUG).

Results: HU-6 was derived from a 31-year-old GCC case, and mimicked the parental tumor both in pathohistological findings and in gene alteration patterns. HPV 18 was detected in HU-6 and TOM-2, while HPV 58 in HOKUG. Common gene alterations in 3 GCC cell lines were detected in 40 loci of 26 cancer-related genes, including alterations of the homologous recombination repair (HRR) pathway (*ATM*, *BRCA2*, *FANCA*, and *BRIPI*), and the SWI/SNF pathway (*PBRM1*, *EZH2*), in addition to single nucleotide variant in *Noch1* and *TP53*, which induces differentiation into squamous epithelium, and a frequent and poor prognosis marker

in adenocarcinoma of the cervix, respectively. Only HU-6 had a mutation of *KRAS* (G12C). Copy number analysis revealed that HU-6 showed amplification of *Myc*, but HOKUG showed loss of heterozygosity of several genes.

Conclusion: HRR related gene alterations were commonly identified in all three GCC cell lines, suggesting that PARP inhibitors may have antitumor effect for GCC. Moreover, *KRAS* inhibitors such as AMG510 or ARS1620 may be effective for GCC with *KARS* mutation (G12C).

Poster (C18)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C18>

Evaluation of mobile health applications for cervical cancer in the digital marketplace

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Objective: To assess the quality of mobile health (mHealth) applications (apps) for cervical cancer using the Mobile App Rating Scale (MARS), APPLICATIONS scoring system, and app rating using specific statements.

Methods: We searched for cervical cancer apps from 2 major mobile operating systems (Google Play Store and Apple iTunes Store) in March 2021. Eligible apps were downloaded and assessed for quality by 2 independent reviewers using multimodal assessment tools.

Results: The overall quality MARS score was 2.61±0.79 of 5. The highest scoring app was “ASCCP Management Guidelines” (3.98). Overall, apps scored highest in the functionality domain, followed by information, engagement, and aesthetics. The mean ± standard deviation of the APPLICATIONS scoring system was 8.50±1.71 of 16. The highest-rated apps were “ASCCP Management Guidelines,” “BSCCP,” and “Cervical Cancer Guide.” Apps scored highest in the paid subscription and price domain. In contrast, apps scored poorly in the text search, literature used, and subjective presentation domains. Concerning app content, many apps infrequently provide misconceptions about cervical cancer. The apps' rating using specific statements was 7.81±4.56 of 16.

Conclusion: Overall, the apps analyzed by the MARS and APPLICATIONS scoring systems demonstrated above-average quality. However, there is a need for improvement in the essential information conveyed by these apps. Moreover, the assessment tools have influenced different app quality rating results, confirming a lack of standardized quality assessment tools for them Health app.

Poster (C19)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C19>

Human papillomavirus independent squamous cell cancer of cervix: a case report

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Objective: Human papillomavirus (HPV) independent cervical cancer is considered to be not associated with HPV infection. Cervical squamous cell carcinoma (SCC) is rarely HPV-negative, and a confirmed HPV independent cervical SCC has not yet been reported.

Methods: A 44-year presented at emergency with heavy menstrual bleeding in August 2021. She underwent therapeutic dilatation and curettage following hysteroscopy. On histology suspicion of invasive cancer, the patient was further evaluated with colposcopy followed by endometrial aspiration and endocervical curettage. Patient presented with similar complaints in 2016 and was evaluated by liquid-based cytology and HPV DNA and OncoTect[®] mRNA testing. Her Pap test was ASC-H but negative for HPV DNA and mRNA. She underwent colposcopy and biopsy and was under yearly follow up as her histology revealed Low grade squamous intraepithelial lesion. Magnetic resonance imaging pelvis done in September 2021 showed multiple uterine fibroids along with a T1/T2 isointense 4.9×4 cm cervical mass. No retroperitoneal lymphadenopathy seen. The EA and ECC done in August 2021 histopathology revealed CIN 2 on ectocervix and p16 negative HPV independent keratinising SCC of cervix.

Results: Evidence suggests HPV independent cervical cancer is caused by mutations in tumor-associated genes such as *TP53*, *PIK3CA*, and *CDKN2A*. As mentioned before till date no case of HPV independent SCC cervix has been reported in literature.

Conclusion: The HPV independent cervical carcinoma are mostly adenocarcinoma and presents at an advanced stage with poor prognosis. Reporting of rare cases like this may help to develop different approach for management.

Poster (C20)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C20>

Hysterotomy followed by radiation in cervical cancer stage IIIC1 with 15 weeks of pregnancy: a case report

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Objective: Cervical cancer is the most common gynaecological cancer during pregnancy. Management of cervical cancer during pregnancy appears to be a significant dilemma for the patients and doctors. We report a case of stage IIIC1 cervical cancer with 15 weeks of pregnancy.

Methods: We report a rare case of cervical cancer during pregnancy and the treatment modality of this case.

Results: In this case we performed hysterotomy before chemoradiation. The patient has no evidence of disease and in good condition now.

Conclusion: This case shows that hysterotomy could be one method to terminate the pregnancy before definitive cervical cancer treatment with chemoradiation.

Poster (C21)

Cervical Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.C21>

Persistence and recurrence rate of cervical cancer FIGO stage IB2–IIIB in the era of adding CT scan for treatment planning

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Objective: To determine the rate and patterns of persistence and recurrence in International Federation of Gynecology and Obstetrics (FIGO) stage IB2–IIIB cervical cancer patients and evaluate the impact of using whole abdomen computed tomography (CT) in the treatment planning.

Methods: From Tumor registry, the histopathology, finding of whole abdomen CT and clinical data of FIGO stage IB2–IIIB cervical cancer patients who were treated in Siriraj Hospital, between 2006 and 2012, were retrospectively reviewed and analyzed.

Results: A total of 304 patients were recruited and 108 cases of persistent and recurrent cervical cancer patients (35.5%) were identified. The median time from complete primary treatment to recurrence was 38 months (95% confidence interval=30.9–45.1 months). The 57.4% of the recurrences were distant. whole abdomen CT prior to treatment was used in 139 patients (45.7%) which allowed discovery the incidence of pelvic, para-aortic, both pelvic and para-aortic lymph node involvement were 0.1%, 2.2%, and 16.5%, respectively. Bladder, rectum, liver, lung and kidney metastases were found in 6.5%,

4.3%, 2.2%, 2.2%, and 0.7% respectively. These findings resulted in the change from curative to palliative aims in 5.0% and increasing in adjuvant therapy up to 24.5%. stage III, primary tumor size, and the presence of pelvic and/or para-aortic lymphadenopathy shown by whole abdomen CT were all determined to be significantly prognostic in the recurrence rate. **Conclusion:** This study implied the potential benefits of CT scans as important for proper staging of primary diagnosis, and determination of disease extent with proper treatment planning to reach the aim of improving outcome.

Poster (C22)
Cervical Cancer
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Radical hysterectomy in cervical cancer during pregnancy: a case report

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Objective: The management of cervical cancer during pregnancy represents a challenge for the physician, and it is influenced mostly by gestational age at diagnosis, stage of disease, and patient's desire of maintaining the pregnancy. Our current case was a pregnant woman with stage IB2 cervical cancer who underwent radical hysterectomy and pelvic lymphadenectomy during the cesarean section.

Methods: A 42-year-old woman, G5P3A1, at 32 weeks of gestation came to our hospital complaining vaginal bleeding for about 3 months. Gynecologic examination revealed a 2 cm exophytic cervical lesion without vaginal and parametrial involvement. A cervical biopsy was performed that revealed an invasive, poorly differentiated, squamous cell carcinoma of the cervix. An ultrasonographic examination confirmed the presence of a cervical lesion with the size of 3×2×2 cm with no parametrial involvement. The cesarean section was performed at 35 weeks of gestation with a live baby girl, 2,530 g, AS 9/10. The procedure was followed by radical hysterectomy, left salpingo-oophorectomy, right salpingectomy, right ovarian transposition and pelvic lymphadenectomy.

Results: The final histopathology result revealed an invasive, moderately differentiated, squamous cell carcinoma of the cervix with no metastasis to the parametrial and lymph node, and also free margin to the vaginal border. We did not give any adjuvant treatment based on our analysis to the histopathology

result. After 7 months of observation, no sign of recurrence was found.

Conclusion: Management of cervical cancer during pregnancy is influenced by gestational age, stage of disease, patient's desire to maintain her pregnancy with careful evaluation and counselling of the patient. We report a case of 42-year-old pregnant woman with cervical cancer stage IB2 with successfully treated by radical hysterectomy and pelvic lymphadenectomy during cesarean section.

Poster (C23)
Cervical Cancer
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Recurrent cervical carcinoma presenting as periumbilical abdominal wall mass treated with wide excision followed by reconstruction using surgical mesh: a rare case report

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Objective: The recurrence of cervical cancer most commonly presents as nodal diseases in pelvic or paraaortic lymph nodes. The prevalence of recurrence in the periumbilical abdominal wall is low. The management depends on patient's condition. We herein report a rare case of the abdominal wall recurrence with diagnosis and management.

Methods: A case report of diagnosis and management.

Results: A 56-year-old woman with history of radical hysterectomy followed by external beam radiotherapy and brachytherapy for stage IIA of poorly differentiated adenocarcinoma of the cervix one year ago. She complained about a mass in her abdomen. Physical examination revealed a 3×3 cm solid mass in the umbilical region. The MRI result showed a 3×2.3×1.9 cm intramuscular solid mass with necrotic component in the right abdominal rectus, 4.1 cm apart from the cutis, and was suspected as metastasis. We performed a laparotomy adhesiolysis, extirpation of solid tumor mass in periumbilical, and then reconstruction by prosthesis (mesh) insertion. The histopathology result corresponded with metastatic carcinoma from the cervix. The patient's condition was good after surgery.

Conclusion: Periumbilical abdominal wall recurrence of cervical carcinoma is unusual and can be treated with wide excision followed by reconstruction using surgical mesh.

Poster (C24)

Cervical Cancer

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Treatment patterns and surgical outcome of stage IA1 cervical carcinoma

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Objective: To evaluate treatment patterns and surgical outcome of stage IA1 cervical cancer.

Methods: Patients with stage IA1 cervical cancer diagnosed between January 2001 and June 2018 at Chiang Mai University Hospital were retrospectively reviewed. The analysis included treatment patterns, surgical types, and clinicopathologic variables, i.e., nodal metastasis, parametrial involvement, positive surgical margins, deep stromal invasion, lymph-vascular space invasion, adjuvant treatment, and 5-year disease-free survival and 5-year overall survival. All pathologic slides were reviewed by gynecologic pathologists. Kruskal-Wallis test and Fisher's exact test, Kaplan-Meier method, and log-rank test were used for statistical analysis.

Results: One-hundred eighty-five patients were included in this study. Simple hysterectomy was the major treatment (57.3%) followed by modified radical hysterectomy and radical hysterectomy (27.6% and 9.7% respectively). Conization and radiation were chosen in few cases. At the median follow-up time of 40.8 months, the 5-year disease-free survival rate was 99.1% and the 5-year overall survival rate was 95.0%. Pelvic lymph node dissection was done in 62 cases (33.7%), but only one (0.54%) had pelvic lymph node metastasis.

Conclusion: Surgical and survival outcomes of women with stage IA1cervical cancer are excellent. These could be effectively treated by conservative treatment (simple hysterectomy and conization). Lymph node metastasis is rare in this stage, therefore, the lymphadenectomy could be omitted.

Poster (C25)

Gynecologic Cancer Screening

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Quality assurance for the cervical cancer screening program in Japan

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Objective: Cervical cancer screening has been implemented nationwide since 1982 in Japan and managed by 1,737 local governments (LGs). In order to improve the level of quality assurance (QA), the Ministry of Health, Labour and Welfare (MHLW) released a guide in 2007 which contains QA instructions and implementation procedures. The aim of this study is to introduce the indicators for the QA structure in the cervical cancer screenings.

Methods: The MHLW and National Cancer Center (NCC) play roles in formulating the screening program's QA. We obtained cancer screening indicators from the NCC's website and MHLW's portal site which pertained to the QA structure.

Results: The guide described 2 main indicators for QA: one is a compliance rate using checklists which listed 50 structural criteria for conducting screening, and the other is a process indicator which is detailed screening results. NCC surveys compliance rate in each LG and publishes it as quality control indicators on their website. Regarding process indicators, all LGs submit annual screening results including the number of women who underwent screening, screen negative, referral, and detection to diagnose not only the cervical cancer but also cervical intraepithelial neoplasia (CIN) 3, CIN2, and CIN1 to the MHLW and they published detailed screening results by age group and screening histories.

Conclusion: The cancer screening programs established QA structures based upon compliance rates and process indicators, however comprehensive evaluation strategies need to be formulated for evaluating the screening activities in order to detect problematic issues and to improve QA.

Poster (C26)

Cervical Cancer

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Active clinical trials of cervical cancer committee in KGOG

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Background: Clinical trials are important to develop new treatment and disease prevention strategy for cervical cancer. Cervical Cancer Committee of Korean Gynecologic Oncology Group (KGOG) have been conducting several clinical trials to contribute to overcome the uterine cervical cancer. We would like to briefly introduce our efforts in this presentation.

Methods: Cervical Cancer Committee of KGOG is conducting 8 clinical trials including 3 international collaborating studies, 2 prospective clinical trials and 3 retrospective studies. Two international studies were as follows: 1) KGOG-1008 is collaborating study with GOG-263: Randomized phase III clinical trial of adjuvant radiation vs. chemoradiation in intermediate risk, stage I/IIA cervical cancer treated with initial radical hysterectomy and pelvic lymphadenectomy; 2) KGOG-1023 is a joint study with RTOG-0724: Phase III randomized study of concurrent chemotherapy and pelvic radiation therapy with or without adjuvant chemotherapy in high-risk patients with early-stage cervical carcinoma following radical hysterectomy. Following 2 clinical trials are being conducted independently by KGOG: 1) KGOG-1036: Prospective-specimen-collection and retrospective blinded-evaluation study of human papillomavirus (HPV) viral load to improve cervical cancer screening. The purpose of KGOG-1036 is to examine whether genotype specific quantitative HPV testing can predict the progress of low grade squamous intraepithelial lesion in uterine cervix into high grade lesion requiring treatment; 2) KGOG-1038: Phase II study of belotecan monotherapy in patients with recurrent or persistent cervical cancer. The aim of KGOG-1038 is to demonstrate the objective response rate of belotecan monotherapy for the treatment of recurrent or persistent cervical cancer. The study is recruiting 21 subjects with recurrent or persistent cervical cancer. In addition, 2 retrospective studies are ongoing: 1) KGOG-1037: Impact of metformin medication on survival outcome of cervical cancer. The study is to examine the impact of metformin medication on the prognosis of cervical cancer in patients with diabetes mellitus; 2) KGOG-1042: Prediction of ovarian transposition in young patients with early-stage cervical cancer undergoing surgery (PRETTY): a Korean multicenter retrospective study. The prediction model developing.

Poster (C27)
Cervical Cancer
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Ovarian transposition and cervical cancer

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Transposition of ovaries remains a basic surgical technique to preserve ovarian function for fertility outcome and hormonal status with acceptable risk for metastases in premenopausal cervical cancer. Cervical cancer is a major gynecologic malignancy worldwide. In early-stage cervical cancer, surgery is the main treatment, opposite to the locoregional stage or metastatic disease that concurrent chemoradiation remains the mainstay management. Premature ovarian insufficiency in irradiated field leads to cardiovascular morbidity, osteoporosis, sexual dysfunction, infertility, poor psychological well-being and a reduced quality of life. Advanced cervical cancers unfortunately occurred in younger women with longer survival made the ovarian transposition to be indicated. Transposition of ovaries aims to place the ovaries outside the irradiated field in order to diminish the exposure to radiation and total dose of irradiation. We present the laparoscopic ovarian transposition with suture and clip in a 20-year-old woman with cervical cancer stage IIB.

Uterine corpus cancer

Poster (E01)
Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.E01>

Adjuvant chemotherapy alone compared with chemotherapy plus radiotherapy for stage III endometrial carcinoma

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Objective: To compare treatment outcomes of adjuvant chemotherapy alone (CMT) and adjuvant chemotherapy followed by radiotherapy (CMT/RT) for stage III endometrial carcinoma.

Methods: Medical record of 211 patients with stage III endometrial cancer (International Federation of Gynecology and Obstetrics 2009) who underwent surgical staging at Faculty of Medicine Siriraj Hospital, Mahidol University during 2007–2019 were retrospective reviewed. Patients received either adjuvant CMT or adjuvant CMT/RT. Treatment outcomes between 2 groups of patients were compared at 2 years.

Results: There were 123 patients received adjuvant CMT and 88 patients received adjuvant CMT/RT. Baseline characteristics such as age, body mass index, pathology were not different between both 2 groups. Most patients in CMT group had stage IIIA (41.5%), while most patients in CMT/RT group had

stage IIIC1 (55.7%). Patients who received adjuvant CMT/RT developed lower vaginal recurrent rates than adjuvant CMT group (1.1% vs. 9.8%; likelihood ratio 8.05, $p < 0.05$). However pelvic and para-aortic lymph node recurrences, distant recurrences and 2-year overall survival were not different between 2 groups.

Conclusion: Adjuvant chemotherapy followed by radiotherapy offered no benefit for pelvic control or overall survival compared with adjuvant chemotherapy alone for patient with stage III endometrial carcinoma. However, adjuvant chemotherapy followed by radiotherapy reduced vaginal recurrence compared to adjuvant chemotherapy alone.

Poster (E02)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E02>

Analysis of antitumor activity of dostarlimab by tumor mutational burden (TMB) in patients with endometrial cancer (EC)

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Objective: GARNET (NCT02715284) is assessing antitumor activity and safety of dostarlimab, an anti-programmed death 1 receptor therapy, in patients with solid tumors. We report on association of antitumor activity and tumor mutational burden (TMB) in 2 endometrial cancer (EC) cohorts.

Methods: A phase 1, multicenter, open-label, single-arm, dose escalation and cohort expansion study. Two expansion cohorts enrolled pts with advanced/recurrent EC (deficient mismatch repair [dMMR; cohort A1] and proficient [MMR; cohort A2] determined by immunohistochemistry). Patients received dostarlimab 500 mg IV Q3W for 4 cycles, then 1,000 mg IV Q6W until disease progression/discontinuation. Primary endpoint was objective response rate (ORR) by RECIST v1.1. TMB status was an exploratory biomarker determined using the FoundationOne test (TMB-High [TMB-H]: ≥ 10 mutations/megabase; TMB-Low [TMB-L]: < 10 mutations/megabase).

Results: Two hundred forty-five patients were included, 103 (TMB-H: 85; TMB-L: 13; TMB missing: 5) in A1 and 142 (TMB-H: 9; TMB-L: 128; TMB missing: 5) in A2. ORRs were 44.7% (A1) and 13.4% (A2). In TMB-H pts, ORRs were 44.7% (A1) and 44.4%

(A2). In TMB-L pts ORRs were 23.1% (A1) and 11.7% (A2).

Conclusion: TMB-H status was more frequent in dMMR patients, a known association with these biomarkers, and correlated with higher ORRs in both cohorts. GARNET was not powered to assess antitumor activity by TMB status, and interpretation is limited by the small number of pts in each subgroup. Additional mutational analysis is ongoing.

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Poster (E03)

Gynecologic Pathology, Genetics and Epidemiology

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Analysis of microsatellite instability status and tumor mutational burden in Chinese endometrial cancer patients

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Objective: Immune checkpoint inhibitors (ICIs), especially pembrolizumab, has yielded encouraging results in recurrent endometrial cancer (EC). Microsatellite instability (MSI) and tumor mutational burden (TMB) are predictive biomarkers for ICIs. In this study, the relationship between the underlying cause(s) of MSI and TMB were investigated in Chinese patients with EC.

Methods: Eighty-six female Chinese patients with EC involved were tested by OncoDrug-Seq™ 603-gene panel assay through next generation sequencing using Illumina NovaSeq 6000. Fifty patients of ECs with both MSI and TMB available were identified.

Results: There were 11 (12.7%) individuals who had MSI-H and the rest had MSS. Twenty-one individuals had TMB-H and 112 patients had TMB-L. The median TMB was 12.7. The correlation between TMB and MSI were significant. Patients with MSI-H status had a significantly higher median TMB than patients with MSS status (17.1 vs. 12.7, $p = 0.0006$). The correlation between gene mutation of MMR genes (*MLH1*, *PMS2*, *MSH2*, and *MSH6*) and TMB were further explored 8 of 50 patients carried the four genes mutation was associated with a higher median TMB 77.0 mut/Mb (range=12.0–248 mut/Mb). 4 demonstrated MSH6 mutation (4/8) was associated with a much higher median TMB (96 mut/Mb), while 75% (3/4) of MSH6 mutations showed MSI-H.

Conclusion: EC patients with MSI-H status was associated with higher median TMB. TMB varies by underlying cause(s) of MSI, this heterogeneity may contribute to differences in response to ICI.

Poster (E04)

Gestational Trophoblastic Neoplasia

<https://doi.org/10.3802/jgo.2021.32.S1.E04>

Clinical characteristics and prognostic factors of gestational trophoblastic neoplasia patients: a comparison between ultra high-risk and other risks

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Objective: To evaluate the treatment outcomes and prognostic factors in patients who had ultra high-risk gestational trophoblastic neoplasia (GTN) compared with those who had low-risk and high-risk GTN.

Methods: The medical records of GTN patients treated in Maharaj Nakorn Chiang Mai Hospital between January 1999 and December 2019 were retrospectively reviewed. The overall survival rate was calculated with the Kaplan-Meier method and prognostic factors were analyzed by univariate and multivariate approaches.

Results: During the study period, 160 GTN patients were identified. Of these patients, 98 (61.2%) were classified as low-risk, 31 (19.4%) as high-risk, and 31 (19.4%) as ultra high-risk GTN. One patient in the low-risk group and 1 in the high-risk group underwent hysterectomy without adjuvant chemotherapy due to spontaneous regression of serum β -hCG. One patient with ultra high-risk GTN died before receiving chemotherapy. Of 97 low-risk GTN patients, 80 (82.5%) were treated with either single methotrexate or actinomycin D. Twenty (66.7%) of 30 high-risk GTN patients were initially treated with EMA/CO (etoposide, methotrexate, actinomycin D, cyclophosphamide, vincristine) regimen as first-line chemotherapy, while 24 (80%) of 30 patients with ultra high-risk GTN received EMA/CO as first-line chemotherapy. Overall, after completion of treatment with first-line chemotherapy and/or salvage treatment, patients with ultra high-risk GTN had significantly worse treatment outcomes than those who had low- and high-risk GTN with the remission rate of 63.3% vs. 96.9% and 80.0%, respectively ($p < 0.01$). The 5-year overall survival rate of the patients with ultra high-risk GTN was significantly lower than those with low- and high-risk GTN (56% vs. 96% and 80%, respectively, $p < 0.001$). By multivariable analysis, significant prognostic

factors were antecedent term pregnancy with the hazard ratio (HR) of 11.50 (95% confidence interval [CI]=3.56–37.22; $p < 0.01$) and brain metastasis (HR=4.61; 95% CI=1.73–12.28; $p < 0.01$).

Conclusion: Ultra high-risk GTN patients had significantly worse survival outcomes compared with those who had low-risk and high-risk GTN. The significant prognostic factors were antecedent term pregnancy and brain metastasis.

Poster (E05)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E05>

Endometrial cancer presenting with bone metastasis: a case report and review

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Objective: Endometrial cancer with bone metastasis is rare and extremely poor survival outcome. The 1-year overall survival (OS) is 33.8%. Several factors affect the survival including tumor grade, tumor subtype, liver and brain metastasis. In literatures review, multimodality treatment were independent predictors associated with increase OS.

Methods: Review of a case and literatures.

