

Surgical Treatment of Endometrial Cancer

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Endometrial Cancer(EC)

- ✓ **The most common gynecologic malignancy**
- ✓ **The 4th most common woman's cancer (breast, lung, colorectal)**
- ✓ **49,560 new cases → 8190 death (USA, 2013)**
- ✓ **Mostly early stage(75%)**
- ✓ **Adenocancer(85%), USC(5-10%), Clear cell(5%)**

Types of EC

Type 1(80%)

Estrogen dependent

Endometrioid
adenocancer

63 y

70% stage I

5 y. surv. \approx 83%

Type 2

Estrogen unrelated

Non-endometrioid
cancer

67y

50% advanced stage

5 y. surv. \approx 53% USC

57 % CC

Revised FIGO Staging (2009)

Stage I*	Tumor confined to the corpus uteri
IA*	No or less than half myometrial invasion
IB*	Invasion equal to or more than half of the myometrium
Stage II*	Tumor invades cervical stroma, but does not extend beyond the uterus**
Stage III*	Local and/or regional spread of the tumor
IIIA*	Tumor invades the serosa of the corpus uteri and/or adnexae#
IIIB*	Vaginal and/or parametrial involvement#
IIIC*	Metastases to pelvic and/or para-aortic lymph nodes#
IIIC1*	Positive pelvic nodes
IIIC2*	Positive para-aortic lymph nodes with or without positive pelvic lymph nodes
Stage IV*	Tumor invades bladder and/or bowel mucosa, and/or distant metastases
IVA*	Tumor invasion of bladder and/or bowel mucosa
IVB*	Distant metastases, including intra-abdominal metastases and/or inguinal lymph nodes

*Either G1, G2, or G3.

**Endocervical glandular involvement only should be considered as Stage I and no longer as Stage II.

#Positive cytology has to be reported separately without changing the stage.

Mortality

- **Advanced stage disease (50% of all deaths)**
- **High risk histology**
- **Not comprehensive surgical staging?**
- **Poor performance**

Prognostic Factors

Uterine

- MI
- LVSI
- Cervical involvement

Extrauterine

- Adnexial involvement
- Intraperitoneal dissemination
- Peritoneal cytology ??
- Lymph node met.

Tumoral

- Histologic types
- Grade
- Tumor diameter
- Molecular

DNA ploidi

E , P

receptors

P53,PTEN

etc.

Risk Definitions(GOG)

Risk	Definition
Low	Confined to uterus; MI (-) or $\leq 1/2$
Intermediate	Confined to uterus MI $> 1/2$, occult cx involvement One of poor prognostic factors (PPF) MI $> 1/3$, G2-3, LVSI (+)
High-intermediate	50-69 Y; three of PPF ≥ 70 Y; two of PPF
High	Stage II-IV, PSC or clear cell

Endometrium CA : Lymphatic Drainage and Metastasis

- Primary => Pelvic lymph nodes
- Pelvic lymph node (-) => isolated paraaortic LN involvement 2%

Onda. Br J Cancer 1977
Chen Gynecol Oncol 1985
Creasman. Cancer 1987

- Pelvic LN (+)
- Advanced stage
- MI >50%
- G3, High risk histology

} Aortic LN met. risk ↑

Treatment

Surgery

•Staging

•Debulking

**Adjuvant
Radiotx.**

•Before

•After

Chemotx.

•Hormonal

•Cytotoxic

Surgical Treatment

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graph TD; A[Surgical Treatment] --> B[Comprehensive Surgical staging]; B --> C[High risk factors]; C --> D[Adjuvant treatment]; D --> E[Recurrence(local,dist.)]; E --> F[Red Arrow];
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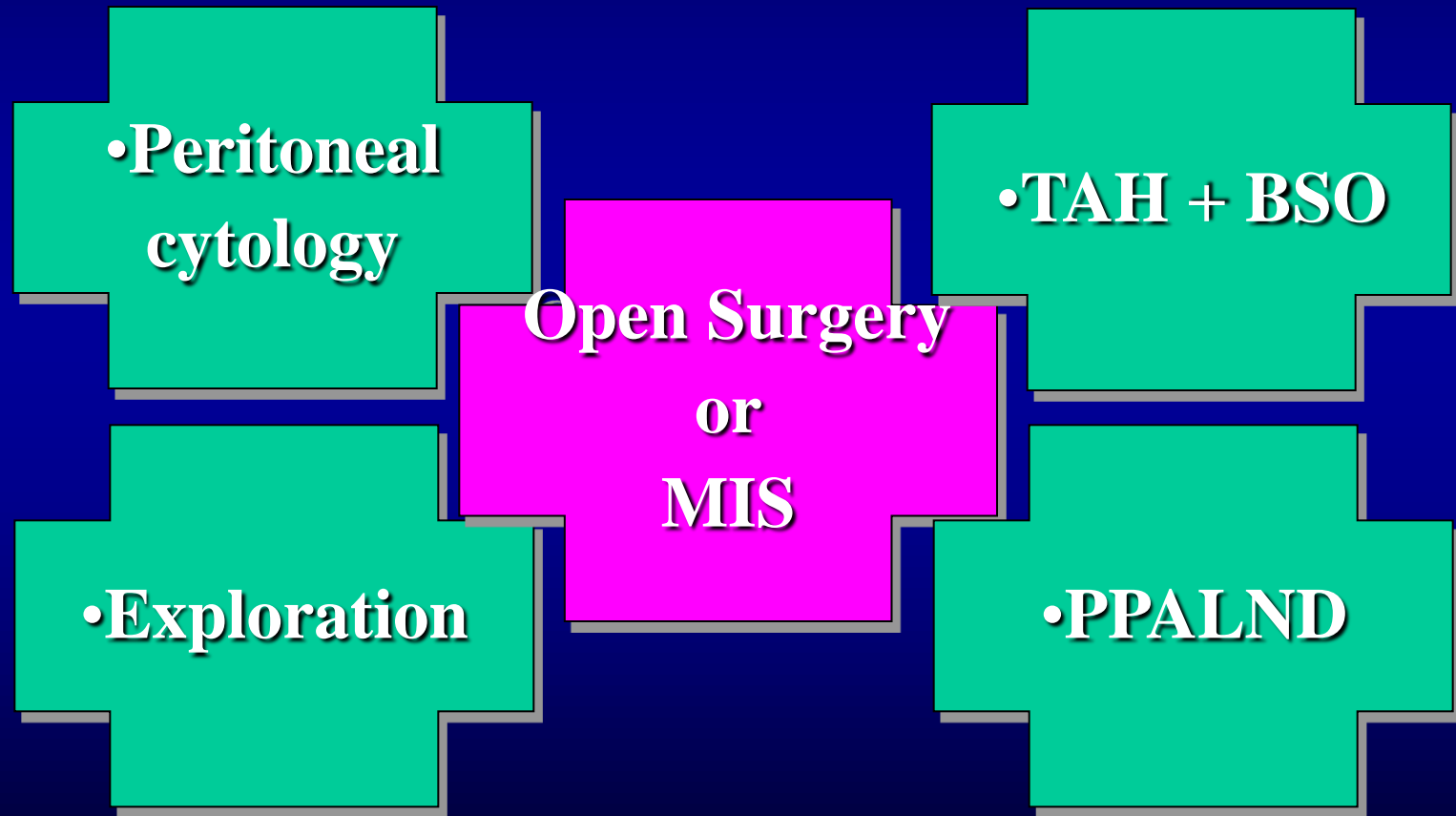
Comprehensive Surgical staging

High risk factors

Adjuvant treatment

Recurrence(local,dist.)

Early Stage EC Surgical Staging



Topics of debate in surgical treatment of early stage EC

- **LND to all patients?**
- **Type of LND ; sampling vs systematic?**
- **Only pelvic vs PABPLND?**
- **LND;therapeutic or diagnostic ?**
- **MIS vs Laparotomy ?**
- **Sentinel Lymph Node Concept?**

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LN Met. in EC

- # 422
- LND (-) (27%)
 - Endometrioid (G1 ve G2), MI $\leq 1/2$, PTD* ≤ 2 cm
 - Endometrioid and MI(-)(Grade ve PTD indepentendly)
- LN #; pelvik 36.5 ± 13.4 , PA 17.4 ± 8.1
- LN Met (High risk group)
 - Endometrioid 16%, nonedometrioid 40%
 - İzole pelvik 33%, izole PA 16%, pelvik+PA 51%

•*PTD: Primer tümör çapı

No LND

**Endometrioid (G1 ve G2), MI $\leq 1/2$,
PTD* ≤ 2 cm**

**Endometrioid and MI(-)
(independently from Grade ve PTD)**

EC

HYTERECTOMY (LS / LT / Robotic)

**If there is one of them;
Extrauterine disease
Grade 3
Non endometrioid
MI>50%
Adnexiel met.**

Yes

**BPPALND (non-endometrioid
omentectomy, appendectomy ,peritoneal
biopsy)**

No

**One of them
Tumor \geq 2 cm and MI < 50%
Cervical involv.**

Yes

**BPLND
(frozen pelvic LN (+) PALND)**

No

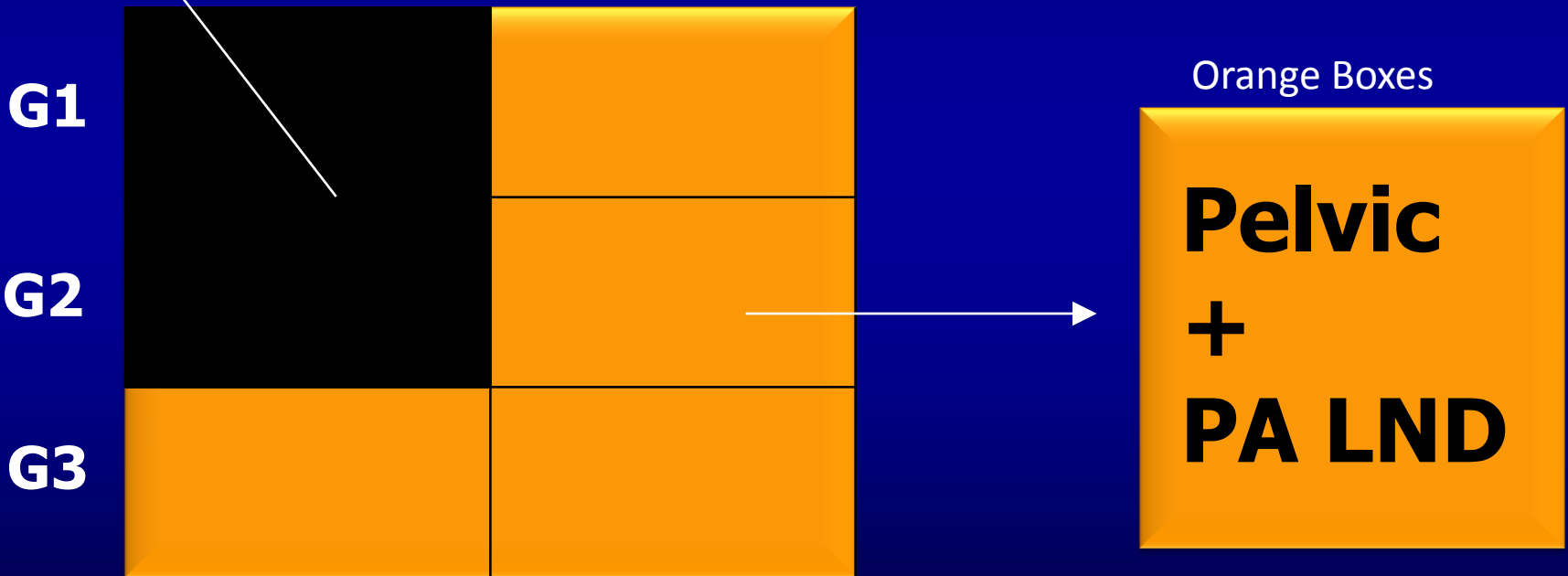
**Operation
stop**

(cervical involv.; RH)

Black Boxes



Myo $\leq 50\%$ Myo $> 50\%$



Black Boxes

* PA LND, only if Pelvic Nodes Positive at FS

Frozen-Section(FS) and Final Pathology

- **Grade: % 35**
- **MI : %28**
- **Cervical involvement:% 13**
- **LVSI :% 32**
- **Staging with intraoperative FS:
6.6 – 13% suboptimal**

Radiologic Examination

USG, CT, MRI

Sensitivity
29-90%

PET

Sensitivity
60%

Summary

LND to all patients

- **Because of diagnostic inaccuracy of FS ,all patients with early stage EC should undergo comprehensive surgical staging.**

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Type of LND

- **Sampling**

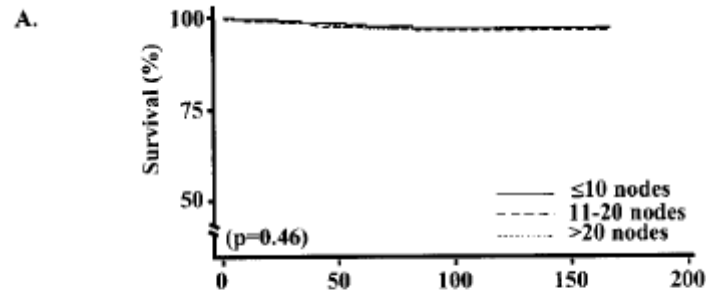
- Only 10% of LN : palpabl
- 37% of LN met. <2 mm
- Sufficient LN # ?
- 62% of PLN and 17% PALN mets. are missed out

- **Systematic**

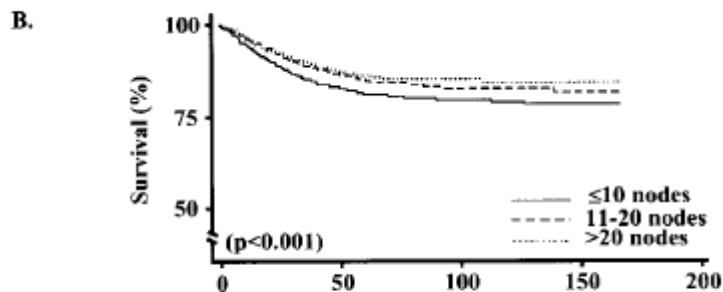
- LN mets. and micromets. are taken out

Therapeutic effect of LN counts

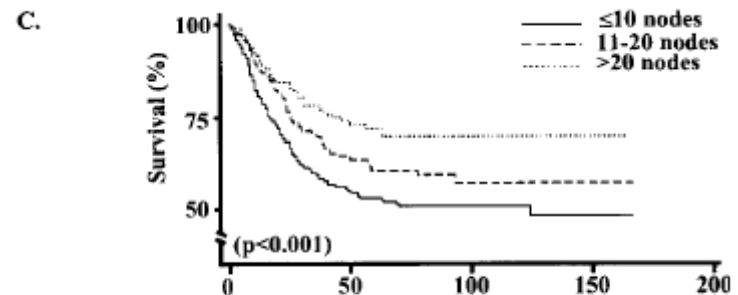
A: Low risk
B: Intermediate
C: High risk



	0	50	100	150	200
≤ 10 nodes	3,036	1,657	689	120	
11-20 nodes	1,429	647	219	29	
> 20 nodes	1,091	461	163	19	



	0	50	100	150	200
≤ 10 nodes	3,542	1,625	666	115	
11-20 nodes	1,793	712	228	35	
> 20 nodes	1,442	493	161	16	

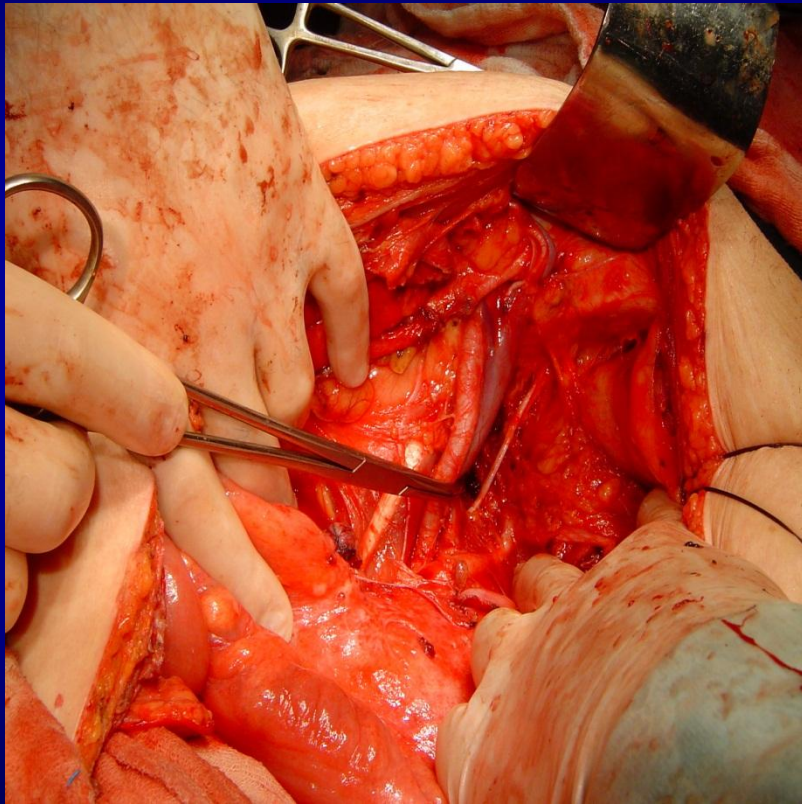


	0	50	100	150	200
≤ 10 nodes	581	150	41	8	
11-20 nodes	320	84	20	3	
> 20 nodes	320	82	17	4	

