



Surgical treatment of cervical cancer

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28/02/2020

Overview

- ▶ History
- ▶ Staging
- ▶ Surgical treatment
 - ▶ Stage 1A
 - ▶ Stage 1B
- ▶ Fertility sparing treatment
- ▶ Role of sentinel lymph node identification
- ▶ Surgical management of recurrent disease

History of cervical cancer treatment

- ▶ 1878 – Freund (Breslau) performed hysterectomy for cervical cancer
- ▶ 1900 - Wertheims first described treatment for cervical cancer
 - ▶ Latzko and Schiffmann – systematic lymphadenectomy + radical hysterectomy
- ▶ 1930s – Okabayashi nerve sparing radical hysterectomy

Background

- ▶ Statistics
 - ▶ 3200 cases of cervical cancer were diagnosed each year (CRUK)
 - ▶ Survival is highest for women age 40 or less as compared to women age 80 or over
 - ▶ >50% of women diagnosed with cervical cancer will have surgery as primary treatment
- ▶ Recent development in surgical treatment:
 - ▶ LACC trial
 - ▶ Sentinel lymph node identification

Principles of management

- ▶ Age
- ▶ Stage
- ▶ Fertility desire
- ▶ Medical comorbidities
- ▶ Avoidance of dual modality treatment

FIGO Staging 2009/2018

T category ⁴	FIGO stage ⁵⁻⁷	Definition
TX		Primary tumour cannot be assessed
T0		No evidence of primary tumour
T1	I	Cervical carcinoma confined to the uterus (extension to corpus should be disregarded)
T1a	IA	Invasive carcinoma diagnosed only by microscopy. Stromal invasion with a maximum depth of 5.0 mm measured from the base of the epithelium and a horizontal spread of 7.0 mm or less; vascular space involvement, venous or lymphatic, does not affect classification.
T1a1	IA1	Measured stromal invasion of 3.0 mm or less in depth and 7.0 mm or less in horizontal spread
T1a2	IA2	Measured stromal invasion of more than 3.0 mm and not more than 5.0 mm, with a horizontal spread of 7.0 mm or less
T1b	IB	Clinically visible lesion confined to the cervix or microscopic lesion greater than T1a2/IA2. Includes all macroscopically visible lesions, even those with superficial invasion.
T1b1	IB1	Clinically visible lesion 4.0 cm or less in greatest dimension
T1b2	IB2	Clinically visible lesion more than 4.0 cm in greatest dimension
T2	II	Cervical carcinoma invading beyond the uterus but not to the pelvic wall or to lower third of the vagina
T2a	IIA	Tumour without parametrial invasion
T2a1	IIA1	Clinically visible lesion 4.0 cm or less in greatest dimension
T2a2	IIA2	Clinically visible lesion more than 4.0 cm in greatest dimension
T2b	IIB	Tumour with parametrial invasion
T3	III	Tumour extending to the pelvic sidewall* and/or involving the lower third of the vagina and/or causing hydronephrosis or nonfunctioning kidney
T3a	IIIA	Tumour involving the lower third of the vagina but not extending to the pelvic wall
T3b	IIIB	Tumour extending to the pelvic wall and/or causing hydronephrosis or nonfunctioning kidney
T4	IVA	Tumour invading the mucosa of the bladder or rectum and/or extending beyond the true pelvis (bullous edema is not sufficient to classify a tumour as T4)
	IVB	Tumour invading distant organs

* the pelvic sidewall is defined as the muscle, fascia, neurovascular structures, and skeletal portions of the

Box 1 FIGO staging of carcinoma of the cervix uteri (2018).

Stage I:

The carcinoma is strictly confined to the cervix uteri (extension to the corpus should be disregarded)

- **IA** Invasive carcinoma that can be diagnosed only by microscopy, with maximum depth of invasion <5 mm^a
 - **IA1** Measured stromal invasion <3 mm in depth
 - **IA2** Measured stromal invasion ≥3 mm and <5 mm in depth
- **IB** Invasive carcinoma with measured deepest invasion ≥5 mm (greater than stage IA), lesion limited to the cervix uteri
 - **IB1** Invasive carcinoma ≥5 mm depth of stromal invasion and <2 cm in greatest dimension
 - **IB2** Invasive carcinoma ≥2 cm and <4 cm in greatest dimension
 - **IB3** Invasive carcinoma ≥4 cm in greatest dimension

Stage II:

The carcinoma invades beyond the uterus, but has not extended onto the lower third of the vagina or to the pelvic wall

- **IIA** Involvement limited to the upper two-thirds of the vagina without parametrial involvement
 - **IIA1** Invasive carcinoma <4 cm in greatest dimension
 - **IIA2** Invasive carcinoma ≥4 cm in greatest dimension
- **IIB** With parametrial involvement but not up to the pelvic wall

Stage III:

The carcinoma involves the lower third of the vagina and/or extends to the pelvic wall and/or causes hydronephrosis or non-functioning kidney and/or involves pelvic and/or paraaortic lymph nodes^c

- **IIIA** Carcinoma involves the lower third of the vagina, with no extension to the pelvic wall
- **IIIB** Extension to the pelvic wall and/or hydronephrosis or non-functioning kidney (unless known to be due to another cause)
- **IIIC** Involvement of pelvic and/or paraaortic lymph nodes, irrespective of tumor size and extent (with r and p notations)^c
 - **IIIC1** Pelvic lymph node metastasis only
 - **IIIC2** Paraaortic lymph node metastasis