Results: We present the case of a 59-year-old woman who was referred from the orthopedist to the gynecological clinic with right leg pain and pelvic mass for 3 months. She also had scanty vaginal bleeding. Computed tomography scan showed ill-defined enhancing lesion of 9.1×10.7×12.2 cm sized. It involved both ovaries, uterus, right pelvic sidewall, distal right iliopsoas muscle. Bilateral external iliac lymphadenopathy and peritoneal metastasis were identified. She received endometrial biopsy and the result was poorly differentiated endometrioid carcinoma. Bone metastasis was found in SI joint from bone scan. A diagnosis was an advanced stage endometrial cancer with bone metastasis. Multidisciplinary team planed for treatment with multimodality therapy. She received initial treatment with systemic chemotherapy (carboplatin and paclitaxel) for 3 cycles and followed by pelvic radiation therapy. Hysterectomy and bilateral salpingo-oophorectomy were performed after radiation and additional 6-cycle chemotherapy were given postoperatively. She felt free from leg pain and had normal walk. Unfortunately, she returned to have leg pain 5 months after completion of treatment. The patient is regularly followed up with best palliative care.

Conclusion: Bone metastasis from endometrial cancer is rare and has poor prognosis. Multidisciplinary team approach is mandatory to perform appropriate treatment to improve clinical outcome and quality of life.

Poster (E06)
 Gestational Trophoblastic Neoplasia
<https://doi.org/10.3802/jgo.2021.32.S1.E06>

Genomic profiles of gestational choriocarcinoma for diagnosis and predicting prognosis

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Objective: Gestational choriocarcinoma (GC) is one of gestational trophoblastic diseases (GTDs), and a unique cancer that originates in pregnant tissues. GCs are known to be preceded by complete hydatidiform mole (CHM) (50%), previous abortions (25%), or normal/ectopic pregnancies (25%). CHM is considered a preneoplastic condition of GC, and invasive mole (IM) has neoplastic characteristics such as tissue invasion. However, what triggers CHM/IM to progress to GC is not figured out. Genomic alterations of GCs are not well studied because of the rare availability of tumor tissues. The lack of genome-wide alteration data on GTDs, led us to analyze GC genomes by whole exome sequencing, copy number alteration, copy-neutral loss-of-heterozygosity (CN-LOH) profiles in this study.

Methods: Whole-exome sequencing (20 GCs) and/or single-nucleotide polymorphism microarray (29 GCs) were performed. We analyzed CN-LOH in 29 GCs.

Results: Most GCs (25/29) harboring recurrent copy number alterations (CNAs) and gains on 1q21.1-q44 were significantly associated with poor prognosis. We detected five driver mutations in the GCs, most of which were chromatin remodeling gene (*ARID1A*, *SMARCD1*, and *EP300*) mutations but not in common cancer genes such as *TP53* and *KRAS*.

Conclusion: Our data indicate that GCs have unique profiles of CN-LOHs, mutations and CNAs that together differentiate GCs from non-GCs. Practically, CN-LOH and CNA profiles are useful for the molecular diagnosis of GC and the selection of GC patients with poor prognosis for more intensive treatments, respectively.

Poster (E07)
 Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
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Impact of surgical approach on survival and perioperative outcomes in women with stage II endometrial cancer

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Objective: To compare the survival and perioperative outcomes between minimally-invasive surgery (MIS) and open surgery in stage II endometrial cancer patients.

Methods: This was a retrospective study involving 205 patients with stage II endometrial cancer in a single institution between 2002–2018. Patients were stratified to either MIS or open surgery groups, and their pathological and clinical data were reviewed.

Results: One hundred fourteen patients had open surgery (55.6%) while 91 patients had MIS (44.4%) including conventional laparoscopic (70.3%), robot-assisted (22.0%) and laparoscopic-assisted vaginal hysterectomy (7.7%). The 5- and 10-year overall survival rate was 94.5% and 93.4% for the MIS group, while 89.4% and 85.8% for the open surgery group ($p=0.219$ and $p=0.127$). The 5- and 10-year progression-free survival rate was 91.2% and 90.1% for the MIS group, while 86.8% and 81.5% for the open surgery group, without statistical significance, $p=0.395$ and $p=0.372$. The uterine size (5.7 ± 2.3 vs. 8.0 ± 4.0 weeks; $p=0.007$) and tumor size (2.5 ± 1.7 vs. 4.5 ± 3.3 cm; $p=0.001$) were significantly smaller in the MIS group than in the open group. MIS was also associated with less blood loss (198.6 ± 4.3 vs. 684.8 ± 614.0 mL; $p=0.001$), fewer wound complications (1.1% vs. 5.6%; $p=0.034$), and shorter hospital stay (3 vs. 5 days; $p=0.031$) compared to open surgery. However, there is no significant difference in operation duration in the two groups (224 ± 97 vs. 227 ± 94 minutes; $p=0.554$).

Conclusion: The oncological outcomes and perioperative complication rates of patients undergoing MIS were not inferior to open surgery for stage II endometrial carcinoma.

Poster (E08)
 Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
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Incorporation of protein biomarkers to the ProMisE molecular classifier for further prognostication in endometrial cancer

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Objective: The Proactive Molecular Risk Classifier for Endometrial Cancer (ProMisE) is a clinically applicable prognostication method

in endometrial cancer. In order to classify endometrial cancer more precisely, especially those with nonspecific molecular profile (NSMP), we aimed to determine the prognostic significance of 3 additional proteins in the institution's endometrial cancer cohort: β -catenin, L1 cell-adhesion molecule (L1CAM), and programmed death-ligand 1 (PD-L1).

Methods: Endometrial cancer patients, surgically treated between 2014 and 2018 at our institution, underwent ProMisE classification using immunohistochemical (IHC) staining for p53 and 4 mismatch repair (MMR) proteins (MLH1, PMS2, MSH2, and MSH6) and hot spot sequencing of DNA polymerase epsilon (POLE) exonuclease domain via droplet digital polymerase chain reaction. Expression of β -catenin, L1CAM, and PD-L1 were studied by IHC staining. Then, we investigated the relationship between protein expression and progression-free survival (PFS).

Results: In total, 156 patients were included in this analysis: 136 (87.2%) and 107 (68.6%) had an endometrioid histologic type and early-stage disease, respectively. ProMisE classification assigned 45 (28.8%), 16 (10.3%), 70 (44.9%), and 25 (16.0%) to MMRd, POLEmut, NSMP (p53wt), and p53abn, respectively. Using 5% of nuclear staining as a cut-off, we observed no difference in PFS between positive and negative β -catenin expression groups ($p=0.465$). Expression of PD-L1 was most frequent in the MMRd subgroup (48.9%). Multivariate analysis adjusting confounders revealed that PD-L1 $\geq 1\%$ of tumor cells was identified as a favorable prognostic biomarker for PFS (adjusted hazard ratio [HR]=0.394; 95% confidence interval [CI]=0.182–0.854; $p=0.018$). However, PD-L1 expression was not predictive of prognosis among the NSMP subgroup. Using 10% of staining as a cut-off, high expression of L1CAM was most frequent in the p53abn subgroup (32.0%). High expression of L1CAM was identified as a poor prognostic biomarker for PFS (adjusted HR=3.486; 95% CI=1.577–7.707; $p=0.002$). L1CAM expression was predictive of prognosis among the NSMP subgroup. In subgroup analyses in endometrioid tumors, consistent results were observed.

Conclusion: While β -catenin was not informative for risk stratification, expression of PD-L1 and L1CAM were associated with disease recurrence. Especially, L1CAM expression further stratifies the risk of disease recurrence among the NSMP subgroup.

Poster (E09)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E09>

Interim analysis of immune-related endpoints of the mismatch repair deficient and proficient endometrial cancer (EC) cohorts from the garnet study

<https://asgo2021.org>

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Objective: GARNET (NCT02715284) is assessing the antitumor activity and safety of dostarlimab, an anti-programmed death-1 receptor therapy, in patients with solid tumors. We report investigator-assessed (IA) efficacy endpoints for endometrial cancer (EC) patients.

Methods: A phase 1, multicenter, open-label, single-arm, dose-escalation and cohort-expansion study. In 2 independent expansion cohorts of patients with recurrent/advanced EC (deficient mismatch repair [dMMR] and mismatch repair proficient [MMRp] determined by immunohistochemistry) that progressed on/after a platinum regimen, patients received dostarlimab 500 mg IV Q3W for 4 cycles, then 1,000 mg Q6W until disease progression, discontinuation, or withdrawal. Primary endpoints of objective response rate (ORR), disease control rate (DCR), and duration of response (DOR) using RECIST v1.1 were reported previously (Oaknin ESMO 2020 LBA36). Immune-related (ir) ORR, irDCR, and irDOR by irRECIST, based on IA, were secondary endpoints.

Results: One hundred twenty-six dMMR and 145 MMRp patients were enrolled and dosed; 110 and 144 patients, respectively, had measurable disease at baseline. After median (range) follow-up of 16.5 (0.03–30.6) and 13.7 (0.03–33.1) months for dMMR and MMRp patients, irORR was 45.5% and 13.9%, irDCR was 63.6% and 42.4%, and irDOR was not reached and 12.2%, respectively.

Conclusion: Efficacy endpoints by RECIST v1.1 and irRECIST were similar. irDCR was particularly interesting in MMRp patients, a group with a poorer prognosis, but the potential benefit awaits confirmation in ongoing randomized controlled studies.

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Poster (E10)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

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Is screening for endometrial cancer necessary in asymptomatic women treated with tamoxifen for breast cancer?

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Objective: We investigated the endometrial pathologic results in women treated with tamoxifen for breast cancer and determined the appropriate diagnostic approach to oncologic endometrial pathologic change.

Methods: The medical records of 162 patients who underwent endometrial biopsy in patients treated with tamoxifen for breast cancer were retrospectively reviewed. We compared the clinical features between the patients with endometrial intraepithelial neoplasia or endometrial cancer (EIN/EC group) and the patients with other pathologic results (others group).

Results: EIN or EC were found in ten patients (6.2%). 70.0% of EIN/EC group received tamoxifen treatment more than 3 years, while 71.7% of others group received less than 3 years ($p < 0.001$). Regardless of the presence of vaginal bleeding, EIN/EC was not found in patients with ET < 5 mm by transvaginal ultrasonography. When ET was ≥ 5 mm, the incidence rates of EIN/EC were only 2.9% in asymptomatic patients and 11.6% in symptomatic patients, respectively ($p = 0.002$). When ET was ≥ 8 mm, the incidence rates of EIN/EC were 3.8% in asymptomatic patients and 12.0% in symptomatic patients, respectively ($p = 0.002$). When ET was < 8 mm, EIN/EC was not found in asymptomatic patients, while EIN/EC was found in 7.1% of symptomatic patients.

Conclusion: The longer the use of tamoxifen, the greater the need for endometrial evaluation. However, unconditional endometrial evaluation should be avoided in patients without vaginal bleeding. When patients with vaginal bleeding show thick endometrium by TV-US, they need to undergo endometrial biopsy.

Poster (E11)
Conservative & Fertility Preservation
<https://doi.org/10.3802/jgo.2021.32.S1.E11>

JGOG2051: The safety and efficacy of repeated high-dose luteal hormone (MPA) therapy for recurrent early-stage endometrial cancer patients

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Background: The number of patients with endometrial cancer (EC) has been steadily increasing in Japan. Additionally, the number of adolescence and young adults with EC who desire fertility-sparing treatment has also increased. A previous meta-analysis showed that the initial rates of complete response (CR) to medroxyprogesterone acetate (MPA) therapy for EC and atypical endometrial hyperplasia (AEH) were 76% and 86%, respectively; however, the recurrence rates were 26% and 41%, respectively. Only some retrospective studies of a single institution on repeated MPA therapy were conducted for intrauterine recurrence following fertility-preserving therapy for EC or AEH, and showed favorable results. Therefore, multicenter prospective studies for repeated MPA therapy were highly demanded. Based on these backgrounds, the Japanese Gynecologic Oncology Group (JGOG) initiated this study to verify the efficacy and feasibility of repeated MPA therapy.

Methods: JGOG conducts a multicenter phase II trial of repeated high-dose luteal hormone therapy for intrauterine recurrence following fertility-preserving therapy for AEH or EC. The major eligibility criteria are: 1) histologically diagnosed as AEH or G1, 2) myometrial invasion ruled out by magnetic resonance imaging, 3) extrauterine lesions ruled out by computed tomography, 4) 20–42 year old, and 5) strong desire and consent for fertility-sparing treatment. The major exclusion criteria are: 1) recurrence ≥ 3 , 2) BMI ≥ 40 kg/m² 3) previous medical history of thrombosis, 4) with multiple cancer with disease-free interval < 5 years, and 5) with severe hepatic dysfunction. Patients are treated with oral MPA (600 mg/day) and are pathologically assessed by dilatation and curettage every 2 months until CR. Moreover, a hysterectomy will be recommended if the treatment duration exceeds 10 months. The primary end-point is 2-year recurrence-free survival during the follow-up period of 2 years. The secondary end-points are overall survival, progression-free survival, CR rate, pregnancy rate, adverse event, and pregnancy prognosis. One-hundred fifteen cases are needed to be recruited within 3 years, and currently Japanese 75 institutions are participating in this study. This study started in December 2020 in Japan, and the current plan is to collaborate with Korea and Taiwan.

Poster (E12)
Uterine Sarcoma
<https://doi.org/10.3802/jgo.2021.32.S1.E12>

Preoperative clinical characteristics between uterine sarcoma and leiomyoma in patients with uterine mass: a case-control study

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Objective: To determine the preoperative clinical characteristics associated with uterine sarcoma in patients with uterine mass.

Methods: We retrospectively reviewed medical records of patients who presented with uterine mass undergoing surgery at Ramathibodi Hospital, with a pathologically confirmed diagnosis, from April 1, 2000 to October 31, 2019. The cases were patients with uterine sarcoma, whereas the controls were patients with leiomyoma diagnosed in the same year, with a proportion of 1 case per 4 controls. The association between preoperative clinical characteristics and uterine sarcoma were analyzed.

Results: There were 18,218 patients with uterine mass undergoing surgery at Ramathibodi Hospital during the study period. Uterine sarcoma was diagnosed in 68 patients. Thus, the incidence of uterine sarcoma was 0.37%. Patients with uterine mass, patients with age >40 years old, postmenopause, postmenopausal bleeding, abnormal uterine bleeding, palpable mass, recognition of rapid growing mass, and with single tumor nodule identified by ultrasonography were more likely to be diagnosed with uterine sarcoma with adjusted odds ratio (95% confidence interval) of 3.30 (1.29–8.43), 8.57 (2.38–30.82), 35.35 (2.94–425.13), 3.39 (1.40–8.23), 4.50 (1.78–11.36), 6.91 (2.08–22.91) and 4.70 (1.91–11.60), respectively.

Conclusion: Clinical characteristics, i.e., age >40 years, postmenopause, postmenopausal bleeding, abnormal uterine bleeding, palpable mass, mass with rapid growth, or single uterine nodule identified by ultrasonography were considered an independently strong association with uterine sarcoma in women who presented with uterine mass.

Poster (E13)

Gynecologic Pathology, Genetics and Epidemiology
<https://doi.org/10.3802/jgo.2021.32.S1.E13>

Prevalence of abnormal MMR proteins in newly diagnosed endometrial cancer patients

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Objective: To estimate the prevalence of abnormal mismatch repair (MMR) proteins in newly diagnosed endometrial cancer patients who underwent surgery aged less or equal than 55 years old.

Methods: A cross-sectional study with a medical record review of the endometrial cancer patients who underwent surgery

between January 2014 and December 2019. The clinical and pathological data were collected. The paraffin tissue blocks and slides were reviewed. Tissue microarray analysis and immunohistochemistry (IHC) of MMR proteins were performed by one gynecologic pathologist. The prevalence of abnormal MMR was estimated. The clinical, pathological data and related factors were analyzed.

Results: The 44 of 188 patients (23.4%) had MMR proteins deficiency (dMMR). dMMR pattern showed as pair of MLH1 & PMS2; MSH2 & MSH6, and isolated PMS2; MSH6; MSH2 which were 22/44 (50%), 8/44 (18.2%), and 6/44 (13.6%), 5/44 (11.4%), 3/44 (6.8%), respectively. The patients with dMMR proteins significantly had body mass index (BMI) <25 kg/m² (56.8% vs. 38.9% in deficient and proficient MMR proteins, respectively) (p=0.036). Stage IIIC1 is associated with dMMR proteins (25% vs. 7.6% in deficient and proficient MMR proteins, respectively) (p=0.004).

Conclusion: In newly diagnosed endometrial cancer patients aged less or equal than 55 years old revealed 23.4% of dMMR proteins from IHC. MMR proteins-deficient associated with BMI <25 kg/m² and stage IIIC1.

Poster (E14)

Gynecologic Cancer Screening
<https://doi.org/10.3802/jgo.2021.32.S1.E14>

Risk factors in young reproductive women with endometrial cancer: an observational study

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Objective: Incidence rates of endometrial cancer are increasing over the time in all ages, corresponding with an increase in the young women. Multiple risk factors have been identified such as unopposed estrogens, nulliparity, obesity, family history of malignancy, polycystic ovaries, diabetes, hypertension etc. The objective of study was to conduct clinic-pathological analysis and predict the risk factors for development of endometrial cancer in reproductive age group women in Indian population and to identify preventive measures for this group.

Methods: A retrospective review of women with endometrial cancer was performed. Medical records analyzed for histopathologically confirmed and treated endometrial carcinoma patients between February 2012 and August 2020. Out of 129, only 10 women were pre-menopausal and under the

age of 45 years at the time of diagnosis. Data were abstracted regarding age, parity, diabetes, hypertension, polycystic ovaries, body mass index (BMI), tumor histology, grade, stage, and survival. Clinical and pathological characteristic were compared, and statistical analyses were performed using SPSS version 22.0.

Results: The mean age at the time of diagnosis was 38.50 years (range, 34.50–41.25) and mean BMI (kg/m²) was 30.55 (range, 27.23–38.45). 50% patients were obese (BMI >30 kg/m²) and 40% were overweight (BMI 25–30 kg/m²). Only 5 out of 10 women had nulliparity, however, 70% women had history of polycystic ovaries, confirmed with ultrasound or on histopathological specimen. Family history was also found to be strongly associated with endometrial cancer with 70% prevalence rate. The prevalence of diabetes mellitus, hypertension and hypothyroidism were 20%, 10% and 10% respectively. Seven patients (70%) had well differentiated tumors, 2 (20%) moderately differentiated and 1 (10%) had poorly differentiated tumor. Stage 1A disease was found in 7 (70%) patients, stage 1B in 1 (10%), stage 2 in 1 (10%) and stage 3 in 1 (10%) patient. 20% patients had completed 5-years disease free interval, one patient was expired with recurrence and stage 3 disease, while 1 woman was lost to follow up after surgery.

Conclusion: We conclude that the obesity, family history and polycystic ovaries are strongly associated risk factors for endometrial cancer in women aged 45 years or younger. We could not find any significant association with medical disorders such as diabetes and hypertension. Nulliparity seems to have less strong relationship with development of endometrial cancer. Majority of young patients have early-stage disease with well differentiated tumors and favorable histology.

Poster (E15)
Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.E15>

Survival benefit of para-aortic lymph node evaluation in endometrioid endometrial carcinoma

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Objective: To evaluate the 5-year survival in endometrioid endometrial carcinoma patients, who underwent

retroperitoneal pelvic lymph nodes (PLN) evaluation alone, compared to both pelvic and para-aortic lymph nodes (PPALN) evaluation.

Methods: This retrospective cohort study enrolled 654 women who were diagnosed with endometrioid endometrial carcinoma and underwent surgical staging at Siriraj Hospital, Mahidol University between January 2006 and December 2015. Patients with PLN evaluation (n=266) and patients with PPALN evaluation (n=388) were included. We excluded patients with no retroperitoneal lymph node evaluation, history of any cancer within 5 years, previously received chemotherapy or radiotherapy. All results were recorded and statistically analyzed.

Results: Mean follow-up time was 83.0 months. The 5-year overall survival (OS) in PLN and PPALN groups were 56.72 months (95% confidence interval [CI]=55.37–58.07) and 57.52 months (95% CI=56.57–58.47), respectively (p=0.096). The 5-year disease specific survival (DSS) in PLN group were 57.15 months (95% CI=55.84–58.45) in PLN group and 59.03 months (95% CI=58.44–59.61) in PPALN group, respectively (p=0.027).

Conclusion: The OS was not significantly difference between patients who underwent PPALN evaluation compared to patients who underwent PLN alone, although there was a trend to improve OS for patients with PPLAN. DSS was significantly better for patients who received PPALN evaluation compared to patients with PLN alone.

Poster (E16)
Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.E16>

Prevalence of occult endometrial carcinoma in patients with endometrial intraepithelial neoplasia underwent hysterectomy at Siriraj Hospital

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Objective: To determine the prevalence and pre-operative risk factors of occult endometrial carcinoma in the patients with endometrial intraepithelial neoplasia (EIN) who underwent hysterectomy at Siriraj Hospital.

Methods: One hundred and sixty EIN patients diagnosed between January 2007 and December 2020 were enrolled. Patients who did not undergo surgery as a primary treatment were excluded. All pathological slides were reviewed by one

experienced gynecologic pathologist. Data were retrieved from the medical records, including gynecologic data, sonographic findings, surgical and pathological results. The prevalence of endometrial carcinoma in such patients was calculated. Various characteristics were used to determine the associated risk factors.

Results: Ninety-eight patients were analyzed. Twenty-nine patients (29.6%) were subsequently diagnosed with stage I endometrial carcinoma after hysterectomy. The hysterectomy pathologies of 69 patients (70.4%) were EIN and other benign diagnoses. The majority of patients who diagnosed with endometrial carcinoma were pre-menopause (80%, $p=0.458$) and nulliparous (70%, $p=0.045$). Endometrial thickness greater than 2 cm and body mass index (BMI) greater than 30 kg/m² were demonstrated as two associated risk factors for occult endometrial carcinoma with the odds ratio of 9.7 and 2.5, respectively.

Conclusion: Occult endometrial carcinoma was observed in approximately one-third of the patients with pre-operative EIN diagnosis. Endometrial thickness greater than 2 cm and BMI greater than 30 kg/m² were associated risk factors for occult endometrial carcinoma.

Poster (E17)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E17>

A window of opportunity study of nivolumab in early-stage endometrial cancer patients with MMRd who had failure after progestins for fertility-sparing treatment (NIVEC)

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Background: National Comprehensive Cancer Network guidelines recommend high-dose progesterone for fertility-sparing treatment only for patients with clinical stage IA, grade 1 without myometrial invasion. In patients with treatment failure from progestins, there is no treatment option except hysterectomy, even if the patients want to preserve the uterus. Recently, some studies evaluated the role of prognostic significance of the Proactive Molecular Risk Classifier for endometrial carcinoma classification infertility-sparing management of endometrial cancer. They showed that patients with mismatch repair deficiency (MMRd) had a lower response rate than those with mismatch repair proficiency with hormone therapy. MMRd tumors are known to be highly immunogenic

and of great interest for immune checkpoint inhibitor. Results from a phase I/II study (CA209003/MDX1106-03) indicate that nivolumab (BMS-936558; anti-PD-1 monoclonal antibody) is active in multiple tumor types. In this regard, we suggest a single-arm phase II study investing the efficacy of nivolumab in the fertility-sparing management of endometrial cancer patients with MMRd who had failure with progestins.

Methods: Early-stage endometrial cancer patients with MMRd who had failure after progestins for fertility-sparing treatment and desire to preserve fertility was offered nivolumab. Approximately 8 patients will be included from 6 centers in Korea for 3 years. The primary endpoint of the study is to determine the efficacy of nivolumab by assessment of complete response.

