Fertility Sparing and Less Radical Surgery

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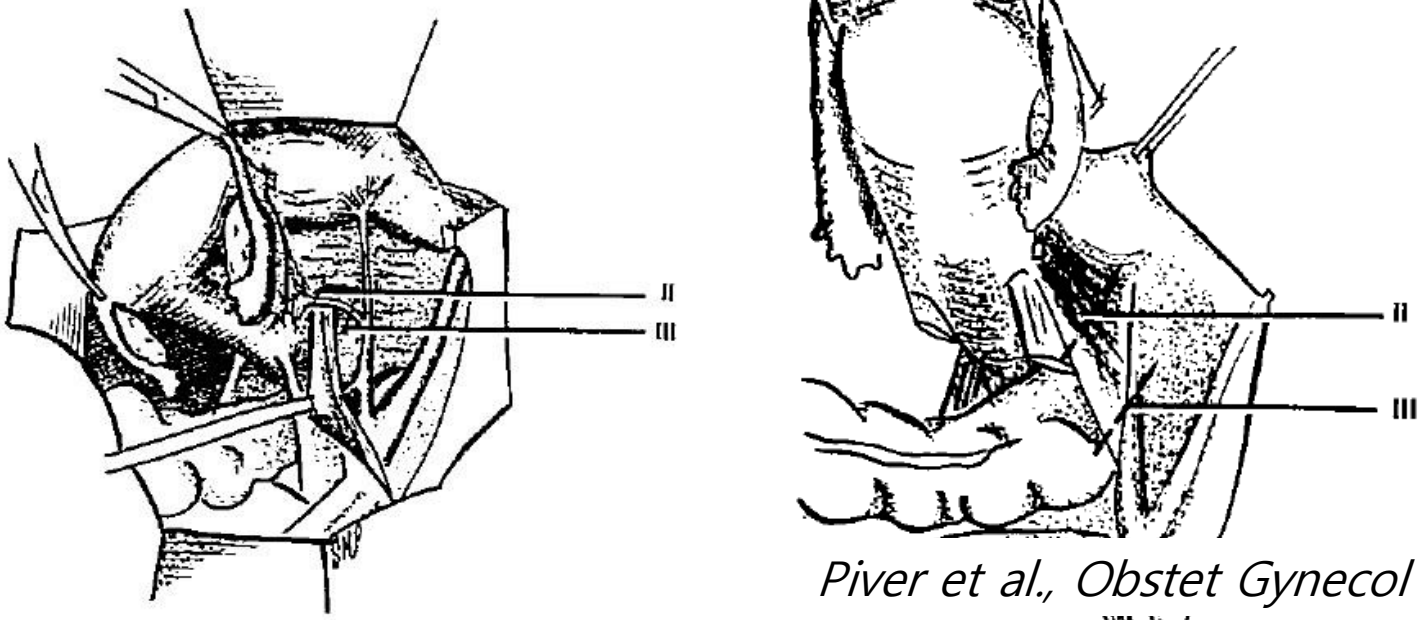
Significance of tailoring the radicality of surgery

Five Classes of Extended Hysterectomy for Women With Cervical Cancer

M. STEVEN PIVER, MD, FACOG, FELIX RUTLEDGE, MD, FACOG
and JULIAN P. SMITH, MD, FACOG



Piver et al., Obstet Gynecol 1974

Indications of type II radical hysterectomy

- EORTC-GCG
  - In general, type II (modified) radical hysterectomy is indicated for the treatment of
    - **stage IA1 with extensive lymphovascular space invasion**
    - **stage IA2**
    - small stage IB1 (<1 cm stromal invasion) cervical cancers

Mota et al., Int J Gynecol Cancer 2008

Morbidity of radical hysterectomy comes from ..

- **Hysterectomy *per se*** Conization Radical trachelectomy
  - Infertility
- **Lymphadenectomy** Sentinel LN
  - Lymphocele/lymphedema, n/vessel injury
- **Parametrectomy** Non radical surgery
  - Damage to autonomic nerve fibers a/w bladder, rectal & sexual dysfunction

Low incidence of parametrial involvement in small volume tumor (1)

TABLE 2. Literature review of treatment, frequency of positive nodes, parametrial involvement, and outcome of patients with stage IA2 according to the 1994 FIGO staging system

Authors	n	Treatment Cone/SH/RH	Node Diss, n	Pos Nodes, n (%)	Pos. Param	Rec (+ node)	Fup, mo
Orlandi et al[6]	16	NA	NA	1 (NA)	NA	2 (1)	83
Buckley et al[2]	94	0/0/94	94	7 (7.4)	NA	5 (0)	5–282
Creasman et al[4]	51	0/0/51	51	0	NA	0	≥60
Takeshima et al[7]	33	0/4/29	29	1 (3.4)	0/29	1 (0)	≥48
Elliott et al[8]	89	NA	59	2 (3.4)	NA	4 (NA)	60–300
Kodama et al[9]	27	0/0/27	27	0	0/27	0	12–204
Smith et al[10]	286	29/116/134*	127	1 (0.8)	NA	NA	1–119
Gadducci et al[5]	23	0/NA/NA	23	0	NA	3 (0)	NA
Hirai et al[11]	6	0/0/6	6	0	0/6	1(0)	≥36
Plante et al[12]	10	NA	10	0	NA	NA	NA
Schlaerth et al[13]	8	8†/0/0	8	0	NA	0	≥24
Juretzka et al[14]	6	0/0/6	6	0	NA	0	39
Ueda et al[15]	37	0/0/37	37	1 (2.7)	NA	0	72–240
Siu et al[16]	9	NA	9	0	NA	NA	NA
Lee et al[17]	28	0/0/27	27	1 (3.7)	NA	1 (1)	36
Quinn et al[1]	238	NA	238	23 (9.7)	NA	NA	NA
Yamaguchi et al[18]	46	0/0/46	46	2 (4.3)	NA	0	NA
Bisseling et al[19]	9	2/3/4	7	0	0/4	0	72
Wright et al[20]	33	0/0/33	NA	NA	0/33	NA	NA
This study	14	0/10/4	4	0	0/4	0	9–119
Total	1063	39/123/498	805	39	0/103	17 (2)	