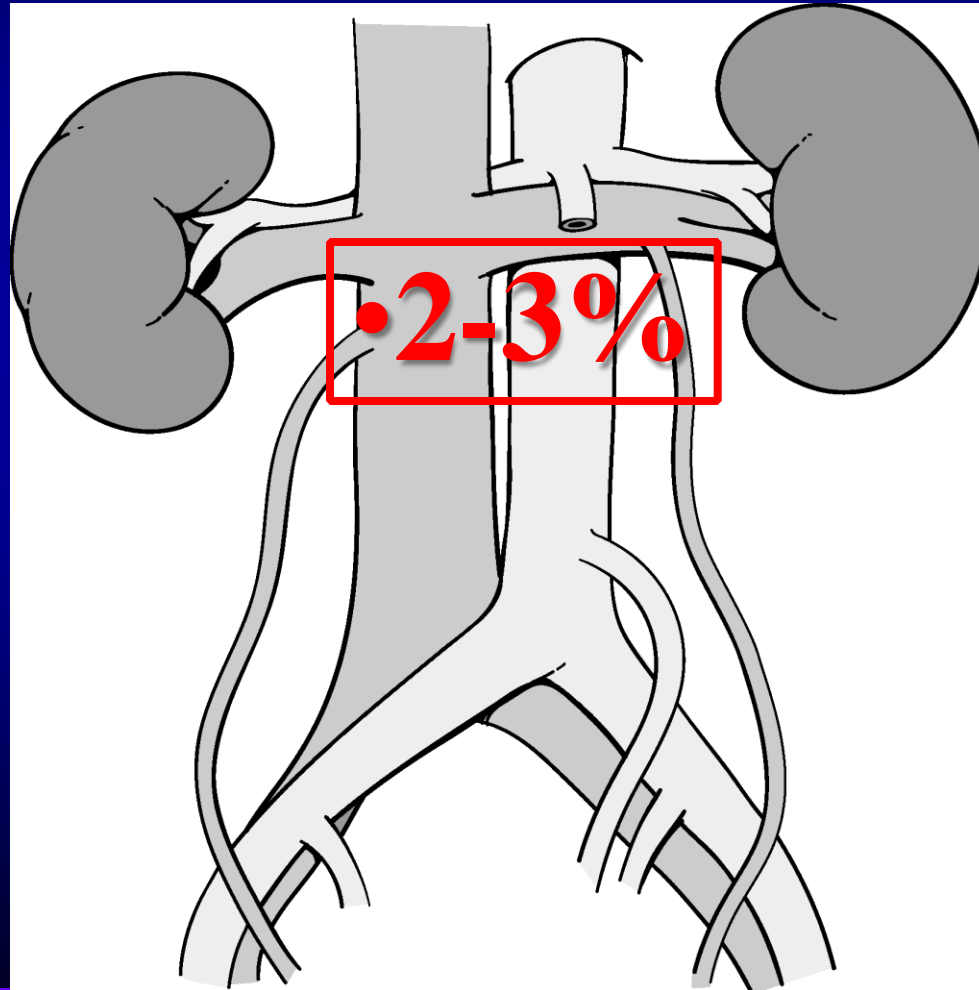
Topics of debate in surgical treatment of early stage EC

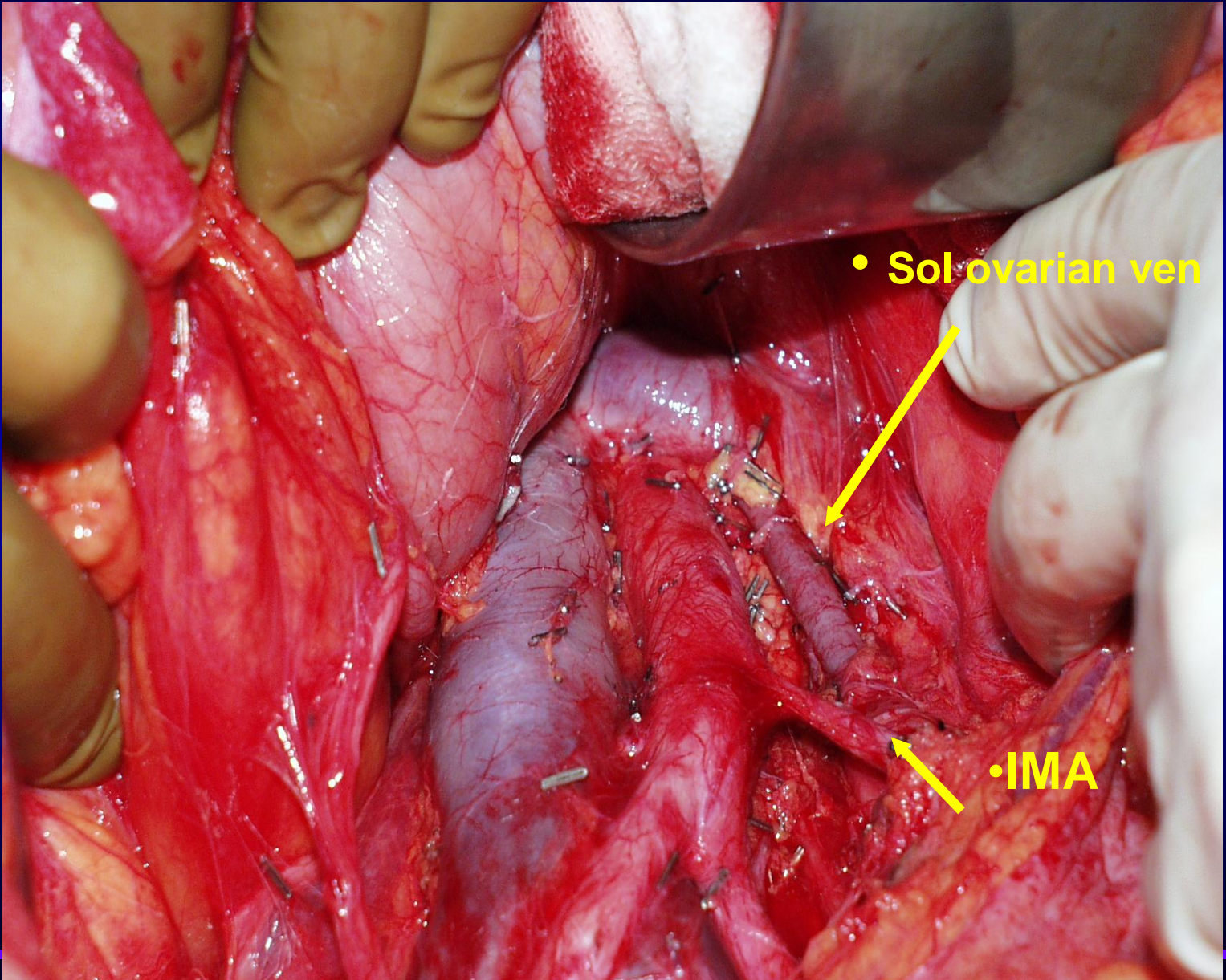
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Only Pelvic or Pelvic+Paraaortic



What is the incidence of isolated paraaortic nodal metastasis in patients with negative pelvic nodes





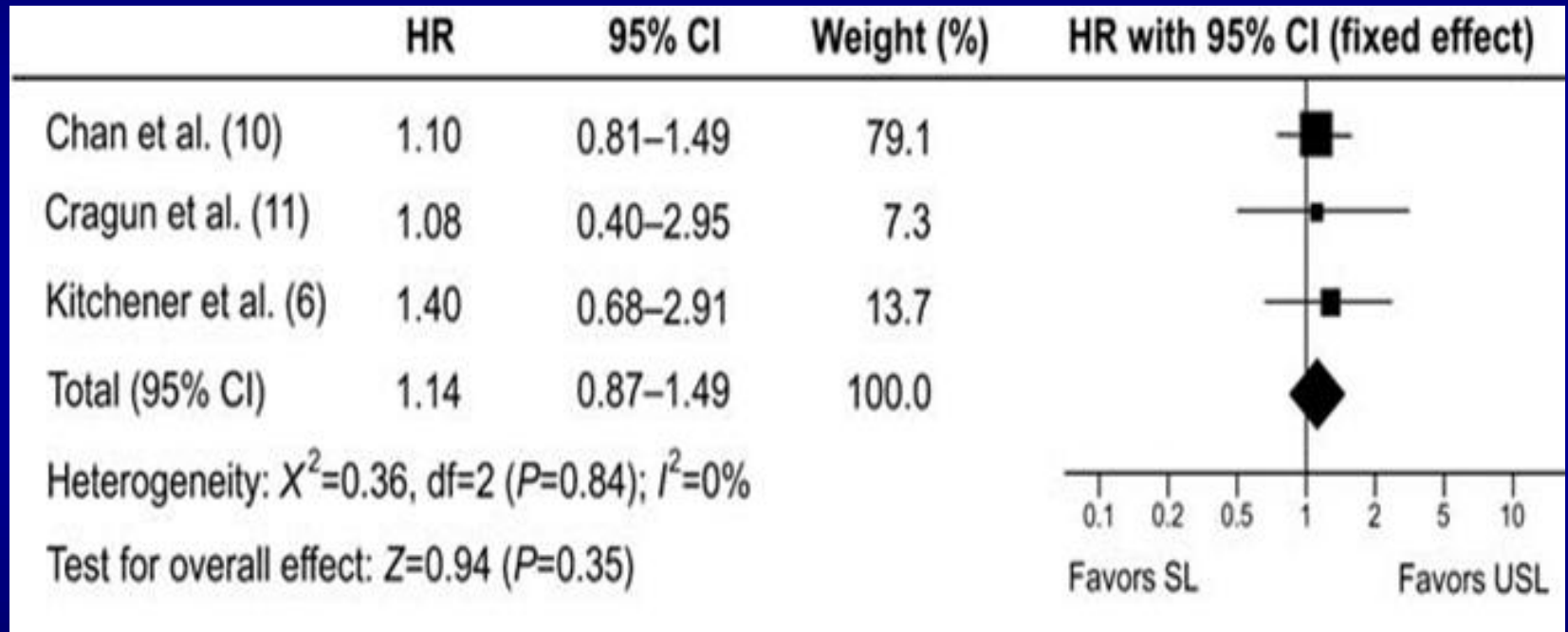
• Sol ovarian ven

• IMA

Topics of debate in surgical treatment of early stage EC

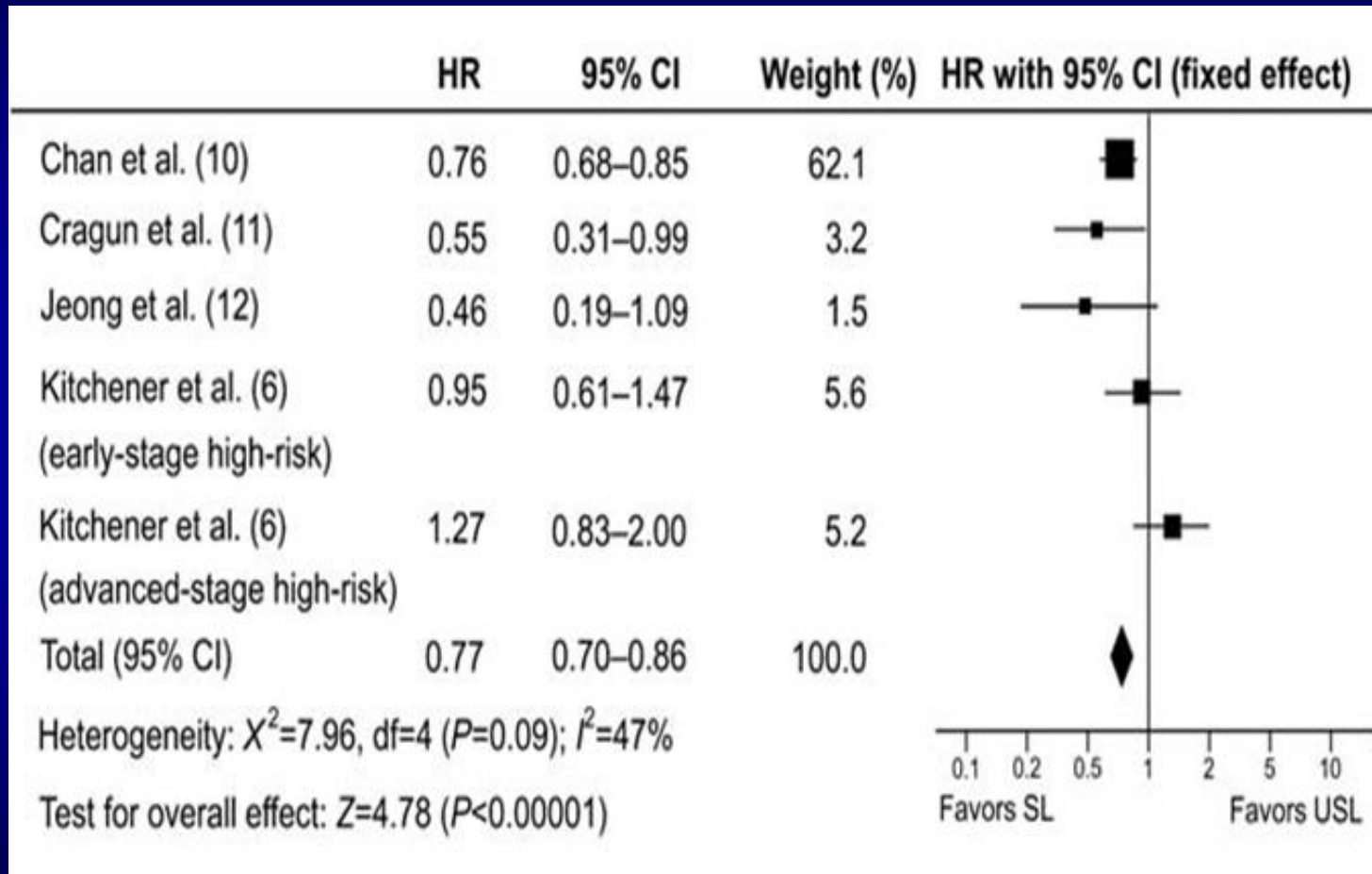
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Low risk Group LND and Survival



Kim HS, Jpn J Clin Oncol 2012

Intermediate, High Risk Group; LAND and Survival



SEPAL Study (Survival Effect of Para-Aortic Lymphadenectomy in endometrial cancer)

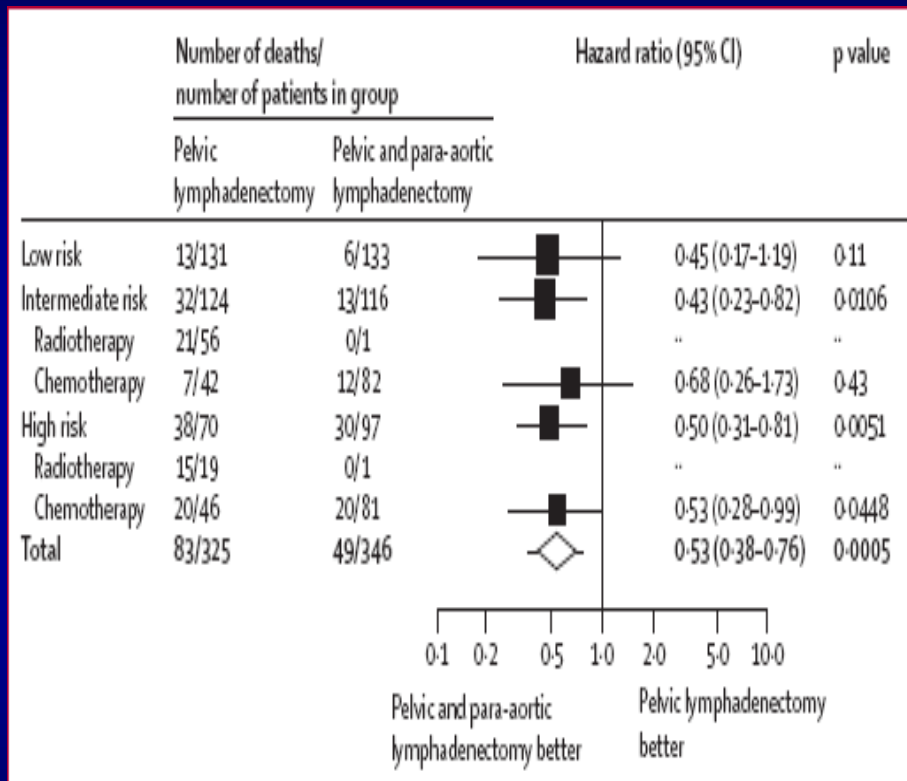


Figure 2: Cox regression analysis of overall survival with pelvic and para-aortic lymphadenectomy compared with pelvic lymphadenectomy alone according to risk of recurrence

--= data not available.