Poster (E18)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E18>

Prognostic factor of pretreatment thrombocytosis to endometrial cancer in Bhumibol Adulyadej Hospital

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Background: Endometrial cancer (EC) is the 6th most frequent of cancer in the world. GLOBOCAN in year 2020 reported that 417,367 new cases of endometrial cancer worldwide. In Thailand, EC is the 6th most frequent cancer after breast, colon, cervix, liver, and lung cancers. There were 4,524 new cases of EC in Thai women in year 2020. Current treatment of EC is total hysterectomy with bilateral salpingo-oophorectomy. Bilateral pelvic lymphadenectomy, omentectomy, and paraaortic lymph node (LN) sampling were needed for surgical staging in EC. Adjuvant radiotherapy or concurrent chemoradiation (CCRT) was designed after corrected staging of EC. According to the International Federation of Gynecology and Obstetrics (FIGO) stage, histopathology, histological grading, depth of myometrial invasion (MI) and present of lymph-vascular invasion (LVSI) were the prognostic factors of EC. Previous studies had demonstrated that thrombocytosis was the poor prognostic factor of many cancer including ovary, cervix, vulvar, and breast. Thrombocytosis was also the prognostic factor in EC that affected disease-free survival (DFS) and overall survival (OS). In the present study, the association of pretreatment

thrombocytosis and other prognostic factors DFS and OS was the aim of study.

Methods: Aim of this study was to analyze the impact of pretreatment thrombocytosis to the prognosis of EC cases. Medical records of EC cases who underwent complete surgical staging, treatment and follow up in Bhumibol Adulyadej Hospital (BAH) during January 2008 and December 2020 were reviewed. Demographic data included age, body weight, height, body mass index, histology and grading, cancer stage, MI, LN metastasis, LVSI, peritoneal washing cytology, platelet count, recurrence, death and follow up time were collected. Associations of thrombocytosis and prognostic factors were analyzed with DFS and OS. A total of 222 cases were included in study. Mean age of participant in the present study was 56.16 years old. One third (88/222) of cases had age more than 60 years old. Ninety percent of histopathology was reported as endometrioid subtype. MI more than half of thickness, well and moderate differentiation (G1, 2) and advanced cancer stage (FIGO stage III, IV) were reported at 44.1%, 79.4%, and 22.5%, respectively. Thrombocytosis was reported at 8.1%. Aggressive histopathology, advanced cancer stage (FIGO stage III, IV), MI more than half of thickness, LN metastasis, present of LVSI and thrombocytosis was significantly correlated with DFS. Advanced cancer stage (FIGO stage III, IV) and thrombocytosis had significant adverse effect on OS. In conclusion, advanced endometrial cancer stage and thrombocytosis were significant adverse prognostic factor.

Hospital between April 2020 and April 2021 was commenced. The preoperative serum levels of CA125 and HE4 were measured and analyzed by clinicopathological characteristics. The receiver operating characteristic (ROC) curves were generated to determine the optimal cutoff values of CA125, HE4, and ROMA levels with optimum sensitivity and specificity for predicting lymph node metastasis.

Results: Eighty-six patients with surgically staged EC were identified. Lymph node involvement was detected in 9 patients (10.5%) with a systemic lymph node dissection. The median serum CA125, HE4, and ROMA levels were significantly higher in EC patients with the presence of lymph node metastasis than those who did not ($p < 0.05$). Based on the ROC curve, both serum markers showed good discrimination for the prediction of lymph node metastasis, with an optimal cutoff value of 35 U/mL for CA125 (area under curve [AUC]=0.789; 95% confidence interval [CI]=0.647–0.932), 200 pMol/L for HE4 (AUC=0.825; 95% CI=0.700–0.950), and 60% for ROMA (AUC=0.856; 95% CI=0.720–0.982). At the optimal cutoff value, HE4 showed the highest sensitivity (88.9%) whereas the combination of CA125 and HE4 had the highest specificity (87.0%).

Conclusion: Pre-operative combining CA125 and HE4 level is associated with an increased risk of having lymph node metastasis in patients with early-stage EC. This biomarker panel can be used as a predictive marker and guidance for identifying EC patients who might most benefit from full staging surgery with lymphadenectomy.

Poster (E19)
Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.E19>

The utility of preoperative serum CA125 combined with HE4 to predict lymph node metastasis in endometrial cancer: a cross-sectional study

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Objective: To investigate the diagnostic performance of the serum cancer antigen 125 (CA125), human epididymis protein 4 (HE4), a combination of CA125 and HE4, and a risk of ovarian malignancy algorithm (ROMA) in the pre-operative prediction of high risk of lymph node metastasis in patients with early-stage endometrial cancer (EC).

Methods: A cross-sectional study of data for patients with early-stage endometrioid EC treated surgically at Rajavithi

Poster (E20)
Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.E20>

A personalised predictive 3-year overall survival for patients with uterine carcinosarcoma at tertiary care hospital of southern Thailand

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Objective: To develop a 3-year overall survival (OS) nomogram to predict outcome of surgically staged patients with uterine carcinosarcomas (UCSs).

Methods: This retrospective study, the clinicopathological, treatment data, and oncological outcomes of 69 UCSs patients between January 2002 and September 2018 were analyzed. We identified and integrated significant prognostic factors for OS to develop a nomogram. The concordance probability (CP) was

used as a precision measure. The model was internally validated with bootstrap samples to correct overfitting.

Results: The median follow-up times was 19.4 months (range, 0.77–106.13 months), and the 3-year OS was 41.8% (95% confidence interval [CI]=29.9%–58.3%). We found International Federation of Gynecology and Obstetrics (FIGO) stage, and adjuvant chemotherapy were independent factors for OS. The CP of the nomogram integrating with body mass index (BMI), FIGO stage and adjuvant chemotherapy was 0.72 (95% CI=0.70–0.75). The calibration curves for probability of 3-year OS also demonstrated agreement between nomogram prediction and observation data.

Conclusion: The nomogram to predict 3-year OS of UCSs after surgery with simple parameters include BMI, FIGO stage, and adjuvant chemotherapy was implemented in a nomogram and provides accurate prediction of individual patients' prognosis useful for patient counselling and deciding on follow-up strategies.

Poster (E21)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E21>

A validation study of a modified TCGA classification for patients with endometrial cancer treated with radical surgery and adjuvant chemotherapy

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Objective: The Cancer Genome Atlas (TCGA) molecular classification for endometrial cancer is expected to propose the most appropriate treatment strategy for each patient. However, the prognostic stratifications remain unclear when adjuvant chemotherapy is applied. This study aimed to validate a modified TCGA classification, ProMisE, for patients who underwent adjuvant chemotherapy at intermediate or high risk of recurrence.

Methods: From 2003 to 2015, the patients who underwent systematic lymphadenectomy were enrolled. The patients were classified by ProMisE using immunohistochemistry for

mismatch repair-related molecules (MLH1, MSH2, MSH6, PMS2) and p53, and direct sequencing for hotspot mutations in POLE (exon 9, 13, and 14). The 5-year disease-specific survival rates (5y-DSS) were estimated by the Kaplan-Meier method.

Results: A total of 182 patients were analyzed. The median age and follow-up period were 57.4-year-old and 105 months. The patients categorized to stage I, II, III, and IV were 97, 23, 51, and 11, respectively. One hundred twenty-two patients were diagnosed as endometrioid carcinoma (grade 1–2), and 60 were high-grade types, including endometrioid (grade 3), serous, and clear cell carcinomas. Based on ProMisE, 57 patients were categorized into mismatch-repair deficiency (MMR-d), 45 into POLE-EDM (exonuclease domain mutations), 15 into p53 wild-type, and 4 into p53 abnormal. The 5y-DSS was 92.9%, 100%, 91.1%, and 75.0%, respectively.

Conclusion: We conclude that ProMisE can stratify the prognosis even when adjuvant chemotherapy was applied for intermediate- and high-risk for recurrence. The 5y-DSS of MMR-d patients seemed better than previous reports, partly because adjuvant chemotherapy could improve their prognosis.

Poster (E22)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

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Association between high body mass index and endometrial pathology in premenopausal women with abnormal uterine bleeding

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Objective: To find out the correlation between body mass index and endometrial pathology in premenopausal women with abnormal uterine bleeding.

Methods: A cross-sectional study was conducted in King Chulalongkorn Memorial Hospital during 1 January to 31 December 2019. All cases of abnormal uterine bleeding in premenopausal women who had endometrial pathology were recruited. All endometrial histopathology had been reviewed. Patient clinical profiles were recorded. Body mass index (BMI) was calculated by using weight in kilogram divided by square of height in meters. Then all cases were categorized by Asia Pacific BMI classification into underweight (<18.5 kg/m²), normal weight (18.5–22.9 kg/m²), overweight (23–24.9 kg/m²) and obese (>25 kg/m²). The pathological reports were classified into 3 groups: normal epithelium, endometrial hyperplasia, and endometrium cancer. Statistical analysis was done SPSS version

21.0. The p-value of 0.05 was considered statistically significant.
Results: There were 562 cases recruited in the study. Mean age of patients was 43 years. The mean BMI was 25.74 kg/m² (range, 14.38–66.12). The BMI was divided into 3 groups: 1) Normal weight (BMI, 18.5–22.9 kg/m²) was 210 cases (37.3%); 2) Over-weight (BMI, 23–24.9 kg/m²) was 90 cases (16.0%); and 3) Obese (BMI ≥25 kg/m²) was 262 cases (46.6%). The pathological reports demonstrated 36 cases of endometrial hyperplasia and 22 cases of endometrial cancer. There was a correlation between obese women and endometrial hyperplasia with odds ratio 5.9 and p-value 0.015. However, there were no statistically significant between other BMI patterns and endometrial pathology.

Conclusion: There was a significant correlation between obesity and endometrial hyperplasia in premenopausal women with abnormal uterine bleeding.

Poster (E23)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E23>

Incidence of parametrial spreading in endometrial cancer at stages I and II in Siriraj Hospital

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Objective: To identify the incidence of parametrial involvement in endometrial cancer stages I and II and the related risk factors.

Methods: The retrospective descriptive study was performed to review data from patients with endometrial cancer, clinical stages I and II who underwent surgical treatment as primary therapy. The data included patients' status, pathological reports (especially parametrial involvement), stage, adjuvant treatment, complications of treatment, and response of disease.

Results: The medical charts of 76 patients were reviewed and 3 cases were excluded from this study because of incomplete pathological report. The mean age was 58 years old. Most of them were early stage (IA, IB and II that defined according to International Federation of Gynecology and Obstetrics 2009 surgical stage with radical or modified radical hysterectomy), 31 (42.5%) tumor grade I, and 76.7% endometrioid adenocarcinoma. Three patients (4.1%) had parametrial involvement. The tumor spread into parametrium by lymphovascular space invasion in 2 cases and one case had lymph node metastasis. Because of the small number of

cases, it is hard to use this data to identify the risk factors and correlation of parametrial involvement.

Conclusion: The incidence of parametrial involvement was too small. The benefit of radical or modified radical hysterectomy to identify parametrial involvement in endometrial cancer is not strongly suggested from the results of this study. A prospective study with adequate sample size and long term follow up should be considered.

Poster (E24)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E24>

Management of inoperable endometrial cancer

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Objective: Most existing information about treatment for inoperable epithelial-myoepithelial carcinoma (EMC) are derived from retrospective studies or case series. Without evidence-based data from randomized study, collective data from available reports would be helpful for a gynecologic oncologist to select an alternative treatment option for EMC patients who are not candidates for primary surgery.

Methods: This work collected and summarized data from literature review of relevant studies according to the treatment intention (definitive or neoadjuvant). Treatment given with a palliative aim, either chemo- or hormonal therapy, or best supportive care is beyond the scope of this review.

Results: The 3 major types of treatment for inoperable EMC were radiation therapy, chemotherapy, or their combination, and interval surgery. Radiation therapy alone (of different modes) was used as a sole definitive modality of therapy particularly for early-stage diseases which limited to uterine body, cervix, with or without parametrial invasion. A more common treatment modality was neoadjuvant treatment prior to surgery. Post-operative adjuvant treatment was also sometimes used depending mainly on the sites of disease and results of surgery. Data of neoadjuvant hormonal or radiation therapy were limited focusing on laboratory outcomes or having only small number of patients, respectively. Most neoadjuvant treatment before surgery was chemotherapy and

fewer with combined chemo-radiation. Surgery was generally proceeded particularly in the patients who had responses or at least stable diseases to neoadjuvant treatment. Peri-operative outcomes after neoadjuvant treatment were superior compared to those of primary surgery whereas survival data were still inconsistent. Features which had or tended to have favorable prognosis were younger age, early-stage disease, response to neoadjuvant treatment, low pre-operative CA125, and optimal surgery. Among different modalities of neoadjuvant treatment which has become a frequent mode of treatment, neoadjuvant chemotherapy was more common than radiation therapy alone or chemoradiation.

Conclusion: Radiation therapy alone (of different modes) was used as a sole definitive modality of therapy particularly for early-stage diseases which limited to uterine body, cervix, with or without parametrial invasion. Among different modalities of neoadjuvant treatment, neoadjuvant chemotherapy was more common than radiation therapy alone or chemoradiation.

Poster (E25)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E25>

Mismatch repair deficiency and real-world outcomes of immunotherapy in patients with endometrial cancer

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Objective: To investigate the clinicopathologic characteristics and the oncologic outcomes of immunotherapy in patients with endometrial cancer according to mismatch repair deficient (MMRd)/microsatellite instability (MSI) status.

Methods: We conducted a single-center retrospective analysis and a total of 215 endometrial cancer patients who underwent MMRd/MSI tests between January 2011 and March 2021 were included.

Results: Of the total 215 patients, 169 patients (78.6%) had mismatch repair proficient (MMRp)/microsatellite stable (MSS) tumors and 46 patients (21.4%) had MMRd/MSI tumors. Between 2 groups, distribution of histologic types and pathological stage were not statistically different ($p=0.469$ and 0.431 , respectively). A total of 68 out of 215 patients were tested for programmed death-ligand 1 (PD-L1), and PD-L1 expression was observed in 51.9% in MMRp/MSS group and 85.7% in MMRd/MSI group ($p=0.022$). The progression-free survival and overall survival rates

did not statistically differ between 2 groups. Eight patients were treated with pembrolizumab and objective response rate was 37.5%, comprised of 3 partial responses. Sixteen patients received lenvatinib/pembrolizumab and objective response rate was 31.3, comprised of 3 complete responses and 2 partial responses. Grade 3 or higher adverse events occurred in 18.8% (3/16) of those treated with lenvatinib/pembrolizumab.

Conclusion: In patients with endometrial cancer, although MMRd/MSI is associated with a higher PD-L1 expression rate than MMRp/MSS, there was no effect on progression and overall survival. In clinical practice, immunotherapy was safe and efficacious in recurrent endometrial cancer.

Poster (E26)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

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Nomogram for microscopic lymph node metastasis in surgically staged endometrioid endometrial cancer patients

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Objective: To establish a nomogram for predicting microscopic lymph node (LN) metastasis in surgically staged endometrioid endometrial cancer (EC) patients.

Methods: Clinicopathologic data of presumed early-stage endometrioid EC patients ($n=338$) treated with lymphadenectomy between March 2000 and February 2018 were analyzed. The nomogram was developed based on multivariate logistic regression analysis of preoperative clinicopathologic data. The predicted and discriminative ability of the nomogram were evaluated by a concordance index and calibration curve. The high-risk group was predefined as having a predicted probability of LN metastasis $>50\%$.

Results: Thirty-four patients (10.1%) had microscopic LN metastasis. Multivariate analysis identified cancer antigen-125, myometrial invasion on magnetic resonance imaging (MRI), cervical stromal invasion on MRI as independent prognostic factors associated with LN metastasis. The concordance index of the nomogram was 0.818 (95% confidence interval= $0.793-0.935$), and calibration plots revealed good agreement between the observed probabilities and nomogram-

predicted probabilities (Hosmer–Lemeshow test, $p=0.818$). In the high-risk group ($n=34$), the predicted probability of LN metastasis was 53.0% and the actual rate of LN metastasis was 50.0%. In the low-risk group, 11 of 16 patients with LN metastasis had the tumor location in the cornu ($n=7$) and lower uterine segment ($n=4$).

Conclusion: Approximately 90% of presumed early-stage endometrioid EC patients may not require lymphadenectomy and this nomogram may provide valuable guidance for physicians on the lymphadenectomy. In the low-risk group, the tumor location including cornu and lower uterine segment should be investigated to determine whether to perform lymphadenectomy.

Poster (E27)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E27>

Outcome of therapeutic lymph node dissection for stage IIIC2 uterine cancer

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Objective: The purpose of this study was to compare the treatment outcomes of stage IIIC2 uterine cancer in our department by histological type.

Methods: Thirty-three cases of stage IIIC2 uterine cancer in which lymph node dissection (LND) was performed at our department from 2006 to 2017 were included in this study. LND was conducted with sharp dissection between the vascular sheath and the adventitia of the vessels. Paraortic lymph node (PAN) biopsy cases were excluded. Postoperative adjuvant chemotherapy was administered. The histological types were divided into estrogen-dependent Type I (endometrioid, grade 1 to 3), estrogen-independent type II, and carcinosarcoma, and the overall survival times were compared.

Results: The median (range) number of PAN metastases was 2 (1–15), 4 (1–19), and 4 (2–34), respectively. The median number of pelvic lymph node metastases was 2, 4, and 3, respectively. There were no cases of postoperative chylous ascites. Three cases of type I, 3 cases of type II, and all cases of carcinosarcoma recurred. The 5-year survival was 76% overall, 89% for type I, 78% for type II, and 33% for carcinosarcoma. There was no significant difference among the 3 groups, but there was a significant difference between the 2 groups of type I and type II

+ carcinosarcoma group.

Conclusion: With our systemic LND, the 5-year survival rate for stage IIIC2 type 1 patients with a median of 2 positive PANs was as high as 89%. Our sharp LND is safe and has high therapeutic value.

Poster (E28)

Gestational Trophoblastic Neoplasia

<https://doi.org/10.3802/jgo.2021.32.S1.E28>

Persistent low concentration hCG in gestational trophoblastic neoplasia with history of 7 series methotrexate

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Objective: Persistently low concentration of human chorionic gonadotropin (hCG) may be associated with false-positive hCG, quiescent gestational trophoblastic disease and pituitary hCG. The knowledge about it, is needed to give the best option to the patient.

Methods: This is a case report of patient Mrs. GM, 24-year-old, with history of referred from Secondary Public Hospital with gestational trophoblastic neoplasia (GTN). The patient had a history of curettage due to molar pregnancy in February 2018, without any hCG level data stated before curettage. We evaluated the hCG measurement after curettage, during single agent chemotherapy methotrexate (MTX) and after unresponsiveness single agent chemotherapy MTX.

Results: Mrs. GM's hCG level before single-agent chemotherapy was 260.7 IU/mL. She underwent single-agent chemotherapy MTX for 7 consecutive series. The hCG levels (mIU/mL) during single-agent were 37.2, 14.7, 6.3, 6.4, 5.7, 4.6 and 5.1. The hCG level after the 7th MTX increased to 5.1 mIU/mL. Therefore, the patient was sent to Dr. Cipto Mangunkusumo National Central Referral Hospital (RSCM) due to unresponsiveness to single-agent chemotherapy on GTN. No complaint, neither any remarkable findings on physical examination in RSCM. Internal genitalia was normal in abdominal and trans-vaginal ultrasound. We also found normal chest X-ray examination. The patient was diagnosed with false-positive hCG and planned for continuing hCG observation. After 2 to 4 months of observation, the hCG level decreased to 4 mIU/mL, 4.3 mIU/mL and 2.46 mIU/mL.

Conclusion: The hCG levels returned to normal and further chemotherapy was no longer needed.

Poster (E29)

Gynecologic Cancer Screening

<https://doi.org/10.3802/jgo.2021.32.S1.E29>

Profiling of menopausal symptoms and therapeutic effects of hormone replacement therapy (HRT) in endometrial cancer survivors

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Objective: This study aimed to investigate the profile of menopausal symptoms in endometrial cancer survivors and analyze the effects and risks of hormone replacement therapy (HRT).

Methods: This was a retrospective study in 33 endometrial cancer survivors who underwent hysterectomy and bilateral oophorectomy (BSO) at Keio University Hospital from January 2013 to June 2019 and received HRT. We administered HRT to patients with postsurgical stage I or II endometrial cancer who complained of menopausal symptoms. Some patients with severe menopausal symptoms diagnosed with stage III disease were also treated after obtaining informed consent after being informed of the risks. Patients filled out a questionnaire on menopausal symptoms before and after HRT. We analyzed patient characteristics, clinicopathological factors, adverse events, and oncologic outcomes, which were extracted from medical records.

Results: The median age at surgical menopause was 44 years, and the median body mass index was 21.2 kg/m². Using the The International Federation of Gynaecology and Obstetrics 2008 staging criteria, 30 patients were diagnosed with postsurgical stage I disease, and 3 patients were with diagnosed with stage III disease. The histological grade of endometrial cancer was grade 1 in 22 patients, grade 2 in 8 patients, and grade 3 in 2 patients. The median duration of HRT was 963 days (641–2,681 days). Our results revealed that 31/33 patients (96%) showed improvement of menopausal symptoms. During the entire observation period, there were no cases of endometrial cancer recurrence.

Conclusion: This study shows that HRT can be given for menopausal symptoms in endometrial cancer survivors in Japan.

Poster (E30)

Endometrial Hyperplasia, Endometrial Intra-epithelial Neoplasia, and Endometrial Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.E30>

Sentinel lymph node mapping in endometrial cancer

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A 57-year-old female presented with postmenopausal bleeding. Fractional curettage showed grade 1 endometrioid carcinoma. She underwent laparoscopic surgical staging with sentinel lymph node (SLN) biopsy using indocyanine green (ICG) and near infrared camera. ICG was injected at 2, 4, 8, and 10 o'clock of cervix, 1 mL superficially and 1 mL at 1 cm depth. Ten minutes after ICG injection, the laparoscopic surgery was begun. Theoretically, ICG will come out of the cervix through the lymph chain, cross the internal iliac artery and 90% drain at obturator or external iliac LN. Otherwise, the SLN will be found in internal iliac, presacral or para-aortic area. This patient has ICG SLN at both obturator area. The patient underwent total laparoscopic hysterectomy, bilateral pelvic lymphadenectomy and para-aortic LN dissection to the level of inferior mesenteric artery. The SLNs were processed with ultrastaging, which was positive micrometastasis on the right side. The full lymphadenectomy revealed negative of other 26 pelvic LNs on the right, 18 pelvic LNs of the left and 5 para-aortic LNs. The postoperative period was uneventful. The patient was discharge in 2 days. We conducted the prospective study to see the detection rate of SLN in endometrial cancer (20% conventional laparoscopy and 80% laparotomy). The detection rate of unilateral SLN was 99%. The detection rate of bilateral SLN was 90%. We performed 100% pelvic lymphadenectomy (mean LN of 17) and 80% para-aortic LN removal (mean LN of 5). The sensitivity of SLN compared to full lymphadenectomy was 86% with 98% negative predictive value and 98% accuracy. The false negative rate was still high at 14%. However, this study is not designed to achieve the false negative rate. We are recruiting more patients to get the real false negative rate. If it is acceptable, we will not do the full lymphadenectomy anymore.

Ovarian cancer

Poster (O01)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O01>

A retrospective review of mucinous borderline ovarian tumor at Siriraj Hospital, Thailand: oncologic outcome including important risk factors

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Objective: A borderline ovarian tumor (BOT) was an important group of tumors of the ovary which needs to be distinguished from invasive ovarian cancer. The most common subtype of BOT in East Asia was the mucinous subtype (mBOT). mBOT was still controversial in terms of management due to different oncologic outcomes and difficulty in preoperative diagnosis. The objectives of the current study were to determine the prognosis and risk factors for recurrence, focusing only on mucinous subtype.

Methods: This retrospective study included patients with mucinous BOT, diagnosed between January 2004 and December 2019, who were operated at Siriraj Hospital. Patients with other subtypes, invasive carcinoma, and other primary carcinomas were excluded.