van Meurs H et al. Int J Gynecol Cancer 2009

Low incidence of parametrial involvement in small volume tumor (2)

- Literature review of patients with low-risk pathological characteristics (including Tumor <2cm, stromal invasion <10mm, pelvic nodes(-), no LVSI)
- Risk of PI: **0.63%** (5/799)

Authors	No. of patients	Stage	Tumor size	LVSI	Depth of invasion	PI+ PLN-
Kinney 1995	83	IB	< 2cm	absent	0.4-1.8 cm	0/83
Covens 2002	842	IA-IB1	≤ 2cm vs. > 2cm	+/-	<10 mm vs. >10 mm	3/536
Sonoda 2004	89	IA-IB1	< 2cm			0/77
Stegeman 2007	103	IA-IB1	< 2cm	+/-	< 10mm	2/103

Stegeman et al., Gynecol Oncol 2007

Low incidence of parametrial involvement in small volume tumor (3)

- Retrospective review of 594 pts, IA1~IIA,
  PI was found in 0.4% if
  - Tumor < 2 cm
  - No LVSI
  - Node negative
- Retrospective review of 350 pts, IA2~IB1, No PI if
  - Tumor < 2 cm
  - No LVSI
  - All grade

Wright et al., Cancer 2007; Frumovitz et al., Obstet Gynecol 2009

Parametrectomy is still needed in low risk early cervical cancer ?

- Hard to justify the morbidity of a radical hysterectomy and parametrectomy in low risk patients
  - Risk of PI < 1%
- Lymphadenectomy probably still justified although LN mets low < 5%
  - Could possibly be omitted in IA2/LVSI (-)

Low risk in early stage cervical cancer, NCI-C & CVM 1001

Candidate for simple hysterectomy + pelvic LND

NCI-C

1. Stage Ia2 ~ 1b1 (tumor < 2cm)
2. Depth of invasion: less than 50%

CVM 1001

1. Stage Ia1: must be LVSI+
2. Stage Ia2 ~ 1b1 (tumor < 2cm)
3. Depth of invasion <10 mm
4. No metastases on MR or CT of pelvis, & CXR

Needs of further considerations for fertility preservation in early cervical cancer

- Nearly 15% of all cervical cancers are diagnosed in women under the age of 40 years.
- Recently, the number of women wishing to have their first child when they are 35–39 years of age has increased.
- Cervical cancer cases diagnosed during childbearing years, in women who have not yet conceived, are therefore rising in number.

Fertility sparing surgery of Early cervical cancer

- Radical vaginal trachelectomy (RVT)
- Radical abdomial trachelectomy (RAT)
  (laparoscopic, Robotic)
- Simple trachelectomy
- Conization with or without NACT

Indication of RVT

1. A desire for future fertility
2. Proven diagnosis of invasive cervical cancer
3. Squamous cell carcinoma, adenocarcinoma, or adenosquamous carcinoma, with exclusion of unfavorable histology (e.g., neuroendocrine carcinoma)
4. Stage IA1 with lymphovascular space invasion, stage IA2, or stage IB1
5. Tumor size ≤2 cm
6. Tumor limited to the cervix
7. No evidence of pelvic lymph node metastasis and/or other distant metastasis

Roy M, Plante M. Pregnancies after radical vaginal trachelectomy for early stage cervical cancer. Am J Obstet Gynecol 1998;179:1491–6.

Decisions also depend on the **presence of high-risk features for recurrence**

- exophytic tumor (≥2cm), minimal stromal invasion
  – reasonable candidate for RVT
- LVSI (+) only – no contraindication
  30% of LVSI (+) in preop. assess → only 5% had positive LN in intraop.

Beiner ME, Covens A. Surgery insight: radical vaginal trachelectomy as a method of fertility preservation for cervical cancer. Nat Clin Pract Oncol 2007;4:353–61.

- preop. MRI – best imaging modality to help determine tumor diameter and volume, degree of endocervical extension, and parametrial involvement.

Peppercorn PD, Jeyarajah AR, Woolas R, Shepherd JH, Oram DH, Jacobs IJ, et al. Role of MR imaging in the selection of patients with early cervical carcinoma for fertility-sparing surgery: initial experience. Radiology 1999;212:395–9.

Operative outcomes of RVT

Summary of operative outcomes of radical vaginal trachelectomy versus radical hysterectomy.