	Low risk		Intermediate or high risk	
	Pelvic lymphadenectomy (n=131)	Pelvic and para-aortic lymphadenectomy (n=133)	Pelvic lymphadenectomy (n=194)	Pelvic and para-aortic lymphadenectomy (n=213)
Overall survival				
Died	13 (10%)	6 (5%)	70 (36%)	43 (20%)
3years	98.4%	97.0%	78.1%	86.2%
5years	94.2%	96.2%	72.6%	83.2%
8years	93.1%	96.2%	66.0%	79.8%
Disease-specific survival				
Died	5 (4%)	1 (1%)	60 (31%)	33 (15%)
3years	99.2%	99.2%	78.6%	87.9%
5years	96.7%	99.2%	73.0%	84.9%
8years	95.5%	99.2%	68.8%	84.1%
Recurrence-free survival				
Relapsed or died	14 (11%)	8 (6%)	80 (41%)	46 (22%)
3years	96.9%	97.0%	70.9%	84.4%
5years	92.7%	95.3%	64.8%	80.7%
8years	92.7%	94.4%	59.7%	79.0%

Data are number of patients (%) or percentage survival. Numbers of patients were recorded at least 5 years after treatment completion. Percentage survival at 3 years, 5 years, and 8 years was estimated by Kaplan-Meier analysis (figure 3).

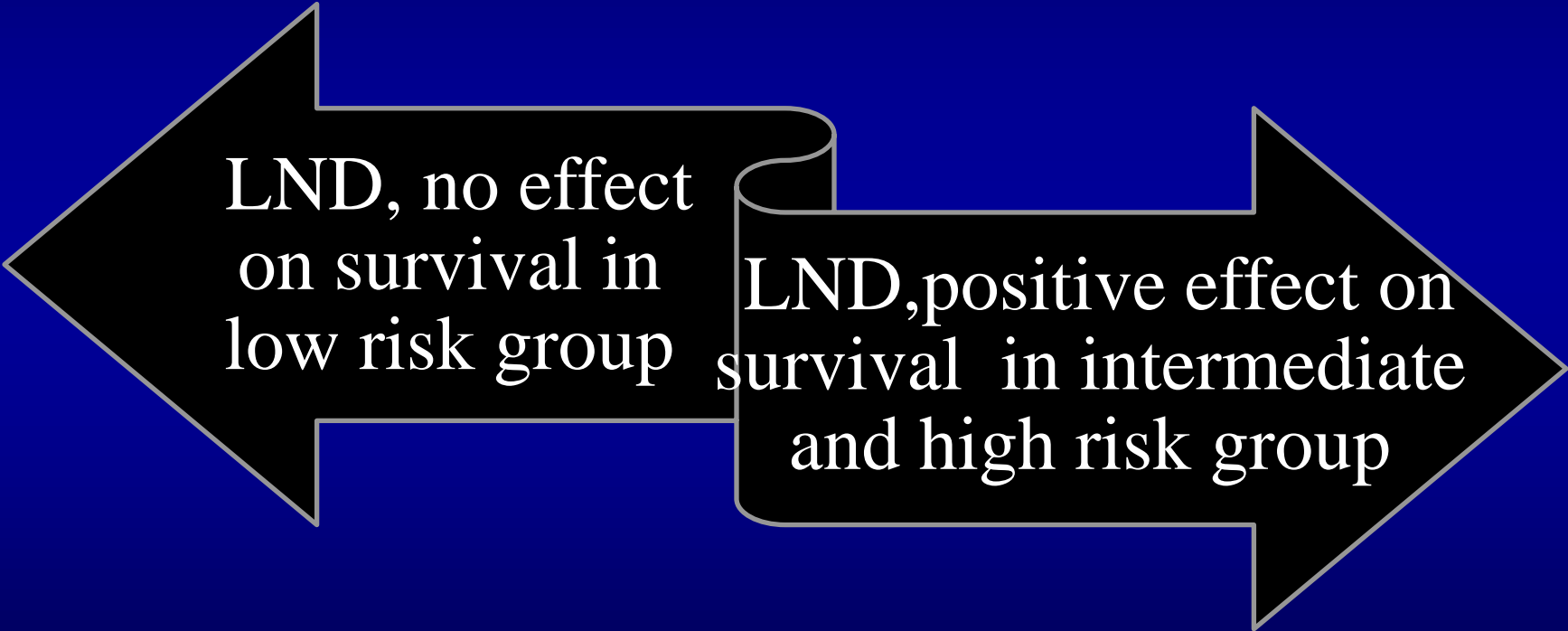
Table 4: Overall, disease-specific, and recurrence-free survival of patients with endometrial carcinoma according to type of lymphadenectomy and risk of recurrence

•Todo Y, Lancet, 2010

LN Metastasis; Prognostic Significance

Recurrence; LN (+) > LN (-) : 6X

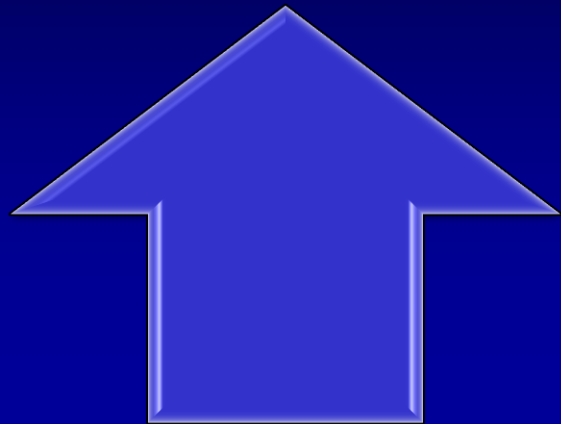
LND -Survival



LND, no effect
on survival in
low risk group

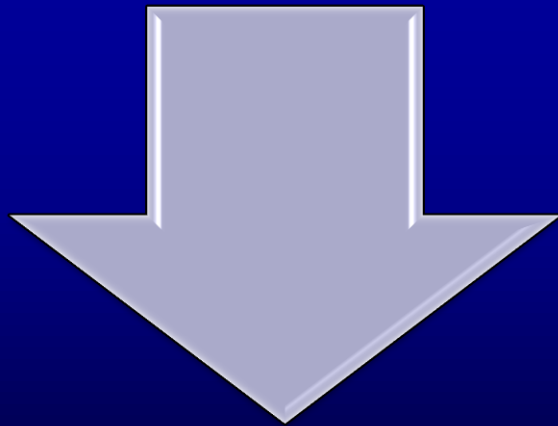
LND, positive effect on
survival in intermediate
and high risk group

Lymphadenectomy-Summary



Correct question

- Whom
- When



Wrong question

- Yes
- No

Surgical Treatment in Stage II



- Cervical adenocarcinoma should be excluded

Clinical Stage II EC

• T R E A T M E N T

• **Extrafascial hysterectomy + Staging + Rtx**

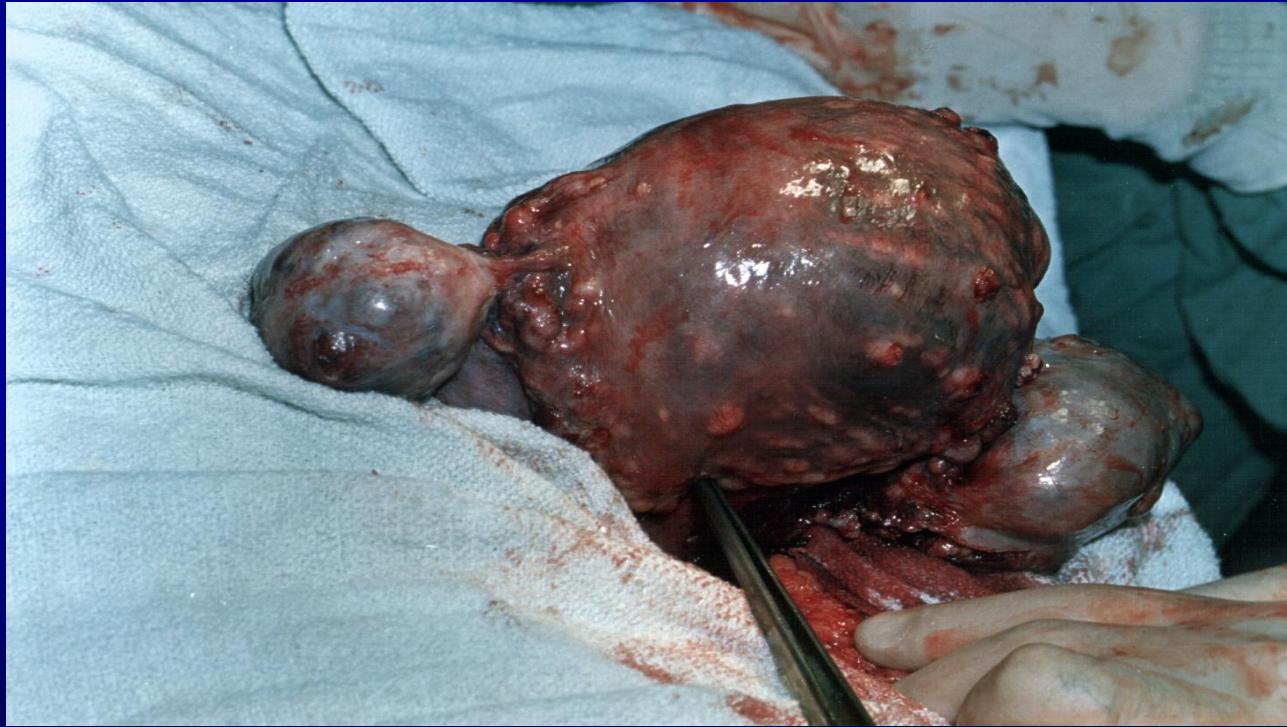
• **Radical Hysterectomy + Staging
+ Adj. Rtx (if indicated)**

Stage II; Radical Hys. vs Simple Hys.

	Simple Hys.	Radical Hys.
No of patients	315	127
LA (%)	233 (74)	126 (99.2)
Adj RT (%)	220/258 (85)	43/119 (36)
Rec(%)	57 (18)	10 (7.8)
Local rec.(%)	27 (8.5)	3 (2.4)
Distant rec.(%)	34 (11)	7 (5.5)
Death (%)	16/136 (12)	2/59 (3.4)

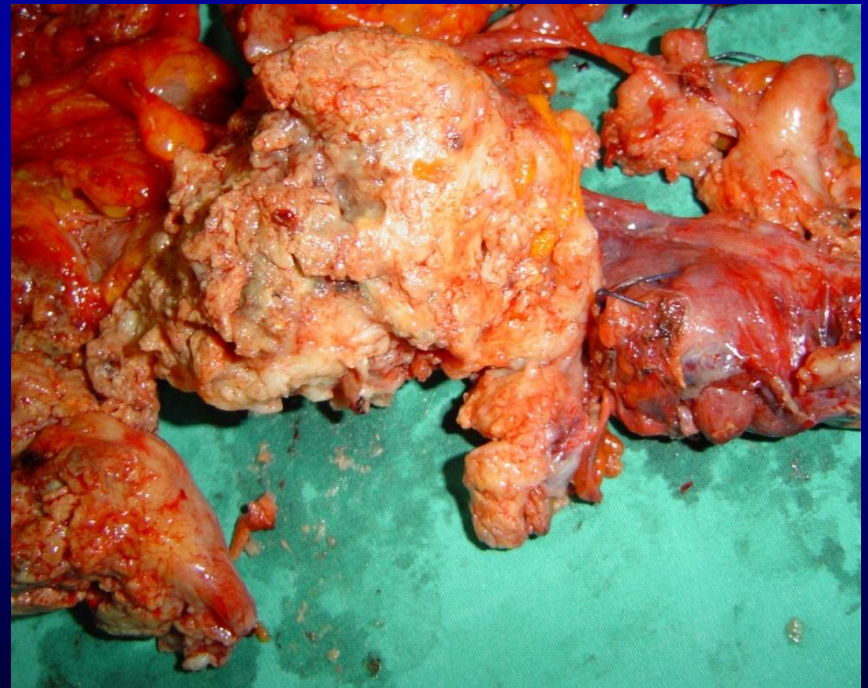
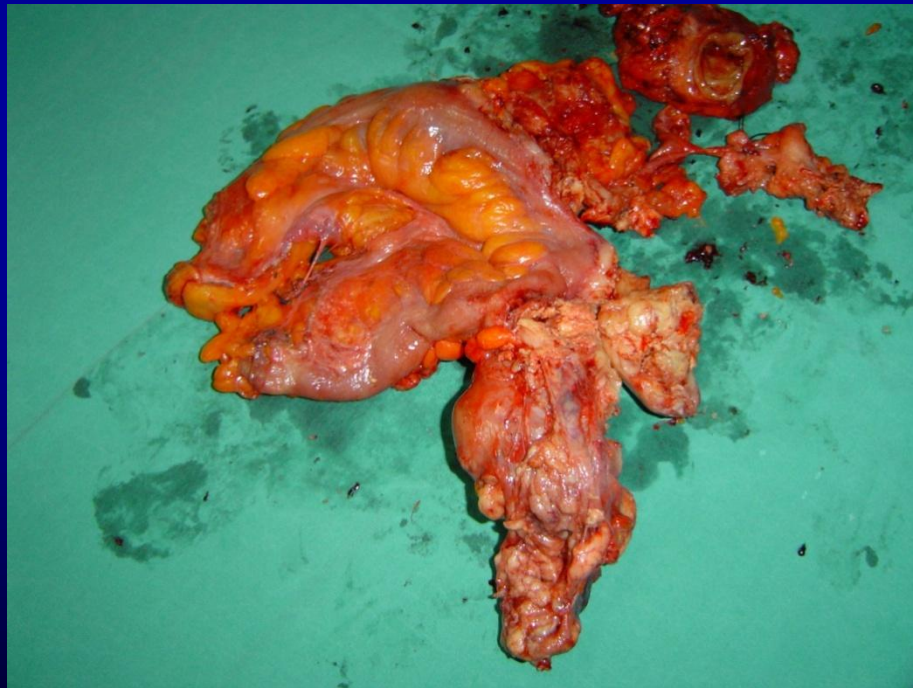
- Eltabbakh GH, Gynecol Oncol 1999; Calvin DP, Am J Clin Oncol 1999; Feltmate CM, Gynecol Oncol 1999;
- Mariani A, Gynecol Oncol 2001; Sartori E, Int J Gynecol Cancer 2001; Ayhan A, Gynecol Oncol 2004

Advanced Stage EC



Advanced stage & Treatment

Cytoreductive Surgery



Advanced Stage SURGERY

•Exp.

•TAH
+
BSO

•Eradication of
ALL
Macroscopic
tumors

•Lmp.

•Debulk.

•Oment.

TABLE 2. The effect of surgical cytoreduction in endometrial cancer

Authors (reference)	Year	N	FIGO stage	Definition of surgical cytoreduction	Outcome
Aalders et al ¹⁷	1984	108	III*	Surgical resection of all macroscopic tumor	5-year survival [†] : 41% vs 11%
Greven et al ¹⁸	1989	52	III* [†]	Surgical resection not further specified	5-year survival [†] : 48% vs 36%
Goff et al ¹⁹	1994	47	IV	Leaving no bulky disease; tumor residuum not stated	Median survival [†] : 18 vs 8 months [‡]
Chi et al ²⁰	1997	55	IV	Optimal cytoreduction defined as largest tumor nodule \leq 2 cm residual disease	Median survival: 31 months vs 12 months [‡]
Bristow et al ²¹	2000	65	IVB	Optimal cytoreduction defined as largest residual tumor \leq 1 cm	Median survival [§] : 34 months vs 11 months [‡]
Ayhan et al ²²	2002	37	IVB	Optimal cytoreduction defined as largest residual tumor \leq 1 cm	Median survival [§] : 25 months vs 10 months [‡]
Van Wijk et al ²³	2006	67	III or IV	Optimal cytoreduction defined as macroscopic removal of all tumor	5-year survival [§] : 66% vs 41%

*Clinical stage.

