# LAPAROSCOPIC SURGERY VERSUS OPEN SURGERY IN ENDOMETRIAL CANCER

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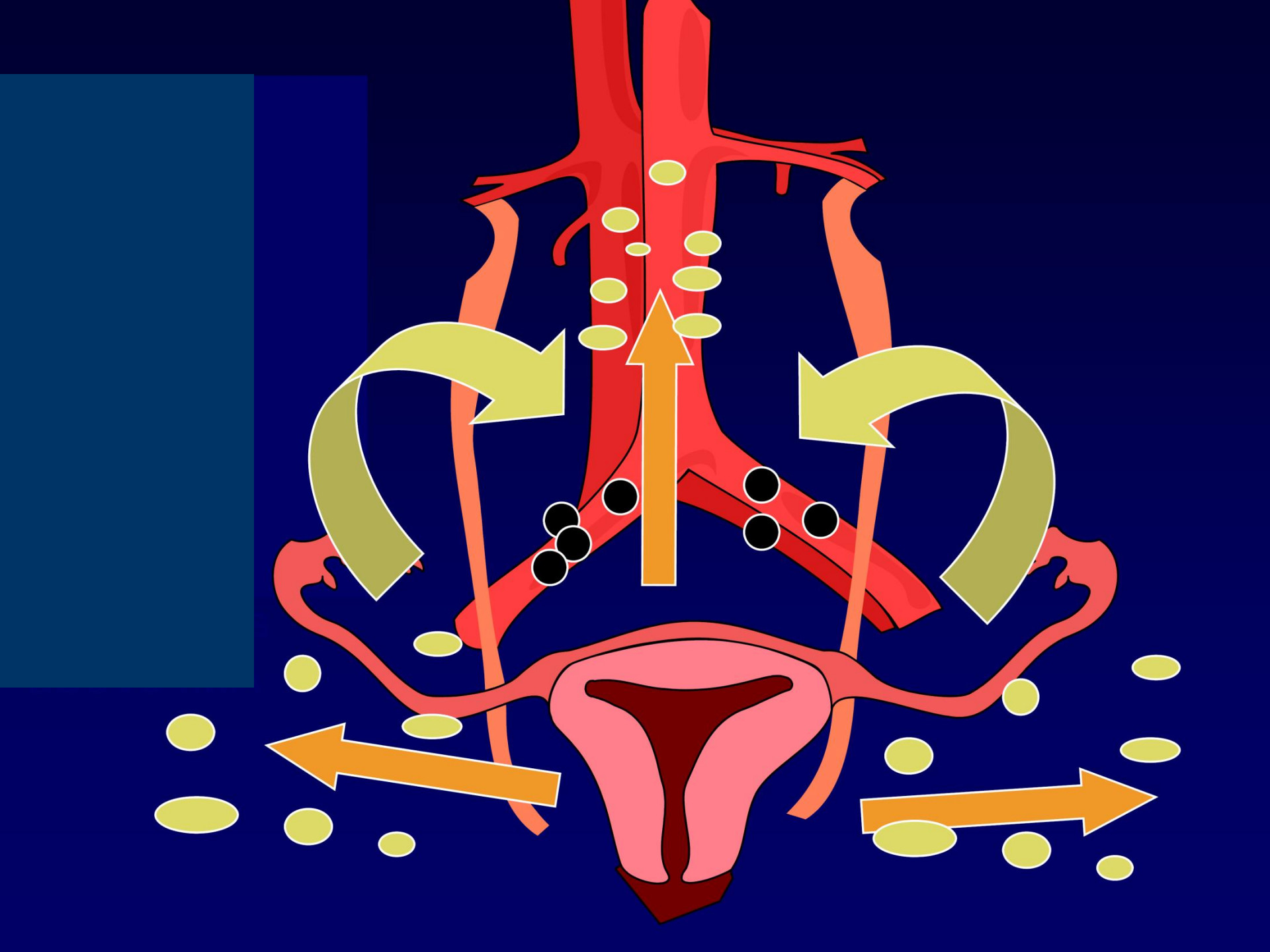
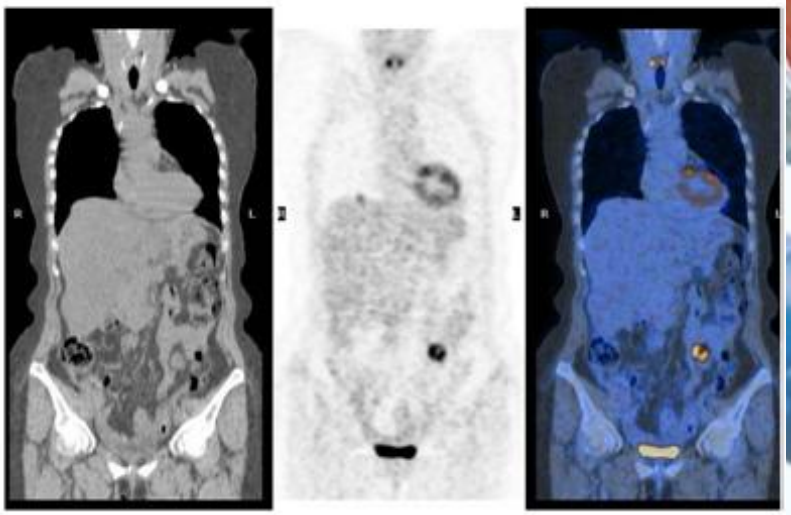