Stage IV:

The carcinoma has extended beyond the true pelvis or has involved (biopsy proven) the mucosa of the bladder or rectum. A bullous edema, as such, does not permit a case to be allotted to stage IV

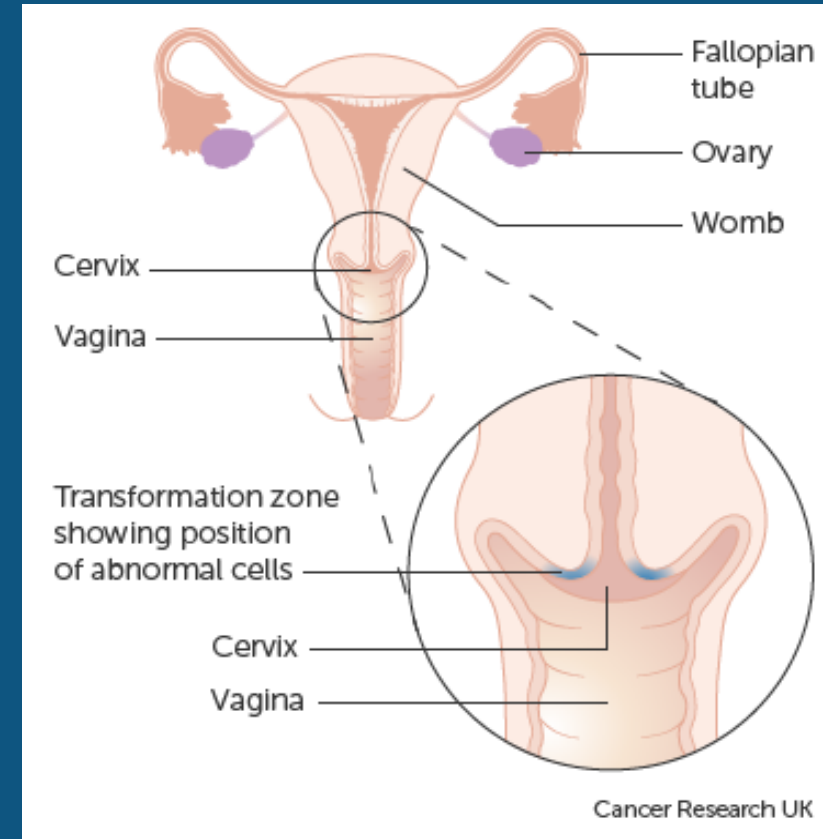
- **IVA** Spread of the growth to adjacent organs
- **IVB** Spread to distant organs

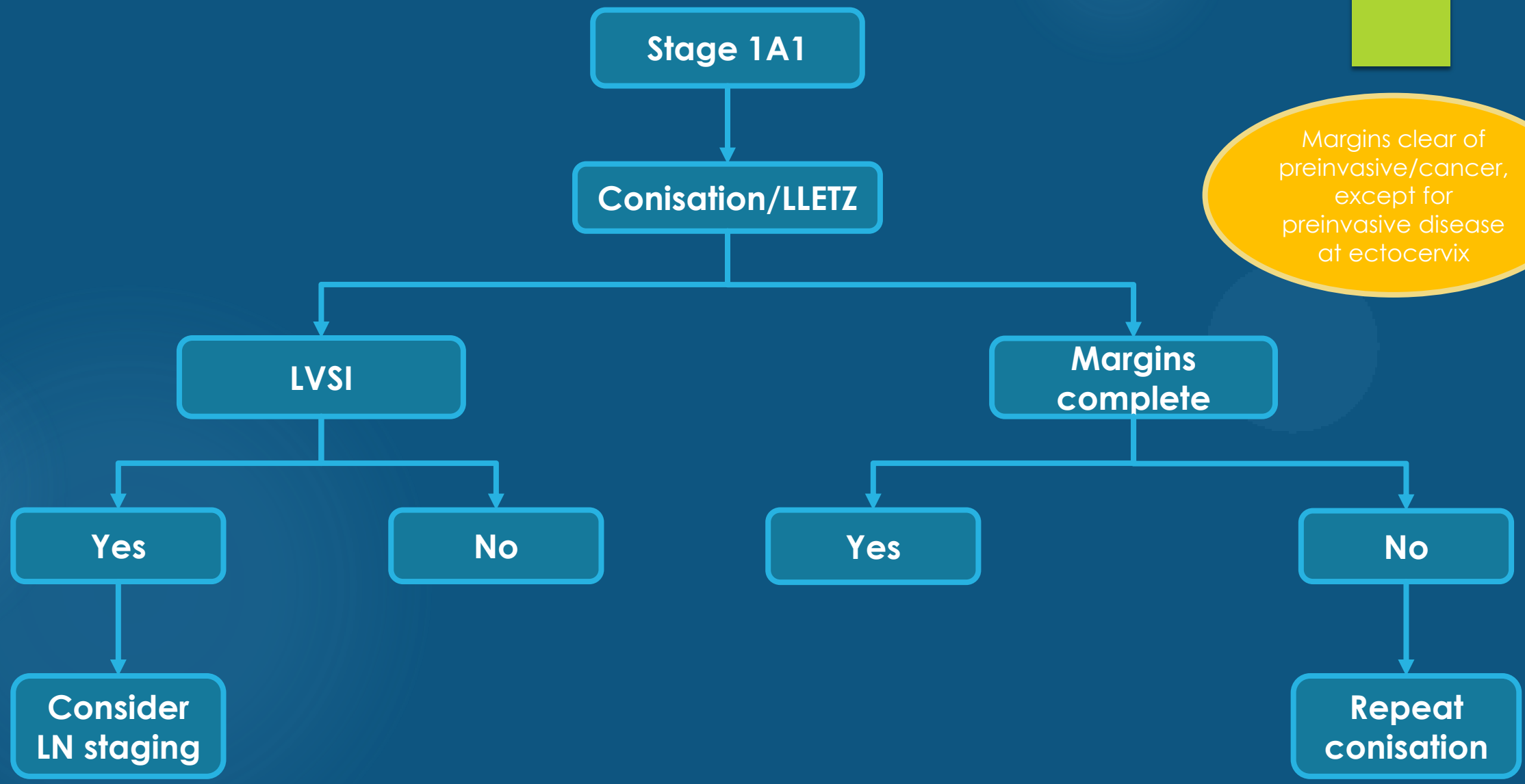
^aImaging and pathology can be used, when available, to supplement clinical findings with respect to tumor size and extent, in all stages.