Author, year [reference]	*N*	Median operative time (min)		Median blood loss (ml)		Intraoperative complications (%)		Length of hospital stay (days)	
Alexandre-Sefre et al., 2006 [9]	29 RVT	260	$p=0.0001$	400	$p=0.0001$	12%	$p=0.61$	6	$p=0.0001$
	50 RH	187		1000		10%		11	
Beiner et al., 2008 [10]	90 RVT	174	$p=0.75$	300	$p<0.001$	13%	$p<0.001$	1	$p<0.001$
	90 RH	168		600		2%		6	
Marchiole et al., 2007 [11]	118 RVT	179	$p=$ NS	12.7%	$p=$ NS	2.5%	$p=$ NS	NR	
	139 RVH			17.3%*		5.8%		NR	

N = number of patients;
RVT = radical vaginal trachelectomy; RH = radical hysterectomy;
NS = not significant; NR = not reported.
* Percent with blood transfusion.

- Longer operative times with RVT because of the slow learning curve
- Beiner ME et al. (Nat Clin Pract Oncol 2007;4:353–61)
- Intraoperative complication rate of 4% (bladder inj., vascular inj.)
- Postoperative complication rate of 12% (bladder hypotonia etc)

Oncologic outcomes of RVT

Summary of oncologic outcomes of radical vaginal trachelectomy vs. radical hysterectomy.

Author, year [reference]	N	Follow-up (months)	Recurrences		5-year RFS		5-year OS	
Marchiole et. al., 2007 [11]	118 RVT	95	7 (5.9%)	$p=$NS	95.5%	$p=$NS	95%	$p=$NS
	139 RVH	113	9 (3.5%)		94.7%		95%	
Beiner et al., 2008 [10]	90 RVT	51	5 (5.5%)		95%	$p=0.17$	99%	$p=0.55$
	90 RVH	58	1 (1.1%)		100%		100%	

N = number of p
RVT = radical va
RFS = recurrence
NS = not signific

no statistically significant difference in recurrences, 5-year recurrence-free survival, and overall survival rates

Summary of sites of tumor recurrence for radical vaginal trachelectomy (modified from Beiner and Covens [5]).

Reference	Central	Parametrium	Pelvic sidewall	Pelvic nodes	Para-aortic nodes	Supraclavicular nodes	Intra-abdominal	Distant metastases	Not reported	Total
Shepherd et al. [54]	1	1	2	–	–	–	–	–	1	5
Hertel et al. [14]	3							–	–	4
Mathevet et al. [13]/ Marchiole et al. (2007) [11]	–							2	–	7
Covens et al. [57]	–							–	–	7
Plante et al. [19]	–	1	–	–	1	–	1[a]	1[b]	2	6
Sonoda et al. [12]	1	–	–	–	–	–	–	–	–	1
Burnett et al. [58]	–	–	–	–	–	–	–	–	–	2[c]
Schlaerth et al. [20]	–	–	–	–	–	–	–	–	–	0
Combined data (%)	5 (16)	5 (16)	5 (16)	1 (3)	6 (19)	1 (3)	2 (6)	3 (10)	3 (10)	31

recurrence rate 4.2–5.3%
death rate 2.5–3.2%

[a] Mesocolon.
[b] Neuroendocrine tumor.
[c] Site of recurrence not reported.

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Radical vaginal trachelectomy vs. radical hysterectomy for small early stage cervical cancer: A matched case–control study

M.E. Beiner [a], J. Hauspy [a], B. Rosen [b], J. Murphy [b], S. Laframboise [b], S. Nofech-Mozes [c], N. Ismiil [c], G. Rasty [c], M.A. Khalifa [c], A. Covens [a,*]

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Surgical morbidity

	Radical vaginal trachelectomy, $N=90$	Radical hysterectomy, $N=90$	p value
Median OR time (hours) (range)	2.9 (1.5–5)	2.8 (1.6–5)	$p=0.75$
Median blood loss (ml) (range)	300 (100-1100)	600 (100-2300)	$p<0.001$
Transfusion (cases) (%)	2 (2%)	21 (23%)	$p<0.0001$
Intra-operative complications (%)	12 (13%)	2 (2%)	$p<0.01$
Infectious postoperative complications (%)	3 (3%)	10 (11%)	$p = 0.08$
Noninfectious postoperative complications (%)	1 (1%)	6 (7%)	$p=0.12$
Median time to normal urine residual (days) (range)	1 (1-49)	6 (2-63)	$p<0.001$
Median postoperative hospital stay (days) (range)	1 (0-7)	6 (1-20)	$p<0.001$

Recurrence rate : 5%
Term delivery rate : ≥50%

Procedure of choice for fertility sparing surgery in early cervical cancer

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www.elsevier.com/locate/ygyno

Radical vaginal trachelectomy (RVT) combined with laparoscopic pelvic lymphadenectomy: Prospective multicenter study of 100 patients with early cervical cancer