# The advantages of pelvic and paraaortic lymphadenectomy

1. The presence of lymph node metastasis is the most significant prognostic factor in the management of gynecologic malignancies.

2. Indirect techniques such as lymphography, computerized tomography, magnet-resonance imaging, or guided fine-needle aspiration are of limited sensitivity and specificity in looking for metastasis.

# How about the advanced imaging technique?



**Validity of FDG-PET in the pre-operative evaluation of Endometrial Cancer**

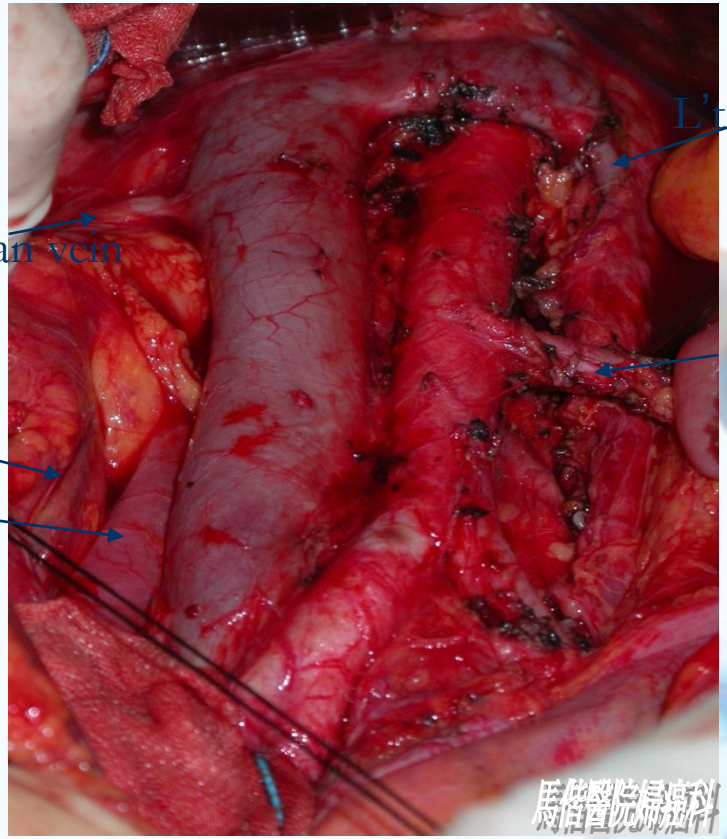
- Sensitivity 69.2%, PPV 42.9%
- Lymph node metastasis < 1 cm not detected by PET

**No advantage of FDG-PET !**

# The advantages of laparoscopic lymphadenectomy

- Diagnostic lymphadenectomy by laparotomy is costly and uncomfortable, and causes major peri-operative complications and pelvic adhesions.

- Laparoscopy, however, results in minimal surgical trauma, less intra-abdominal adhesion formation, lower costs, less pain, and a shorter recovery time.