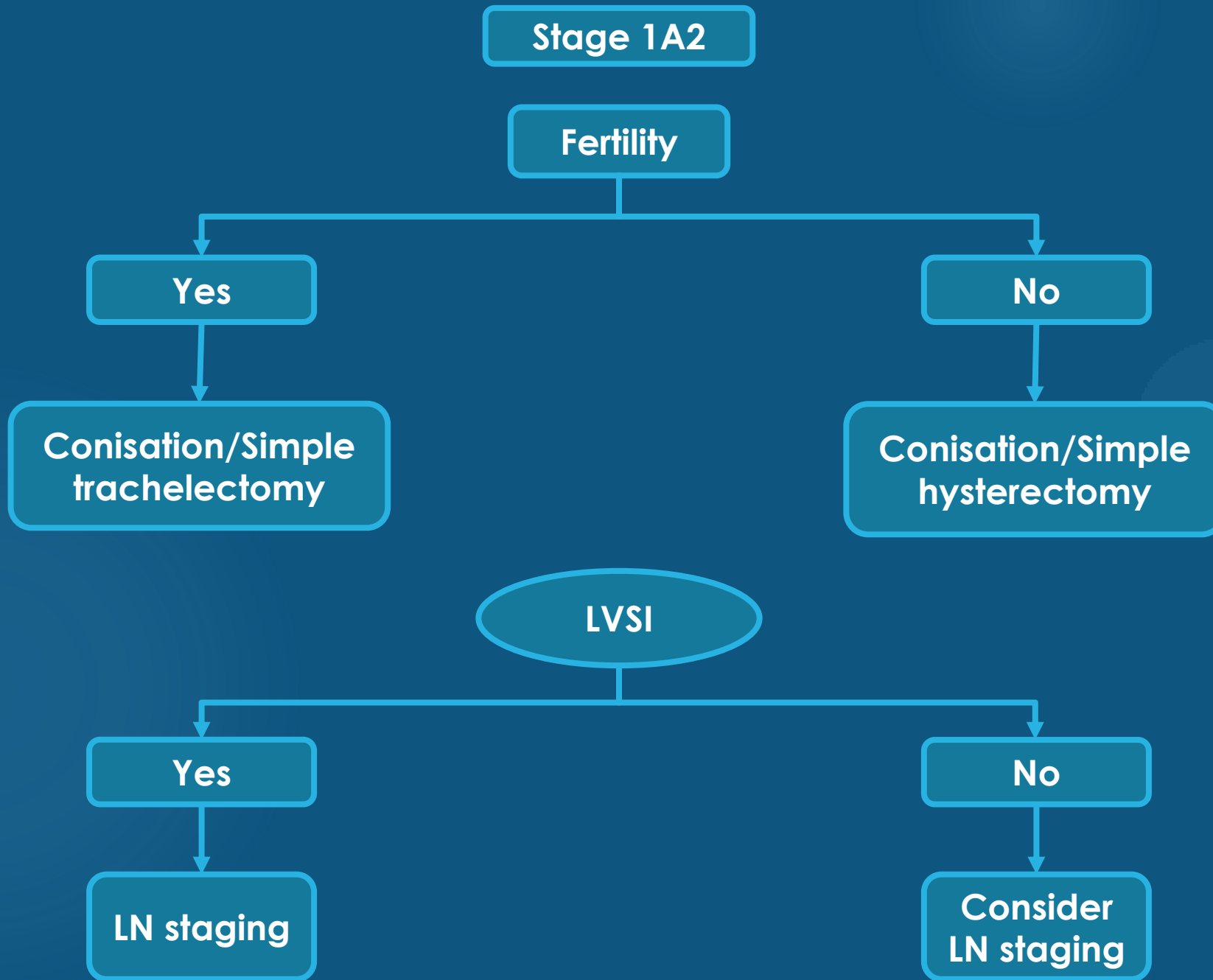
^bThe involvement of vascular/lymphatic spaces does not change the staging. The lateral extent of the lesion is no longer considered.