Results: Two hundred and thirty-five patients were diagnosed as mBOT. The median follow-up time was 54 months. There were 9 patients (3.8%) who had tumor recurrence. Risk factors of recurrence were a ruptured tumor, presence of ascites, residual tumor, and stage of the tumor. The recurrence rate between fertility-sparing surgery and radical surgery was not different. Detailed surgical staging, a pathological finding of intraepithelial carcinoma, and microinvasion were not associated with recurrence of the disease.

Conclusion: mBOT had an excellent prognosis. Nowadays, fertility-sparing surgery had more roles with no difference in the oncologic outcomes. Patients with risk factors had to be observed closely. Moreover, pre/perioperative diagnosis and accuracy of the final pathological results were also important.

Poster (002)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.002>

Bowel surgery by gynecologic oncologists during maximal cytoreductive surgery for advanced ovarian cancer

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Objective: We report the oncological outcomes in patients with advanced ovarian cancer who had bowel surgery which was performed by gynecologic oncologist (GO) during maximal cytoreductive surgery and compared the outcomes with those of bowel surgery performed by general surgeons (GS).

Methods: Patients who were stage III–IV ovarian cancer and had bowel surgery during maximal cytoreductive surgery were eligible. Patients were divided into two groups according to

whether bowel resection was performed by GO (group 1) or GS (group 2). In both groups, GO were mainly involved in debulking procedures. Perioperative and survival outcomes were compared between 2 groups.

Results: A total of 268 patients were eligible. Fifty-five patients received bowel surgery by GO (group 1), and 213 patients by GS (group 2). The rate of R0 resection (no residual tumor) after maximal cytoreductive surgery did not differ between 2 groups (45.5% vs. 40.8%, $p=0.529$). Among extra-uterine procedures, the rate of diaphragm stripping was higher in group 1 (72.7% vs. 40.8%, $p<0.001$). Operation time (331 minutes [212–608] vs. 362 minutes [173–677], $p=0.031$) and hospital stay (12 days [8–62] vs. 14 days [7–80], $p<0.001$) were slightly longer in group 2. Bowel surgery specific complications did not differ between 2 groups (ileus, 36.4% vs. 35.7%, $p=0.925$; leakage/perforation/fistula, 3.6% vs. 6.1%, $p=0.478$). There were no significant differences in progression-free survival and overall survival between 2 groups.

Conclusion: Bowel resection performed by GO was feasible and showed equivalent oncological outcomes when compared with those by GS during maximal cytoreductive surgery for advanced ovarian cancer.

Poster (003)

Imaging in Gynecologic Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.003>

Comparison of 2D USG based IOTA simple rules and 3D USG in preoperative assessment of adnexal masses

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Objective: To compare the diagnostic accuracy of “International Ovarian Tumor Analysis (IOTA) simple rules” and 3-dimensional (3D) ultrasound (USG) to discriminate benign from malignant adnexal masses.

Methods: A prospective observational study was conducted on 84 patients with adnexal masses. Both 2D USG and 3D USG with power doppler were done and IOTA simple rules applied using 2D parameters. Findings were correlated with final histopathology report.

Results: Eighty-four cases were recruited, 41 benign and 43 malignant. IOTA simple rules were conclusive in 88.1% (74/84) of cases, and the sensitivity and specificity of IOTA simple rules in conclusive cases were 83.78% (95% confidence interval [CI]=67.99–93.81%) and 89.19% (95% CI=74.58–96.97%),

respectively. The sensitivity and specificity of 3D USG with power Doppler were 84% and 88% respectively with area under the curve 0.96 (95% CI=0.92–0.99). With simple rules, 11.9% (10/84) cases were inconclusive of which 3D USG correctly discriminated 50% malignant cases (3/6).

Conclusion: Both IOTA simple rules and 3D USG with power Doppler have a good ability to differentiate benign from malignant adnexal masses. 3D USG does not provide any added advantage over IOTA simple rules. However, the potential use of 3D USG as a second step test in inconclusive masses should be the subject of further evaluation.

Poster (O04)

Gynecologic Pathology, Genetics and Epidemiology
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Copy number alterations feature of normal adjacent tissue as a novel biomarker for tumor burden in epithelial ovarian cancer patients

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Objective: Ovarian cancer typically presents high recurrence rate due to the propensity for ovarian cancer to disseminate throughout the peritoneum. Currently, there are limited studies based on genomic characteristics on histologically normal tissue adjacent to the tumor (NAT), we hereby characterized the genome-wide copy number alterations (CNAs) of NAT.

Methods: Seventeen blood samples, 10 tumor tissues (TT) and 10 NAT were collected from 10 patients with histologically confirmed diagnosis of ovarian cancer. All samples were sequenced to genome-wide coverage of 1x. IchorCNA were used to determined tumor fraction (TF) in each samples with bin resolution of 1 Mb.

Results: The 3/10 (30%) NAT samples revealed evidences of global CNA with TF of 10.72%, 4.77% and 25.67%, respectively. TF in their corresponding ctDNA samples were 15.55%, 0%, 13.08%. The rest of patients have average TFs of 0.65% and 2.23% for ctDNA and NAT. A strong correlation between NAT and ctDNA in TF was observed. No significant difference in International Federation of Gynaecology and Obstetrics stages were observed between 2 subgroups. We subsequently analyzed CNA concordance among TT/NAT, TT/ctDNA, NAT/ctDNA pairs. NAT TF-positive patients showed high concordance (median values of 29.07%, 35.42% and 31.85%) whereas NAT

TF-negative patients showed considerably lower concordance between their TT and NAT (0%–5.42%).

Conclusion: Our results presented a subgroup of patients that exhibits high tumor fraction in both NAT and ctDNA. Their genomes altered in a much similar manner compared with low-TF patients. This phenomenon provided an early version of tumor aggressiveness and may becoming a promising biomarker for prognosis and recurrence.

Poster (O05)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O05>

Correlation between preoperative PCI imaging and intraoperative PCI measurement in peritoneal carcinomatosis secondary to ovarian, tubal and primary peritoneal carcinoma

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Objective: To evaluate the correlation between preoperative and intraoperative percutaneous coronary intervention (PCI), the secondary objectives were to determine whether PCI could predict surgical oncologic outcomes and to identify factors statistically significant to the optimal surgical outcome.

Methods: In a prospective cohort study, women with advanced-stage epithelial ovarian cancer or primary peritoneal cancer or fallopian tube cancer who underwent either primary cytoreductive surgery or interval debulking were included. The preoperative computed tomography (CT) scan findings and intraoperative measurement of the peritoneal carcinomatosis were evaluated by PCI and their correlation was determined using Spearman coefficient.

Results: A total of 55 women were enrolled, 52 patients were eligible and analyzed. Mean preoperative and intraoperative PCI were 5.04 and 7.27, orderly. Twenty-nine patients achieved optimal surgery (55.8%). There is a moderate correlation between the PCI obtained from CT image and surgical findings ($r=0.510$, $p<0.001$). The significant cutoff values of preoperative PCI and intraoperative PCI to predict optimal surgical outcome could be 7 and 8 respectively. In a univariate analysis, ECOG-0, preoperative CA125 <416 U/mL, preoperative PCI <7 and intraoperative PCI <8 were significantly associated with the optimal surgical outcome. While with multivariate analysis, preoperative CA125 <416 U/mL and intraoperative PCI <8 were only independent factors related to the optimal surgery.

Conclusion: Our correlation between preoperative PCI and

intraoperative PCI is particularly measurable. With lesser PCI that would predict optimal surgical outcome, the preoperative PCI from a practical imaging would be useful as a predictive method to assess possibility of an optimal cytoreduction and the optimal time of surgery as well.

Poster (O06)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O06>

Correlation of CD47 expression and treatment response to neo-adjuvant chemotherapy in advanced epithelial ovarian cancer

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Objective: To study the expression of CD47 and its correlation with treatment response to neo-adjuvant chemotherapy (NACT) among patients with advanced ovarian malignancy (CD47 may play an inhibitory role in NK cell-mediated cytotoxicity against cancer cells, implying a possible mechanism of immune escape in cancer cells leading to aggressive behavior. Overexpression of CD47 increases the risk of metastasis and is negatively correlated with prognosis).

Methods: In this hospital-based cohort study, 92 patients diagnosed with advanced ovarian cancer decided for NACT were recruited. Baseline clinical data, including cancer antigen 125 levels and contrast enhanced computed tomography findings, were noted. These women were subjected to image-guided fine needle aspiration cytology of the ovarian tumor for pathological diagnosis. We prepared cell blocks for immunohistochemistry and studied CD47 expression. After 3 cycles of NACT, patients were assessed for treatment response. Among patients with good treatment response and deemed to be operable after 3 cycles of NACT, interval cytoreductive surgery was performed. The level of cytoreduction was studied among these patients and was correlated with CD47 levels.

Results: Out of 92 patients, 61 were assessed to have a good response to NACT after 3 cycles and underwent interval cytoreduction. Among these, six patients had suboptimal cytoreduction. Around 19 (86.5%) women with high CD47 expression and 36 (92.6%) women with low CD47 expression had optimal cytoreduction (R0 and R1). But the difference is statistically insignificant. Out of 36 women with high CD47 expression, 17 (47.2%) women had a poor response compared to 19 (52.8%) women who had a good response. Around two-thirds of the patients with low CD47 expression had a good response

to NACT. But the difference is statistically insignificant.

Conclusion: The 39.1% of patients had high CD47 expression in our study, much lesser than reported in the published literature. There was no significant association between CD47 expression and response to NACT in patients with advanced epithelial ovarian malignancy in our study.

Poster (O07)

Basic/Translational Science
<https://doi.org/10.3802/jgo.2021.32.S1.O07>

Digital spatial profiling of metastatic clear cell carcinoma reveals intra-tumor heterogeneity in epithelial-mesenchymal gradient

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Objective: Advanced ovarian clear cell carcinoma (OCCC), known to harbor intra-tumor heterogeneity (ITH), is chemoresistant and poor prognostic, possessing distinct molecular and histological characteristics. However, detailed spatial information of the nature of ITH within OCCC remains unclear. Here, we aim to decipher the hidden spatial information within the tumor samples of primary (Pri) and colonic metastatic (Met) sites from one advanced OCCC patient and build up a geospatial analysis pipeline for further exploratory study.

Methods: NanoString Digital spatial profiling (DSP) GeoMx platform was utilized to perform multiplex protein expression analysis on OCCC samples, and 18 to 19 regions of interest (ROIs) were selected per sample. Tumor cells were classified into different subgroups based on the expression patterns from the heatmap of the clustered data.

Results: The 47.6% of the PanCK-positive segments of ROIs from Met were clustered into C2_tumor, while those from Pri were mostly clustered into C1_tumor, suggesting that Met were more heterogeneous (χ^2 test, $p=0.00371$). For tumor cells from different subgroups in Met, the difference between the expression levels of PanCK, SMA, Ki-67, FN, NCAM and ITGAX were statistically significant, which reflected the existence of an epithelial-mesenchymal (EM) gradient within Met (1-way

analysis of variance, $p < 0.05$).

Conclusion: The spatial resolution revealed an EM gradient within Met but not Pri. This provides an unprecedented view of the EM gradient during the progression of cancer such as OCCC. Our study provides the first spatially resolved in situ evidence of intermediate or hybrid EM states within the tumor samples of similar morphology.

Poster (O08)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O08>

DKK3, down-regulated in invasive epithelial ovarian cancer was associated with chemoresistance and enhanced paclitaxel susceptibility via inhibition of β -catenin-P-glycoprotein pathway

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Objective: This study aimed to assess aberrant Dickkopf-3 (DKK3) expression in epithelial ovarian carcinoma and to determine the therapeutic role of DKK3 in ovarian cancer.

Methods: DKK3 protein expression was examined by immunohistochemistry using tissue blocks from 82 patients with invasive ovarian adenocarcinoma, and 15 normal, 19 benign, and 10 borderline tumors as controls. Survival data were estimated using Kaplan-Meier estimates, and multivariate analysis was performed using the Cox regression method. Paclitaxel-resistant cell lines were manufactured with TOV-21G and OV-90 ovarian cancer cell lines. The protein expression and cell viability were assessed by Western blotting and MTT assay, respectively.

Results: DKK3 was significantly down-regulated in invasive carcinoma compared to normal, benign, and borderline tumors. Univariate analysis showed that higher FIGO stage, DKK3 loss, suboptimal debulking operation, and chemo-resistance were significantly associated with low disease-free survival of serous carcinoma patients. DKK3 loss occurred in 56.1% invasive carcinoma cases and was significantly associated with chemo-resistance in serous adeno carcinoma ($p = 0.029$). Paclitaxel-resistant cell lines were successfully established. Western blot analysis showed that DKK3 was lost in paclitaxel-resistant

cells and as expected, β -catenin and P-glycoprotein were upregulated. Secreted DKK3 exerted an anti-proliferative effect and induced paclitaxel susceptibility in paclitaxel-resistant cells ($p < 0.01$). Secreted DKK3 was internalized into cells, reduced β -catenin activity, hence inhibited P-glycoprotein, suggesting an axis link between them.

Conclusion: DKK3 loss was frequent in invasive epithelial ovarian cancer and significantly associated with chemo-resistance. Secreted DKK3 has an anti-proliferative effect on paclitaxel-resistant cells by inhibiting β -catenin and P-glycoprotein, suggesting that DKK3 could be therapeutics targeting paclitaxel-resistant ovarian cancer.

Poster (O09)

Conservative & Fertility Preservation

<https://doi.org/10.3802/jgo.2021.32.S1.O09>

Fertility sparing surgery in malignant ovarian germ cell tumors (MOGCTs): 15 years experiences

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Objective: Our aim is to evaluate the reproductive outcome of fertility-sparing surgery and chemotherapy among young women diagnosed with malignant ovarian germ cell tumor (MOGCT) of any stage.

Methods: In current retrospective study we evaluated 79 patients with MOGCT whom visited at Imam Center, Vali-Asr Hospital, Gynecology Oncology department during 2001–2016. Reproductive outcomes (menstruation status & childbearing) followed fertility preserving surgery and adjuvant chemotherapy by filling questionnaires. Statistical analysis was done with SPSS software, χ^2 tests were done, and significance determined at $p \leq 0.05$.

Results: Among 79 young women who underwent fertility-sparing treatment, 72 patients followed up for reproductive outcome and 7 patients excluded due to death (3 cases), XY genotyping (3 cases), and bilateral ovarian involvement (1 case). The mean age at presentation was 23 years (range=19–33 years). The 5 and 10-year disease-free survival rate was 87% and 94.4%, respectively. The overall survival rate was 94.4% at 5 and 10 years. Regular menstruation recovered in 60 of 72 patients after treatment (83%). All patients without adjuvant chemotherapy experienced regular menstruation while normal menstruation retrieved in 78% in adjuvant chemotherapy group at the end of treatment. This retrieval of regular menstruation was not

depended on the age or number of chemotherapy cycles. The 19 of 26 patients who attempted for pregnancy were leading to delivery (73%). No one required infertility treatments. Mean of chemotherapy cycles and age is related to successful pregnancy. **Conclusion:** we showed patients with MOGCT could become pregnant and give birth if they desire. Advanced tumor stage was not the convincing factor for avoiding fertility preservation. Fertility sparing surgery with adjuvant chemotherapy is a safe treatment and results in high fertility rate.

Poster (O10)
Basic/Translational Science
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Identification of the therapeutic and prognostic significance of STAU2 in ovarian cancer

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Objective: Of all the gynecologic cancers, ovarian cancer (OC) accounts for the most deaths worldwide. Factors such as chemotherapy and extensive abdominal metastasis may be important reasons leading to the high mortality of OC patients. Staufen homolog 2 (STAU2) is a member of the family of double-stranded RNA-binding proteins involved in cell fate decision by regulating mRNA transport, mRNA stability, translation, and ribonucleoprotein assembly. Past research have shown that STAU2, an anti-apoptotic protein, can participate in DNA replication and/or maintain genome integrity. However, the role of STAU2 in OC remains unknown.

Methods: GEPIA2 (<http://gepia2.cancer-pku.cn/#/index>) is an analysis tool containing RNA sequence expression data of 9,736 tumors and 8,587 normal samples from TCGA and the GTEx projects, using a standard processing pipeline. In this study, we used the “Single Gene Analysis” module of GEPIA2 to analyze the differential mRNA expression of tumor and normal tissues, perform pathological stage analysis, and analyze the prognosis value of claudins. The p-value cutoff was 0.05. The Human Protein Atlas (<https://www.proteinatlas.org/>) provides analysis of the secreted and membrane proteins, as well as an analysis of the expression profiles for all proteins targeted by pharmaceutical drugs and proteins implicated in cancer. In this study, we confirmed the expression of STAU2 in OC via immunohistochemistry using The Human Protein Atlas. Metascape (<https://metascape.org/gp/index.html>) includes analysis of bio-pathway enrichment, protein interaction network structure, and abundant gene annotation functions based on

more than 40 public database. In this study, we performed an enrichment analysis of STAU2 and its most related genes by the Express Analysis module. TIMER (<https://cistrome.shinyapps.io/timer/>) is a comprehensive resource for systematical analysis of immune infiltrates across diverse cancer types. In this study, “Gene” module was used to evaluate the correlation between STAU2 level and the infiltration of immune cells. And we evaluated the correlation among clinical outcome and abundance of immune infiltrates expression using “Survival” module. **Results:** STAU2 expression among several cancers were analyzed, and we found the transcription level of STAU2 in OC tissues was significantly higher than normal tissues. We further confirmed that STAU2 in OC tissues overexpressed compared with normal tissues via immunohistochemistry. OC patients with higher expression of STAU2 were significantly associated with poorer overall survival (p=0.0014) and disease-free survival (p=0.039). Besides, the pathological stage of OC patients was closely related to the expression of STAU2 (p=0.0295), concluding that STAU2 may promote the progress of OC. GO/KEGG analysis showed the differential expression of STAU2 and its related genes were mainly associated with regulation of mRNA stability, endocytosis and ubiquitin mediated proteolysis. Then we found that CD8+ T cells expression (coefficient=0.175, p=5.64e-3), CD4+ T cells (coefficient=0.205, p=1.13e-3) and macrophages (coefficient=0.353, p=9.66e-9) infiltration increased, while B cells (coefficient=-0.201, p=1.36e-3) and dendritic cells (coefficient=-0.13, p=3.98e-2) infiltration decreased with high STAU2 expression. The Cox proportional hazard model showed CD4+ T cells (p=0.001), macrophages (p=0.001), neutrophils (p=0.030) and STAU2 expression (p=0.038) were significantly associated with the clinical outcome of OC patients. **Conclusion:** In summary, STAU2 may play a great influence on immune cell infiltration and may represent a valuable prognostic biomarker and therapeutic target for ovarian cancer.

Poster (O11)
Gynecologic Pathology, Genetics and Epidemiology
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Molecular characterization and its correlation with tumor mutation burden in Chinese ovarian cancer patients

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Objective: The breakthrough have been brought in therapy of ovarian cancer by poly(ADP-ribose) polymerase PARP inhibitor

and immune checkpoint inhibitor, but predictive biomarkers are lacking. We performed genomic profiling and characterized specific genes associated with an increased tumor mutational burden (TMB) in Chinese patients with ovarian cancer (OC). OC accounts for high rates of relapse and mortality among people with solid tumors worldwide. As traditional treatments are limited and often intolerant for patients with advanced ovarian cancer, PARP inhibitors and immunotherapy may breakthrough therapies patients immunotherapy could be a better option.

In order to explore the potential use of immunotherapy biomarkers, our study aimed to assess gene alteration and its correlations with microsatellite instability (MSI), TMB and tumor neoantigens burden (TNB) in Chinese CLC populations.

Methods: A total of 201 female Chinese patients with OC (including primary peritoneal cancer and fallopian tube cancer) were involved from February 2020 to July 2021. All paired specimens were detected by OncoDrug-Seq™ 603-gene panel assay through next generation sequencing using Illumina NovaSeq 6000.

Results: TP53 (62.7%) was the gene with highest mutation frequency, followed by *BRCA1* (18.9%), *KRAS* (11.9%), *ARID1A* (9.5%), *PIK3CA* (9.0%), *NFI* (6.0%), and *BRCA2* (6.0%). Further analysis showed that TP53 alterations (84.6%, n=11/13) were significantly more common in high-grade serous carcinoma than other histological subtypes. Variations detected included fusions (1.4%), duplication (4.5%), and deletion (4.0%). Among them the fusions were RET-CCDC6, BRAF-KIAA1549, NRG1-DIP2B, ERBB2-MACROD2, especially, the latter 2 fusions occurred simultaneously in one patient. Mutational incidences of significant pathway were also analyzed. Five signal pathways, including JAK-STAT (1.4%), MAPK (74.6%), EGFR (28.9%), WNT (63.7%), and TGFB (1.0%) were related to mutational incidences. Correlation analysis between TMB and mutation status in OC (n=110) showed that the OC with RAD50 (n=4) or PALB2 (n=3) mutation patterns had higher TMB (mean values 20.3, 25.5, respectively, p<0.05), while the MSI status showed no significant difference (p>0.05).

Conclusion: The landscape of mutation patterns and MSI, and TMB among Chinese OC populations in this study will further assist the utilization of these biomarkers to immunotherapy strategies.

Poster (O12)

Rare Tumors & Metastatic Tumors

<https://doi.org/10.3802/jgo.2021.32.S1.O12>

Mucinous ovarian cancer metastasis to cervix: a rare case report

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Objective: Ovarian cancer is the second most common gynecological malignancy, but the most lethal. Mucinous ovarian cancer (MOC) is a rare subtype of epithelial ovarian carcinoma. MOC was believed to constitute around 12% of ovarian malignancies. However, recent estimations show the true incidence to be at around 3%. It is difficult to diagnose multiple malignancies in genital organ due to almost similar spreading pattern.

Methods: Women, 45 years old with vaginal bleeding and abdominal enlargement. The diagnose of the malignancies was made from Histopathology and advanced imaging. This is a rare case of MOC spreading to cervix has been treat as double primary cancer with radiotherapy and chemotherapy.

Results: After completion the therapy (radiotherapy and chemotherapy), patient shows good response without no evidence of disease. the close follow up are need to early detection of the recurrence.

Conclusion: Radiotherapy and Chemotherapy in this rare case of MOC that spread to cervix can treat both for locally advanced cervix metastasis and MOC. A good modality for diagnose is a key to detect a pathologic disease in gynecology malignancies.

Poster (O13)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O13>

Predictors of outcome for relapsed epithelial ovarian cancer

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Objective: To determine the predictors of overall survival (OS) in relapsed epithelial ovarian cancer (EOC).

Methods: Case records of patients with EOC treated between January 2010 and December 2019 were reviewed to identify cases with relapse who received treatment. Primary treatment included upfront cytoreductive surgery followed by adjuvant paclitaxel + carboplatin in 116 (45.7%) patients and neoadjuvant chemotherapy followed by interval cytoreduction in 138 (54.3%) patients. Following first relapse, 215 (84.6%) received salvage chemotherapy, 13 (5.1%) underwent surgery while 27 (10.6%) patients with biochemical relapse were kept on observation. An intent to treat analysis was done.

Results: Total 254 patients, median age 50 (range=18–81) years had relapse; median relapses-2 (range=1–9). Median progression

free survival (PFS1) from diagnosis was 19.3 months (95% confidence interval [CI]=17.9–20.6 months). Median OS was 50 months (95% CI=42.6–57.4 months). On univariate analysis, PFS1, primary surgery, optimal cytoreduction, complete response to primary therapy, 3 weekly chemotherapy and PFS1 interval were important predictors of OS. On multivariate analysis-response at primary treatment (CR vs. non-CR, hazard ratio [HR]=0.47 [95% CI=0.29–0.74], $p=0.001$), type of relapse (clinical vs. biochemical, HR=1.74 [95% CI=1.19–2.52], $p=0.004$), treatment at relapse (observation vs. chemotherapy, HR=1.09 [95% CI=0.99–3.6], $p=0.05$), type of chemotherapy at relapse (paclitaxel + carboplatin vs. non-paclitaxel + carboplatin, HR=0.57 [95% CI=0.36–0.91], $p=0.018$) and response to relapse-1 treatment (progressors vs. non progressors, HR=2.5 [95% CI=1.64–3.8], $p<0.001$) were predictors of OS.