Hermann Hertel [a], Christhardt Köhler [b], Dorothee Grund [b], Peter Hillemanns [a], Marc Possover [c], Wolfgang Michels [d], Achim Schneider [b,*]
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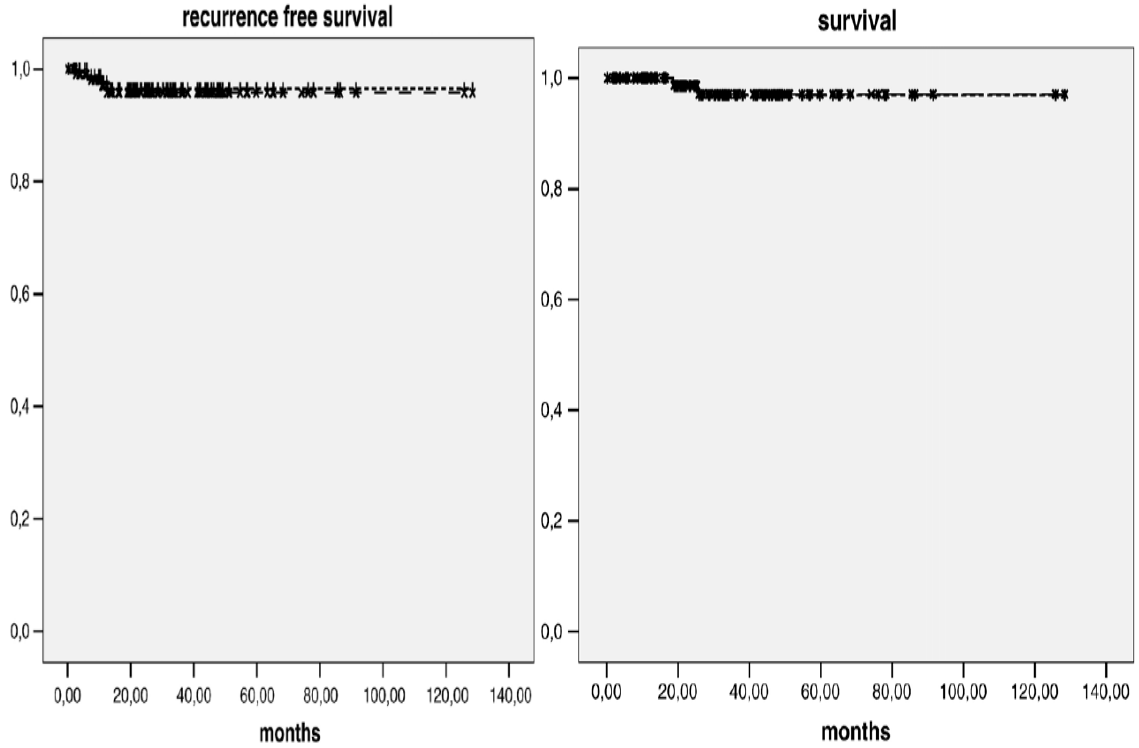

Ds free survival : 97%
Overall SR : 98%

RVT is an oncologically approriate approach

Risk factors for recurrence

- **Tumor size**
  > 2cm → 29% recur
  ≤ 2cm → 1.6% recur
  2.5-3cm size, exophytic type, small stromal invasion → RVT candidate

Marchiole P, Benchaib M, Buenerd A, Lazlo E, Dargent D, Mathevet P. Oncological safety of laparoscopic-assisted vaginal radical trachelectomy (LARVT or Dargent's operation): a comparative study with laparoscopic-assisted vaginal radical hysterectomy (LARVH). Gynecol Oncol 2007;106:132–41.

Plante M, Renaud MC, Francois H, Roy M. Vaginal radical trachelectomy: an oncologically safe fertility-preserving surgery. An updated series of 72 cases and review of the literature. Gynecol Oncol 2004;94:614–23.

- **LVSI**
  LVSI (+) in 28% RVT → 12% recur
  LVSI (-) in 72% RVT → 2% recur
  If, LVSI (+) → increased recurrence rate

Mathevet P, Laszlo de Kaszon E, Dargent D. Fertility preservation in early cervical cancer. Gynecol Obstet Fertil 2003;31:706–12.

But, LVSI (+) alone is not absolute contraindication for RVT.

Creasman WT, Kohler MF. Is lymph vascular space involvement an independent prognostic factor in early cervical cancer? Gynecol Oncol 2004;92:525–9.

Risk factors for Recurrence

- Unfavorable histology
  - **Adenocarcinoma, adenosquamous type vs squamous type**

  - very early stage cancers, the difference in recurrence and overall survival rates between these histologies appears to be negligible

Gien LT, Beauchemin MC, Thomas G. Adenocarcinoma: a unique cervical cancer. Gynecol Oncol 2010;116:140–6.

Multivariate analysis that histology was not an independent negative prognostic factor for recurrence.

Marchiole P, Benchaib M, Buenerd A, Lazlo E, Dargent D, Mathevet P. Oncological safety of laparoscopic-assisted vaginal radical trachelectomy (LARVT or Dargent's operation): a comparative study with laparoscopic-assisted vaginal radical hysterectomy (LARVH). Gynecol Oncol 2007;106:132–41.

Fertility sparing surgery of Early cervical cancer

- Radical vaginal trachelectomy (RVT)
- Radical abdomial trachelectomy (RAT)
  (laparoscopic, Robotic)
- Simple trachelectomy
- Conization with or without NACT

Indication of RAT

1. Cervical cancer in patients with distorted vaginal anatomy
2. Cervical carcinoma in pediatric patients
3. Cancer in cervical stump after subtotal hysterectomy
4. Bulky exophytic cervical cancer
5. Extent and location of cervical cancer that requires increased radiality of parametrial resection

- Most gynecologic oncologists are not trained in radical vaginal surgery. RAT is a feasible alternative to RVT.
- Pediatric patients are not candidates for the vaginal approach

Abu-Rustum NR, Su W, Levine DA, Boyd J, Sonoda Y, Laquaglia MP. Pediatric radical abdominal trachelectomy for cervical clear cell carcinoma: a novel surgical approach. Gynecol Oncol 2005;97:296–300.