^cAdding notation of r (imaging) and p (pathology) to indicate the findings that are used to allocate the case to stage IIIC. For example, if imaging indicates pelvic lymph node metastasis, the stage allocation would be stage IIIC1r and, if confirmed by pathological findings, it would be Stage IIIC1p. The type of imaging modality or pathology technique used should always be documented. When in doubt, the lower staging should be assigned.

Surgical treatment - Stage 1A1





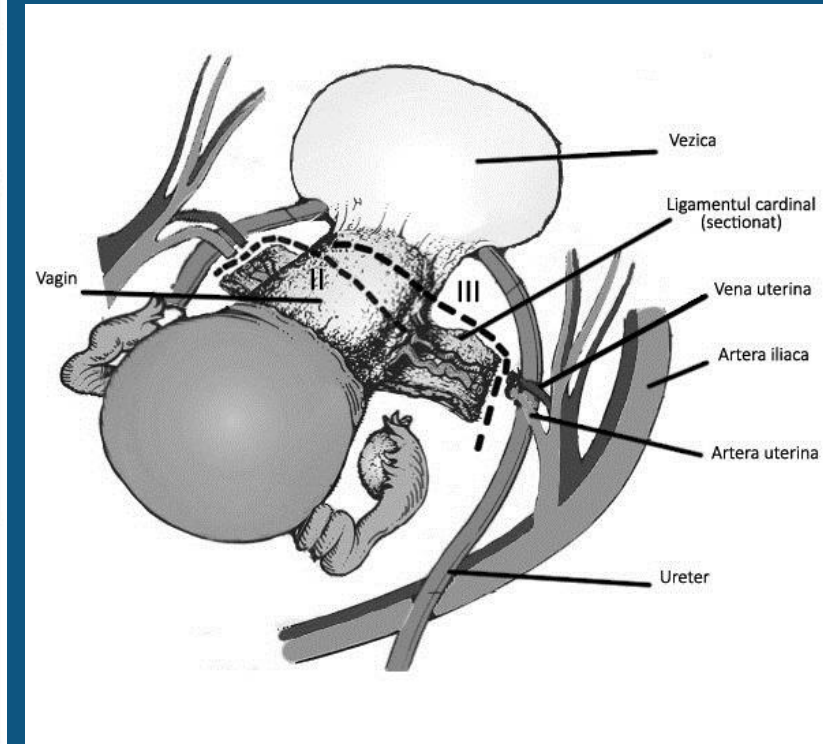


Treatment of stage 1B1/1B2 cervical cancer

- ▶ Options would largely depend on
 - ▶ Tumour size
 - ▶ Fertility desire
 - ▶ Morbidity
- ▶ Similar oncological outcomes between surgery and radiotherapy
- ▶ Surgery has the advantage of:
 - ▶ preserving ovarian and sexual function
 - ▶ Preventing radiation-induced late effects
 - ▶ Preserving fertility

Classification of radical hysterectomy

Classification of Radical Hysterectomy ¹⁶		
	Extent of Resection	Ureter
A- Minimum resection of paracervix	Paracervix is transected medial to ureter, but lateral to the cervix; uterosacral and vesicouterine ligaments are not transected at a distance from the uterus; vagina resection, generally at minimum, without removal of the paracolpos.	Palpation or direct visualisation without freeing from bed
B Transection of paracervix at the ureter	Paracervix is transected at the level of the ureteral tunnel; partial resection of uterosacral and vesicouterine ligaments; no resection of caudal (deep) neural component of the paracervix (caudal to the deep uterine vein); vaginal resection at least 10 mm of the vagina from the cervix or tumor	Unroofing and rolled laterally
B1	As described above	
B2	As described above and with additional removal of the lateral lymph nodes	
C- Transection of paracervix at junction with internal iliac vascular system	Transection of the uterosacral ligaments at the rectum; transection of the vesicouterine ligaments at the bladder; resection 15-20 mm of the vagina from the tumor or cervix and corresponding paracolpos.	Completely mobilised
C1	With autonomic nerve sparing/preservation	
C2	Without autonomic nerve sparing/preservation	
D- laterally extended resection		
D1	Resection of the paracervix at the pelvic side, with vessels arising from internal iliac system, exposing the roots of the sciatic nerve	Completely mobilised
D2	Resection of the paracervix at the pelvic side, with hypogastric vessels plus adjacent fascial or muscular structures (laterally extended endopelvic resection)	



Marin, F et al. "Types of radical hysterectomies : From Thoma Ionescu and Wertheim to present day." *Journal of Med Life*. 2014;7(2)172-6.