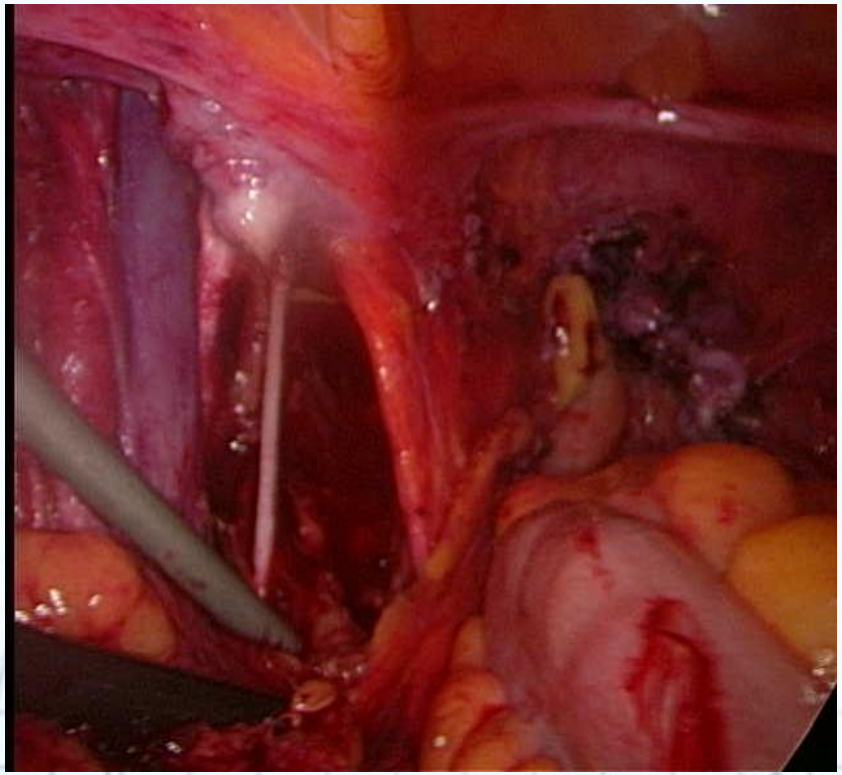


# Historical Background

- In the late 1970s and early 1980s, laparoscopy was used for pre-treatment evaluation of patients whose initial staging laparotomy was felt to be inadequate.
- Laparoscopy for second-look procedure was suggested in 1980s.

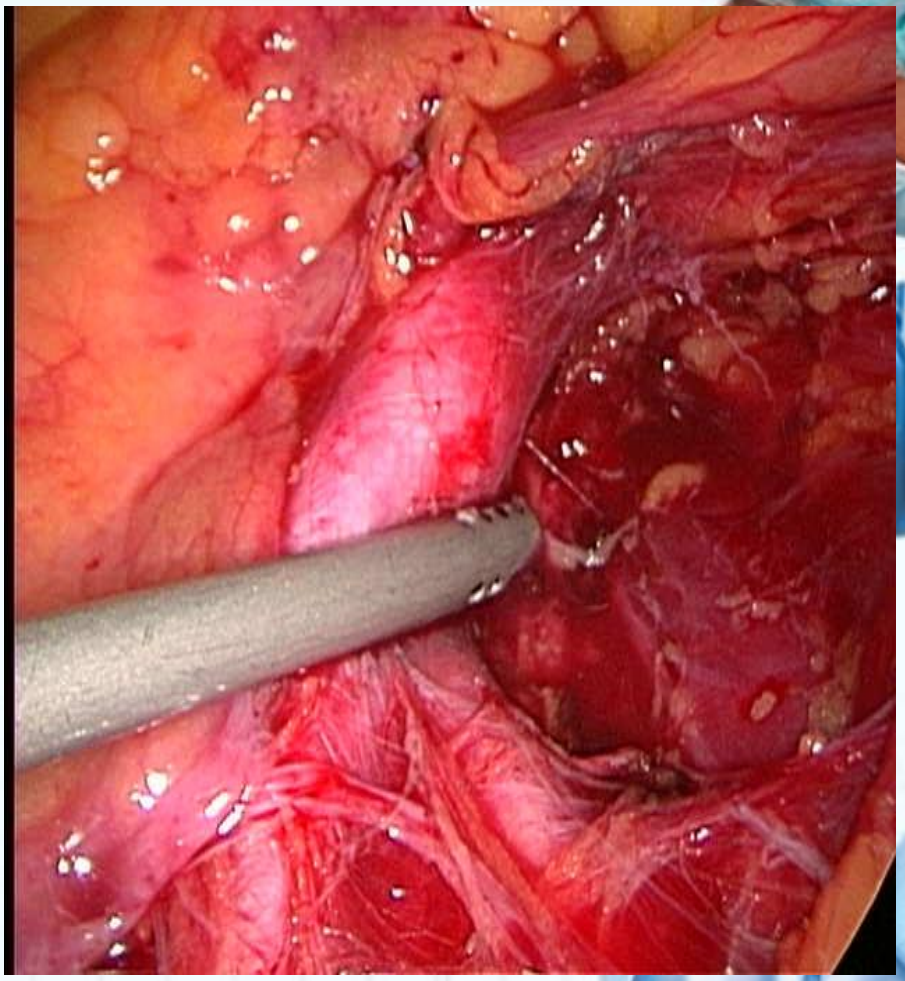
# History of laparoscopic lymphadenectomy