Conclusion: Response at primary treatment and chemotherapy response at relapse are important predictors of OS.

Poster (O14)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O14>

Prognostic value of baseline and 3 months postoperative circulating tumor DNA (ctDNA) in ovarian cancer patients

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Objective: Blood sample based circulating tumor DNA (ctDNA) samples are easily obtained and can be used for disease monitoring in ovarian cancer patients undergoing primary surgery.

Methods: Patients undergoing debulking surgery for primary diagnosis or recurrent ovarian cancer were prospectively enrolled since October 2019. Control patients undergoing surgery for benign ovarian mass with CA-125 above 35 were also enrolled. Whole blood samples for cell free DNA analysis were collected immediately before and 3 months after surgery. Custom gene panel covered 9 genes (*TP53*, *BRCA1*, *BRCA2*, *ARID1A*, *KRAS*, *MYC*, and *PIK3CA*). Prepared libraries were sequenced using NextSeq550Dx System (Illumina) and analyzed using the custom analysis pipeline (Dxome). Clinical information was also obtained.

Results: A total of 170 patients including 78 patients with epithelial ovarian cancer and 92 control patients with benign or borderline ovarian mass were analyzed. None of the control patients showed detectable ctDNA preoperatively. Analysis of

baseline sample showed different ctDNA patterns with respect to histological subtypes. Based on the combination of baseline and 3 months follow up ctDNA, ovarian cancer patients were grouped to non-detected (n=18), zero conversion (n=41), and persistently elevated group (n=19). Analysis of time to progression with Kaplan-Meier curve showed that the persistently elevated group patients had worse prognosis compared to other groups.

Conclusion: ctDNA is a highly specific test for detecting ovarian cancer among patients with suspected ovarian mass on preoperative radiological and biomarker-based evaluation. Despite the variation in mutational landscape among histological subtypes, analysis of baseline and 3 months follow up ctDNA demonstrates a prognostic value.

Poster (O15)

Gynecologic Pathology, Genetics and Epidemiology
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Putative N-glycoprotein markers of ovarian cancer from N-glycoproteomics characterization of the whole cell lysate

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Objective: To study the comparative N-glycomics of N-glycans on the cell-surface of ovarian cancer SKOV3 cells vs. the non-cancerous ovarian epithelial IOSE80 cells.

Methods: Both SKOV3 and IOSE80 cells were cultured and extracted the proteins. With sequential digestion by trypsin, enriched by Zwitterionic Hydrophilic Interaction chromatography (ZIC-HILIC), the intact N-glycopeptides were then isotopic diethyl labeled and analyzed using C18-RPLC-MS/MS (HCD). Comprehensive structure- and site-specific N-glycoproteomics characterization for both the SKOV3 and IOSE80 cells were searched by GPSeeker database.

Results: Totally 13,822 intact glycopeptides from 2,918 N-glycoproteins with comprehensive structure and site information were identified. A total of 3,733 peptide backbones and 3,754 N-glycosites were confirmed by information of GlcNAc-containing site-determining ions and structure-diagnostic. Seven hundred forty-six differentially expressed intact N-glycopeptides in SKOV3 relative to IOSE80 cells was found, where 421 were upregulated and 325 were downregulated, respectively.

Conclusion: Linking observation of differentially expressed N-glycosylation as well as specific N-glycan substructures with epigenetic functions in ovarian cancer might help to develop the novel markers applied in diagnosis and prognosis of ovarian cancer.

Poster (O16)

Gynecologic Pathology, Genetics and Epidemiology
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Risk reducing salpingo-oophorectomy for germline BRCA mutation carriers: outcomes of single-center experiences in South Korea

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Objective: This study was aimed to investigate the patient's characteristics and histopathologic findings of risk-reducing salpingo-oophorectomy (RRSO) conducted in Asan Medical Center.

Methods: We retrospectively analyzed the medical records of germline BRCA1/BRCA2 mutation carriers who underwent RRSO at Asan Medical Center from January 2009 to December 2020.

Results: A total of 274 patients underwent RRSO (136 BRCA1, 135 BRCA2, 3 BRCA1, and 2 mutation carriers). The mean age at the time of surgical intervention was similar for BRCA1 and BRCA2 mutation carriers (46.9 and 46.3, respectively). Only 6 surgeries were performed in 2009, while 48 were performed in 2020, with more and more over time. Eight out of 136 (5.8%) BRCA1 carriers and 9 out of 135 (6.7%) BRCA2 carriers were unaffected, and others were breast cancer patients. According to the pathologic reports, 6 out of 136 (4.4%) BRCA1 mutation group were diagnosed with occult malignancy such as tubal cancer, and 4 out of 137 (3.0%) were pre-malignant lesions, including serous tubal intraepithelial lesion (STIL) or serous tubal intraepithelial carcinoma (STIC). In the BRCA2 mutation group, only 1 out of 135 (0.7%) was diagnosed with STIC, and no occult cancer was found.

Conclusion: According to our study, germline BRCA mutation carriers tend to go through RRSO in their mid to late 40s, and most of the patients were breast cancer patients. Occult tubal cancer or premalignant lesion (STIC, STIL) were diagnosed more frequently in BRCA1 carriers than BRCA2 carriers.

Poster (O17)

Basic/Translational Science
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SOX17 and PAX8 constitute an actionable lineage-survival transcriptional complex in ovarian cancer

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Objective: Müllerian tissue-specific oncogenes, prototyped by PAX8, underlie ovarian tumorigenesis and represent unique molecular vulnerabilities. Further delineating such lineage-dependency factors and associated therapeutic implications would provide valuable insights into ovarian cancer biology and treatment.

Methods: SOX17 and PAX8 expression were assayed by pan-cancer analysis, single-cell RNA sequencing, immunohistochemistry and immunoblotting. Functional impact of SOX17 or PAX8 depletion was assessed in cell lines and xenografts. The relationship between SOX17 and PAX8 was investigated by immunofluorescence staining, co-immunoprecipitation, RNA sequencing and CUT & Tag. A high-throughput image-based drug screen was performed, and a novel orally bioavailable cyclin-dependent kinase (CDK) 12/13 covalent antagonist was synthesized to evaluate its anti-tumor efficacy.

Results: We identified SOX17 as a new lineage-survival master transcription factor, which shared co-expression pattern with PAX8 in epithelial ovarian carcinoma. Genetic disruption of SOX17 or PAX8 analogously inhibited neoplastic cell viability and downregulated a spectrum of lineage-related transcripts. Mechanistically, we showed that SOX17 physically interacted with PAX8 in cultured cell lines and clinical tumor specimens. The 2 nuclear proteins bound to overlapping genomic regions and regulated a common set of downstream genes, including those involved in cell cycle and tissue morphogenesis. In addition, we revealed that small-molecule inhibitors of transcriptional CDKs effectively reduced SOX17 and PAX8 expression. ZSQ1722, a novel orally bioavailable CDK12/13 covalent antagonist, exerted potent anti-tumor activity in xenograft models.

Conclusion: These findings shed light on an actionable lineage-survival transcriptional complex in ovarian cancer, and facilitated drug discovery by generating a serial of candidate compounds to pharmacologically target this difficult-to-treat malignancy.

Poster (O18)

Epithelial Ovarian Cancer including Borderline Tumor
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Survival analysis of adjuvant chemotherapy impacts in advanced-stage epithelial ovarian cancer

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Objective: This study aims to assess adjuvant chemotherapy impacts on survival benefit at advanced stage epithelial ovarian cancer (EOC) treated with adjuvant chemotherapy.

Methods: A retrospective survival analysis between December 2018 to April 2021. Samples were all patients with advanced-stage EOC treated with adjuvant chemotherapy. Characteristics of the study samples were assessed based on age, marital status, history of contraception, patient's outcome, International Federation of Gynaecology and Obstetrics (FIGO) staging, chemotherapy regimens, residual disease, and the number of toxicities that appeared. Advanced-stage was defined as stage IIB–IVB based on FIGO staging 2014. Chemotherapy regimens were paclitaxel-carboplatin and docetaxel-carboplatin. Residual disease was defined as residual disease >1 cm. We included patients with advanced-stage EOC who completing their adjuvant chemotherapy.

Results: Ninety-eight patients were identified. Factors that significantly influenced survival are FIGO staging, chemotherapy regimens, and residual disease ($p=0.001$). We also found a significant association number and type of toxicity to survival ($p=0.001$). Bone marrow toxicity (26.6%), peripheral neuropathy (34.7%), the combination of bone marrow-gastrointestinal toxicities (29.6%), and the combination of bone marrow-gastrointestinal toxicities-nephropathy (7.1%) were identified as side effects that appeared after completing adjuvant chemotherapy. The shortest survival was found in the combination of bone marrow-gastrointestinal toxicities and nephropathy (median=12.5 months).

Conclusion: The combination of bone marrow toxicity, gastrointestinal tract toxicity, and nephropathy is the most lethal complication which decreased the length of survival after completing adjuvant chemotherapy in advanced-stage EOC.

Poster (O19)
 Basic/Translational Science
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Targeting nuclear F-actin to circumvent ovarian cancer chemotherapy resistance

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Objective: Despite an excellent initial response to chemotherapy, a large proportion of ovarian cancer patients are faced with tumour relapse within 2 years. The chemotherapy drugs, cisplatin or

carboplatin, induce DNA damage and results in cell apoptosis in ovarian cancer. The underlying mechanisms of how ovarian cancer cells acquire resistance to chemotherapy remain obscure. It is widely accepted that actin filament (F-actin) is one of the main cytoskeleton that is mainly organized in the cytoplasm, and it is involved in key physiological processes, e.g. cell division, cell migration and intracellular trafficking. However, this has been challenged by recent studies showing that F-actin and globular actin exist in the nuclei of somatic cells, and are involved in chromatin remodeling and gene transcription regulation. Notably, 2 pioneering studies have claimed that nuclear F-actin is assembled to accelerate DNA repair in fly and mouse cells. Our preliminary data reveals that nuclear F-actin organization occurs in ovarian cancer cells, and we have found that cells with these structures are less sensitive to carboplatin treatment. Therefore, we hypothesize that nuclear F-actin assembly may have a critical role in chemotherapy resistance in ovarian cancer cells. To date, the clinical significance of nuclear F-actin has not been investigated and our study may provide insight into this exciting link.

Methods: Ovarian cancer cell lines stably expressing nuclear actin-chromobody-citrine probe were used to investigate nuclear F-actin structure, in combination with spinning disc confocal microscopy and super resolution stimulated emission depletion microscopy. The nuclear F-actin structures were further evaluated in ovarian cancer patient tumour samples using phalloidin staining, a toxin which specifically binds to F-actin. Additionally, IF staining using cell apoptosis marker antibody (anti-caspase 3) and long-term colony formation assays were conducted to investigate the chemosensitivity of ovarian cancer cells with nuclear F-actin. Moreover, we performed kinome screening using kinome small interfering RNA library and small molecular inhibitors library (TargetMol library) in combination with High-Content Screening system to unravel the underlying molecular pathways which may potentially be involved in regulating nuclear F-actin polymerization in ovarian cancer cells.

Results: We generated ovarian cancer cell lines stably expressing nuclear actin chromobody and found out that nuclear F-actin were polymerized in ovarian cancer cells, which was further confirmed using phalloidin staining. To investigate the clinical significance of nuclear F-actin in the context of ovarian cancer, we conducted F-actin staining using phalloidin in tumour tissues from individual ovarian cancer patients. It was confirmed that nuclear F-actin structures were present in ovarian tumour cells from patient samples. Moreover, cells with nuclear F-actin had less rH2Ax foci under the treatment of platinum drugs, indicating that nuclear F-actin might play critical roles in DNA repair in ovarian cancer cells. Importantly, ovarian cancer cells with the nuclear F-actin

phenotype had better survival to chemotherapy treatment. At the molecular level, we found out that the mitogen-activated protein kinase, phosphoinositol-3 phosphate/AKT pathways and ABL1 kinase are involved in nuclear F-actin polymerization. Further investigation revealed that ABL1 may phosphorylate Wiskott-Aldrich syndrome protein to activate the key actin nucleation factor Arp2/3 complex to promote nuclear F-actin polymerization in ovarian cancer cells treated with chemotherapy drugs carboplatin or cisplatin. Our preliminary data suggests a potential target in combination with chemotherapy for ovarian cancer treatment, and this necessitates further evaluation by recruiting preclinical models in future studies.

Conclusion: Here, we reveal that ovarian cancer cells with nuclear F-actin undergo less DNA damage under platinum treatment, suggesting that nuclear F-actin may mediate chemotherapy resistance in the context of ovarian cancer. Moreover, we unravel the underlying kinase pathway involved in nuclear F-actin polymerization in ovarian cancer cells, potentially paving the way for a novel strategy of targeting potential kinases in combination with well-established chemotherapy regimens in order to circumvent chemotherapy resistance.

Poster (O20)

Imaging in Gynecologic Cancer

<https://doi.org/10.3802/jgo.2021.32.S1.O20>

The diagnostics of epithelial ovarian cancer: focus on apparent diffusion coefficient map on magnetic resonance imaging using machine learning

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Objective: To compare radiologic features including mean apparent diffusion coefficient (ADC) value of uterus magnetic resonance imaging (MRI) among the histology types of epithelial ovarian cancer (EOC).

Methods: This retrospective single center study included patients underwent preoperative uterus MRI and pathologically diagnosed as EOC. On MRI, the proper image of the axial ADC map that contained the largest area of the solid portion was selected, and the region of interest (ROI) of the solid portion were manually

drawn by a gynecologist and a radiologist with consensus. The mean ADC value (ADC_{mean}) of solid portion was derived from ROI. The ADC_{mean} in each histology was compared using Mann-Whitney U test. The 3 kinds of machine learning (ML) algorithms also used to evaluate several values included ADC_{mean} (Random Forest, Gradient Boosting Machine, and XGBoost).

Results: Two hundred patients were finally included with 97 type I patients (low-grade serous carcinoma, n=8; mucinous carcinoma [MC], n=33; endometrioid carcinoma [EC], n=21; clear cell carcinoma [CCC], n=35) and 103 type II patients (high-grade serous carcinoma [HGSC], n=103). The ADC_{mean} significantly differ between type I and II EOC (p<0.001). In detail, median ADC_{mean} of HGSC was 1.06×10⁻³ s/m² the lowest among all types, and significantly distinguished from MC, EC, and CCC (p<0.001). Among 3 types of ML, Gradient Boosting Machine noted the highest accuracy to distinguish type I/II EOC (accuracy: 0.91), XGBoost conducted the highest value in 5 histology of EOC (accuracy: 0.68).

Conclusion: The ADC_{mean} is useful tool to evaluate the histologic type of EOC in preoperative MRI.

Poster (O21)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O21>

Toxicity profile of olaparib maintenance monotherapy for Japanese platinum-sensitive relapsed ovarian, fallopian tube and primary peritoneal cancer patients

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Objective: This study aims to investigate the toxicity profile of olaparib maintenance therapy for Japanese population.

Methods: Fifty-two Japanese patients with platinum-sensitive relapsed ovarian, fallopian tube and primary peritoneal cancer who started olaparib maintenance monotherapy following platinum-based chemotherapy from May 2018 to June 2021 at our hospital were included. The information about the adverse effect were collected retrospectively from the medical records. This study was approved by the ethics committee of Keio University, School of Medicine.

Results: The median age was 58 years old (33–80 years), and the median progression-free survival was 17.1 months (95% confidence interval=10.6–23.5). The number of previous platinum-based regimens was 2 in 35 patients (67.3%), 3 in 8 patients (15.4%) and ≥4 in 9 patients (17.3%). Twenty-nine

patients (55.8%) had presented anemia of grade 1–2 and 18 patients (34.6%) had experienced anemia of grade 3–4, which seemed higher than the previous reports. Five patients received blood transfusions. As for non-hematological toxicity, nausea (25 patients, 48.1%), fatigue (20 patients, 38.4%) and blood creatinine increased (27 patients, 51.9%) were observed frequently (any grade). The incidence of blood creatinine increased also seemed higher than the previous studies. One patient discontinued olaparib due to prolonged renal dysfunction. In total, 22 patients (42.3%) required dose interruption, and 11 patients (21.2%) required dose reduction. No patient had suffered from acute myeloid leukemia or myelodysplastic syndromes.

Conclusion: Olaparib maintenance monotherapy was tolerable also for Japanese population, although the toxicity profile might be a bit different from the previous reports (SOLO2, Study 19).

Poster (O22)

Epithelial Ovarian Cancer including Borderline Tumor
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TP53 sequence analysis revealed distinct characteristics of p53 signatures in RRSO samples

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Objective: Risk-reducing salpingo-oophorectomy (RRSO) is recommended for women with *BRCA1/2* pathogenic variants upon completion of childbearing. Precursor lesions could be identified in the fallopian tubes of RRSO samples. Serous tubal intraepithelial carcinoma (STIC) is considered a precursor of high-grade serous carcinoma (HGSC), however, the significance of the p53 signature remains unclear. In this study, we analyzed the potency of the p53 signature as a precancerous lesion.

Methods: We analyzed the clinicopathological findings and conducted DNA sequencing for TP53 variants of p53 signatures isolated using laser capture microdissection in 13 patients with *BRCA1/2* pathogenic variants who underwent RRSO and 17 control patients with the benign gynecologic disease.

Results: p53 signatures were most frequently observed in fimbriae of fallopian tubes from RRSO samples. Between the RRSO group and the control group, there was no significant difference in the percentage of p53 signatures in fimbriae ($p=0.17$), whereas the percentage of pathogenic variants in TP53 variants identified in p53 signature lesions were significantly higher in the RRSO group than the control ($p<0.001$).

Conclusion: The characteristics of the p53 signature may be

different between specimens obtained during RRSO and those from controls. The sequence analysis for TP53 revealed distinct characteristics of p53 signatures as precancerous lesions.

Poster (O23)

Non-epithelial Ovarian Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.O23>

Tumor recurrence and fertility in young women with malignant ovarian germ cell tumors who received fertility-sparing surgery

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Objective: We evaluated the tumor recurrence and fertility outcomes in young women with malignant ovarian germ cell tumors (MOGCTs) who received fertility-sparing surgery (FSS).

Methods: We reviewed the medical records of women aged ≤ 40 years with MOGCTs who received FSS between July 2002 and December 2018, retrospectively. FSS was defined as the preservation of the uterus and at least one adnexa.

Results: Forty-four women were included in the study. The median age of the patients was 22 years (range, 7–39 years). Twenty-nine patients (65.9%) received postoperative chemotherapy with bleomycin, etoposide, and cisplatin. During a median follow-up period of 62 months (range, 7–185), 4 patients (9.1%) had a recurrence. Of these, 2 patients with dysgerminoma had recurrences at para-aortic lymph nodes and 2 patients with immature teratomas had recurrences at the remaining ovary. Of a total of 44 patients, 37 (88.1%) had regular menstruations. Of 14 women desiring a pregnancy, 12 achieved the term delivery of 12 singleton pregnancies. The pregnancy and live birth rates were 85.7% and 100%, respectively.

Conclusion: FSS with or without adjuvant chemotherapy is an appropriate option for young women with MOGCTs who wish to preserve their fertility.

Poster (O24)

Non-Epithelial Ovarian Cancer
<https://doi.org/10.3802/jgo.2021.32.S1.O24>

Giant ovarian fibrosarcoma-a rare case report

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Objective: Ovarian fibrosarcoma is very rare malignant neoplasm, accounts for less than 1% of all ovarian

malignancies, usually seen in peri- or post-menopausal women. Criteria for diagnosis of fibrosarcoma include mitotic count, the most important feature for distinguishing between benign and malignant lesions. Only few cases have been reported due to its low incidence and poor prognosis. These tumors are easily misdiagnosed so sometimes diagnosis is primarily based on histopathological and immunohistochemistry (IHC) report as in our case report. We report a rare case of ovarian fibrosarcoma.

Methods: A 40 year, P5L5, woman visited to gynecological oncology department of IGIMS, Patna, with complain of abdominal distention for 6 months. Her menstrual history was regular with average flow. On abdominal examination—a lump of 32 week size with mobility found. On vaginal examination—cervix was healthy, uterine size could not be assessed due to such huge mass. Her tumor markers showed raised cancer antigen 125 level with value of 152.7. Other tumor markers were within normal limit. Computed tomography abdomen showed 22×19×16 cm mass in left adnexa with multiple septae and few cystic areas.

Results: Primary debulking surgery done. Final pathological diagnosis was fibrosarcoma of left ovary. IHC showed ki-67—35%.

Conclusion: Primary ovarian fibrosarcomas is a rare neoplasm of ovary but it must be considered as differential diagnosis of unilateral huge solid ovarian mass in all age group. ki-67 along with mitosis, greater than 4 mitotic areas/HPF, has recently become an important indicator for diagnosis of ovarian fibrosarcoma. Preoperative diagnosis is often difficult. Gynaecologist has to wait for histopathological and IHC report for final diagnosis.

Poster (O25)

Rare Tumors & Metastatic Tumors

<https://doi.org/10.3802/jgo.2021.32.S1.O25>

Mature cystic teratoma of the ovary with keratinizing squamous cell carcinoma

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Objective: Learning about clinical manifestation and diagnosis of mature teratoma cases with malignant transformation.

Methods: A 41-year-old woman, P3A0, was referred from primary hospital because of post-operative pathological examination revealed a malignancy. Earlier, she underwent subtotal abdominal hysterectomy and bilateral salpingo-oophorectomy at primary hospital for indication abdominal enlargement and dysmenorrhea. After procedure, post-

operative pathological result revealed; keratinized squamous cell carcinoma, poorly differentiated originating from mature teratoma of the right ovary. Tumor cell infiltration was seen in the tissue around the right tube.

Results: Histological according to keratinized squamous cell carcinoma, poorly differentiated originating from mature teratoma of the right ovary.

Conclusion: Malignant transformation of benign ovarian tumors, including mature teratoma, is very rare. In addition, the clinical findings and pre-operative examinations did not help a lot to establish the diagnosis. Often the diagnosis was discovered unexpectedly in post-operative specimens such as happened in this case.

Poster (O26)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O26>

Preoperative evaluation for prediction of suboptimal primary cytoreductive surgery in advanced-stage ovarian cancer

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Objective: To identify the preoperative predicting factors of suboptimal primary cytoreductive surgery (PCS) in advanced stage ovarian cancer patients and to determine the suboptimal cytoreduction rate.

Methods: Retrospective cross-sectional study was conducted between 1 January 2014 to 31 December 2019. Ovarian cancer International Federation of Gynecology and Obstetrics (FIGO) stage III-IV patients who underwent PCS in Phramongkutklo Hospital were reviewed. Data collection included age, performance status, serum cancer-antigen 125 (CA125) and radiological criteria from computed tomographic (CT) scan of whole abdomen with intravenous and oral contrast provided within 30 days to PCS. Univariate and multivariate logistic regression analysis were employed to access the predicting factors of suboptimal PCS. The suboptimal cytoreduction rate was presented in percentage.

Results: Eighty patients with advanced ovarian cancer who had PCS by gynecologic oncologist in Phramongkutklo Hospital were enrolled. The majority of ovarian cancer FIGO stage in this population was IIIC (60%). The suboptimal surgery rate in the study was 62.5%. According to univariate analysis, Eastern Cooperative Oncology Group performance score=1–3 (p=0.017), serum CA125 level of 500 units/mL or more (p=0.02), CT features of retroperitoneal lymph nodes above renal hilum

>1 cm ($p=0.008$), diffuse small bowel adhesion/thickening ($p=0.018$) and lesser sac lesion >1 cm ($p<0.001$) were classified as predicting factors for suboptimal surgery. However, only CT features of retroperitoneal lymph nodes above renal hilum >1 cm ($p=0.046$) and lesser sac lesion >1 cm ($p=0.004$) were significant predicting factors for suboptimal surgery in multivariate analysis.