[†]Cytoreduction versus no cytoreduction.

[‡]Statistically significant.

[§]Optimal cytoreduction versus not optimal cytoreduction.

Microscopic	40,6 mo
1 cm or less	34 mo
More than 1 cm	11 mo

Advanced Stage EC

MORBIDITY \Rightarrow %16 -24

*Lambrou, Oncol, 2004 Gynecol
Ayhan, Int J Gynecol Cancer, 2002*

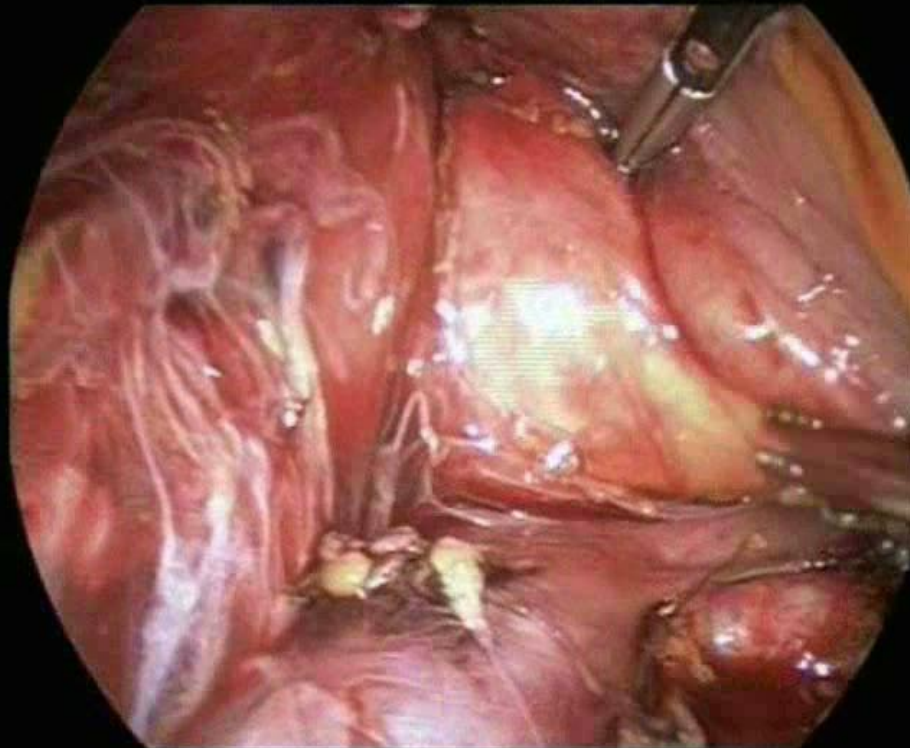
Topics of debate in surgical treatment of early stage EC

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Role of MIS in Endometrial Carcinoma

- **Application**
- **Complications**
- **QOL**
- **Oncogic out-come and safety**

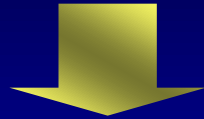
Laparoscopy



Early stage endometrial cancer

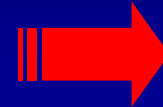


MIS

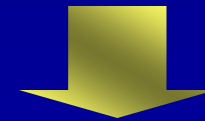


Evaluation of peritoneal cavity

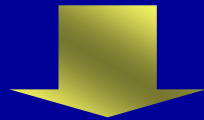
Peritoneal cytology



•IP disease



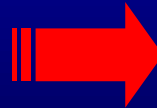
•L/T



•LAVH or LH



•Prognostic factors

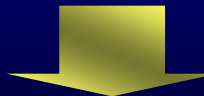


•MI > %50

•G3

•Cervical involvement

•Adnexal involvement



•Laparoscopic lymphadenectomy

Table 2. Comparison of postoperative complications between laparoscopy and laparotomy treatments for endometrial cancer

	% Postoperative complications	
	Laparoscopy	Laparotomy
Scribner <i>et al.</i> (1999) [9]	10.5	17.6
Eltabbakh <i>et al.</i> (2000) [10]	7.5	10.0
Eltabbakh <i>et al.</i> (2002) [13]	9.0	18.6
Langebrekke <i>et al.</i> (2002) [12]	3.7	4.1
Holub <i>et al.</i> (1998) [6]	15.2	20.4
Occelli <i>et al.</i> (2003) [15]	1.4	6.9
Litta <i>et al.</i> (2003) [14]	0	0
Kuoppala <i>et al.</i> (2004) [16•]	17.5	32.5

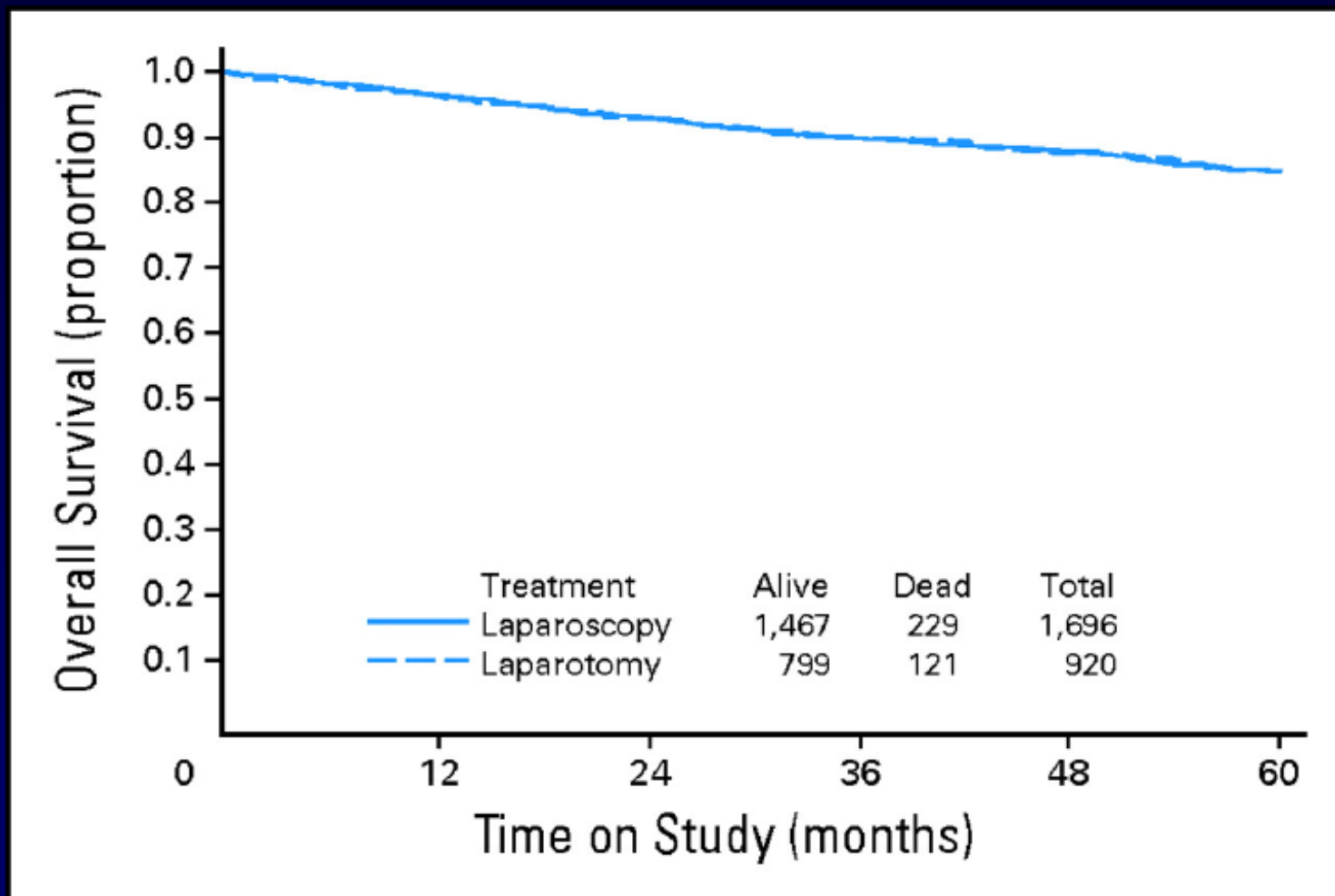
•Laparoscopy is associated with similar or lower complication rates compared to laparotomy

Laparotomy vs Laparoscopy

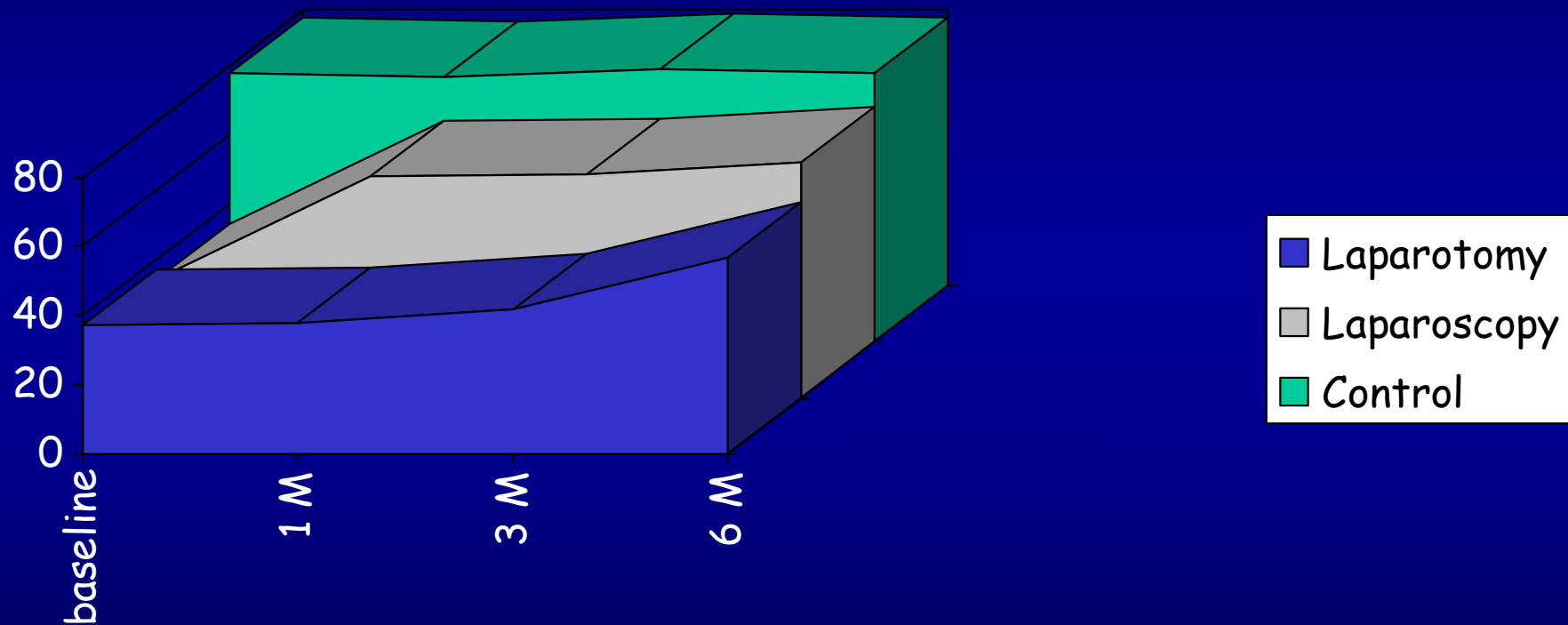
Author	Recurrence (%)		DFS(%)	
	LPT	LS	LPT	LS
Eltabbakh GH	10.5	7	92	90
Holub Z	6.8	6.2	93.2	93.7
Langebrekke A	4.1	0	95.9	100
Kuoppala T	2	2.5	95	100

• **Recurrence and DFS are similar between laparoscopy and laparotomy group**

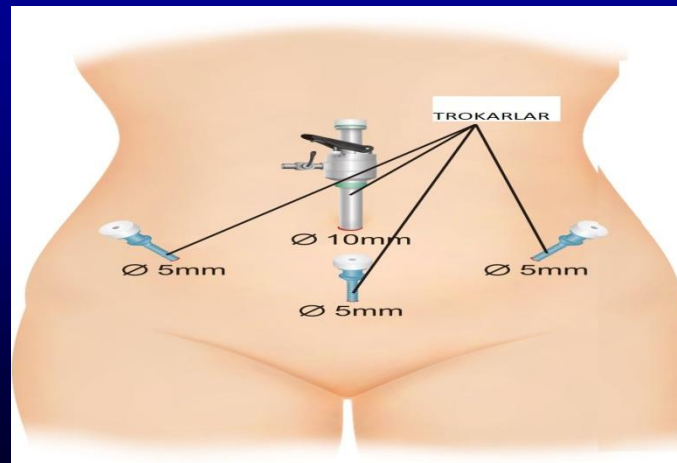
Overall Survival – LAP 2 GOG Study (n = 2616)



Quality of Life



Robotic Surgery



Survival analysis of robotic versus traditional laparoscopic surgical staging for endometrial cancer

Joel Cardenas-Goicoechea, MD; Amanda Shepherd, MD; Mazdak Momeni, MD; John Mandeli, PhD; Linus Chuang, MD; Herbert Gretz, MD; David Fishman, MD; Jamal Rahaman, MD; Thomas Randall, MD

Am J Obstet Gynecol 2014;210:160.e1-11.

- **415 EC**
 - **183 robotic (97% pelvic, 73% paraaortic LND)**
 - **232 laparoscopic (94% pelvic, 63% paraaortic LND)**

Survival analysis of robotic versus traditional laparoscopic surgical staging for endometrial cancer

Joel Cardenas-Goicoechea, MD; Amanda Shepherd, MD; Mazdak Momeni, MD; John Mandeli, PhD; Linus Chuang, MD; Herbert Gretz, MD; David Fishman, MD; Jamal Rahaman, MD; Thomas Randall, MD

Demographics

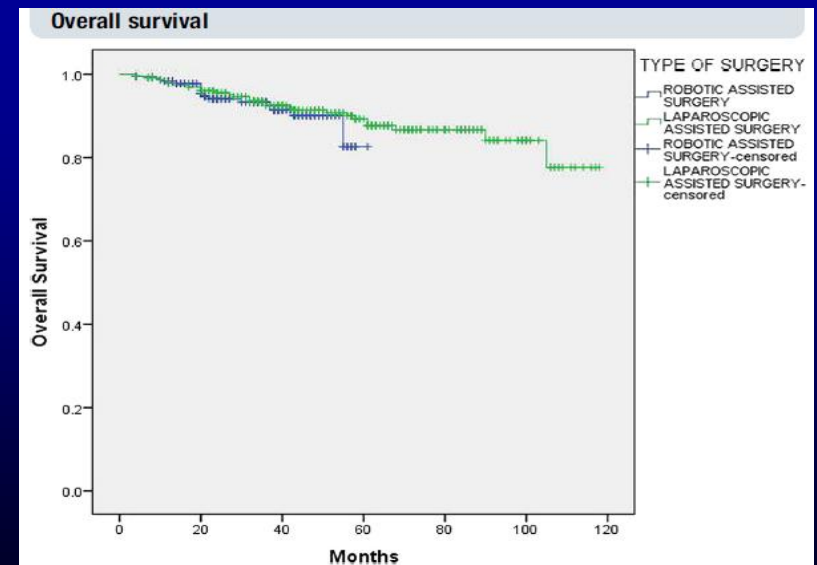
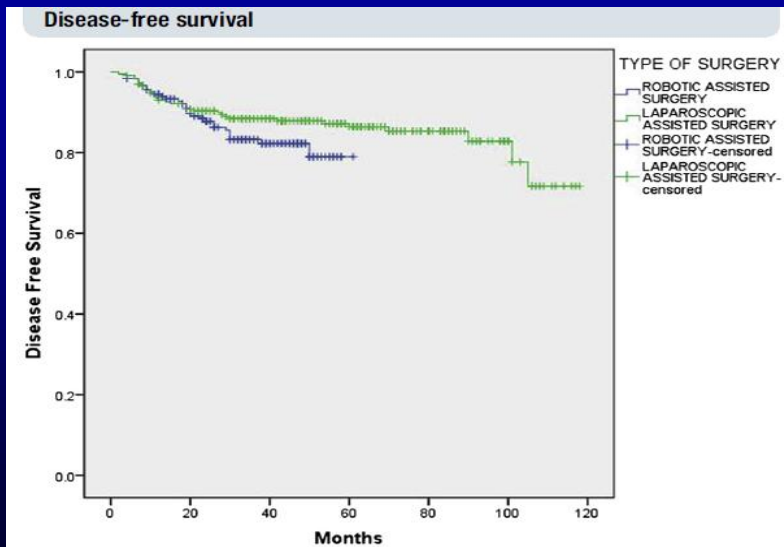
Variable	Robotic (n = 183)	Laparoscopy (n = 232)	P value
Median age, y (range)	62 (39–86)	61 (27–86)	.56
BMI, kg/m ² (range)	29.2 (17–55)	29.3 (17–58)	.20
Comorbid condition, n (%)	118 (65)	145 (63)	.68
HTN, n (%)	89 (49)	120 (52)	
Diabetes, n (%)	29 (16)	37 (16)	
Coronary artery disease, n (%)	13 (7)	17 (7)	
Hyperlipidemia, n (%)	61 (33)	62 (27)	
Conversion, n (%)	5 (2.7)	12 (5.2)	.21
Surgical stage, n (%)			.25
I	153 (84)	197 (85)	
II	4 (2)	12 (5)	
III	23 (13)	21 (9)	
IV	3 (1.6)	2 (0.9)	
Grade, n (%)			.15
1	79 (43)	113 (49)	
2	52 (28)	72 (31)	
3	52 (28)	47 (20)	
Histology, n (%)			.71
Endometrioid	146 (80)	196 (84)	
Serous	14 (8)	14 (6)	
Clear cell	4 (2)	3 (1)	
Mixed	12 (7)	10 (4)	
Carcinosarcoma	7 (3.6)	13 (4.8)	
Undifferentiated	0	1 (0.4)	
Median node counts			
Pelvic (range)	13 (2–50)	15 (1–52)	> .05
Paraaortic (range)	8 (1–27)	7 (1–29)	> .05
Total (range)	19 (2–61)	20 (2–60)	> .05
Adjuvant therapy, n (%)			.11
No treatment	108 (59)	156 (67)	
Radiation only	24 (13)	34 (15)	
Chemotherapy only	19 (10)	19 (8)	
Chemotherapy + radiation	32 (17)	22 (9)	
Refused	0	1 (0.4)	