Operative outcomes of RAT

Summary of two largest series on radical abdominal trachelectomy.

Author, year [reference]	N	Stage			Operative time (min)	Hospital stay in days (range)	Adjuvant treatment	Median follow-up in months (range)	Recurrences
		IA2	IB1	IB2					
Ungar et al., 2005 [44]	33	10	15	5	226	14 (12–22)	3 (9%)	47 (14–75)	0
Abu-Rustum et al., 2008 [40]	22	0	22	0	298	4 (3–6)	7 (32%)	12 (1–35)	0

Among 33 patients - ureteral injury (1)

Ungar L, Palfalvi L, Hogg R, Siklos P, Smith R, Del Priore G, et al. Abdominal radical trachelectomy: a fertility-preserving option for women with early cervical cancer. Br J Obstet Gynecol 2005;112:366–9.

Among 22 patients - infected lymphocele(2), cerclage erosion(1), lymphedema(1)

Abu-Rustum NR, Su W, Levine DA, Boyd J, Sonoda Y, Laquaglia MP. Pediatric radical abdominal trachelectomy for cervical clear cell carcinoma: a novel surgical approach. Gynecol Oncol 2005;97:296–300.

RVT(28) vs RAT(15)

- In RAT, more bleeding, shorter time of surgery

Einstein MH, Park KJ, Sonoda Y, Carter J, Chi DS, Barakat RR, et al. Radical vaginal versus abdominal trachelectomy for stage Ib1 cervical cancer: a comparison of surgical and pathologic outcomes. Gynecol Oncol 2009;112:73–7.

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Abdominal radical trachelectomy as a fertility-sparing procedure in women with early-stage cervical cancer in a series of 61 women

Hiroshi Nishio [a], Takuma Fujii [a,*], Kaori Kameyama [b], Nobuyuki Susumu [a], Masaru Nakamura [a], Takashi Iwata [a], Daisuke Aoki [a]

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Surgical outcomes.

Surgical outcomes	No. of patients (%)
Number of lymph nodes retrieved	
Median (range)	38 (17–69)
Positive lymph nodes	7 (11.4%)
Transfusion	
Autotransfusion	60 (98.4%)
Allotransfusion	8 (13.1%)
Residual disease in specimen[a]	28 (45.9%)
Median estimated blood loss (ml)	1160 (352–5568)
2002/03–2006/02 (30 cases)	2010 (704–5568)
2006/03–2008/03 (31 cases)	1032 (352–2195)
Median length of stay (days)[b]	23 (11–63)
Median operative time (min)[c]	436 (317–586)
Median time to recovery of bladder dysfunction (days)[d]	15 (7–35)

Pregnancy outcomes.

Fertility treatment	Time to pregnancy (months)	Intraoperative cerclage	Cerclage during pregnancy	Termination (gestational week)
AIH	14	-	+	24
IVF-ET	45	+	-	27
NI	22	+	-	37
NI	16	+	+	37

Conclusion. Among selected women with early-stage cervical cancer, especially those with a tumor diameter of <20 mm, abdominal radical trachelectomy and pelvic lymphadenectomy is a fertility-sparing treatment option, even though the cumulative conception rate was not particularly high compared with that for women who had undergone a vaginal radical trachelectomy.

DOI: 10.1111/j.1471-0528.2009.02446.x
www.bjog.org

Fertility-sparing laparoscopic radical trachelectomy for young women with early stage cervical cancer

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Characteristics	Variables
Age, mean (range), years	29 (22–37)
BMI, mean (range), kg/cm^2	20.8 (17.5–24.6)
Parity, *n* (%)	
0	20 (74.1)
1	5 (18.5)
2	2 (7.4)
Preoperative LEEP, *n* (%)	
No	12 (44.4)
Yes	15 (55.6)
FIGO stage, *n* (%)	
IB1	26 (96.3)
IIA	1 (3.7)
Tumour size, mean (range), cm	1.7 (0.4–3.5)
<2 cm, *n* (%)	19 (70.4)
≥2 cm, *n* (%)	8 (29.6)
Histology, *n* (%)	
Squamous cell carcinoma	20 (74.1)
Adenocardinoma	6 (22.2)
Adenosquamous carcinoma	1 (3.7)
Histologic grade of tumour, *n* (%)	
Well differentiated	5 (18.5)
Moderately differentiated	14 (51.9)
Poorly differentiated	8 (29.6)
Number of LNs retrieved	
Para-aortic LNs, mean (range), *n*	4.3 (1–8)
Pelvic LNs, mean (range), *n*	24.6 (8–50)
Total LNs, mean (range), *n*	25.7 (8–50)