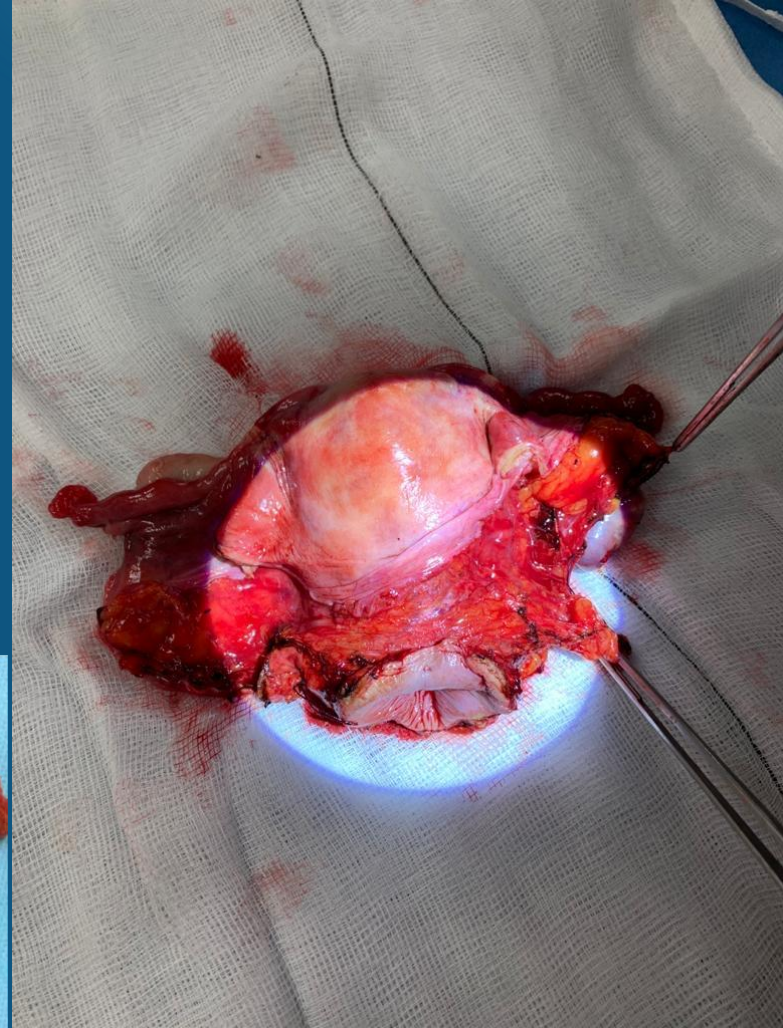
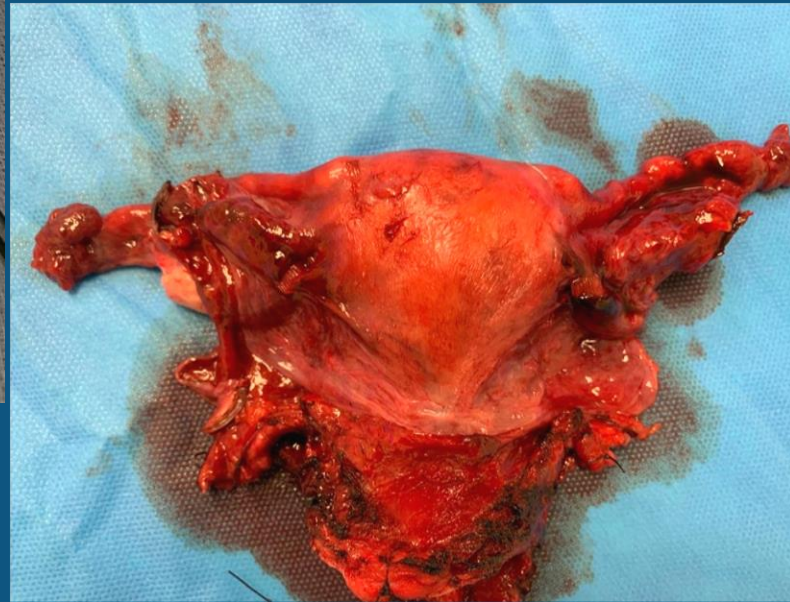
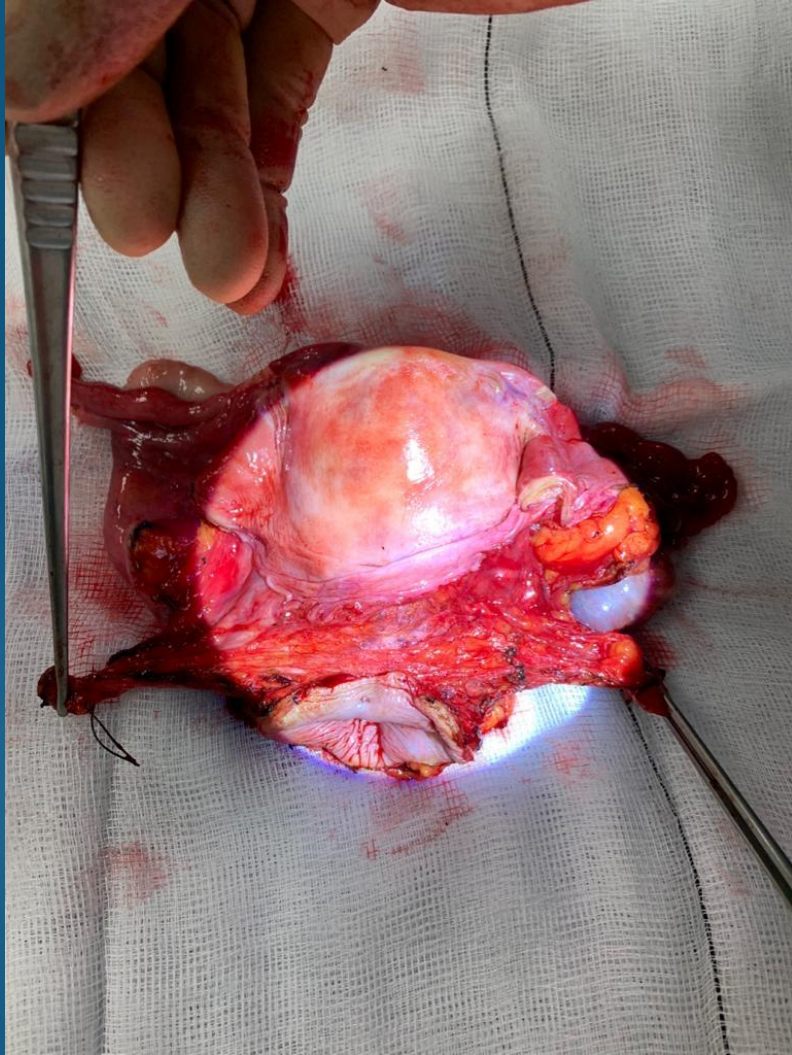
Treatment of stage 1B1/1B2 cervical cancer