TABLE 2
Recurrence

Variable	Robotic, n = 183	Laparoscopy, n = 232	P value
Recurrence, n (%)	27 (14.8)	28 (12.1)	.42
Isolated vaginal cuff, n (%)	1 (0.5)	5 (2.2)	.17
Pelvis, n (%)	7 (3.8)	10 (4.3)	.80
Abdomen ± pelvis, n (%)	15 (8.2)	11 (4.7)	.15
Distant ± pelvis ± abdomen, n (%)	9 (4.9)	9 (3.9)	.61
Time for surgery to first recurrence			
Median, mo (range)	19 (2–50)	11.25 (2–70)	.36

Cardenas-Goicoechea. Survival analysis of robotics and traditional laparoscopy for endometrial cancer. Am J Obstet Gynecol 2014.

•Recurrence and over-all survival are similar in both group



MIS in EC SUMMARY

- **If performed experienced surgeon**
 - **Similar oncologic outcome with laparotomy**
 - **Short hospital stay**
 - **Better QOL**
 - **Early adjuvant treatment**
 - **Preferable in morbid obese patients**

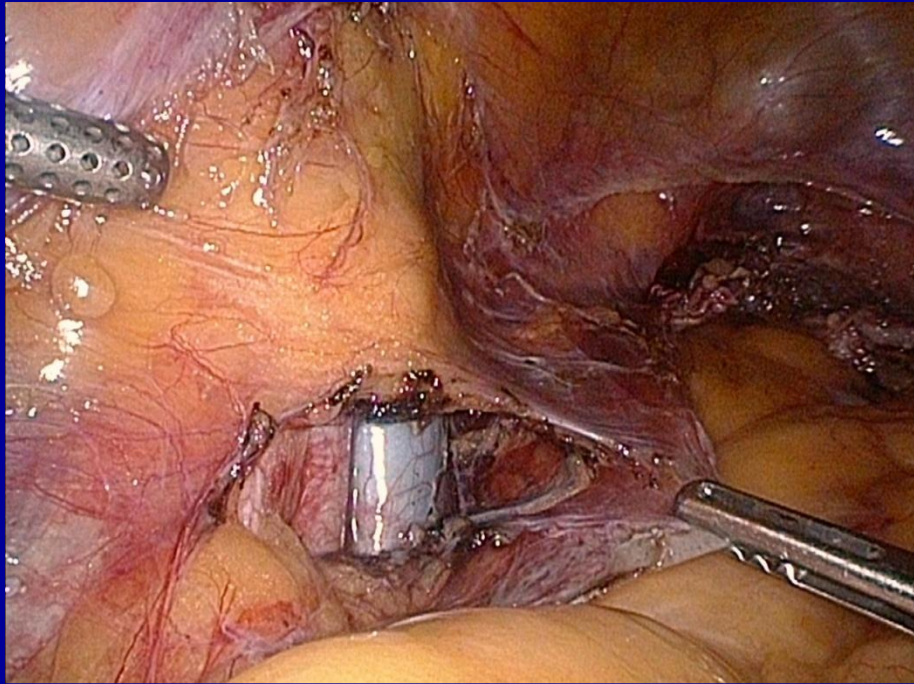
Topics of debate in surgical treatment of early stage EC

- LND to all patients?
- Type of LND ; sampling vs systematic?
- Only pelvic vs PABPLND?
- LND;therapeutic or diagnostic ?
- MIS vs Laparotomy ?
- **Sentinel Lymph Node Concept?**

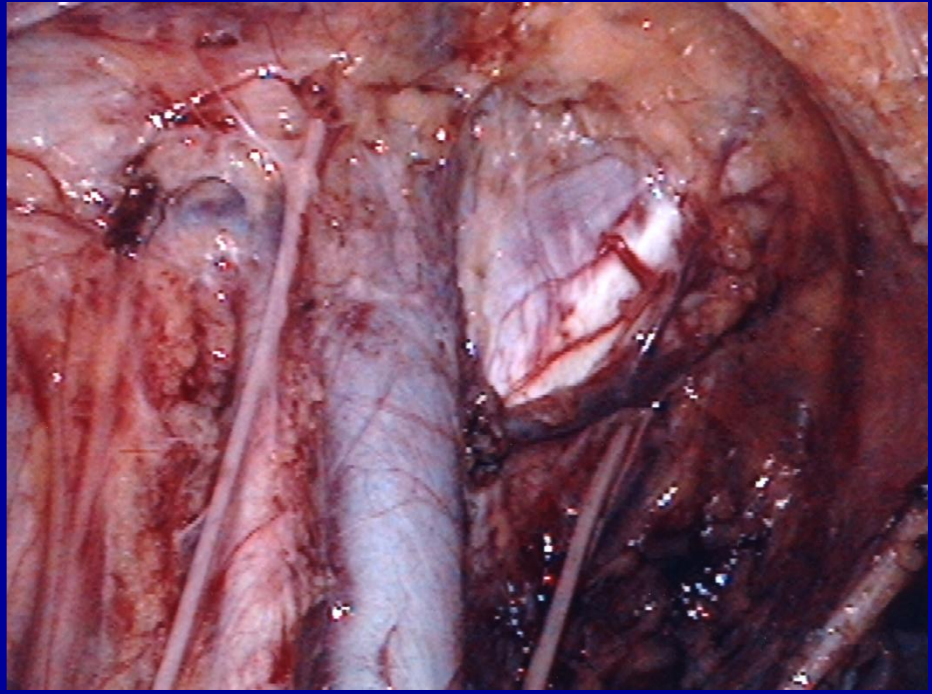
Why SLN mapping?

- **Avoid excessive lymphadenectomy and reduce operative time and morbidity**
- **Proper tailoring of the extent of lymphadenectomy**
- **Increase the detection rate of positive node(IHC,ultrasectioning)**

- Current Practice
- “LESS IS MORE”

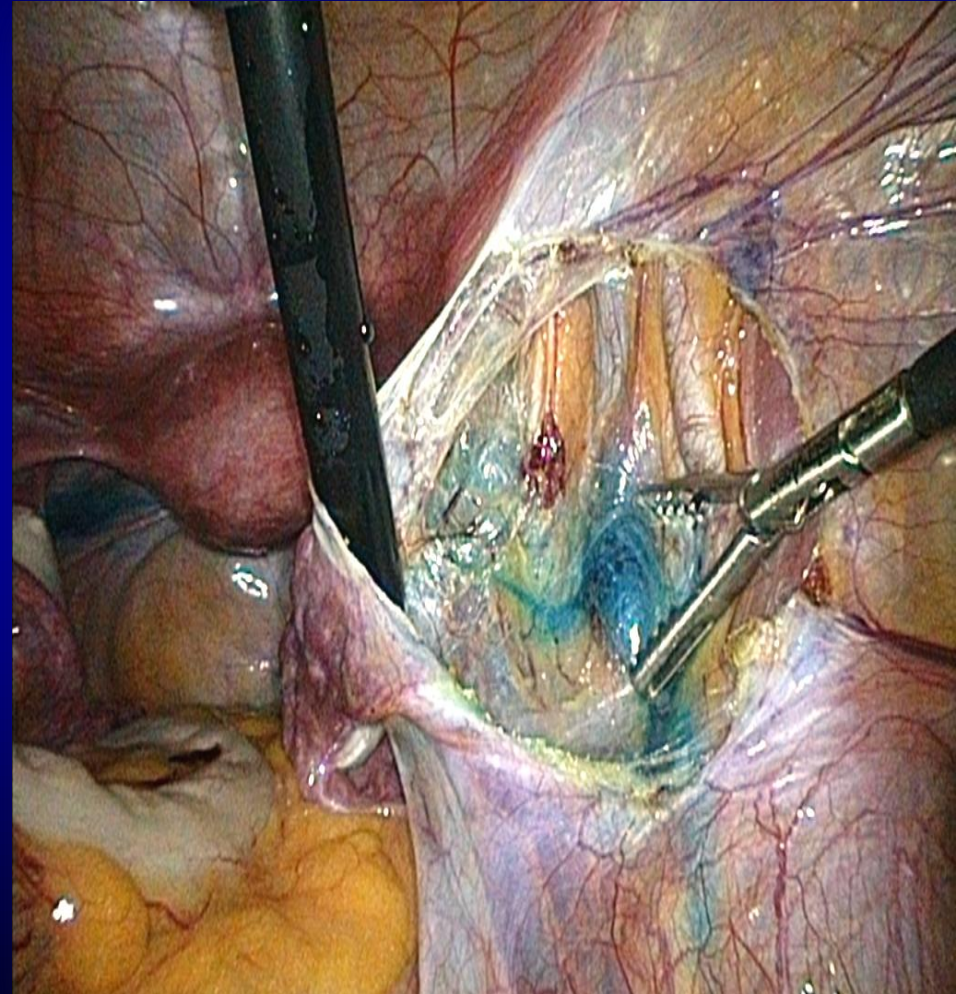
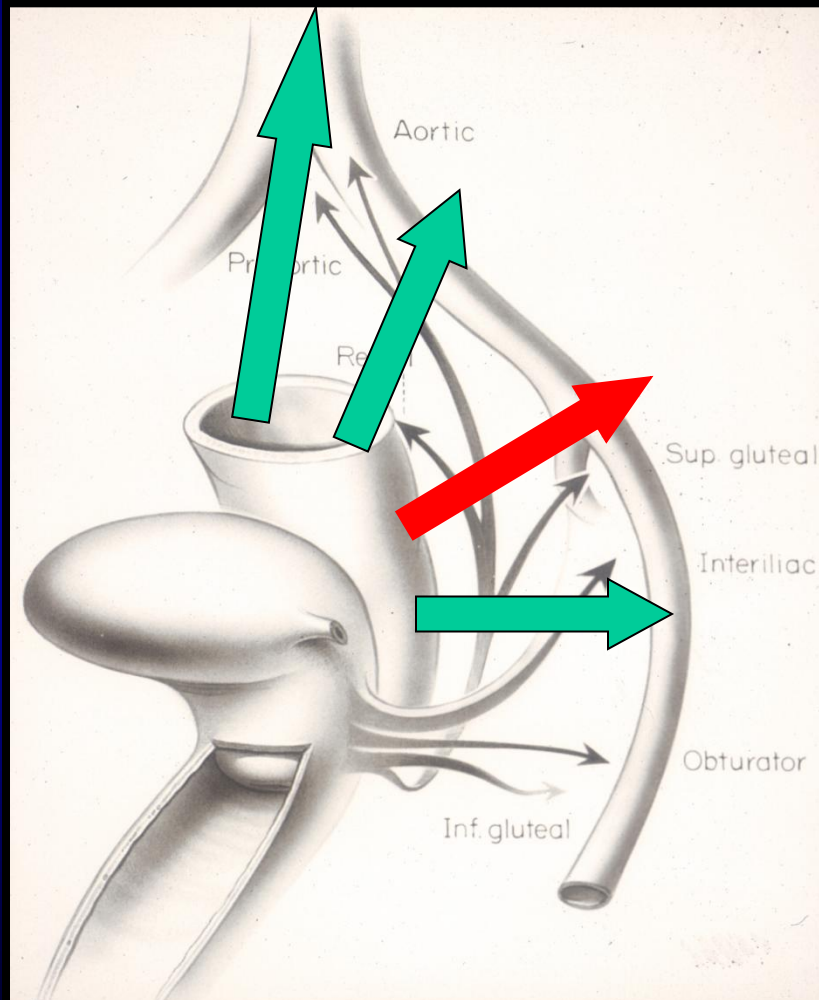


•Sentinel Node Mapping



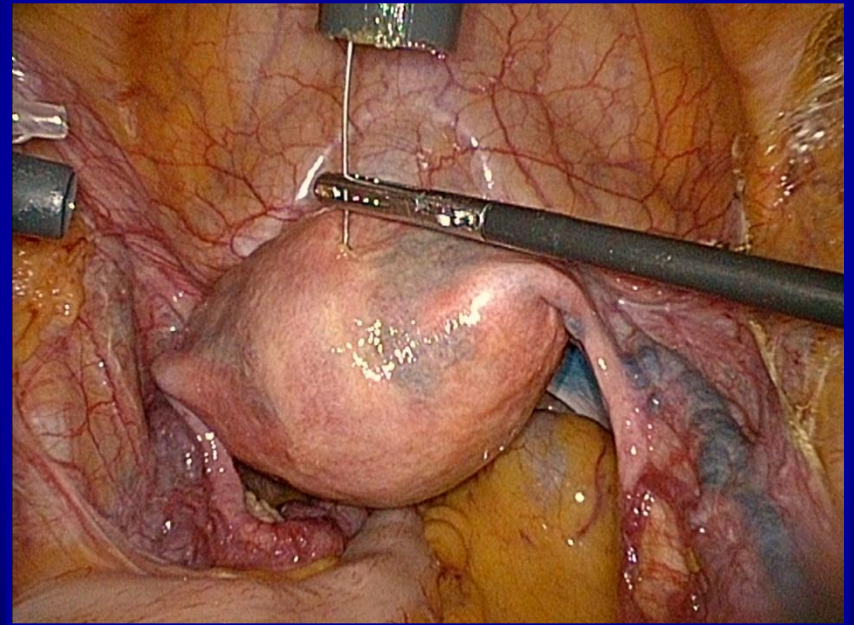
•Lymphadenectomy

Uterine SLN Complex Lymphatic Drainage



Debate

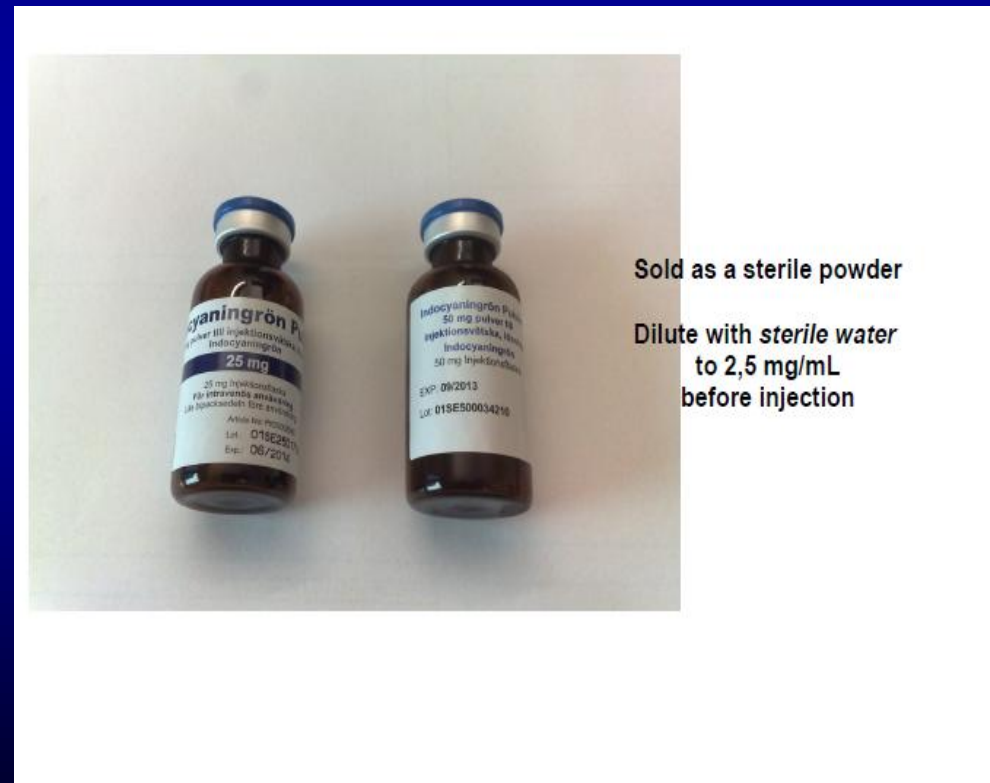
Cervical vs. Fundal Injections vs. Hysteroscopic