5 patients : LRT -> LRH conversion
27 patients : LRT

Recur – 1 patients,
Death – 6 patients
Successful pregnancy – 3 patients

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THE JOURNAL OF MINIMALLY INVASIVE GYNECOLOGY

Original Article

Laparoscopic Nerve-Sparing Radical Trachelectomy: Surgical Technique and Outcome

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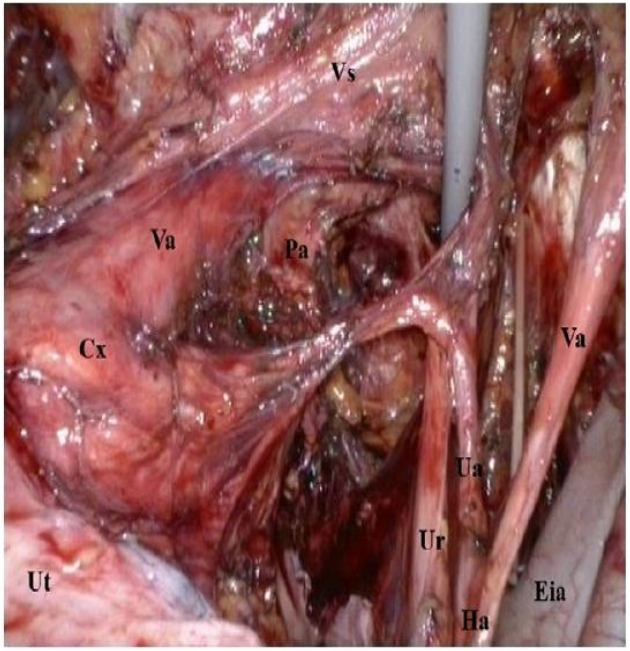
From the Department of Gynecology, Hospital Son Llàtzer, Balear Health Institute, Palma de Mallorca, Spain (both authors).



In conclusion, our preliminary experience shows that the laparoscopic approach may be a useful alternative to be considered in fertility-preserving surgery to treat cervical cancer for most centers that do not specialize in radical vaginal surgery. Therefore, this may favor diffusion of this surgical indication, which is increasingly demanded. However, larger clinical series with longer follow-up are needed to provide consistent data on the oncologic and reproductive outcomes of this procedure.

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Safety and feasibility of robotic radical trachelectomy in patients with early-stage cervical cancer

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Published reports of robotic radical trachelectomy.

	Geisler et al. [8]	Persson et al. [9][a]	Chuang et al. [10]	Our series (Ramirez et al.)
Number of patients	1	2	1	4
Operating time (min)	172	373[b]	345	282[b]
Estimated blood loss (ml)	100	125	200	62
Residual disease in trachelectomy specimen	No	No	No	No
Node count	26	26.5	43	20
Length of hospital stay (days)	N/A	3.5	2	1.5
Complications	None	Edema[b]	None	Neuropathy[c]

We have demonstrated that robotic radical trachelectomy is a safe and feasible procedure. Robotic surgery offers a minimally invasive approach to patients with early-stage cervical cancer who may be candidates for fertility-sparing surgery, and therefore this option should be discussed when we counsel our patients.

Fertility sparing surgery of Early cervical cancer

- Radical vaginal trachelectomy (RVT)
- Radical abdomial trachelectomy (RAT)
  (laparoscopic, Robotic)
- Simple trachelectomy
- Conization with or without NACT

Backgrounds

- Post-trachelectomy biopsy after a diagnostic cone
  – no residual tumor (65%)

Plante M, Renaud MC, Francois H, Roy M. Vaginal radical trachelectomy: an oncologically safe fertility-preserving surgery. An updated series of 72 cases and review of the literature. Gynecol Oncol 2004;94:614–23.

- Tumor size ≤ 2cm, Pelvic LN (-), invasion ≤ 10mm
  – parametrium invasion (0.6%)

Covens A, Rosen B, Murphy J, Laframboise S, Depetrillo AD, Lickrish G, et al. How important is removal of the parametrium at surgery for carcinoma of the cervix? Gynecol Oncol 2002;84:145–9.

- conization or simple trachelectomy
  – an alternative surgery for early stage low volume disease
  – need to adopt strict selection criteria to avoid recurrences and deaths in this group of highly curable patients.

NACT

- Neoadjuvant chemotherapy (NACT) can reduce the tumor size prior to fertility-sparing surgery.

Maneo A, Chiara S, Bonazzi C, Mangioni C. Neoadjuvant chemotherapy and conservative surgery for stage Ib1 cervical cancer. Gynecol Oncol 2008;111: 438–43.

- 21 IB_1 patients received conization with PLND after NACT
- Using Cisplatin, paclitaxel and ifosfamide – 3 cycle
  - 5 patients – no residual lesion
  - After median follow up (69 months) – no recur
  - 10 pregnancies occurred in 6 patients.

  (9 live births, 2 preterm deliveries and 1 first-trimester miscarriage)

Plante M, Lau S, Brydon L, Swenerton K, Leblanc R, Roy M. Neoadjuvant chemotherapy followed by vaginal radical trachelectomy in bulky stage Ib1 cervical cancer: case report. Gynecol Oncol 2006;101:367–70.

- But alkylating agents such as ifosfamide and cisplatin can be detrimental to ovarian follicles, thus less gonadotoxic regimens should be evaluated in the future.