Conclusion: The preoperative predicting factors of suboptimal primary cytoreductive surgery in advanced stage ovarian cancer were retroperitoneal lymph nodes above renal hilum >1 cm and lesser sac lesion >1 cm on CT scan. The suboptimal cytoreduction rate was 62.5%.

Poster (O27)

Epithelial Ovarian Cancer including Borderline Tumor
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Wip1 suggested as an independent predictor for poor overall survival through chemoresistance in specifically advanced-stage ovarian clear cell carcinomas

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Objective: Although ovarian clear cell carcinoma (OCCC) tends to be diagnosed at an early stage, advanced-stage disease shows poor prognosis due to chemoresistance unlike the more common high-grade serous carcinoma.

Methods: We explored the differential roles of the Wip1-p38-p53 DNA damage response pathway in early or advanced-stage OCCCs, respectively. We performed immunohistochemistry of Wip1, nuclear/cytoplasmic phospho-p38, p53 and phospho-p53 in OCCCs from consecutive 143 patients. Clinicopathological and prognostic data were retrospectively reviewed and correlated with the protein expressions.

Results: High Wip1 expression was significantly associated with positive p53, which was significantly associated with low nuclear phospho-p38 expression ($p=0.011$ and 0.0094 , respectively). In the early-stage diseases ($n=102$), patients with positive p53 showed trends toward worse overall survival (OS) ($p=0.062$). Whereas in the advanced-stage diseases ($n=41$), patients with high Wip1 expression showed significantly worse OS ($p=0.0012$). The univariate and multivariate analyses for prognostic factors in the advanced-stage diseases indicated that high Wip1 expression was significant and independent for worse OS

($p=0.011$), but not in the early-stage diseases. Furthermore, high Wip1 showed a trend toward shorter treatment-free interval in advanced stages, but not in early stages ($p=0.083$ vs. $p=0.93$).

Conclusion: Wip1 appears to play a significant role for the prognosis of OCCCs through chemoresistance specifically in advanced stages, suggesting that Wip1 may serve as a reasonable therapeutic target for improving the poor prognosis of advanced-stage OCCC.

Poster (O28)

Epithelial Ovarian Cancer including Borderline Tumor
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Ambulatory chemotherapy in epithelial ovarian cancer patients

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Objective: Chemotherapy is a very effective for treatment of epithelial ovarian cancer (EOC) in not only primary but also in recurrence disease. According to health care policy to date, standard chemotherapy (paclitaxel plus carboplatin) should be managed as outpatient care. To determine the response rate and the toxicity of a 3-hour paclitaxel plus carboplatin administered as ambulatory chemotherapy for primary or recurrence EOC.

Methods: Retrospective review of medical records between April 2010 and July 2012. Seventy-nine EOC patients with mean age of 55 years old who were treated with adjuvant or salvage chemotherapy (intravenous paclitaxel 175 mg/m² drip in 3 hours plus carboplatin area under the curve [AUC] 5 drip in 1 hour) every 21 days for 6 cycles.

Results: Twenty-four (36.4%) patients were in early stage (I–II) and 42 (63.6%) patients were in advanced stage (III–IV). Of 83.5% of the patients were in primary treatment and 16.5% were in recurrence. The complete response rates were 79.2%, 64.3%, and 46.2% in early, advanced, and recurrence cases, respectively. Four patients had hypersensitivity reaction during the first administration of paclitaxel, another patient had hypersensitivity reaction after carboplatin infusion. Only 3.8% (3/79) developed febrile neutropenia which were manageable. Fourteen patients (17.7%) had grade III–IV neutropenia without any symptoms. Most of the patients complained of grade I neuropathy.

Conclusion: Three-hour 175 mg/m² paclitaxel plus 1 hour carboplatin AUC 5 is effective and quite safe for ambulatory care. However, hypersensitivity reaction should be accounted for especially during the first course of administration.

Poster (O29)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O29>

Clinical outcomes of immunohistochemistry of p53 staining pattern in high-grade serous ovarian carcinoma

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Objective: To investigate the prevalence of p53 mutations and the associated factors between the immunohistochemistry (IHC) of p53 staining pattern among patients with high-grade serous ovarian carcinoma (HGSOC).

Methods: The study was a retrospective study and enrolled a total of 62 patients with HGSOC, who underwent surgery in Srinagarind Hospital, between January 2016 and December 2020. Histological examination was reveal based on the combination of morphology and IHC staining with p53. The p53 immunostaining pattern was interpreted as a missense mutation, nonsense mutation, or wild-type pattern. Missense (p53 overexpression pattern) and nonsense mutation (null expression p53 pattern) were considered to be p53 mutation. A wide-type pattern was defined as p53 non-mutation.

Results: The p53 mutation was identified in 93.55% of patients. When subgroup analysis in p53 mutation group between overexpression p53 pattern and null expression p53 pattern in terms of clinicopathological characteristic and initial treatment was performed. Patients with overexpression p53 pattern had more omental metastasis compared to those with null expression p53 pattern (90.0% vs. 64.7%, p=0.042). There were no statistically significant differences in terms of progression free survival (PFS) (9 months vs. 10 months, p=0.813) and overall survival (OS) (12 months vs. 17 months, p=0.526) were observed between the 2 groups.

Conclusion: The prevalence of p53 mutations in HGSOC in this study was 93%. Omental metastasis is the one significant pathological factor for predicting an overexpression p53 pattern of HGSOC. However, IHC of p53 staining pattern did not impact on OS and PFS among patients with HGSOC.

Poster (O30)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O30>

Efficacy analysis of niraparib using patient-derived xenografts of rare subtypes of ovarian cancer

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Objective: Niraparib, a PARP inhibitor, shows an antitumor effect by synthetic lethality in tumors with homologous recombination deficiency. However, the efficacy of niraparib for rare subtypes of ovarian cancer remains unclear. In this study, we investigated the efficacy of niraparib using patient-derived xenograft (PDX) models with rare subtypes of ovarian cancer.

Methods: We tried to establish PDXs by transplanting patients' tissue specimens subcutaneously into NOG mice. Immunohistochemical (IHC) staining for SLFN11(D-2 sc-515071X, Santa Cruz), a possible efficacy biomarker of PARP inhibitor, and genetic analysis of 160 cancer-related genes (GeneRead Human Comprehensive Cancer Panel, Qiagen) were performed using the parental tumors. Response to carboplatin (CBDCA) and niraparib was analyzed using the PDX models.

Results: A total of 3 PDXs with rare subtypes of ovarian cancer were established including carcinosarcoma (CS), adenocarcinoma (Adeno) with neuroendocrine carcinoma (NEC), and clear cell carcinoma (CCC). Histologically, PDX tumors generally mimicked their parental tumors. Positive staining for SLFN11 was observed in CS and Adeno with NEC, both of which had TP53 alterations, while only the CS case had BRCA2 pathogenic mutation. In the PDX of CS, both CBDCA and niraparib suppressed tumor growth in a dose-dependent manner. In the PDX of Adeno with NEC, CBDCA significantly suppressed tumor growth, while niraparib did not. Neither CBDCA nor niraparib inhibited tumor growth in the PDX of CCC without BRCA mutation.

Conclusion: The combination of SLFN11 expression in IHC and BRCA status may be an efficacy biomarker for niraparib in rare subtypes of ovarian cancer.

Poster (O31)

Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O31>

High gradient magnetic separation of circulating endothelial cells as a diagnostic tool for ovarian cancer

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Objective: This study aims to evaluate circulating tumor cells isolated by high gradient magnetic separation of circulating endothelial cells (CECs) as a diagnostic tool for ovarian cancer.

Methods: Thirty-six newly diagnosis with pelvic mass who were scheduled for surgery were included in this study. Blood samples were obtained from patients. CECs were identified with fluorescent microscopy by expert cytologists. The diagnostic performance of CECs was compared with the histopathological results.

Results: Definite diagnosis showed that twenty-six patients were later diagnosed as having malignant ovarian cancer (69.4%), 5 cancerous patients (19.2%) had metastatic ovarian tumor from gastrointestinal origin, and 10 patients were diagnosed as benign ovarian tumor (30.6%). Serum from patients were extracted for CECs were found in 10 patients. CECs demonstrated modest diagnostic performance for malignant ovarian cancer with accuracy, sensitivity and specificity of 38.9%, 26.9%, and 70.0%, respectively.

Conclusion: CECs has low sensitivity. However, the clinical value of CECs in borderline ovarian tumor cases must be further investigated. This technique needs more development to improve sensitivity for diagnostic for ovarian cancer.

Poster (O32)
Epithelial Ovarian Cancer including Borderline Tumor
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Knockdown of E2F4 suppresses the growth of ovarian cancer cells via cell cycle pathway

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Objective: Ovarian cancer is one of the leading causes of death from gynecological cancer in the developed countries. The E2F family is a group of transcription factors that play decisive roles in the control of cell proliferation and cell cycle progression through the transcriptional activation of target genes in higher eukaryotes. However, the carcinogenic role of E2F transcription factor 4 (E2F4) remains unclear in ovarian cancer. In this study, we investigated the underlying molecular mechanism of E2F4 in human ovarian cancer cells (OCC).

Methods: The expression levels of E2F4 were demonstrated by quantitative real-time polymerase chain reaction (qRT-PCR). Small interfering RNA was used to suppress E2F4 expression. The effects of suppressing E2F4 on cell proliferation, migration and differentiation were evaluated by cell proliferation assay, wound healing assay and colony formation assay in vitro. The expression level of cyclins in OCC influenced by E2F4 was

detected by Western blot.

Results: The expression of E2F4 mRNA and protein showed a significant higher level in OCC lines compared with controls. Depletion of E2F4 inhibited the cell proliferation and suppressed the cell migration and colony formation ability compared to control. Moreover, Western blot analysis showed that the expression of cyclin A, cyclin D and CDK2 was upregulated after the knockdown of E2F4.

Conclusion: Our study was consistent with the concept that E2F4 might contributed to proliferation and migration of OCCs by regulating the expression of cell cycle component in epithelial ovarian cancer.

Poster (O33)
Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O33>

Multimodality active prehabilitation in patients undergoing surgery for epithelial ovarian cancer: a tertiary cancer center experience from Eastern India

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Objective: This study aimed to determine if a multimodality active prehabilitation (MAP) program improves postoperative outcomes in patients undergoing surgery for epithelial ovarian cancer (EOC).

Methods: This was a prospective observational study over 6 months including 52 patients of EOC who underwent cytoreductive surgeries after MAP. These patients were compared with 51 patients with similar clinical characteristics at the same institution in the 6 months preceding the implementation of a MAP program (non-MAP group) by comparing frequency of complications with Clavien-Dindo (CD) score, median length of hospital stay, median time to chemotherapy, and 30-day-readmission rates.

Results: Twenty-nine patients (55.8%) with interval debulking surgery, 13 with interval debulking surgery-hyperthermic intraperitoneal chemotherapy (25.0%), 6 (11.5%) with primary debulking surgery, 3 (5.8%) with completion surgery, and 1 patient (1.9%) with secondary cytoreduction were included in the MAP group (n=52). CD \geq 3 complications were similar in the 2 groups. Median length of hospital stay was significantly shorter in the MAP group compared to the non-MAP group (8 vs. 10 days, p=0.006). Median time to chemotherapy was significantly reduced (26 days vs. 30 days, p=0.007) and 30-day-

readmission rate was also significantly lower (1.9% vs. 11.8%, $p=0.047$) in the MAP group compared to the non-MAP group.
Conclusion: MAP program appears to improve postoperative outcomes in patients with EOC undergoing surgery by shortening hospital stay, reducing time to chemotherapy, and lowering rates of hospital readmission. Larger prospective studies are warranted to better understand the role of prehabilitation in patients of EOC.

Poster (O34)
 Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O34>

Simplified selection criteria for the secondary cytoreductive surgery in recurrent ovarian cancer

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Objective: Indications for secondary cytoreductive surgery (SCS) in ovarian cancer are often dependent on multiple confounding factors. We aimed to evaluate the treatment outcomes of recurrent ovarian cancer and investigate the factors for identifying patients who could most likely benefit from SCS.
Methods: We retrospectively reviewed medical records of patients with recurrent ovarian cancer from 2003 to 2020. Treatment outcomes and potential factors influencing survival were evaluated between the patients who received chemotherapy alone (chemotherapy group) and those who received SCS (surgery group) after recurrence.
Results: Altogether, 262 patients with recurrent ovarian cancer were identified. The patients' median age was 53 (20–80) years and 87.4% of patients had initial stage III/IV disease. Eighty-nine (34%) patients received SCS. The median survival was 41.0 (95% confidence interval [CI]=37.4–44.5) months, and 88.0 (95% CI=64.2–111.7) months in the chemotherapy and the surgery groups, respectively. Patients in the surgery group were more likely to be young and showed no gross residual disease at primary surgery, BRCA 1/2 mutation, limited metastatic lesion, and low rate of ascites ($p=0.001$, $p=0.001$, $p=0.001$, $p=0.001$, and $p=0.04$, respectively). Multivariate analysis showed limited regional carcinomatosis (single region or up to 3 regions with limited carcinomatosis) ($p=0.045$) as the only significant factor for predicting no residual disease after SCS. In platinum-sensitive recurrent patients with limited regional recurrence, the complete resection rate was 87.6%.
Conclusion: SCS showed a significant survival impact on a well-

selected patient population. Limited regional recurrence can be considered simplified criteria for SCS in platinum-sensitive recurrent ovarian cancer patients.

Poster (O35)
 Epithelial Ovarian Cancer including Borderline Tumor
<https://doi.org/10.3802/jgo.2021.32.S1.O35>

The impact of appendectomy in grossly normal appendix on the survival outcomes among mucinous borderline ovarian tumors and mucinous ovarian carcinomas, in a tertiary hospital

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Objective: To evaluate the survival outcomes of appendectomy in grossly normal appendix among patients with mucinous borderline ovarian tumors and mucinous carcinomas
Methods: A retrospective cohort study was performed in Songklanagarind Hospital between 2002 and December 2019. All patients with mucinous borderline ovarian tumors and mucinous ovarian carcinomas who had grossly normal appendix were included. Overall survival (OS) and progression-free survival (PFS) were analyzed using the Kaplan-Meier method and were compared with the log-rank test. Univariate and multivariate Cox regression analysis were used to determine the independent factors associated with OS and PFS.
Results: Of 534 patients, appendectomy was performed in 344 (64%). Of these, 6 (1.7%) were primary appendiceal tumors and 6 (1.7%) were appendiceal metastasis from the ovarian tumors. During the median follow up of 74.5 months, 100 deaths were identified. The OS and PFS were better in patients with appendectomy compared to non-appendectomy (5-year OS, 87.9% vs. 77.9%, $p=0.001$ and 5-year PFS, 81.2% vs. 62.6%, $p<0.001$). Independent factors associated with worse OS and PFS were non-appendectomy, mucinous carcinoma, and advanced International Federation of Gynaecology and Obstetrics stage. Secondary ovarian tumor was the risk factor for a worse PFS but not significant in OS. Suboptimal debulking tumor also was the risk factor for a worse OS but not significant for PFS.
Conclusion: Appendectomy in grossly normal appendix among patients with mucinous borderline ovarian tumors and mucinous ovarian carcinomas was independent prognostic factor for a better OS and PFS.

Poster (O36)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O36>

Visceral fat-to-muscle ratio is an independent factor to predict overall survival of the patients with epithelial ovarian, fallopian tube, or primary peritoneal cancer

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Objective: This study aimed to investigate the clinical significance of body composition in Korean women with epithelial ovarian, fallopian tube, or primary peritoneal cancer.

Methods: A total 153 consecutive patients who underwent primary or interval cytoreductive surgery in Chung-Ang University Hospital, Seoul, Korea were retrospectively identified. The visceral and subcutaneous fat areas, skeletal muscle area and skeletal muscle index (SMI), were measured based on the pre-treatment computed tomography scans at the third lumbar vertebra. Fat-to-muscle ratios were calculated using total fat area (tFMR) or visceral fat area (vFMR). Sarcopenia was defined as a SMI <38.7 cm²/m² and tFMR and vFMR were divided into high or low groups based on the median value.

Results: Univariate survival analysis showed that serous type, older age, higher International Federation of Gynecology and Obstetrics (FIGO) stage, neoadjuvant chemotherapy, suboptimality of debulking surgery, chemoresistance and high vFMR group were significantly associated with poor overall survival (OS), while sarcopenia and tFMR were not associated with OS. Multivariate survival analysis revealed that FIGO stage (hazard ratio [HR]=2.24; p=0.025), chemo-responsiveness (HR=4.89; p=0.006), and vFMR (HR=3.55; p=0.013) were independent factors to predict OS.

High vFMR group were significantly associated with old age, high body mass index, the present diabetes mellitus or hypertension, menopausal status, serous type, and neoadjuvant chemotherapy compared with those in low vFMR group.

Conclusion: In conclusion, the pretreatment vFMR could be independent prediction factor of the prognosis of Korean patients with epithelial ovarian, fallopian tube, or primary peritoneal cancer.

Poster (O37)

Gynecologic Cancer Screening

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Clinicopathological characteristics of epithelial ovarian cancer in elderly patients

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Objective: To evaluate the clinicopathological characteristics and treatment of epithelial ovarian cancer (EOC) in elderly patients. Prognostic factors for survival were also studied.

Methods: The study included EOC patients who aged 60 years or older and who received treatment in our institution between January 2010 to December 2019. Demographic data, clinicopathological characteristics, treatments and their outcomes were compared between the elderly (60–69 years old) and extremely elderly patients (>70 years old). Prognostic factors for overall survival (OS) and progression-free survival (PFS) including age group of the patients were also studied.

Results: A total of 144 patients were included in this study. Median ages of 109 patients in the elderly and 35 patients in the extremely elderly were 63 years (interquartile range [IQR], 61–65 years) and 76 years (IQR, 73–82 years) respectively. The extreme elderly patients had significantly higher frequency of co-morbidity particularly metabolic disease and less optimal primary surgery: 51.4% vs. 19.3% (p<0.0001) and 28.6% vs. 47.7% (p=0.047) respectively. Although worse prognostic features including poor performance status, advanced stage, non-endometrioid histology were demonstrated more frequently in the extreme elderly patients, the differences were not statistically significant. The overall response rates between the 2 groups were not significantly different 54.3% in the extreme elderly vs 62.4% in the elderly (p=0.121). With a median follow-up of 32.1 months, 3-year PFS and 3-year OS were not significantly different between the 2 groups: 50.7% in elderly (95% confidence interval [CI]=40.09%–60.34%) vs. 56.8% (95% CI=36.16%–73.01%) (p=0.714) in the extremely elderly for PFS and 93.9% (95% CI=86.86–97.23) vs. 86.2% (95% CI=66.77–94.64) (p=0.201) for OS. Multivariate analysis reviewed only advanced stage and adjuvant therapy were independent prognostic factors for survivals.

Conclusion: Extremely elderly (>70 years) EOC patients had more co-morbidity and less optimal primary surgery than the elderly patients (60–69 years). No significant differences of clinicopathological factors and survivals were found between the 2 age groups.

Poster (O38)

Gynecologic Cancer Screening

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Investigation of PARP inhibitor resistance through the analysis of serially collected circulating tumor DNA (ctDNA) in ovarian cancer patients

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Objective: Poly (ADP-ribose) polymerase (PARP) inhibitors are used to treat patients with defective homologous recombination repair (HRR), such as deleterious mutations in BRCA1 or BRCA2. Reversion mutation and the subsequent restoration of HRR pathway has been suggested as main resistance mechanism. However, reversion mutations do not fully explain the resistance mechanism. In this study, we enrolled PARP inhibitor treated ovarian cancer patients with germline or somatic BRCA mutation (n=71) and analyzed circulating tumor DNA (ctDNA) obtained from relapsed patients after progression on PARP inhibitor (n=16).

Methods: From whole blood samples, ctDNA was extracted from plasma and germline DNA from buffy coat. Extracted DNA was target enriched with panel targeting 531 cancer-related genes, and the resultant library was sequenced using the Illumina Novaseq 6000 sequencing system. The sequencing data was analyzed using our custom analysis pipeline.

Results: Among 16 relapsed patients, 11 patients had both before PARP inhibitor treatment and relapsed samples, 5 patients had only relapsed sample. Every patient had tissue NGS data. Analysis of ctDNA samples showed ctDNA-specific variants. BRCA reversion was found in two patients (12.5%). Analysis of patient-matched paired samples before and after progression on PARP inhibitor showed an increase in intratumoral heterogeneity in post-progression samples. New variants in genes that are linked to DNA repair pathway were found to be associated with increase tumor mutation burden.

Conclusion: In this study, we demonstrated profiling of ctDNA, a less invasive assay, can efficiently offer information on tumor heterogeneity and predict PARP inhibitor resistance.

Poster (O39)

Rare Tumors & Metastatic Tumors

<https://doi.org/10.3802/jgo.2021.32.S1.O39>

Mature cystic teratoma of the ovary with carcinoid component: a case report

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Objective: Learnig about clinical manifestation and diagnosis of mature teratoma cases with malignant transformation.

Methods: A 36 years old woman, P2A0, was referred from a primary hospital because of post-operative pathological examination revealed a malignancy. Earlier, she underwent bilateral salpingo-oophorectomy (BSO) at a primary hospital for indication benign ovarian cyst. After BSO procedure, post-operative pathology result revealed: In both ovary, tumor tissue composed of ectoderm, mesoderm, and endoderm components with tumor cells nucleated round/oval, vesicular, relatively uniform, fine-grained chromatin resembling “salt and pepper, partially solid.” Immunohistochemistry result training pattern was consistent with carcinoid tumors.

Results: In conclusion, histological according to mature ovarian teratoma with carcinoid.

Conclusion: Malignant transformation of benign ovarian tumors, including mature teratoma, is very rare. In addition, the clinical findings and pre-operative examinations did not help a lot to establish the diagnosis. Often the diagnosis was discovered unexpectedly in post-operative specimens such as happened in this case.

Poster (O40)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O40>

Single-arm, phase II study of niraparib and bevacizumab maintenance in platinum-sensitive, recurrent ovarian cancer previously treated with a PARP-inhibitor: KGOG3056/ NIRVANA-R

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Background: Given the expanding clinical use of poly(ADP-ribose) polymerase inhibitors (PARPi), there is a significant need for optimal strategies with which to treat patients whose cancer progresses while using a PARPi. However, the treatment consensus after PARPi has not been established. PARPi and anti-angiogenic agent combination therapy is a promising option to treat relapsed patients exposed to a PARPi. The synergistic efficacy of dual maintenance therapy

(anti-angiogenic agent plus PARPi) in epithelial ovarian cancer (EOC) patients was approved in many previous studies, but there were few data in patients after PARPi progression. The aim of the Korean Gynecologic Oncology Group (KGOG) 3056/NIRVANA-R trial is to investigate the efficacy of niraparib in combination with bevacizumab as a maintenance therapy in platinum-sensitive ovarian cancer patients who were previously treated with a PARPi.

Methods: The KGOG3056/NIRVANA-R is a multi-centre, investigator-initiated, single-arm, phase II trial recruiting recurrent EOC patients from seven KGOG sites. This study included patients with platinum-sensitive recurrent EOC who received at least two previous courses of platinum-containing therapy and had been treated with a PARPi. Mucinous histology type was excluded. Patients who had responded to the last platinum regimen (either complete or partial response) were eligible to participate in this study. Forty-four patients will be recruited and treated with niraparib and bevacizumab for maintenance therapy until disease progression, unacceptable toxicity, or withdrawal of patient consent. The primary endpoint is progression-free survival (PFS, 6-month PFS rate) according to the Response Evaluation Criteria in Solid Tumors guidelines. Accrual is expected to be completed in 2022, followed by presentation of results in 2023.

similar gene expression profiles to clear cell renal cell cancers—they have an immune-suppressive microenvironment, prominent upregulation of HIF-1 α and a hypoxia-like mRNA expression signature. This provides rationale for the use of lenvatinib plus pembrolizumab in CCGCs.