Dargent reported the first case of laparoscopic pelvic lymphadenectomy on early-stage diseases in 1987.



# History of laparoscopic lymphadenectomy

1. Childers described laparoscopic para-aortic lymphadenectomy in 1992.
2. Improvements in laparoscopic surgical techniques and instrumentation have made laparoscopic lymphadenectomy in gynecologic malignancies feasible and effective.
3. The development of laparoscopic techniques open the new avenues for laparoscopic treatment in gynecologic malignances.



# LASS

- Laparoscopically assisted surgical staging

  *Childlers JM et al. Gynecol Oncol 1993*

- Low risk, grade 1
  - LAVH or LH with frozen section

  If < 1/2 myometrial invasion

  ➔ No need for lymph node sampling

  If > 1/2 myometrial invasion

  ➔ Lymph node sampling
- Intermediate to high risk, grade 2 or 3
  - LAVH or LH + Lymph node sampling

# LASS

*Childers JM et al. Gynecol Oncol 1993*

- Only 5% required laparotomy
- Blood loss: All < 200 cc
- Average hospital stay: 2.9 days

*Childers JM et al. Obstet Gynecol 1994*

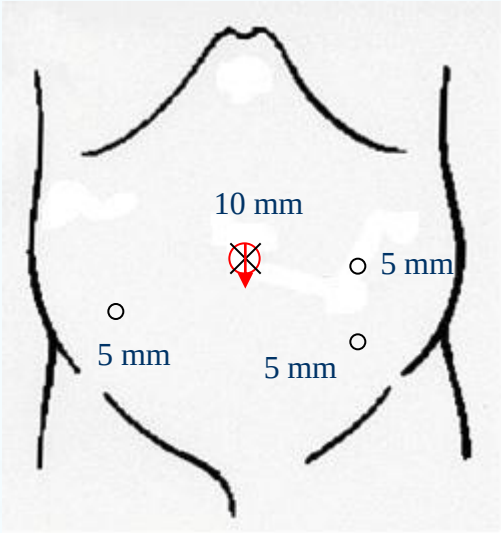
- 13 Incomplete surgical staging after hysterectomy
  - ➔ LN sampling
    - Average blood loss < 50 cc
    - Average hospital stay: 1.5 days