Risk group	Tumour size	LVSI	Stromal invasion	Type of radical hysterectomy*
Low risk	< 2 cm	Negative	Inner 1/3	B1 (A)
Intermediate risk	≥ 2 cm	Negative	Any	B2 (C1)
	< 2 cm	Positive	Any	
High risk	≥ 2 cm	Positive	Any	C1 (C2)

Adapted from Cervical Cancer Guidelines, ESGO

Treatment of stage 1B1 cervical cancer

- ▶ Risk of lymph node involvement in tumours <2cm without LVSI is approximately 3%
- ▶ Risk of parametrial invasion in tumours of <2cm without LVSI and negative LN is small (<0.5%)
- ▶ Hence less radical treatment modality is suggested.
- ▶ The safety of which should be answered by SHAPE trial



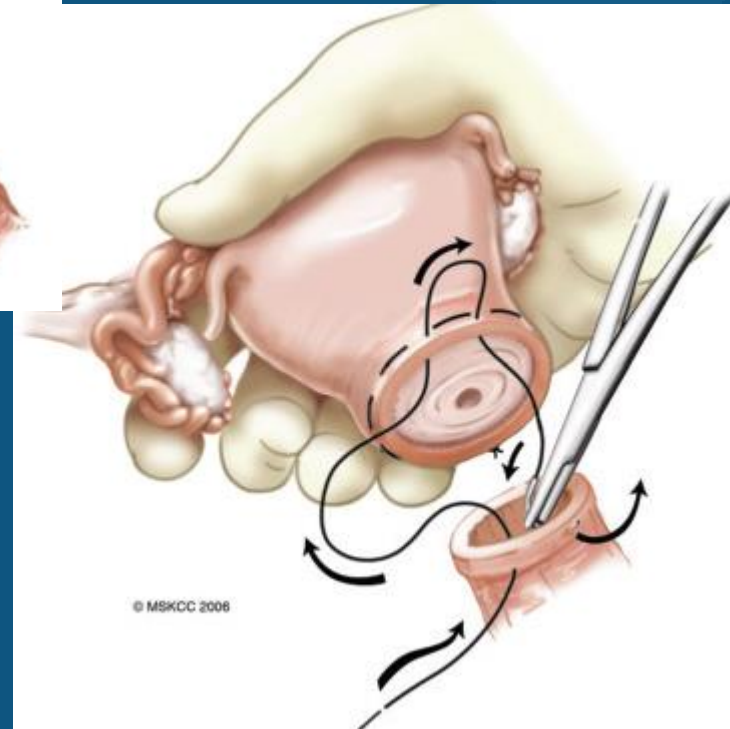
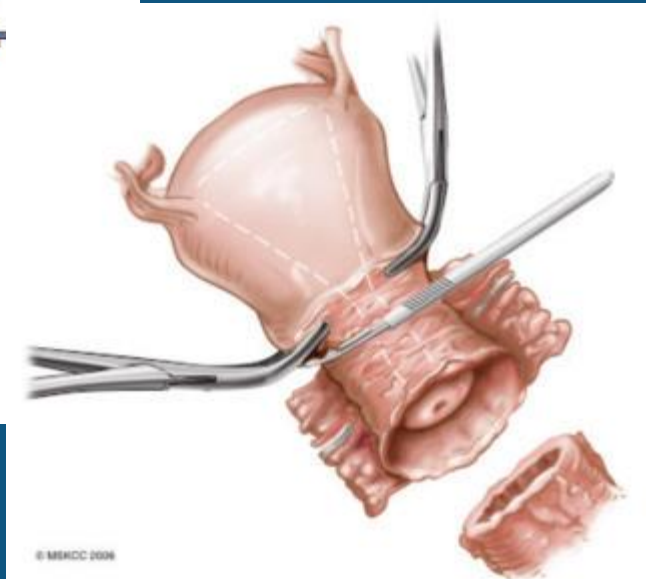
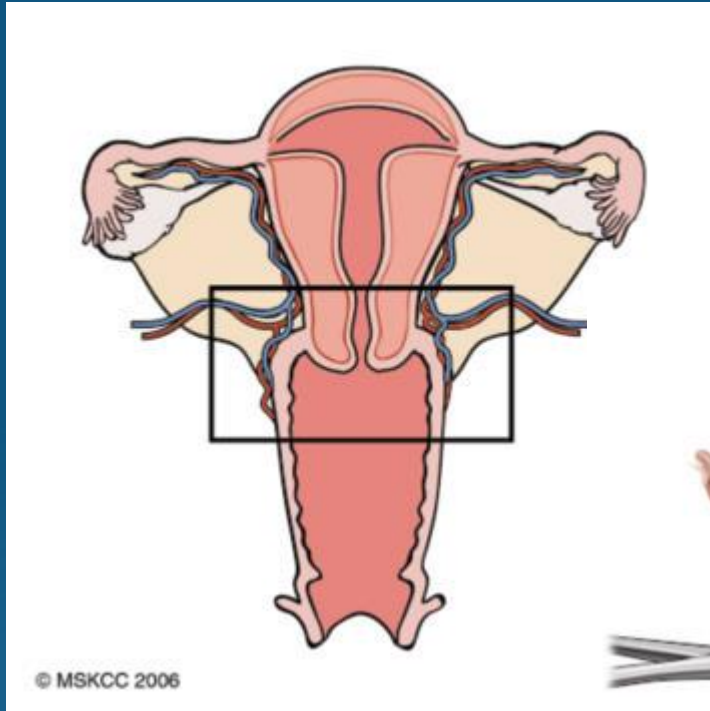
Ovaries