KGOG 1016

Wide conization following neoadjuvant chemotherapy in early stage cervical cancer patients with negative pelvic lymph node metastasis who eagerly want to conceive

Inclusion criteria

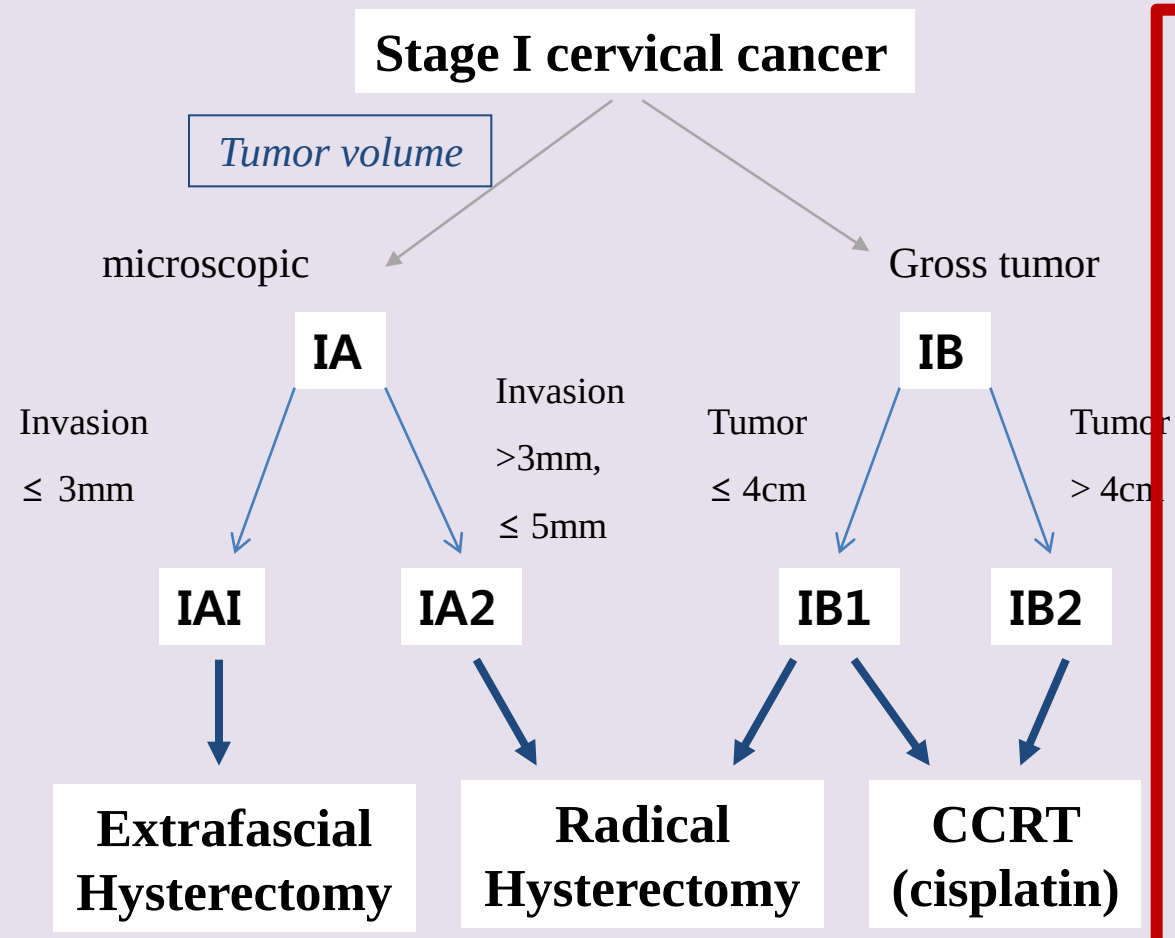
- Stage IB1 (tumor size < 2 cm) or IA2 with positive surgical margin (squamous, adenocarcinoma, adenosquamous)
- Baseline study includes USG, CT, MRI, or PET-CT to measure tumor size and tumor-localized to cervix
- No evidence of pelvic lymphadenopathy via laparoscopy or –tomy

Neoadjuvant chemoRx and Wide conization

- Paclitaxel 175mg/m^2 + carboplatin AUC 5 every 21 days, 3 cycles
- Wide conization of uterine cervix with safe margin

- ❖ Primary endpoint: 5-yr disease-free survival ?
- ❖ Required sample size: 110 pts