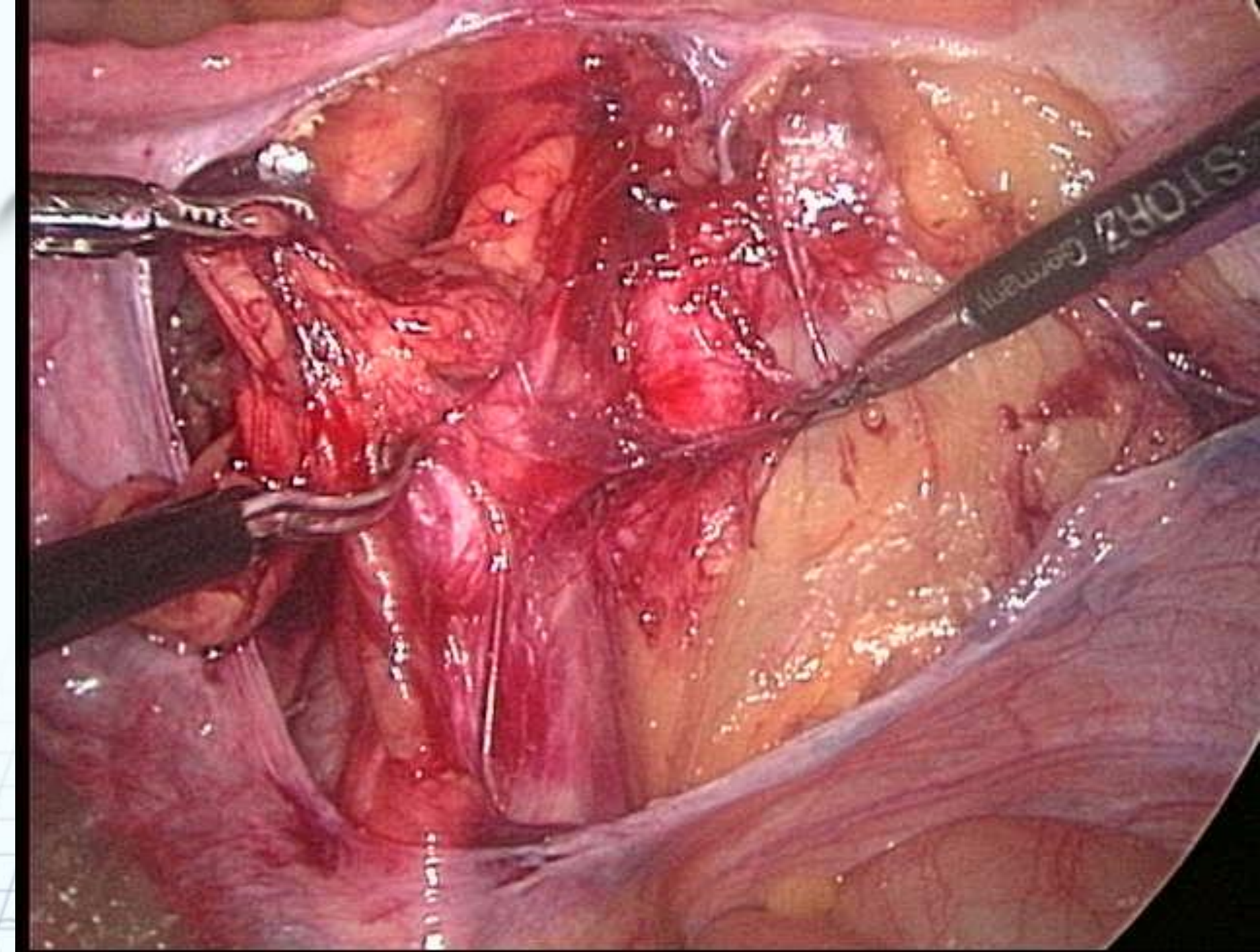
# The role of laparoscopic staging operation in endometrial cancer