- ▶ Risk of ovarian metastasis
 - ▶ 0.5% for squamous cell carcinoma
 - ▶ Up to 4.5% for adenocarcinoma
- ▶ Ovarian transposition can be undertaken if conserved.
 - ▶ Above pelvic brim, away from radiation field

Trachelectomy

- ▶ Radical excision of the cervix +/-paracervical tissues+/-upper vagina
- ▶ Suitable for tumours <2cm.
- ▶ Types of trachelectomy
 - ▶ Simple trachelectomy involves a supravaginal amputation of cervix.
 - ▶ Suitable for 1a1/1a2 tumours
 - ▶ Radical trachelectomy involves removal of cervix with the parametrium and vaginal cuff.
 - ▶ T1b1 tumours (<2cm)
 - ▶ Cerclage

Trachelectomy



Trachelectomy

- ▶ Inclusion
 - ▶ Fertility desirous
 - ▶ No evidence of LN metastasis
 - ▶ Tumour of <2cm
- ▶ Exclusion
 - ▶ Rare tumours such as neuroendocrine and non-HPV related adenocarcinoma

Obstetric outcomes

- ▶ 10-13% are infertile
- ▶ Vaginal trachelectomy is more fertility saving
- ▶ Miscarriage rate
 - ▶ 1st trimester 20%
 - ▶ 2nd trimester 3%
- ▶ 73% of pregnancies reached 3rd trimester
- ▶ Of which 75% delivered at term
- ▶ Delivery by LSCS, care must be taken not to cut cerclage.

Sentinel lymph node (SLN) identification in cervical cancer

- ▶ SLN – first lymph node cancer cells are most likely to spread to from primary tumour
- ▶ Established in treatment of breast and vulval cancer as well as melanoma
- ▶ Would require ultra-staging
 - ▶ Multiple sections from each lymph node combined with immunohistochemistry

Sentinel lymph node (SLN) identification in cervical cancer

- ▶ Benefits:
 - ▶ Reduced morbidity (lymphoedema/lymphocyst)
 - ▶ Allow intra-operative assessment of lymph node – one step management
 - ▶ Avoidance of dual modality treatment
 - ▶ Ultrastaging improves lymph node assessment
- ▶ Disadvantage:
 - ▶ Not been validated by prospective trial in cervical cancer
 - ▶ No uniformed protocols for ultrastaging (time consuming and cost issues)

Sentinel lymph node identification

- ▶ Retrospective cohort study – 645 cases
 - ▶ SLN followed by full pelvic lymphadenectomy
 - ▶ All SLN ultrastaged
 - ▶ 47/46 cases were found to have macro- and micro-metastasis respectively
 - ▶ These patients had worse overall survival (HR 6.85 95% CI 2.59-18.05)
- ▶ SLN ultrastaging could potentially detect an extra 15% of patients with lymph node metastasis