Blue Dye Cervical Injection Under Anesthesia

Isosulfan Blue 1% (50mg/5ml)

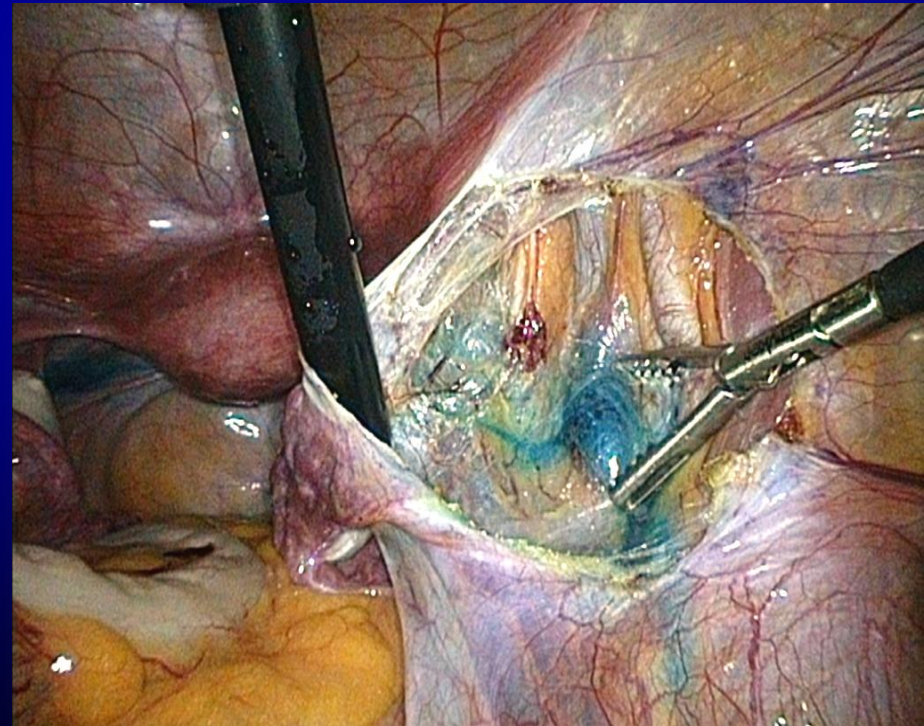
2cc at 3 O'clock & 2cc at 9 O'clock



Improving SLN detection rates

How many cases are needed?

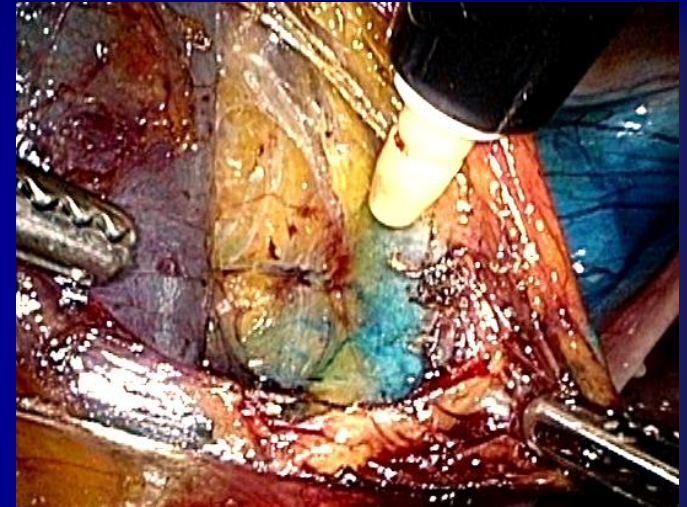
- **After the first 30 cases**
 - Rate of successful mapping increased from 77% to 94% (P=0.03)



MSKCC Results

Number of cases: 266

SLN Detection rate: 84%



•Khoury-Collado F, et al. Gynecol Oncol 2011

SLN Mapping for EC

Table 1. Sentinel node mapping for endometrial cancer

Author [reference]	No. of patients	Substance	Injection site	Detection rate
Burke et al. [44]	15	B	S	67
Echt et al. [47]	8	B	S	0
Holub et al. [48]	25	B	C, S	84
Gien et al. [49]	9	B	S	56
Li et al. [50]	20	B	S	75
Frumovitz et al. [51]	18	R, B	S	45
Altgassen et al. [52]	23	B	S	92
Lopes et al. [53]	40	B	S	78
Robova et al. [54]	67	R, B	S	73
	24	R	H	50
Niikura et al. [55]	28	R	H	82
Fersis et al. [56]	10	R	H	50
Maccauro et al. [57]	26	R, B	H	100
Delaloye et al. [58]	60	R, B	H	82
Solima et al. [59]	80	R	H	95
Perrone et al. [60]	17	R	H	65
Bats et al. [61]	43	R, B	C	70
Delpech et al. [62]	23	R, B	C	83
Mais et al. [63]	34	B	C	62
Ballester et al. [64]	133	R, B	C	89
Barlin et al. [46]	498	B (75 patients also with R)	C	81
Gargiulo et al. [65]	11	R, B	C	100
Pelosi et al. [66]	16	R, B	C	94
Lelievre et al. [67]	12	R, B	C	91

B, blue dye; S, subserosal; C, cervical; R, radioactive; H, hysteroscopic.

Sentinel Lymph Node in Endometrial Cancer: A Review

*Cyril Touboul · Enrica Bentivegna · Catherine Uzan ·
Sebastien Gouy · Patricia Pautier · Catherine Lhommé ·
Pierre Davillard · Christine Haie-Meder · Philippe Morice*

Published online: 5 November 2013

**Review of a total of 899 patients with cervical injection
for detection of SLN in endometrial cancer
Radiocolloid +dye in 854 patients**

**96 ptn (10.7%) node positive 11 ptn (10.2%) false negative
Pelvic detection rate 82.9% Paraaortic detection rate 6.5%
Mean number of nodes detected 2.4**

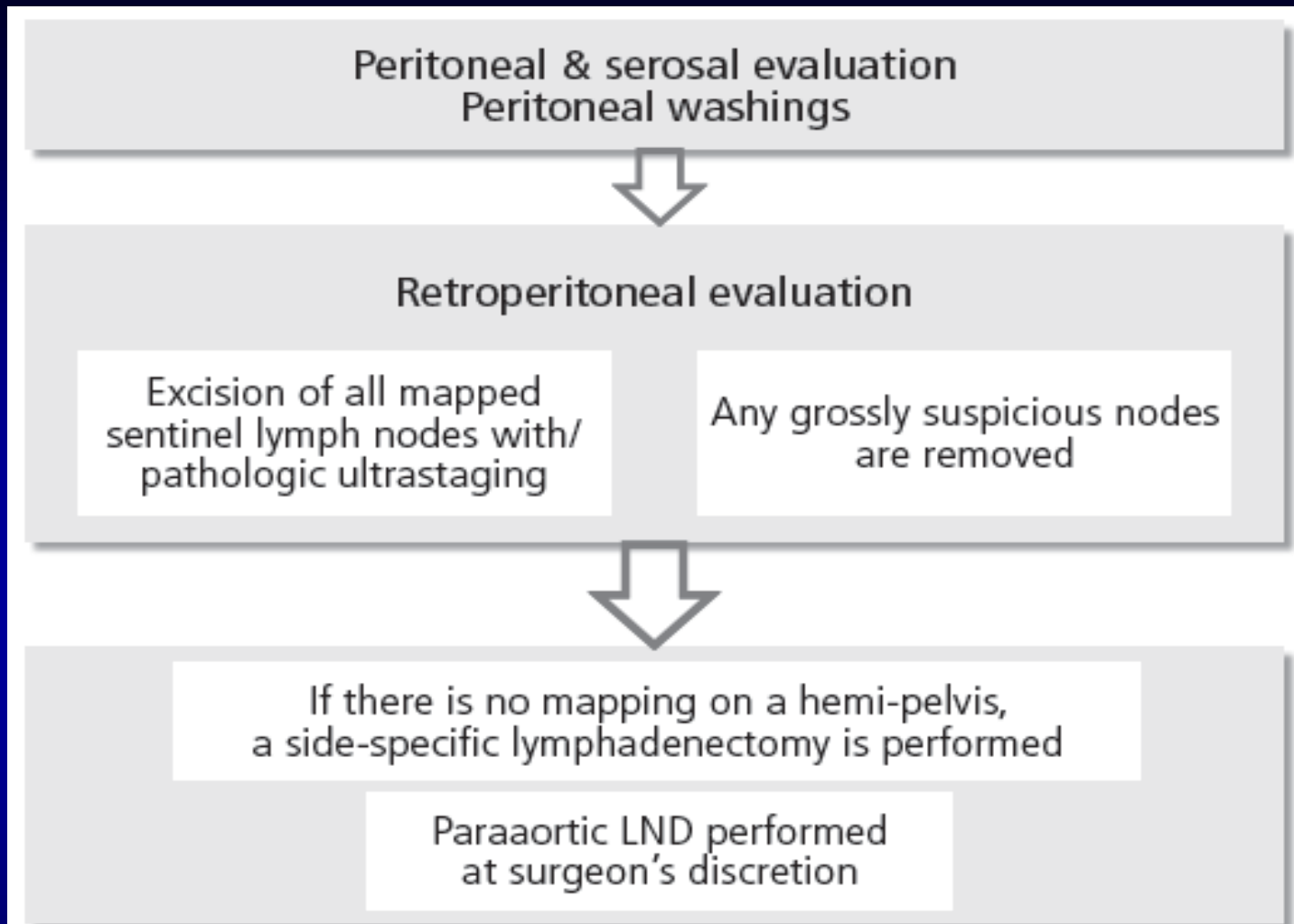


Fig. 1. Surgical algorithm for endometrial cancer. LND, lymph node dissection (From Barlin JN, et al. *Gynecol Oncol* 2012;125:531-5, with permission from Elsevier) [46].

Sentinel node mapping(Algorithm)

- **After applying the algorithm, the false negative rate for detecting nodal metastasis dropped from 15% to 2%**

Barlin et al .Gynecol Oncol 2012;125:531-5

Recurrence

Stage	(%)	Site	(%)
Stage I	15	Distant	65
Stage II-IV	25-45	Vagina	6
Overall	15	Pelvic	15

Recurrent EC-Treatment

- **Patient's performance**
- **Primary treatment**
- **Site of recurrence**

Surgery

XRT

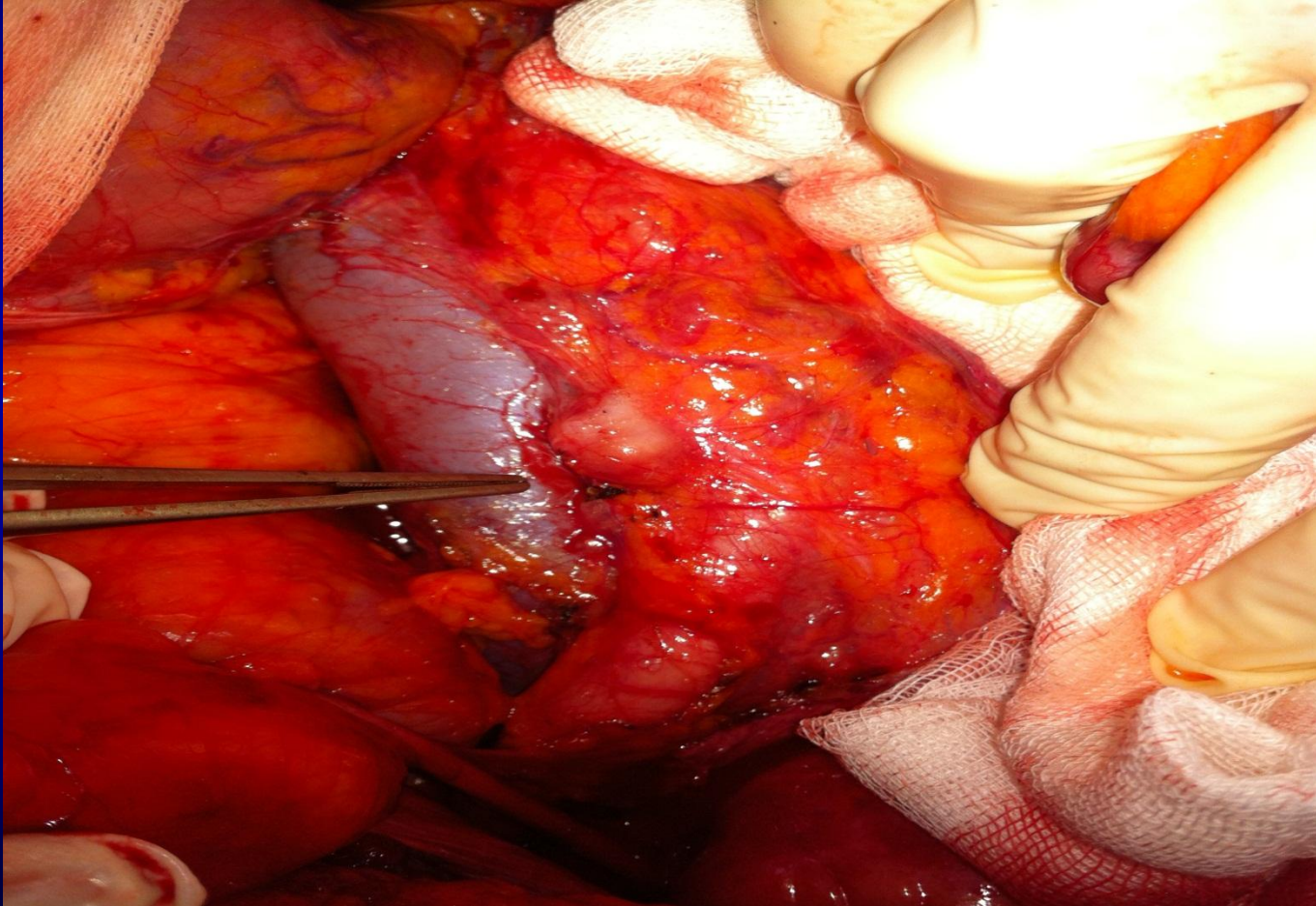
HORMONAL THERAPY

CHEMOTHERAPY AND TARGETED THERAPY

Local Recurrence



Isolated Lymphatic Recurrence



Isolated intestinal recurrence



Pelvic Exenteration (Pelvic recurrence)

- **Endometrial cancer ?**
- **Total exenteration is better than standart debulking surgery plus XRT has not shown**
- **5Y OS; %30-56**
- **Major surgical complication;60-80%
Fistula, abcess , septisemia**

Barakat RR, Gynecol Oncol,1996; 1999; Morris M, Gynecol Oncol, 1996;

Kuten A, Int J Radiat Oncol Biol Phys, 1989

Peritoneal Carcinomatosis

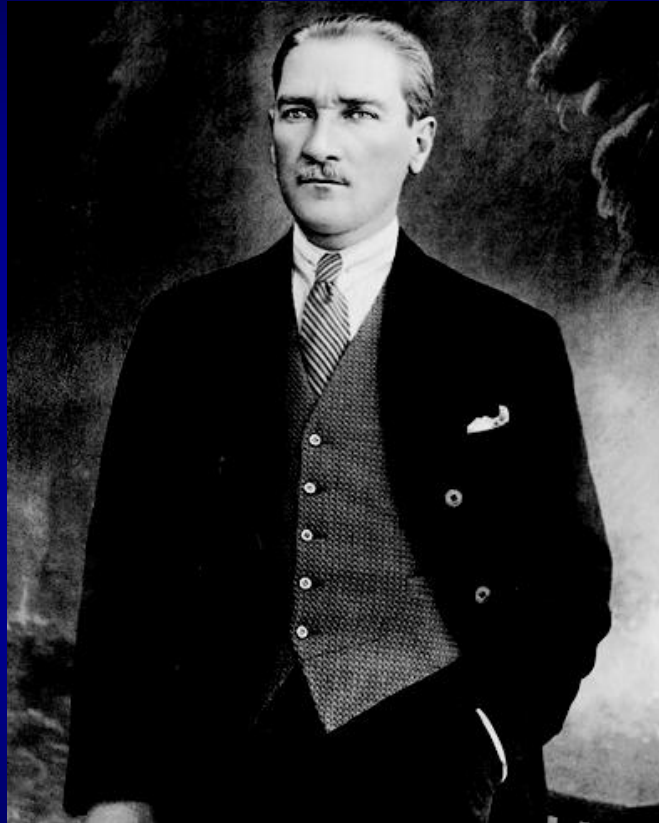
- Peritoneal Carcinomatosis
Cytoreductive surgery?????
Chemo.or Hormonal Therapy(G1)