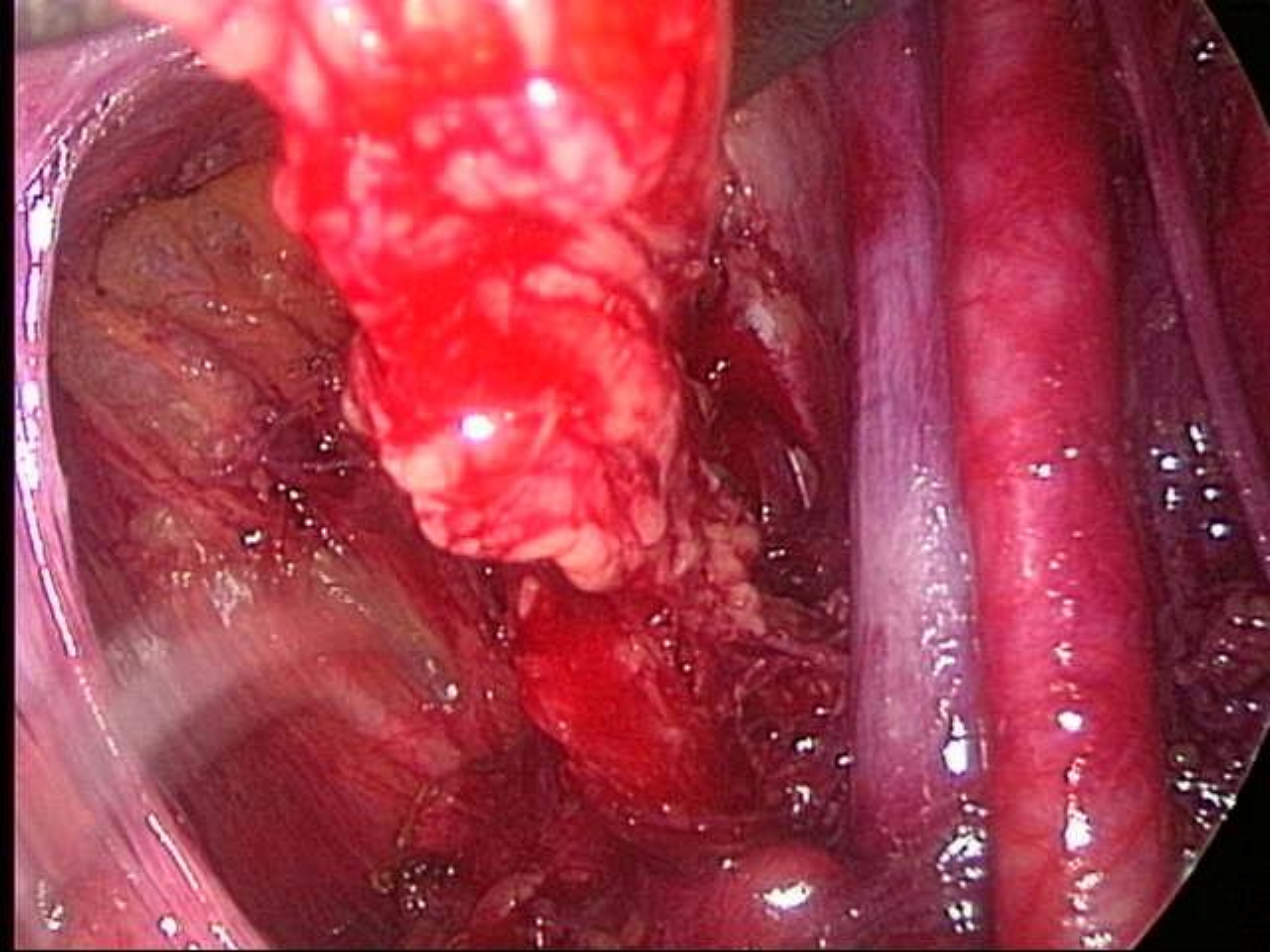
- LASS
  - LAVH + BSO + LN sampling
- This is a feasible, safe and adequate procedure that offers short hospital stay and recovery times for patients with endometrial cancer.