BGCS consensus statement on SLN in cervical cancer

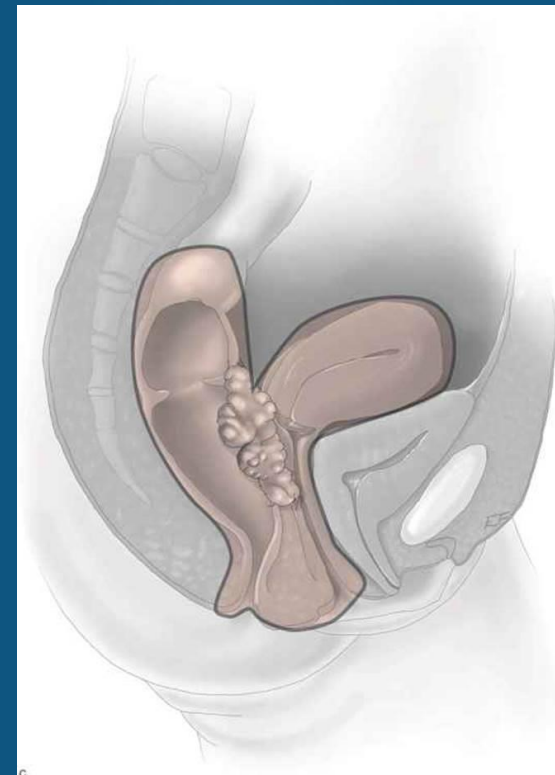
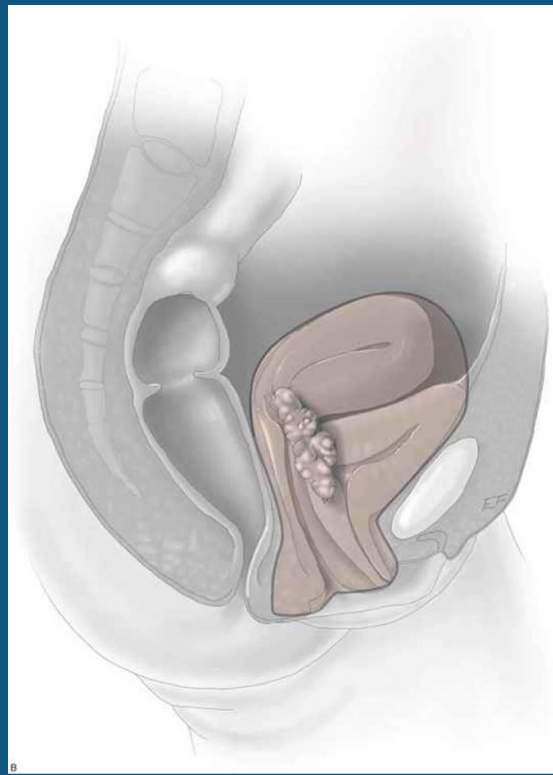
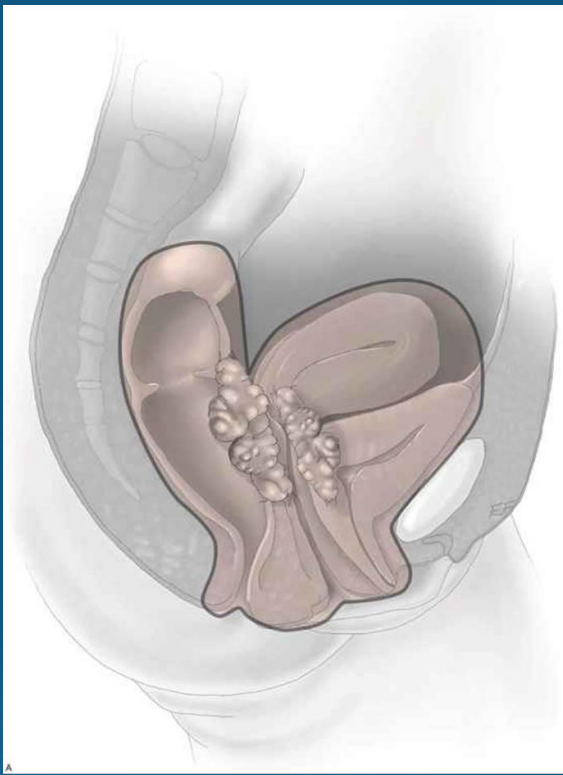
- ▶ Should be done as part of trial
- ▶ SLN in cervical cancer – high negative predictive value
- ▶ Can be considered for tumour of <2cm with no evidence of mets (including stage 1A1 tumour with LVSI)
- ▶ SLN – reduced complications
- ▶ Systematic lymphadenectomy in conjunction with SLN – higher positive node rate
- ▶ Ultrastaging
- ▶ Tc99 in conjunction with dye/ICG
- ▶ ?minimum number of cases for learning curve/case load to maintain skills

A prospective multicenter trial on sentinel lymph node biopsy in patients with early-stage cervical cancer (SENTIX)

SENTICOL III: an international validation study of sentinel node biopsy in early cervical cancer. A GINECO, ENGOT, GCIG and multicenter study

Surgical management of recurrence

- ▶ If had primary chemoradiation
- ▶ Can be considered for:
 - ▶ Pelvic relapse – LEER procedure
 - ▶ Central recurrence – total/anterior/posterior pelvic exenteration
- ▶ 5-year survival 30-50%
- ▶ High morbidity
- ▶ Requires careful counselling



Series	Berek et al ³ 2005 (N = 75)	Goldberg et al ⁴ 2006 (N = 103)	Maggioni et al ⁵ 2009 (N = 106)	McLean et al ⁷ 2010 (N = 44)	Fotopoulou et al ⁶ 2010 (N = 47 ^a)
Median procedure duration, hours	7.8	NR	8.1	9.5	5.4
Mean EBL, mL	2500	NR	1240	2497	NR
Postoperative mortality	3/75	1/103	0	1/44	4/47
Transfusions	4.9 U	NR	62%	86%	5 U
Length of hospitalization, days	23.4	NR	21.6	15	29
Survival	39%	47%	53%	52%	53% ^b
Complications					
Infection	86%	71%	NR	68%	NR
Fistula	27%	28%	NR	2%	NR
Intestinal obstruction	33%	9%	NR	18%	NR
Early complications	NR	NR	44.8%	NR	70%
Late complications	NR	NR	48.5%	NR	NR

EBL, estimated blood loss; NR, not reported; U, median number of units.

^aTwenty-two cases done for palliation.

^bMedian follow-up was 7 months.

Gynecologic Oncology: Clinical Practice and Surgical Atlas 1st Ed.

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Cervical cancer patient gives birth after rare procedure

🕒 8 August 2019



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Rebecca Campher gave birth to her daughter Everleigh Grace in February

A woman who faced the prospect of never conceiving after being diagnosed with cervical cancer has given birth to a baby girl.

Thank you