Surgical Treatment of EC

Summary

- **In early stage EC, comprehensive surgical staging except low risk group**
- **In advanced EC: Cytoreductive surgery**
- **MIS has similar oncologic outcome, less complications, better QOL vs open surgery**
- **MIS or vaginal Hys. is preferable in obese patients with EC because of morbidity**
- **Sentinel LN mapping is applicable but not standard yet.**

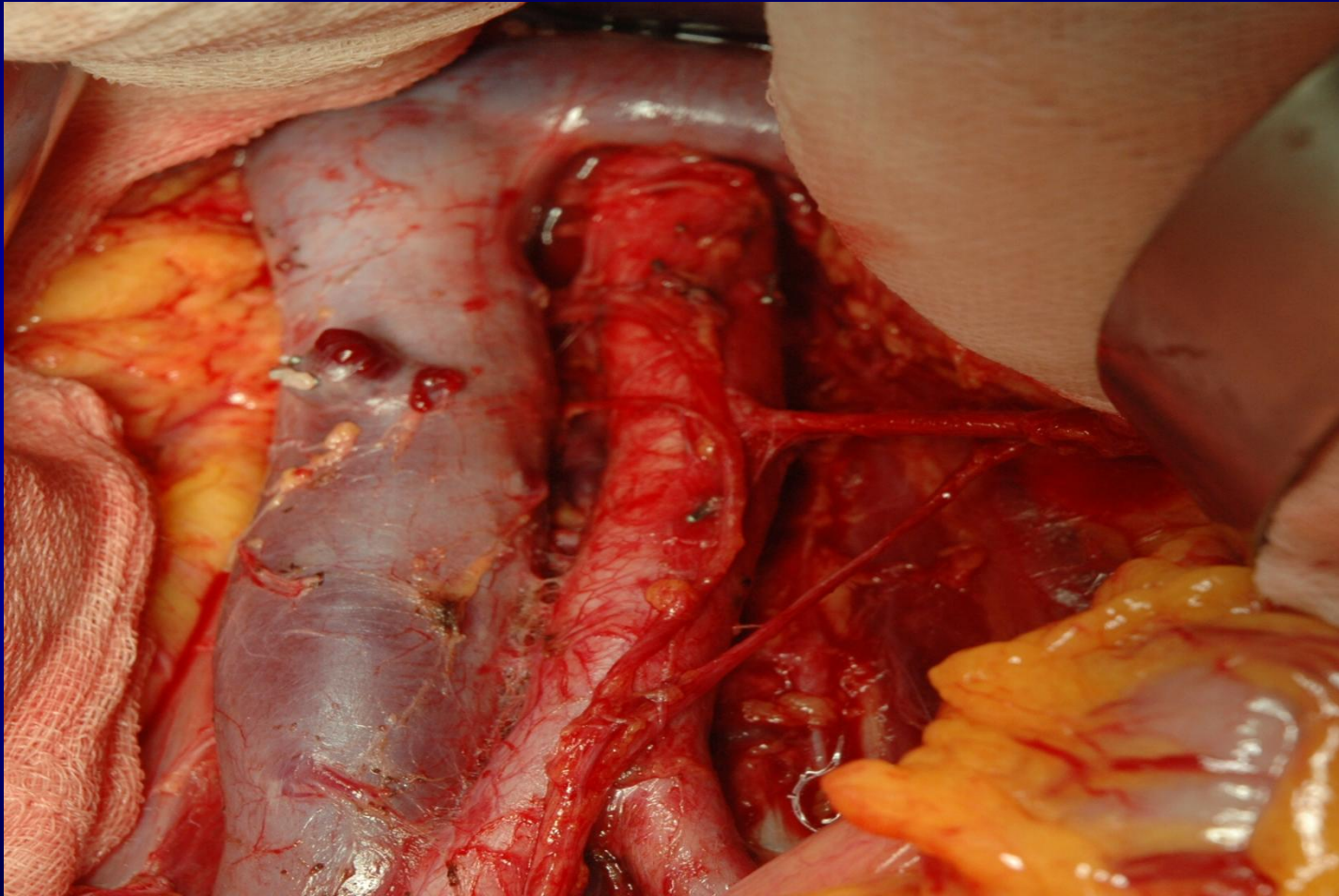
Thanks!



Pelvic Lymphadenectomy



Paraaortic Lymphadenectomy



Stage

Stage	%
I	73
II	11
III	13
IV	3

Cytoreduction in Stage IV EC

• **C O N C L U S I O N**

All studies are retrospective

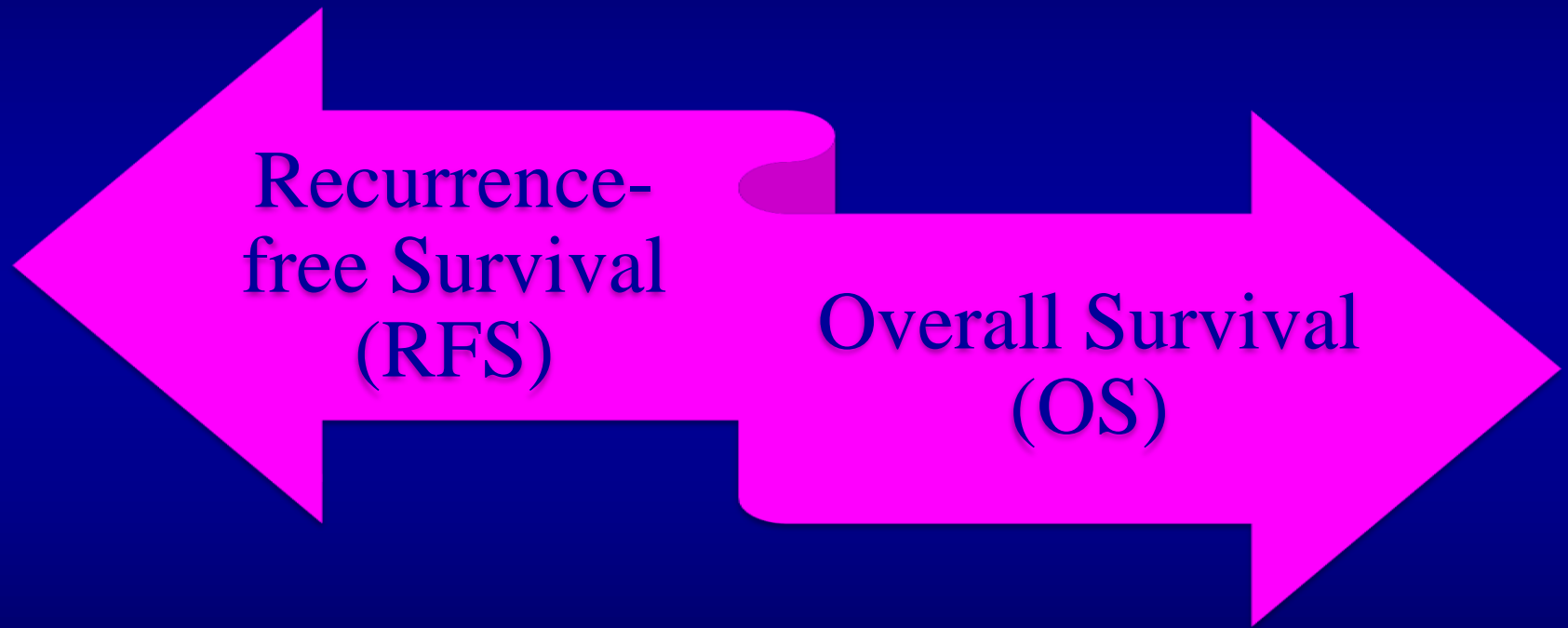
Relatively small number of patients

Residual tumor is prognostic for outcome

Neoadj Ctx ?

Postoperative standard Treatment?

MIS vs LPT Primary Results



•MIS: Minimal invaziv cerrahi, LPT: Konvansiyonel cerrahi

The use of SLN techniques in cervical and endometrial cancer

Avoid excessive lymphadenectomy / reduce
operative time and morbidity

Proper tailoring of the extent of lymphadenectomy

Increase the detection rate of positive node
(ultrasectioning, IHC)

Identify nodes outside normal retrieval areas

Learning the anatomy of the lymphatic system

Controversies in endometrial cancer

Principles for risk groups not consistent

Survival benefit from lymphadenectomy ?

Appropriate extent of lymphadenectomy ?

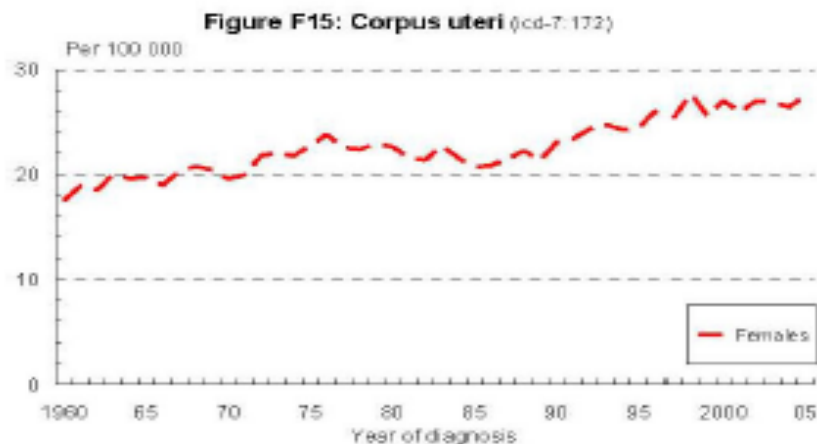
Diagnostic or therapeutic lymphadenectomy?

Principles for adjuvant/ oncological treatment not consistent

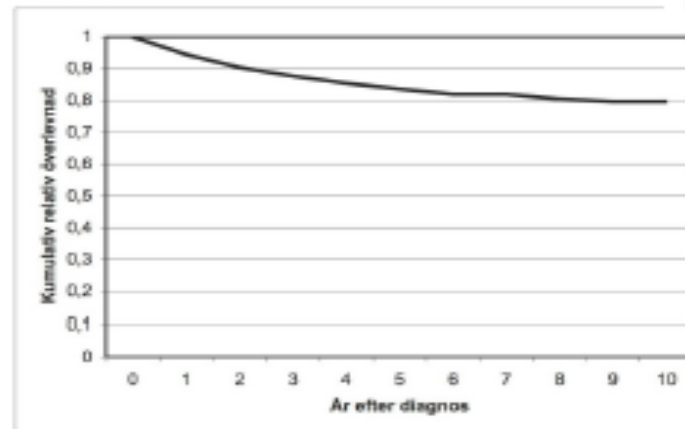
Effective treatment in case of paraaortic/ disseminated spread?

The morbidly obese/ comorbid patient dilemma

Basic data endometrial Cancer



FIGUR 5



Relativ överlevnad / corpuscancer 1993-2003

Endometrial cancer

5 year Disease free survival

87% node negative patients

71% pos pelvic nodes

36% pos paraaortic node*



We need to know nodal status

To give the right treatment
To evaluate treatments
To schedule follow up
Intervals and how to check

* Morrow CP et al, GOG study Gynecol Oncol 1991

Nodal involvement in EC

High Risk EC (appr 70%*)

>2cm or >50%MI or Grade III,
non endometrioid hist (*"Mayo criteria"*)

20% node positive (17% p+-pa, 3% skip pa)

89% of 514 (457pts) high risk
patients were staged

Mean number of pelvic nodes

36 (+ -14)

Mean number of paraaortic
nodes

18 (+ -9)

Low Risk EC (appr 30%)

None of above

Appr 5% node positive

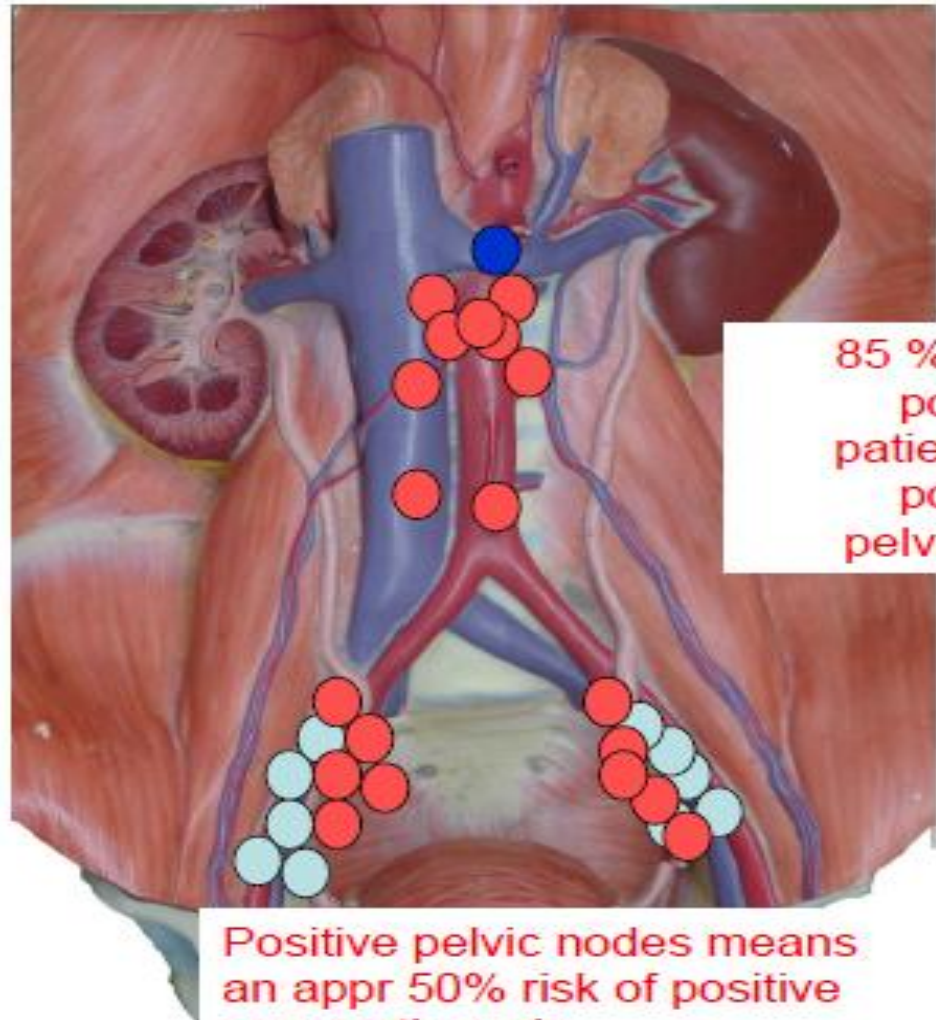
* Kumar, Podratz; Mariani et al. Gynecol Oncol 2013

● Isolated positive paraaortic nodes 3% of high risk patients (negative pelvic nodes)