Treatment Algorithm for stage I cervical cancer



Stage I cervical cancer

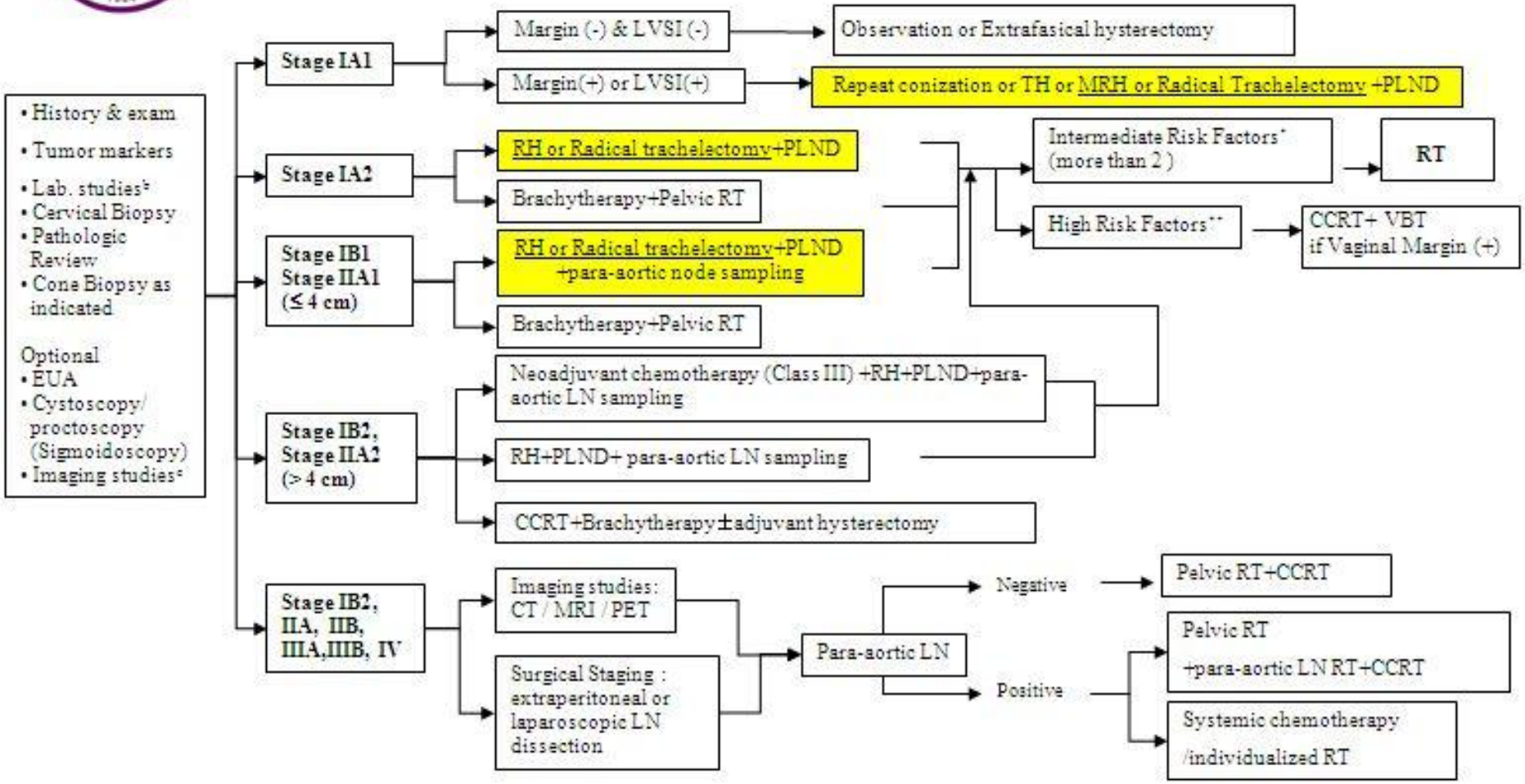
Want fertility preservation

IA, IB1

Simple trachelectomy or conization wth or without NACT

Radical trachelectomy

KSGOC Practice Guideline for Cervical Cancer (I)



[a] **Tumor markers**; SCC Ag, CEA, CA-125 if clinically indicated
[b] **Lab. studies**; CBC with platelets, chemistry profile, IVP, ECG and urine analysis
[c] **Imaging studies**; Chest X-ray, Abdomino-pelvic CT, MRI, PET if clinically indicated
* **Intermediate-risk Factors**
; Larger tumor size, Cervical Stromal Invasion to the middle or deep one third, Lymph-vascular space invasion
** **High Risk factors** ; Positive margin, Positive Lymph Nodes, Microscopic parametrial Involvement

- *RT: radiation therapy*
- *TH: total hysterectomy*
- *(M)RH: (modified) radical hysterectomy*
- *CCRT: concurrent chemoradiation*
- *VBT: Vaginal Brachytherapy*

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Cervical Cancer

CLINICAL STAGE	PRIMARY TREATMENT
Stage IA1	Extrafascial hysterectomy or Observe if patient desires fertility or if inoperable (only if cone biopsy has negative margins) or Modified radical hysterectomy + pelvic lymph node dissection if lymphovascular invasion (category 2B)
Stage IA2	Radical hysterectomy + pelvic lymph node dissection ± para-aortic lymph node sampling or Brachytherapy + pelvic RT (point A dose: 75-80 Gy)[b] or Radical trachelectomy for fertility preservation + pelvic lymph node dissection ± para-aortic lymph node sampling
Stage IB1 and stage IIA (≤ 4 cm)	Radical hysterectomy + pelvic lymph node dissection ± para-aortic lymph node sampling (category 1) or Pelvic RT + brachytherapy (point A dose: 80-85 Gy)[b] or Radical trachelectomy for fertility preservation for lesions (Stage IB1) + pelvic lymph node dissection ± para-aortic lymph node sampling
Stage IB2 and stage IIA (> 4 cm) (also see CERV-4)	Radical hysterectomy + pelvic lymph node dissection + para-aortic lymph node sampling (category 2B) or Pelvic RT + concurrent cisplatin-containing chemotherapy[c] + brachytherapy (point A dose ≥ 85 Gy)[b] (category 1) or

In conclusion

- Less radical surgery should be confirmed in the future prospective randomized clinical trials in pts with low risk early cervical cancer so far.
- Fertility-sparing radical trachelectomies including both RVT and RAT are a safe and feasible alternatives to RH for early cervical cancer patients who desires to preserve fertility, with low morbidity, recurrence, and mortality rates, if performed under adequate selection criteria.
- Simple trachelectomy or conization for fertility sparing also warrants further investigation, which can be combined with NACT, as previously described. This will obviously require strict selection criteria to avoid recurrences and deaths in highly curable patients.

Thank you