Methods: This is a phase II, international, multi-center, single-arm trial of continuous daily oral lenvatinib 20 mg plus intravenous pembrolizumab 200 mg 3-weekly. Patients with recurrent CCGC of either ovarian or endometrial origin after progression on at least one line of platinum-based chemotherapy, who have measurable disease and no prior immune checkpoint blockade are eligible. The primary endpoint of the trial is the objective response rate (ORR) by RECIST v1.1 criteria at 24 weeks. Secondary endpoints include ORR by iRECIST at 24 weeks, biochemical response rate, progression-free survival rate at 24 weeks, clinical benefit rate at 24 weeks, duration of response, overall survival and adverse event profile. Translational multi-parametric immune analysis on archival tissue, pre-, on-treatment and post-progression tumor biopsies as well as blood samples will seek to explore prognostic and predictive biomarkers of response and resistance to this combination. Sample size calculations were based on the Simon 2-stage minimax design. Based on ORR up to 10% (H₀) in recurrent CCGC treated with chemotherapy and an alternate hypothesis of ORR up to 30%, at a 5% significance level (one-sided alpha) and 80% power of rejecting H₀, 15 patients will be recruited to the first stage. If 2 or more patients demonstrate objective response, the study may proceed to full recruitment of 25 patients. LARA is currently open for accrual at three sites in Singapore and South Korea, and has 6 patients enrolled at the time of submission (NCT04699071, APGOT OV3).

Trial Registration: ClinicalTrials.gov Identifier: [NCT04699071](https://clinicaltrials.gov/ct2/show/study/NCT04699071)

Poster (O41)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O41>

Trial in progress: a phase II trial of lenvatinib plus pembrolizumab in recurrent gynecological clear cell adenocarcinomas (LARA) - APGOT OV3

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Background: Advanced and recurrent clear cell gynecologic cancers (CCGCs) remain an area of significant unmet need. CCGCs are associated with lower response rates to platinum-based chemotherapy compared to high-grade serous ovarian cancers, and worse 5-year stage-adjusted disease-specific survival. CCGCs are more prevalent in East Asia, constituting up to 25% of all epithelial ovarian cancers. CCGCs bear remarkably

Poster (O42)

Surgical Techniques & perioperative Management

<https://doi.org/10.3802/jgo.2021.32.S1.O42>

Morbidity and mortality outcomes after cytoreductive surgery with hyperthermic intraperitoneal chemotherapy in a treatment of gynecologic malignancies

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Objective: It has been reported that hyperthermic intraperitoneal chemotherapy (HIPEC) with cytoreductive

surgery (CRS) improved survival in selected patients with peritoneal carcinomatosis, although the procedures are associated with high morbidity and mortality rates. This study investigated the morbidity and mortality rate of CRS with HIPEC in patients with gynecologic cancers.

Methods: We reviewed retrospectively the medical records of patients who underwent CRS with HIPEC due to gynecologic cancer and pseudomyxoma peritonei from January 2013 to June 2021 at 2 institutions in Korea. The adverse events (AEs) that occurred within 60 days of HIPEC and operative factors related to the AEs were investigated.

Results: A total of 170 procedures were included in this study. There were 155 procedures with ovarian/tubal/peritoneal cancer (91.2%) and 15 (8.8%) with pseudomyxoma peritonei. The median age of patients was 55 years old (range, 16–79). The median score of the peritoneal carcinomatosis index was 9 (range, 0–29). The median operative time was 480 minutes (range, 195–1,080), and estimated blood loss was 600 mL (range, 50–8,600). AE of grade ≥ 3 during hospitalization occurred in 63 procedures (37.1%). The most common serious AE was anemia (34/170, 20%), followed by neutropenia (4.7%) and ileus (4.1%). The mortality rate was 0.6% (1/170) due to acute myocardial infarction. A total of 29 patients (17.1%) was re-hospitalization due to AEs within 60 days postoperative.

Conclusion: The morbidity and mortality rates of CRS with HIPEC in gynecologic cancer patients are comparable with previous reports, and those are in acceptable rates even broad extent of surgery and the long operation time.

After informed consent, participants were asked to complete a standardized questionnaire including socio-demographic and clinical characteristic, detail of CAM use, attitude of CAM use, and quality of life using EORTC QLQ-C30.

Results: The prevalence of CAM use was 25.13%. The most common type was herbal medicine (55.90%). The participants who resided or had a birthplace in rural areas presented with a higher proportion of CAM use than those in urban areas ($p=0.470$ and $p=0.004$, respectively). Participants who received multiple modalities of cancer treatment reported significantly higher proportion of CAM use ($p=0.024$). Most CAM users agreed that the CAM could be used in combination with standard treatment, and some rather disagreed that CAM could interrupt the treatment effect of the conventional treatment. CAM users had significantly higher role functioning in quality-of-life scores.

Conclusion: Factors influencing CAM use in gynecologic cancer patients were rural area birthplace or residency, receiving multiple modalities of cancer treatment, having positive attitude towards CAM use. CAM users had better performance in role functioning in quality-of-life score. Therefore, gynecologic oncologists should pay attention to these factors in order to communicate with gynecologic cancer patients about CAM use.

Miscellaneous

Poster (M01)

Quality of Life, Nursing & Supportive Care
<https://doi.org/10.3802/jgo.2021.32.S1.M01>

Factors influencing the use of complementary and alternative medicine in gynecologic oncology patients

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Objective: To determine the factors influencing the use of complementary and alternative medicine (CAM) in gynecologic cancer patients and the prevalence and pattern of CAM use.

Methods: This was a cross-sectional study of 370 gynecologic cancer patients conducted at the out-patient clinic, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

Poster (M02)

Surgical Techniques & Perioperative Management
<https://doi.org/10.3802/jgo.2021.32.S1.M02>

Initial experience with the enhanced recovery after surgery (ERAS) protocols in gynecologic surgery at an urban academic tertiary medical center

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Objective: The aim of this study was to describe the development and early experience of enhanced recovery after surgery (ERAS) protocols in gynecology at an urban academic medical center.

Methods: The target patient population included those who underwent major gynecologic surgeries for both benign and malignant diseases between October 2020 and January 2021. Two attending surgeons implemented the protocols for their patients (ERAS cohort) while 3 attending surgeons maintained conventional perioperative care for their patients (non-ERAS cohort). Baseline characteristics, surgical outcomes and patients' answers to a 12-question survey were compared. A case-matched comparative analysis was also performed between

the ERAS cohort and the legacy non-ERAS cohort (those who received the same types of surgery from the 2 ERAS attending surgeons prior to implementation of the protocols).

Results: A total of 244 patients were evaluated (122 patients in ERAS cohort vs. 122 patients in non-ERAS cohort). The number of vials of opioid analgesia used during the first 2 post-operative days were significantly lower in the ERAS group. The patients in ERAS group reported less post-operative pain, feelings of hunger and thirst, and greater amount of exercise post-operatively. These benefits of the ERAS cohort were more pronounced in the patients who underwent laparotomic surgeries than those who underwent laparoscopic surgeries. The case-matched comparative analysis also showed similar results. The length of hospital stay did not differ between the 2 groups.

Conclusion: The results of this study demonstrated the safety, clinical feasibility and benefits of the ERAS protocols for patients undergoing gynecologic surgeries.

Poster (M03)
Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.M03>

Clinical analysis of multiple primary malignancies in gynecologic cancer patients

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Objective: The aim of this study was to evaluate the prevalence and oncologic outcomes in multiple primary malignant tumors (MPMTs) with gynecologic cancers.

Methods: A retrospective study included 1,929 patients diagnosed with gynecologic malignancies at a tertiary institution medical center between August 2005 and April 2021. We analyzed MPMTs in gynecologic malignancies.

Results: The prevalence of MPMTs with gynecologic cancer patients was 8.6% (165/1,929). The median diagnosis period between primary and secondary cancer was 38 months (range 0–420). Among 165 MPMTs patients, 20 patients had multiple primary gynecologic cancers (MPGC), and 145 patients had gynecologic cancer coexisting with non-gynecologic cancer (GNC). The coexistence of endometrial cancer and ovarian cancer (12/20, 60%) was the most common in MPGC patients. The most common non-gynecological cancer in GNC patients was breast cancer (50/145, 34.5%). Synchronous malignancies cases were 48 (29.1%), and metachronous malignancies cases were 117 (70.9%). MPGC patients had more synchronous cancer than GNC patients (50.0% vs. 26.2%, $p=0.030$). In patients with

ovarian cancer, the diagnosis of early stage was significantly higher in MPGC patients than that in GNC patients (87.5% vs. 52.4%, $p=0.031$). The mortality rate during study period was 7.3%, all of which were GNC patients. Gynecologic cancers were a more direct cause of death than non-gynecological cancer (66.7% vs. 33.3%).

Conclusion: Half of MPGC patients had synchronous cancer, which was significantly higher than GNC. Ovarian cancer showed a higher rate of being diagnosed at an early stage in MPGC patients than that in GNC patients. A systematic examination after the diagnosis of primary cancer can help to diagnose secondary primary malignancy at early stage and improve the prognosis of the patients.

Poster (M04)

Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.M04>

Natural killer cell as prognostic factor in Thai gynecologic cancer patients

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Objective: Natural killer (NK) cells are lymphocytes that are programmed in immune system to recognize altered/ or stressed by malignant transformation. In gynecologic cancers, the prognostic impacts of NK cell have also been published. Thus, this study aims to demonstrate a preliminary report of NK cell levels in correlation with treatment outcomes among Thai gynecologic cancer patients.

Methods: This cohort comparative study was conducted on 122 women with gynecologic cancer who have been treated with chemotherapy at Siriraj Hospital, between March 2011 and March 2012. The assessment of NK cell using flow cytometry (FACscan) with CD16/CD56 surface markers was done prior to the first course of chemotherapy, which reported in the percentage of NK cells and NK cell count. The majority chemotherapy was carboplatin and paclitaxel (PT) regimen every 3 week. The patients were divided into 2 groups based on the outcomes of the treatment: responder group (complete response or partial response), and non-responder group (stable disease, progression of disease, death with disease).

Results: After completion of 6 cycle-chemotherapy, the median follow-up time was 7.3 months (range 1–18 months). The mean percentage of NK cell in responder and non-responder group were $19.5\% \pm 9\%$ and $19.6\% \pm 8\%$, respectively ($p=0.949$). The median NK cell count in responder group was 313 cells/ μ L (range 95–1,255) compared to 282 cells/ μ L (range 66–1,885) in non-responder group ($p=0.276$). The mean of NK cell count in patients with death with disease, alive with disease, and alive without disease were 171 ± 95 ,

326±342, and 400±240, respectively (p=0.001). The higher NK cells levels were significantly associated with the survival of the patients in the follow-up time (p=0.009).

Conclusion: Pre-chemotherapy NK cell levels failed to demonstrate a significant predictor of response to chemotherapy. However, the higher pre-chemotherapy NK cell levels are associated with favorable patient follow-up outcome. This study is only a preliminary report of NK cell in Thai gynecologic cancer. A well-design and larger population study may be further conducted to clarify the role of this immunologic factor.

Poster (M05)

Quality of Life, Nursing & Supportive Care
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Perspective and conception of Thai gynecologic oncologists in palliative care

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Objective: To evaluate the conception and perspective on palliative care (PC) in Thai gynecologic oncologists.

Methods: The online survey was distributed to all certificated Thai gynecologic oncologists. The survey could be accessed via working email address, hyperlink, or QR code during May 2020 and January 2021. A 5-point Likert scale captured the perspectives and concepts of PC. The association between respondents' characteristics and their choices of content in PC, together with their decision making in specified clinical scenarios was analyzed.

Results: A total of 207 completed surveys from 320 Thai gynecologic oncologists were received (64.6% participation rate). They prospectively a willingness to give the advices to both patients and their families (85.5%), and strongly agreed to introduce PC in any stage of cancer at the time of diagnosis (75.8%). The numbers of their palliative cases per year were 5–20 (57.97%) and the PC teams were available in their hospitals. They decided to offer early PC and do-not-resuscitate (DNR), especially for the elders, or patients with advance stages, or recurrent disease. We found that gynecologic oncologists who previously experienced a PC training did not show any difference in decision making in specified clinical scenarios, compared with who did not.

Conclusion: Thai gynecologic oncologists responded to the conceptions and perspectives in PC. Their concepts of early and willingness to offer a PC especially in the elders, advanced stage, or recurrent patients were proven, regardless of the experience in PC training.

Poster (M06)

Quality of Life, Nursing & Supportive Care
<https://doi.org/10.3802/jgo.2021.32.S1.M06>

Prevalence of malnourishment and predictive factors associated with the nutritional status of gynecologic cancer patients undergoing chemotherapy: a cross-sectional analysis

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Objective: To investigate the prevalence of malnourishment and predictive factors for nutritional status of gynecologic cancer patients treated with chemotherapy.

Methods: One hundred and one gynecologic cancer patients treated with chemotherapy between April 2020 and February 2021 were interviewed for Patient Generated-Subjective Global Assessment (PG-SGA). Clinical data including body mass index (BMI), underlying disease, the diagnosis, FIGO staging, the recurrent status, the surgical intervention, the performance status, the chemotherapy detail, the total number of lymphocytes per cubic milliliter (TLC) and serum albumin were collected. Levels of TLC and serum albumin were calculated for an optimal cut-off point by using receiver operating characteristic curves. The clinicopathological variables were compared using univariate and multivariate analysis to identify the independent predictive factors for malnourishment status.

Results: The prevalence of well, moderate and severe nourishment were 73.3%, 18.8% and 7.9%, respectively. The optimal cut-off points for TLC was 1,450 cells/μL and for albumin was 3.9 g/dL. The univariate analysis indicated that the number of present chemotherapy <3 cycles, albumin level <3.95 g/dL, BMI <25 kg/m² TLC <1,450 cells/μL, anemia and no neutropenia were significant associated factors for malnourishment. However, only serum albumin <3.95 g/dL was independent associated factor for malnourishment (adjusted odds ratios = 6.709; 95% confidence interval = 2.113–21.304).

Conclusion: Nearly one-fourth of patients with gynecologic cancer who on going treatment with chemotherapy were found malnourishment. The only independent associated factor related to the nutritional status was serum albumin <3.95 g/dL.

Poster (M07)

Quality of Life, Nursing & Supportive Care
<https://doi.org/10.3802/jgo.2021.32.S1.M07>

Validity of the COMprehensive Score for Financial Toxicity (COST) tool in gynecologic cancer patients

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Objective: Costs related to cancer care negatively affect patients physically and psychologically. This is called financial toxicity (FT). To quantify FT, the “COmprehensive Score for financial Toxicity (COST)” tool has been developed in the United States. The COST tool consists of 11 items as patient-reported outcomes. Our objective is to validate the COST tool for patients with ovarian, cervical, and endometrial cancer. Additionally, we aim to assess reproducibility, which explains consistent scores over time by test-retest reliability.

Methods: In this multi-center study, patients were eligible for enrollment if they had ovarian, cervical or endometrial cancer; were receiving anti-cancer drug treatment for at least 2 months, and had out-of-pocket expenses for treatment at a hospital. Patients answered the COST tool twice and sent the responses to the data center by mail. Internal validity was examined by Cronbach's alpha at the first responses. Test-retest reliability was assessed by intra-class correlation coefficient (ICC).

Results: From April 2019 through July 2021, a total of 112 patients (ovarian cancer: 50, cervical cancer: 26, and endometrial cancer: 36) answered the initial COST questionnaire and 99 patients answered the re-test. Median age was 58 years (range: 28–78 years). Mean COST score was 19.82 (SD=7.28). Cronbach's alpha was 0.83 (95% confidence interval [CI]=0.78–0.87). ICC was 0.85 (95% CI=0.77–0.90).

Conclusion: The COST tool demonstrated good internal consistency and reproducibility among patients with gynecologic cancers. The results strengthen the evidence quality of FT researches using the COST tool in gynecologic cancers.

Poster (M08)

Gynecologic Cancer Screening

<https://doi.org/10.3802/jgo.2021.32.S1.M08>

Association of cervicitis resulting from lower genital tract infections with oncogenic human papillomavirus and Pap smear abnormalities among Indian women

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Objective: To investigate the relationship between cervicitis with oncogenic Human papillomavirus, Bacterial vaginosis and epithelial cell abnormalities.

Methods: Total 508 women; 254 women with established diagnosis of cervicitis (case arm) and 254 asymptomatic women with healthy cervix (control arm) attending the tertiary cancer hospital for cervical cancer screening were enrolled in the study. Gram-stained smears for diagnosing lower genital reproductive tract infections (RTIs), Hybrid Capture-2 (HC2) test to diagnose oncogenic human papillomavirus (HPV) infection and Pap smears to demonstrate epithelial cell abnormalities (EP) were performed for all women enrolled in the study.

Results: Study findings demonstrated the prevalence of bacterial vaginosis (BV), HPV infection and EP to be significantly higher among women in case arm (BV=44.09%; EP=18.47%; and HPV=14.17%) than control arm (BV=3.95%; EP=4.82%; and HPV=5.12%). Case arm demonstrated increased risk for BV (odds ratio [OR]=19; 95% confidence interval [CI]=9.63–37.49), HPV (OR=3.06; 95% CI=1.58–5.92), and EP (OR=4.47; 95% CI=2.30–8.68).

Conclusion: Current study addresses the gaps in literature about the prevalence of HPV infection among Indian women with cervicitis. Our results demonstrate cervical inflammation to be significantly associated with increased risk of harboring HPV and EP. This results enforce the need of strengthening the RTI programs at national level in an attempt to reduce the burden of cervical cancer. Emerging trends of association of BV with cervicitis also warrant the treatment of BV in addition to treatment of recognized pathogens for cervicitis i.e., Gonococcal and Chlamydia infections as a part of syndromic management for women with cervicitis.

Poster (M09)

Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.M09>

Comparison between International Ovarian Tumor Analysis (IOTA)—simple rules and risk malignancy indices in differentiating benign and malignant adnexal masses—prospective comparative study

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Objective: To compare the sensitivity, specificity, and the

positive and negative predictive values of International Ovarian Tumor Analysis (IOTA)—simple rules and risk of malignancy index (RMI) classification in differentiating benign and malignant adnexal masses.

Methods: This is a prospective comparative study performed in the Department of Obstetrics and Gynaecology at All India Institute of Medical Sciences, Jodhpur over 2 years from 2018 to 2020. Women with adnexal masses in the reproductive and postmenopausal age group, planned for surgery were included in the study. Those with known malignancies or already receiving treatment were excluded. A complete clinical assessment, cancer antigen 125, and ultrasound scans were done along with other tumor markers and radiological investigations as per patient profile and consultant discretion. The findings were then classified as benign or malignant as per the IOTA simple rules. The RMI-2 score was also calculated for the same with a cut-off of 200 for benign masses. The results obtained were compared with the histopathology report obtained postoperatively.

Results: This study included 174 patients in total. IOTA—simple rules had an overall sensitivity of 96.67%, specificity of 92.36%, positive predictive value (PPV) of 72.5%, negative predictive value (NPV) of 99.25%. The scores were higher if indeterminate cases were excluded. RMI-2 had a sensitivity of 80%, specificity of 82.64%, PPV of 48.98% and 95.20% was NPV. Both of these scoring systems were then compared with each other and it concluded that IOTA simple rules have a higher sensitivity, specificity as compared to RMI. With an accuracy of 93.1%. The cost-effectiveness of IOTA- simple rules makes it an efficient outpatient department (OPD) procedure of classifying adnexal masses.

Conclusion: We can conclude that IOTA-simple rules, can be used as an effective screening criterion for differentiating adnexal masses into benign and malignant on an OPD basis.

Poster (M10)
Miscellaneous
<https://doi.org/10.3802/jgo.2021.32.S1.M10>

Perception of gynaecologic cancer patients undergoing surgical management at a tertiary care center during COVID-19 pandemic: a descriptive study

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Objective: Coronavirus disease 2019 (COVID-19) pandemic

led to a major transformation of healthcare services across the globe regardless of economic status. Less is known about the perspective of oncology patients who underwent a major surgical procedure during this challenging period when protocols were being implemented.

Methods: We conducted a questionnaire-based survey on patients who underwent surgical procedure for a gynaecologic malignancy at All India Institute of Medical Sciences, New Delhi between March 2020-December 2020. The survey was carried out telephonically after verbal consent to assess their perspective regarding medical care during pandemic.

Results: Median age of 88 patients was 56 years (range, 18–74 years). Most common sites were ovary (n=62, 70%) followed by endometrium (n=21, 24%). Only 38 (43%) participants were fully aware of COVID-19(cause/spread/symptoms/outcome) whereas 67 (76%) participants felt scared of suffering from cancer if did not get timely surgical management. Out of all patients, 38 (43%) felt comfortable in hospital visits, 36 (41%) knew that cancer could make them more susceptible to COVID-19 and 64 (73%) faced no delay in surgical management. Only half (n=42, 48%) of respondents felt comfortable in telephonic and video consultations. Majority (83%) of the patients and attendants followed all measures to decrease risk however 10 (11%) respondents contacted COVID-19 during hospital stay.

Conclusion: Cancer patients in our country are more worried about disease progression than severe acute respiratory syndrome-coronavirus-2. Awareness about COVID-19 is not satisfactory however most follow COVID appropriate behavior to decrease transmission risk. A majority did not feel any delay in their surgical management.

Poster (M11)
Preinvasive Disease of Cervix, Vulva, and Vagina
<https://doi.org/10.3802/jgo.2021.32.S1.M11>

Endocervicospscopy for evaluation of transformation zone in cases of incompletecopolposcopy

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Objective: To evaluate the role of endocervicospscopy for visualization of transformation zone (TZ) in incompletecopolposcopy.

Methods: This descriptive analytical study was carried out between October 2019 and March 2021 (18 months) after obtaining ethics committee approval. A total of 92 women were recruited in the study after obtaining a written informed consent. All screen positive women and those having unhealthy looking cervix on colposcopy

had TZ 3, were included in this study. Endocervicoscopy was performed in all women by vaginoscopic approach, using a 4-mm continuous flow hysteroscope. The endocervical curettage was taken in all cases and sent for histopathological examination and patients were managed as per the histopathology report. Sensitivity, specificity, PPV, NPV of colposcopy and endocervicoscopy was calculated. The value of $p < 0.05$ was considered statistically significant.

Results: The mean age was 43.76 ± 13.02 years and most women had parity ≥ 3 (48.9%). Endocervicoscopy has a success rate of 100% for visualization of TZ completely. There were 29 women where colposcopy was normal but 5 out of these 29 women (17.2%) had findings on endocervix. Out of these 5 women, 3 were screen positive on pap smear (1 LSIL, 1 SCC, 1 AGC) and 2 had unhealthy looking cervix. In total there were two skip lesions in our study. The sensitivity, specificity, PPV, NPV and diagnostic accuracy of colposcopy was 95.6%, 56.5%, 68.7%, 92.8%, 76.1% and endocervicoscopy was 100%, 80.5%, 58.8%, 100%, 84.8% respectively.

Conclusion: Endocervicoscopy is a reliable method to detect the TZ in patients with TZ type 3 with a success rate of 100% and a short learning curve. Skip lesions can be detected and the precise localization of the lesions allows for the depth of cone excision to be tailored, thus leading to a more conservative treatment and preserving the future fertility of women.

Poster (M12)

Surgical Techniques & Perioperative Management
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Laparoscopic para-aortic lymphadenectomy

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Objective: The primary study objective was to evaluate the safety and short-term outcomes of minimal access para-aortic lymphadenectomy.