● Positive pelvic AND paraaortic nodes 9%

● Positive pelvic nodes* 17%

* Includes patients with positive paraaortic nodes



85 % of node positive patients have positive pelvic nodes

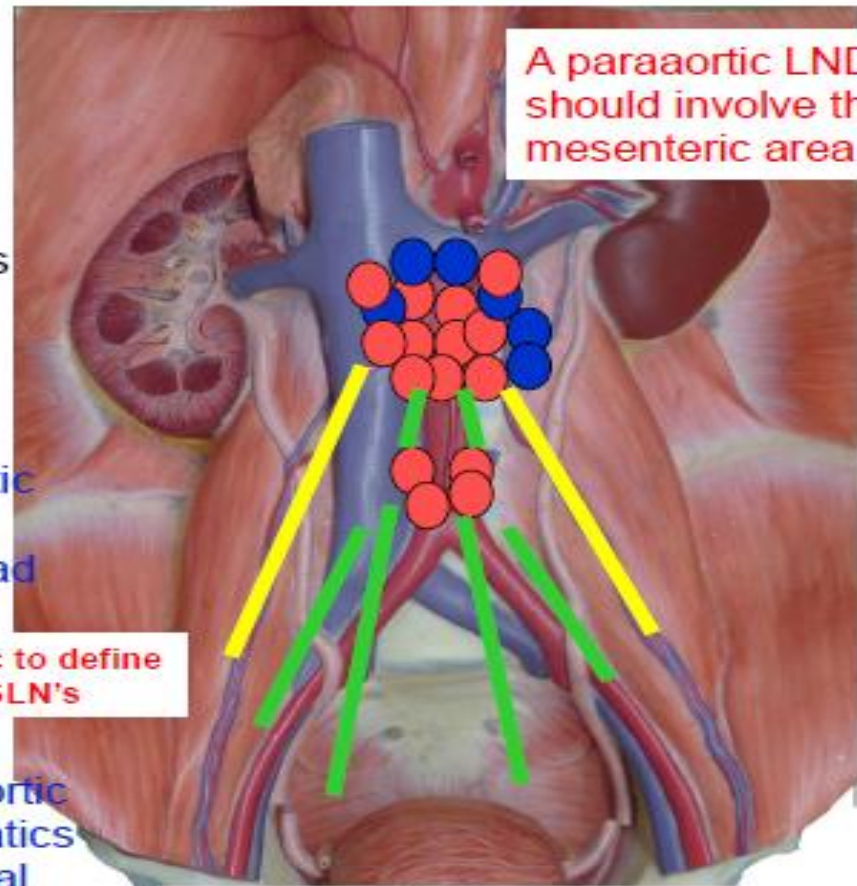
Positive pelvic nodes means an appr 50% risk of positive paraaortic node

Positive paraaortic nodes include the supramesenteric area in 88 % of cases

35% paraaortic positive nodes are ONLY in the supra-mesenteric area

Tumor spread high paraaortic nodes via the IP ligament or by further presacral spread

Tumor spread to low paraaortic nodes via presacral lymphatics or further spread from lateral pelvic lymphatics



A paraaortic LND should involve the supra-mesenteric area

Problematic to define paraaortic SLN's

Positive pelvic nodes means an appr 50% risk of positive paraaortic node

Injection technique

Use a 1 mL syringe with thin long needle

" the hydraulic principle"

Pressure = $N/sqm = 1$ Pascal

The force to press the syringe piston will be multiplied by the difference between syringe needle area and piston area

Injection technique

Chapel Hill (Rossi*)

0,5mg 1cm into the cervical stroma 3 and 9 clockwise

Florida (Holloway**)

0,6mg " each cervical quadrant" depth not stated


Lund:

Slowly submucosally (cervical ca)
at 2-4-8-10 clockwise at cervix (total 1,25 mg/side)

Slowly submucosally + 2cm into stroma (endom ca)

Optimal dose

0.65-1.25 mg per side
(0.25-0,5 mL)



*Rossi et al. Robotically assisted fluorescence-guided Lymph node mapping with ICG for gynecologic Malignancies: feasibility study. Gynecol Oncol (124);78-82

**Holloway R et al. Detection of sentinel lymph nodes in Patients with endometrial cancer undergoing robotic-assisted Staging..... Gynecol Oncol 2012(128); 25-9

● Paraortic "skip mets"
1,5-5 % of node
Positive patients

● Positive pelvic and
paraortic nodes 46-50%

● Positive pelvic nodes only
48-54%

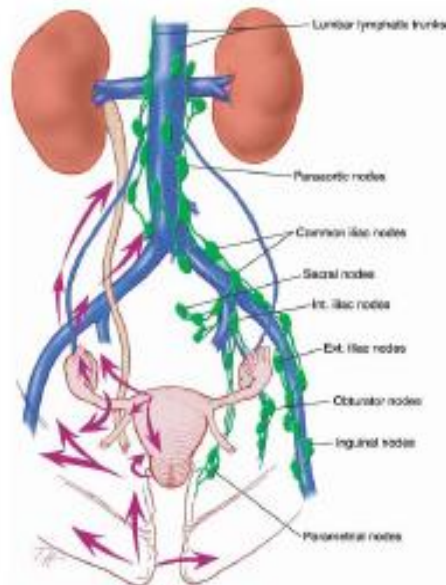
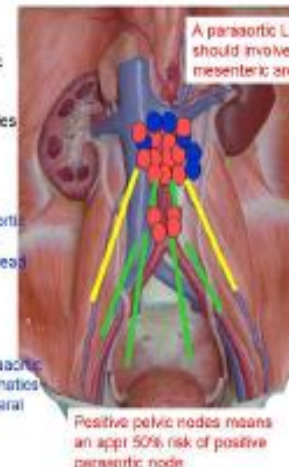


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nodes via the IP ligament
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Tumor spread to Low paraaortic
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or further spread from lateral
pelvic lymphatics



There are only two ways routes for lymphatic
spread from the uterus

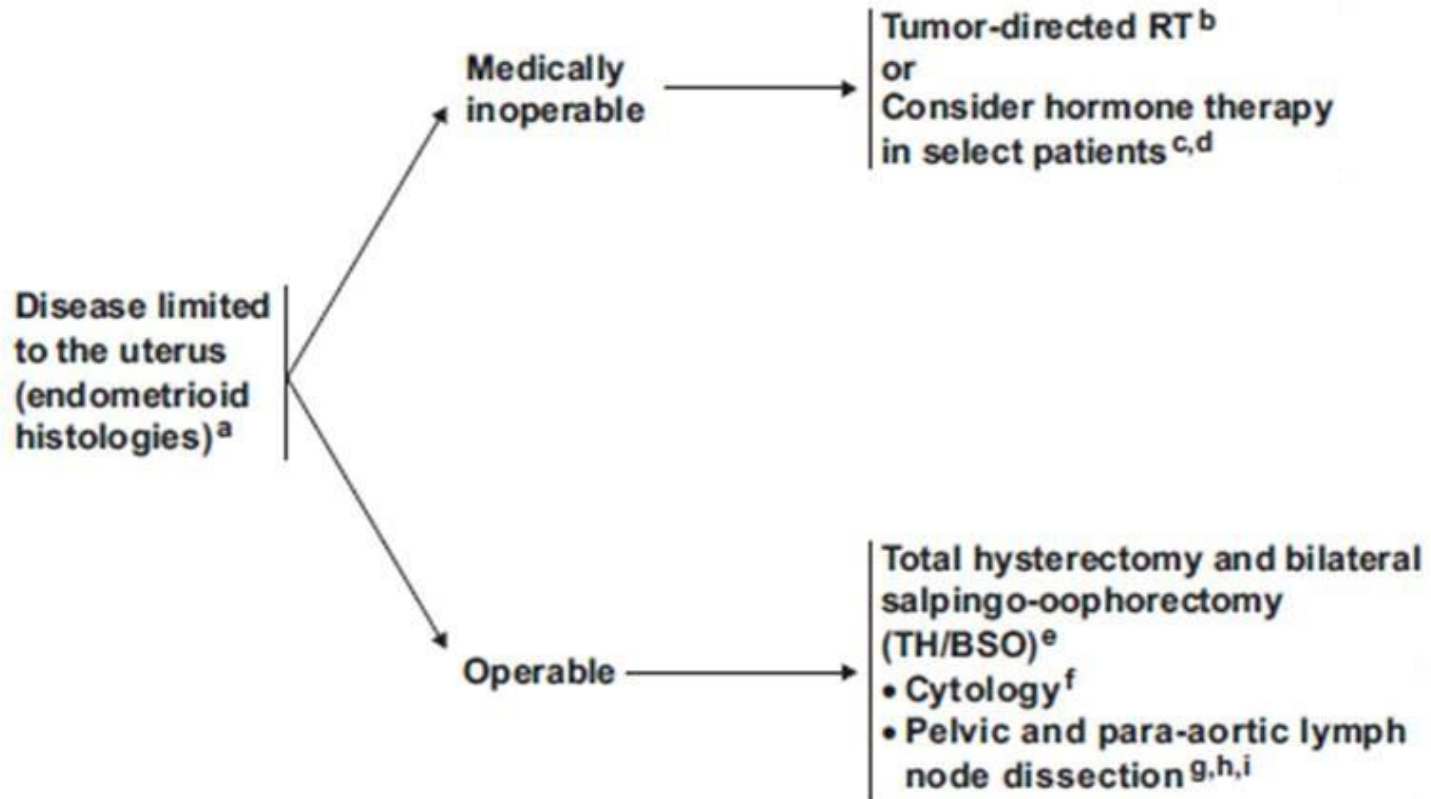
Paraaortic skip met's are rare

85 % of node positive patients have positive
pelvic nodes

Pelvic nodes are well defined by a cervical
injection of SLN tracer

Do we need a technique that detects
paraaortic SLN's separately?

NCCN Guideline



Follow-up and Recurrence

SURVEILLANCE

- Physical exam every 3-6 mo for 2 y, then 6 mo or annually
- Vaginal cytology (category 3)
- Patient education regarding symptoms
- CA-125 (optional)
- Chest x-ray annually (category 2B)
- CT/MRI as clinically indicated
- Consider genetic counseling/testing for young patients (< 55y) with a significant family history and/or selected pathologic risk features

CLINICAL PRESENTATION

Local/regional recurrence
 • Negative distant metastases on radiologic imaging

Isolated metastases

Consider resection ± RT

Low grade or Asymptomatic

Symptomatic or Grade 2, 3 or Large volume

THERAPY FOR RELAPSE

[See Therapy For Relapse](#)

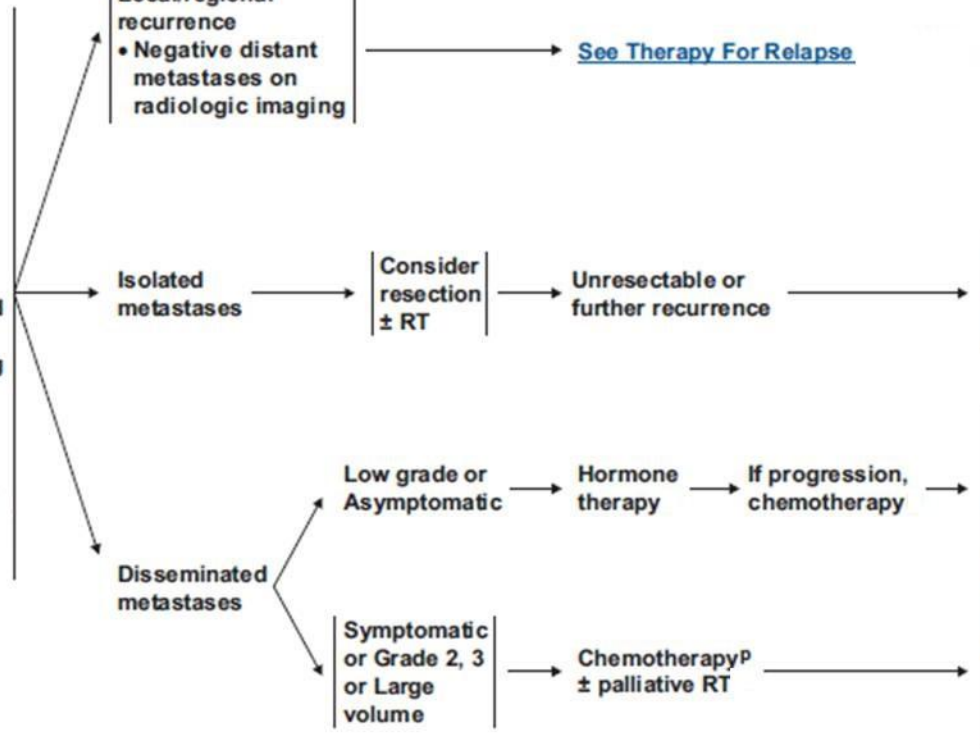
Unresectable or further recurrence

Hormone therapy

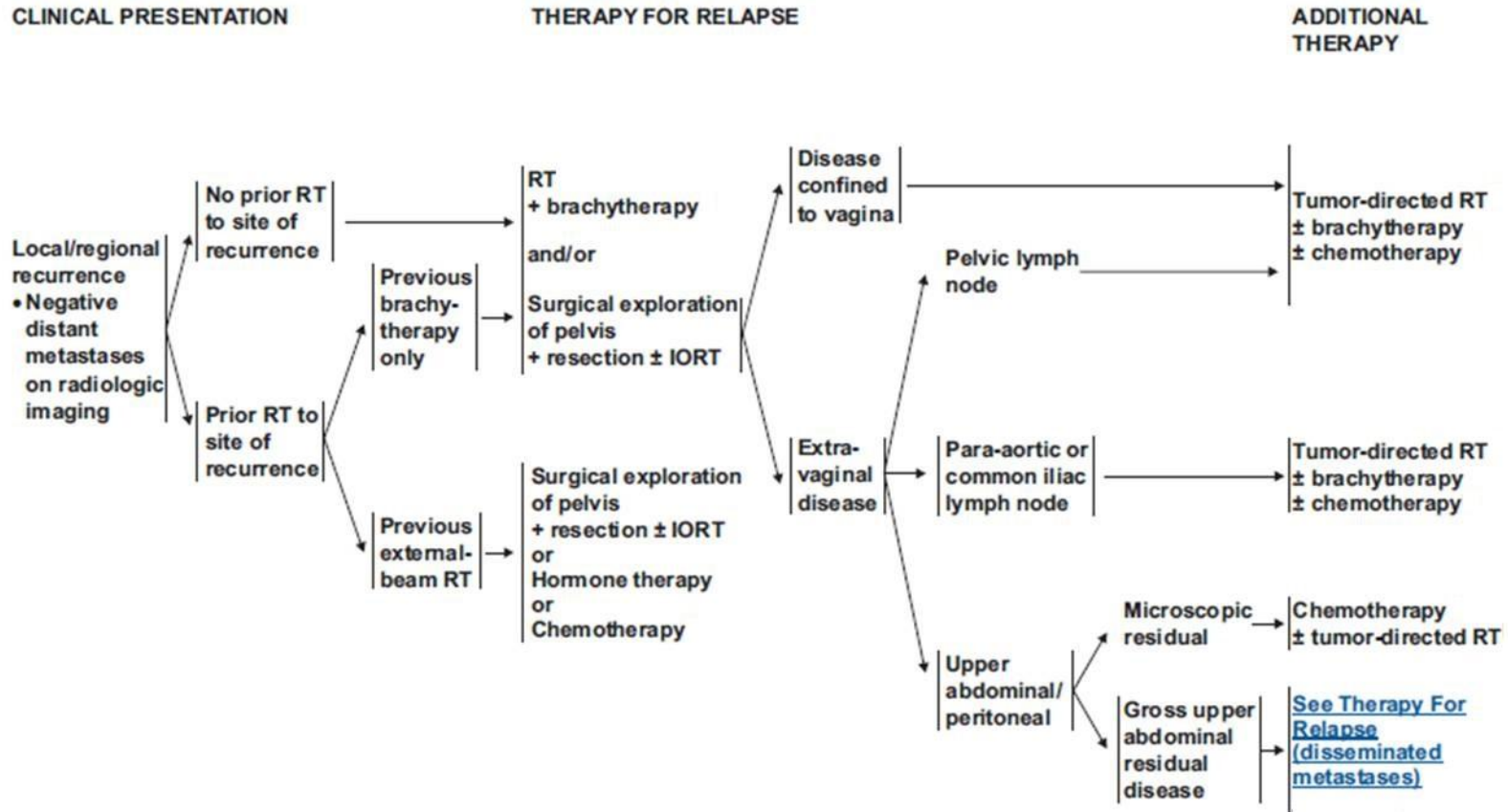
Chemotherapy^P ± palliative RT

Treat as disseminated metastases (See below)


If progression, Best supportive care ([See NCCN Palliative Care Guidelines](#)) or Clinical trial



Recurrence



LND; Sampling vs Systematic

- # 11.443
- Stage I 78.7%, Stage II 10.3%, stage III 11.0%
- Grade 1 31.5%, grade 2 40.6%, grade 3 24.3%
- **Detection of one positive LN involvement %45** 
- **Low risk group** (Stage IA, all G; stage IB G1,2)
5Y DFS ; **no advantage**
- **Intermediate and high risk group; 5 Y DFS**
 - LN #1:75.3%
 - LN #6-10: 84.1%
 - LN #>20: 86.8% (p<0.001)

Local Recurrence

local recurrence,
usually at vaginal cuff

Confirmation by radiologic exam(PET-CT,MRI)

- **lokal recur.in RT-naive site:**
 - < 3cm – EBPRRT / +,- Brachitherapy
 - > 3 cm:Debulking / +,- IORT
Neoadjuvan KT +Debulking or RT
- **Local recur. in previously RT:** Exenteration
,Debulking +IORT