Methods: From January 2012 and October 2020, a total of 106 patients underwent laparoscopic para-aortic lymphadenectomy. The data was analyzed through a prospectively maintained database. All laparoscopic para-aortic lymph node dissection (PALND) were performed upto the left renal vein. The procedures were done with Karl Storz 3D/Hi-Definition (HD) or Stryker 4K 1688 laparoscopic systems.

Results: The median age was 56 years (range, 11–75 years), median body mass index of 27.59 kg/m^2 (range, 13.67–42.19). The median operative time was 310 minutes (range, 180–430

minutes). Median intensive care unit stay was 1 day (range, 1–5 days) with a hospital stay of 6 days (4–18 days). Five patients required repair of a rent in the inferior vena cava (IVC), 4 of these were managed with laparoscopic suturing without conversion to laparotomy, while 1 patient required a laparotomy for suturing the IVC rent. Postoperatively 5 patients had chylous output in the abdominal drain, 3 of them settled with conservative management (medium chain triglyceride diet and octreotide injection), 1 patient each required ultrasound guided drain placement under anesthesia and required re-exploration. Four patients had paralytic ileus, while 1 patient each had SAIO/PTE/UTI/portocaval thrombosis. Two patients required re-admission, there were no 30-day post-operative deaths. The median number of para-aortic lymph nodes dissected was 10 (range, 2–52).

Conclusion: PALND when indicated in gynecologic malignancies can be safely performed with a standard two-stage 6-ports technique.

Poster (M13)

Rare Tumors & Metastatic Tumors
<https://doi.org/10.3802/jgo.2021.32.S1.M13>

Isolated inguinal lymphadenopathy in recurrent ovarian carcinoma: a case series

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Objective: The abdominal, pelvic, and retroperitoneal cavities represent the most common sites of ovarian cancer recurrence, with isolated inguinal node involvement rarely reported. The treatment of isolated inguinal recurrence of ovarian cancer is debated, and current therapies include secondary cytoreductive surgery, chemotherapy, immunotherapy or any combination of the above. To describe the characteristics of women presenting with isolated groin recurrences.

Methods: A retrospective case series of patients with isolated inguinal lymph node recurrence were identified, patient demographic, clinical characteristics and disease course were retrieved from electronic medical record.

Results: Three cases of inguinal lymph node recurrence of ovarian cancer were identified. Mean age 50, 2 patients had a serous component, 1 had grade 3 endometrioid component, stage at initial diagnosis ranged from FIGO stage IC to III. All 3 were primary recurrences in the inguinal nodal region. The progression-free survival duration from chemotherapy completion to diagnosis of inguinal recurrence varied from (12 to 24 months). 2 were treated chemotherapy f/b chemotherapy response score (CRS), n=1 was treated with CRS

f/b chemotherapy post-excision.

Conclusion: It is important to consider ovarian cancer in the differential diagnosis for inguinal lymphadenopathy in a female patient. The optimal treatment for these isolated recurrences is unknown. Larger studies are necessary to identify prognostic factors and substantiate apt treatment strategies specifically to this unusual rare clinical condition.

Poster (M14)

Gynecologic Cancer Screening

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Predictive value of ‘Smartscope’ for detection of preinvasive cervical lesions during COVID-19 pandemic: a diagnostic study

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Objective: To evaluate the predictive value of ‘Smartscope’ using a snapshot from a smartphone to diagnose preinvasive cervical lesions in patients with abnormal cervical screening.

Methods: This study was a diagnostic study. Women with abnormal cervical cancer screening were enrolled at colposcopy clinic in Srinagarind Hospital, Khon Kaen University between September 2020 and March 2021. The cervix was evaluated by using a smartphone and colposcopy by two independent colposcopists. Colposcopy with cervical biopsies and endocervical curettage were performed as standard procedures. The diagnostic performance of the smartphone for cervical intraepithelial neoplasm was assessed. The kappa value was tested to evaluate the correlation of two colposcopists.

Results: Two hundred seventy-four patients with abnormal cervical screening were enrolled. There was a significant correlation between histologic diagnoses based on the smartphone and colposcopic findings (K=0.88, 95% confidence interval [CI]=0.82–0.93). The AUC value, sensitivity, specificity, positive predictive value, negative predictive value, and accuracy of the smartscope to detect CIN1+ were 0.54 (95% CI=0.51–0.57), 96.6% (95% CI=91.6–99.1), 12.9% (95% CI=8.06–19.2), 46.2% (95% CI=39.7–52.4), 83.3% (95% CI=62.6–95.3), 0.49% (95% CI=0.43–0.55) respectively. The AUC, sensitivity, specificity, positive predictive value, negative predictive value, and accuracy of the smartphone in the diagnosis of CIN2+ were 0.765 (95% CI=0.704–0.826), 67.6% (95% CI=55.2–78.5), 85.4% (95% CI=79.9–90), 60.5% (95%

CI=48.6–71.6), 88.9% (95% CI=83.7–92.9), 0.81 (95% CI=0.75–0.85) respectively.

Conclusion: Smartscope has a remarkable correlation with colposcopy and high predictive value to detect preinvasive cervical lesions. Therefore, smartscope demonstrated usefulness as an alternative cervical cancer screening tool in low resource medical setting and had made telemedicine an essential social distancing during covid-19 pandemic.

Poster (M15)

Miscellaneous

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Course and pattern of venous thromboembolism in ovarian cancer patients

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Objective: Malignancy has been described as a risk factor for venous thromboembolism (VTE) which is shown to significantly affect mortality and morbidity. The objective of this study was to identify the incidence and the course-pattern of VTE in ovarian cancer patients.

Methods: Retrospectively reviewing medical records, from January 2005 to December 2009, of 993 ovarian cancer patients who were diagnosed with the first episode of VTE in the Department of Obstetrics and Gynecology, Siriraj Hospital. Thromboembolic events were confirmed with imaging studies which include duplex-doppler sonography or other radiologic procedures. Data analysis was performed to evaluate the cumulative incidence and course-patterns of thromboembolic events.

Results: A total of 46 ovarian cancer patients were diagnosed of VTE, the mean age was 54.5 years old (range, 33–82). The 5-year-cumulative incidence is 4.63%. VTE occurred 77% in the lower limbs (common femoral and popliteal veins) and more prevalence on the left side, 15% in the pelvis, and 17% in the pulmonary vein. Time-courses (mean + standard deviation) between diagnosis of ovarian cancer and VTE event were 4.2+5.1, 4.8+4.2, and 48.3+56.6 weeks before ovarian cancer diagnosis, during ovarian cancer treatment, and after treatment or proceeding recurrence disease respectively. Two of symptomatic pulmonary embolism cases were fatal after surgery.

Conclusion: The 5 year-cumulative incidence of VTE in ovarian cancer patients is 4.63%. Symptomatic pulmonary embolism had been identified to have a negative impact on survival. Awareness of VTE should be considered during the course treatment of ovarian cancer patient.

Poster (M16)

Preinvasive Disease of Cervix, Vulva, and Vagina
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Efficacy of lidocaine spray for pain reduction during colposcopy-directed cervical biopsy: a randomized controlled trial

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Objective: To evaluate the efficacy of lidocaine spray in reducing pain during colposcopy-directed cervical biopsy (CDB).

Methods: From December 2017 through February 2019, 312 women undergoing CDB were enrolled. The participants were randomized to 3 groups: group 1 (lidocaine spray), lidocaine spray was applied thoroughly to the cervix; group 2 (placebo), normal saline was applied thoroughly to the cervix; group 3 (control), no anesthetic agent was applied to the cervix. Each woman completed a 10-cm visual analog scale for subjective pain experience at three-time points: baseline, immediately after biopsy, and 10 minutes after the procedure. The primary outcome of this study was the biopsy pain score.

Results: Of the 312 women, 104 were randomly assigned to each study group. The clinic-pathological and procedure-related characteristics of the participants in all groups were similar. The baseline, the biopsy, and the post-procedure pain scores were comparable among the three groups. We found a significant difference in the pain scores changes from baseline to biopsy and from baseline to postprocedure among the three groups. However, when compared to the lidocaine spray group directly to the control group, there was no statistically significant difference in the pain scores changes from baseline to biopsy ($p=0.06$) and from baseline to postprocedure ($p=0.29$). There was no complication with the intervention observed.

Conclusion: The application of lidocaine spray to the cervix has a small benefit in reducing pain associated with CDB. However, the intervention is safe and may be considered in nulliparous and/or overly anxious women undergoing the procedure.

Poster (M17)

Preinvasive Disease of Cervix, Vulva, and Vagina
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Treatment outcomes of patients with cervical intraepithelial neoplasia or invasive carcinoma who underwent loop electrosurgical excision procedure (LEEP)

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Objective: To study treatment outcomes of cervical intraepithelial neoplasia (CIN) or cancer patients who underwent loop electrosurgical excision procedure (LEEP) in terms of primary outcome and factors associated with persistent/recurrence.

Methods: Patients with CIN or cancer who underwent LEEP from January 2007 to December 2015 were reviewed. Data collected were age, parity, menopausal status, human immunodeficiency virus (HIV) infection, smoking, cervical cytology, histopathology from cervical biopsy and LEEP including margin status, final histopathology, and follow-up data.

Results: The mean age of 385 patients was 41.9 + 10.8 years (range, 18–79 years). Majority were multiparous (81.6%) and premenopausal (78.2%). There were 15.3% of patients had HIV infection. The most common cervical cytology was HSIL (44.1%) followed by ACS-US (21%). Minor complications of bleeding or infection from LEEP were encountered 7.3%. Among 153 patients (39.7%) who had positive margin(s), 43 underwent second LEEP whereas 76 had hysterectomy. From all patients, 47 had failure aftertreatment (12.2%): being either persistence (30 patients; 7.8%) or recurrence (17 patients; 4.4%). Factors associated with persistence or recurrence by multivariate analysis were age ≥ 55 years old, HIV infection, final diagnosis of invasive cancer, and positive of endocervical margin or both ecto- and endo-cervical margins.

Conclusion: LEEP had low rate of persistence/recurrence. Age ≥ 55 years old, HIV infection, final diagnosis of cancer, and positive of endocervical or both endo- and ecto-surgical margin(s) were significantly associated with persistent or recurrent diseases.

Poster (M18)

Quality of Life, Nursing & Supportive Care
<https://doi.org/10.3802/jgo.2021.32.S1.M18>

Quality of life and psychological aspects among ovarian cancer survivors compare to normal female population at Bhumibol Adulyadej Hospital

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Objective: This study intended to compare quality of life (QOL) and psychological aspects among ovarian cancer survivors to healthy female population who presented at Bhumibol Adulyadej Hospital, using standardized questionnaire.

Methods: A cross-sectional analytical study, conducted at Bhumibol Adulyadej Hospital, Thailand from August 2020 to May 2021. This study enrolled healthy Thai female who came to hospital for their health check-up at gynecology clinic as a control group and ovarian cancer survivors on their follow up at tumor clinic as a study group. Questionnaire by Functional Assessment of Cancer Therapy (FACT) was used to measure QOL. Anxiety and depression were assessed by Hospital Anxiety and Depression Scale.

Results: Results shown ovarian cancer survivors and healthy participants had an equal QOL in all four domains of FACT general (FACT-G). Total FACT-G score was similar between two groups (50.2±9.7 vs. 49.5±8.5). QOL of nonepithelial ovarian cancer survivors were better than control group (56.1±5.4 vs. 49.5±8.5) in clinical significance. Psychological aspects were also comparable between two groups.

Conclusion: Ovarian cancer survivors experienced deteriorating in physical function or emotional related to treatment. But after completed the course of treatment, QOL will improve over time along with mental status, approaching level that comparable to the healthy peers.

Poster (M19)

Quality of Life, Nursing & Supportive Care
<https://doi.org/10.3802/jgo.2021.32.S1.M19>

Sexual dysfunction in gynecologic cancer survivors

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Objective: To evaluate the sexual dysfunction in gynecologic cancer survivors and to explore the risk factors associated between gynecologic cancer survivors and sexual dysfunction.

Methods: A cross-sectional study was conducted with Thai gynecologic cancer survivors in Rajavithi Hospital. To assess the sexual dysfunction, a Thai version of the Female Sexual Function Index (FSFI) questionnaire was utilized. The inclusion criteria were Thai women who were gynecologic cancer survivors scheduled at the Gynecologic Oncology Clinic, Rajavithi Hospital, and had active sexual intercourse (SI). Data were collected between September 1, 2020, to January 31, 2021.

Results: A total of 180 gynecologic cancer survivors who had active SI participated in this study. Those consisted of cervical

cancer (43.9%), endometrial cancer (28.3%), and ovarian/tubal/peritoneal cancer (25.6%) and gestational trophoblastic neoplasia (2.2%). Ninety-nine out of 180 women (55%) had sexual dysfunction (FSFI score <26.5). Cervical cancer was found in the majority with sexual dysfunction, but the mean FSFI score was the lowest in endometrial cancer. Among the six domains, desire had the lowest mean score and pain had the highest mean score. Furthermore, postmenopausal status was the significant risk factors that had an impact on sexual dysfunction.

Conclusion: The prevalence of sexual dysfunction in gynecologic cancer survivors was 55%, and cervical cancer was found in the majority. The factors that significantly affected sexual dysfunction were postmenopausal status.

Poster (M20)

Quality of Life, Nursing & Supportive Care
<https://doi.org/10.3802/jgo.2021.32.S1.M20>

Symptom experience of cancer-related cognitive impairment in women with ovarian cancer

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Objective: To explore Chinese ovarian cancer survivors' symptom experience of cancer-related cognitive impairment (CRCI).

Methods: Semi-structured interviews were conducted with 34 women aged 22–65 in Cancer Center of Fudan University, Shanghai, China. This study was guided by symptom management theory and the conceptual model of preliminary cognition model among cervical cancer survivors. Qualitative content analysis was used to refine themes.

Results: The average age of participants (n=34) was 51.38 years (range, 25–65 years) and median time since diagnosis was 1 year (range, 0.2–42.8 years). Three themes and 9 subthemes were identified from the research. For perception of cognitive changes: Become stupid, not as smart as before; not noticing/having the chance to notice any cognition change. Possible influence events in the evaluation of cognitive changes include that comfortable, monotonous, isolation and narrow-focused life cause the brain to “retire”; Surgical anesthesia and chemotherapy were blamed for the change; Fatigue, sleep disorders and anxiety were also considered to affect cognition. For the impact of CRCI, most participants expressed that it was not an issue for them, and they did not particularly care, only a few said that their self-confidence was affected a little.

Conclusion: The majority of ovarian cancer patients experienced symptoms of CRCI, highlighted by memory and attention problems. Sociocultural and life-and-work adjustments to cope with cancer play an important role in the CRCI symptom experience.

Poster (M21)

Vulvar and Vaginal Cancer

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Good outcome vulvar adenocarcinoma-mucinous with pseudomyxoma type stage IVB-grade I after radical vulvectomy, bilateral inguinal lymphadenectomy, left pelvic lymphadenectomy, vulvar reconstruction (keystone flap), colostomy transversum adjuvant radiation

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Objective: To discuss about the role of radical vulvectomy, bilateral inguinal lymphadenectomy, left pelvic lymphadenectomy (external iliac and obturator), vulvar reconstruction (keystone flap), colostomy transversum and adjuvant radiation in vulvar adenocarcinoma of stage IVB - mucinous with pseudomyxoma type: a rare case.

Methods: The 52-year-old woman, para 3, was referred from Adyaksa Hospital with vulvar cancer. Pain in the genital area heavily increased since September 2019. Firstly, at 2017, she complained of mass in her vagina, which was 2 cm and initially was not painful, but it became bigger in the last 2 months, sized about 8 cm and felt painful. She also experienced weight loss of 8 kg in 2 months. She had no complaints on urination or defecation. She consumed pain killer and antibiotics to relieve her pain. In RSUPN Dr. Cipto Mangunkusumo (RSCM), systemic examination was normal, but gynecological examination showed a solid, fixed mass with rough surface covered by skin on the left labia majora 8×8×7 cm, upto 1/3 posterior wall of distal vagina, reddish, with indistinct boundary, easy bleeding, soft, sized 3×4 cm extended and associated with mass in the vulva. Distance to urethra was 2 cm, distance to anus 1.5 cm. The RSCM histopathology was reported on October 10th, 2019, and it was histologically suitable with well differentiated adenocarcinoma intestinal type of the vulva. Magnetic resonance imaging (MRI) of whole abdomen with contrast RSCM was taken on October 17th, 2019:

- In the vulva region, a solid mass appears to sting contrast with the diffusion restriction measuring 8.7×4.1×7.4 cm. The mass involves the perienum and 1/3 of the distal vagina. OUE,

urethra and rectum involvement was not seen. Enlargement of multiple lymph nodes in the bilateral inguinofemoral region (largest diameter on the left side 4.3 cm) to bilateral external parailiacs (largest diameter on the left side 1.2 cm). Lesions in the inguinofemoral region only involve subcutaneous smears, no visible cuticle defects in the region

- In the left adnexal cystic lesion was seen with a bleeding component of 5.7 cm in diameter. In the right adnexa there is a cystic lesion of 2 cm in diameter.
- Uterus anteflexed normal shape and size, does not show mass.
- The liver, gallbladder, spleen, pancreas, kidneys were normal no visible mass or focal lesions.
- Aorta was normal, there is no apparent lymphadenopathy in the paraaorta. On October 24th, 2019, The radical vulvectomy, bilateral inguinal lymphadenectomy, left pelvic lymphadenectomy (external iliac and obturator), vulvar reconstruction (keystone flap), colostomy transversum was done. On February 2020, the adjuvant radiation (28s courses of external beam radiotherapy) was done. At early 2021, colostomy was closed and repair.

Results: On August 5th, 2020, whole abdomen MRI with contrast RSCM was done, revealing no evidence of disease (complete response). At 3–6 months routine evaluation, until September 2021, there was no evidence of disease (complete response).

Conclusion: The radical vulvectomy, bilateral inguinal lymphadenectomy, left pelvic lymphadenectomy (external iliac and obturator), vulvar reconstruction (keystone flap), colostomy transversum and adjuvant radiation was the best treatment option for vulvar adenocarcinoma stage IVB - mucinous with pseudomyxoma.

Poster (M22)

Miscellaneous

<https://doi.org/10.3802/jgo.2021.32.S1.M22>

DNA content in ovarian scaffold using various tissue decellularization techniques: a model for fertility preservation in cancer patients

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Objective: The present study principally aimed to compare efficacy of ionic and non-ionic detergents to eliminate DNA content in ovarian scaffold using tissue decellularization technique.

Methods: Ovarian tissues were retrieved from four premenopausal patients, age 42 to 45 years old, with gynaecologic pathological

conditions. Use of human biological materials was approved by Institutional Review Board. Cortical and medulla tissues (average size; 0.5×0.5×0.2 mm; width × length × thickness) from each patient were randomly allocated into 5 groups 1) fresh control; 2) tissue decellularization using ionic detergent (0.5% sodium dodecyl sulfate [SDS]); 3) tissue decellularization using 1.0% SDS; 4) tissue decellularization using non-ionic detergent (1.0% Triton-X), and 5) tissue decellularization using 5.0% Triton-X. After 24-hour decellularization process under various detergents, all tissues were treated with DNase 1 enzyme overnight and followed by detergent residual removal for another 24 hours. DNA concentration and detergent residuals from each tissue were evaluated using spectrophotometer (optical density 260/280 and 500 nm, respectively).

Results: The major outcomes revealed that the lowest DNA concentration in cortical tissues was observed in 0.5% SDS group (group 2 vs. control, 229±101 vs. 1,371±389 ng/μL). In contrast to medulla, DNA content was effectively eliminated by 5.0% Triton-X (group 4 vs. control, 344±143 vs. 1,820±431 ng/μL). However, detergent residuals were present in all treated tissues.

Conclusion: Ovarian scaffold might possibly be constructed either by ionic or non-ionic detergents which was depended on ovarian cell type. This technology could be further applied for in vitro follicle growth in young cancer patients who prefer to preserve their fertility.

Poster (M23)
Surgical Techniques & Perioperative Management
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Fluorescence ureter navigation during laparoscopic hysterectomy

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Recently, laparoscopic surgery has been widely employed for gynecological surgery including total laparoscopic hysterectomy. However, laparoscopic surgery may injure the ureters slightly increase urological tract injury thus leading to long-term medical complications such as fistula formation and renal failure, resulting in the need for additional treatments and increase morbidity. Nonetheless, such complications can be prevented by knowing direct visualization the location of ureters throughout the whole surgery session and carefully not to injure the ureters whether during the cutting, coagulation, or ligation. Identification of the ureters can be done by insertion of fluorescence ureteric catheters through cystoscopy prior to

the surgery. Afterwards, using a laparoscope that is capable of absorbing the near-infrared spectral range together with the fluorescence imaging system, the inserted ureteric catheters are then illuminated. This procedure enables the surgeons to see the ureters clearly and thus facilitates safe surgery.

Poster (M24)
Surgical Techniques & Perioperative Management
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Inguinofemoral lymph node dissection for vulvar cancer

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The skills and techniques of the surgery for vulvar cancer are derived from the traditional surgery. Especially, the inguinal lymph node dissection is an essential part of the surgery but is not common as a daily practice. It is important for a surgeon to be well acquainted before surgery with the anatomy of the femoral triangle and the skills of the dissection before surgery. I will show you the standard procedure of Inguinofemoral lymph node dissection. Before dissecting the femoral area, surgeon must identify the position of femoral artery by touching and feeling the pulse and imaging the anatomical structures beneath the fascia lata.

Poster (M25)
Gynecologic Pathology, Genetics and Epidemiology
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Genomic landscape and its correlations with immunotherapy-related biomarkers in Chinese gynecologic cancer patients

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Objective: To explore mutational characterization, tumor mutational burden (TMB) and its correlations with gene alterations, TMB in Chinese gynecologic cancer.

Methods: In 207 samples (formalin-fixed, paraffin-embedded tissue samples) including 141 ovarian cancer (OC), 28 cervical cancer (CC) and 38 endometrial carcinoma (EC), were detected by OncoDrug-Seq 603-gene panel assay through next generation sequencing (NGS) using Illumina NovaSeq 6000.

Results: In 207 samples, the median TMB was 4.7/Mb with the range from 0/Mb to 248/Mb. The median TMB of OC, CC,

and EC was 4.7/Mb, 4/Mb and 4.7/Mb, respectively. The top 10 genes with mutational incidence were *TP53* (42.5%), *PIK3CA* (16.4%), *ARID1A* (11.6%), *PTEN* (11.1%), *KRAS* (9.7%), *BRCA1* (7.7%), *BRCA2* (5.8%), *KMT2D* (4.3%), *RAD50* (3.9%), *KMT2C* (3.9%). Specially, mutational incidence differed in mutational incidence and spectra for genes. With *RAD51D* (3.5%) in OC group; *TERT* (10.7%), *EGFR* (7.1%), *FANCA* (3.6%) and *PDE4DIP* (7.1%) in CC group; *EGFR* (3.5%), *FANCA* (13.2%), and *CTCF* (10.5%) in EC group, respectively. While *TP53*, *PIK3CA*, *PTEN*, *KRAS*, *BRCA2* appeared to co-occurrent more likely in OC, CC, and EC samples, *BRCA1* and *KMT2C* showed higher frequency

in OC group, *RAD50* appeared more likely in EC group, *ARID1A* appeared more likely in OC and EC groups, *KMT2D* appeared in more likely in OC and CC groups. Furthermore, our data showed that median TMB had no significant differences among OC, CC, and EC. But the arrays of the top 10 were displayed similarly and specifically, which can be potential biomarkers for target-therapy.

Conclusion: Differences observed in the mutation spectra for spontaneous gynecologic tumors and similarities in spectra support the concept that mutation spectra can serve as a “fingerprint” of each type of cancer.



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