# Procedures of pelvic lymphadenectomy

## 1. Trocar positions





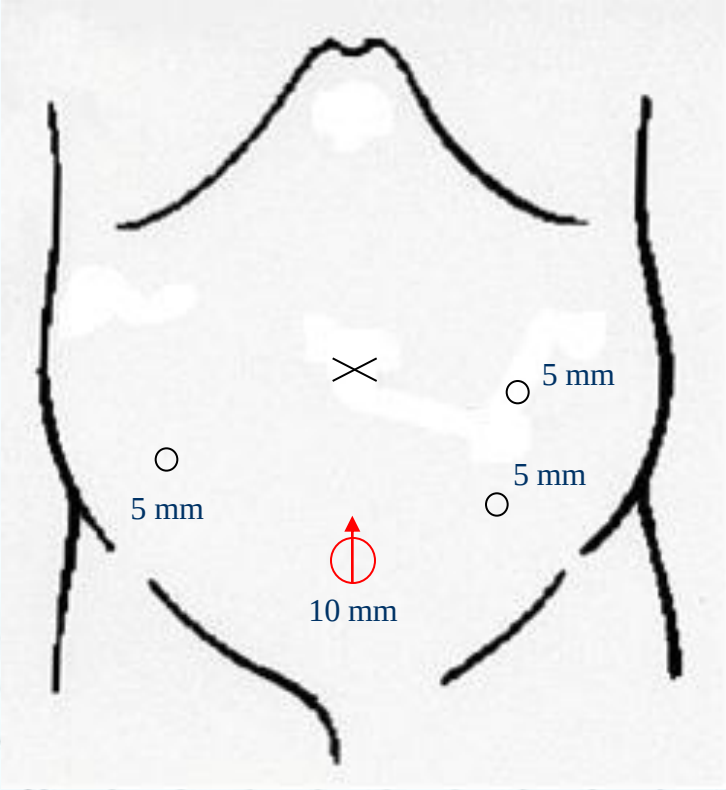


# Approaches of laparoscopic paraaortic lymph node dissection

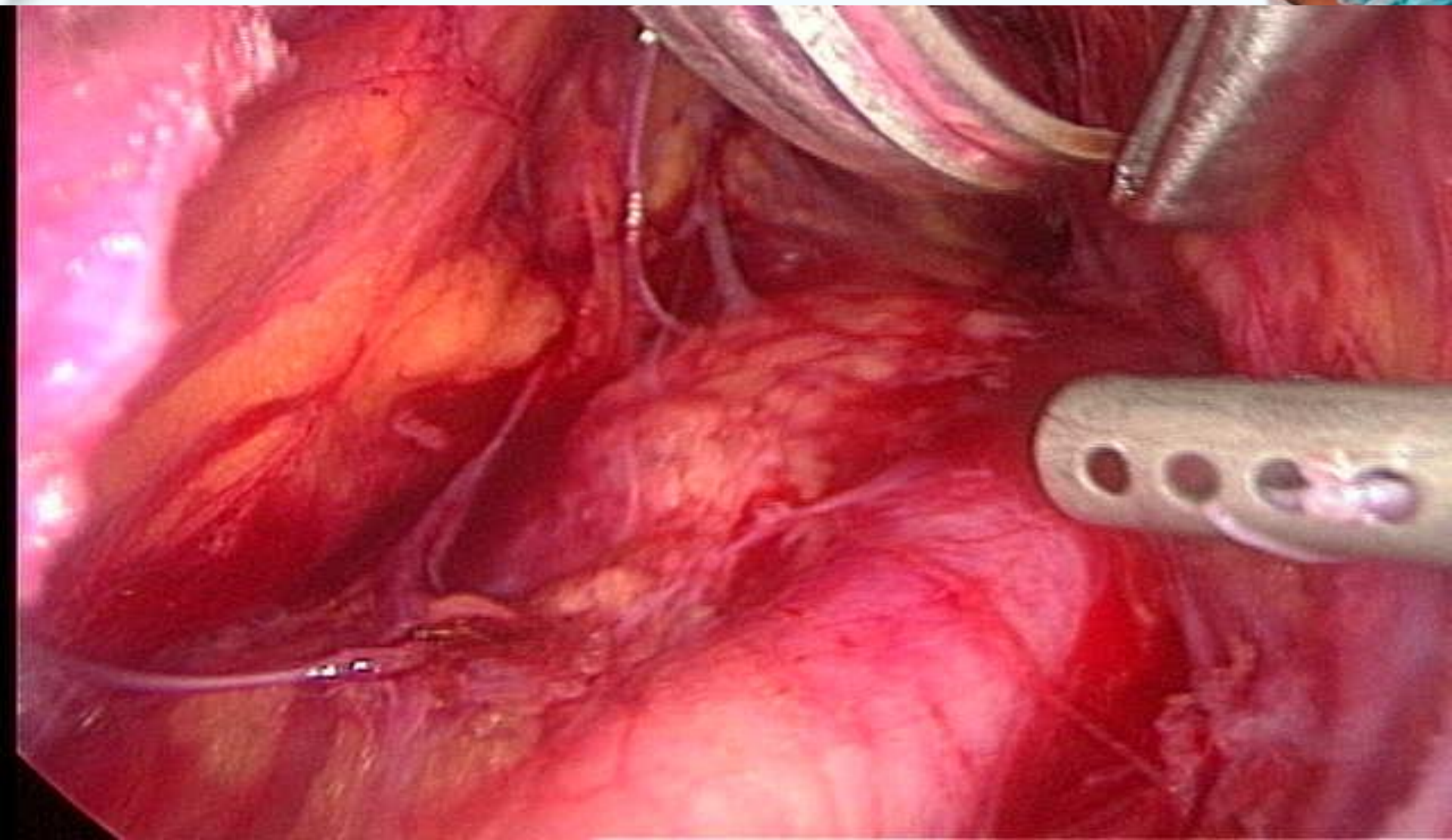
1. Transperitoneal
   a. Normal lower port
   b. Lee-Huang Port
2. Bilateral extraperitoneal
3. Left extraperitoneal

# Procedures of transperitoneal paraaortic lymphadenectomy: normal lower port

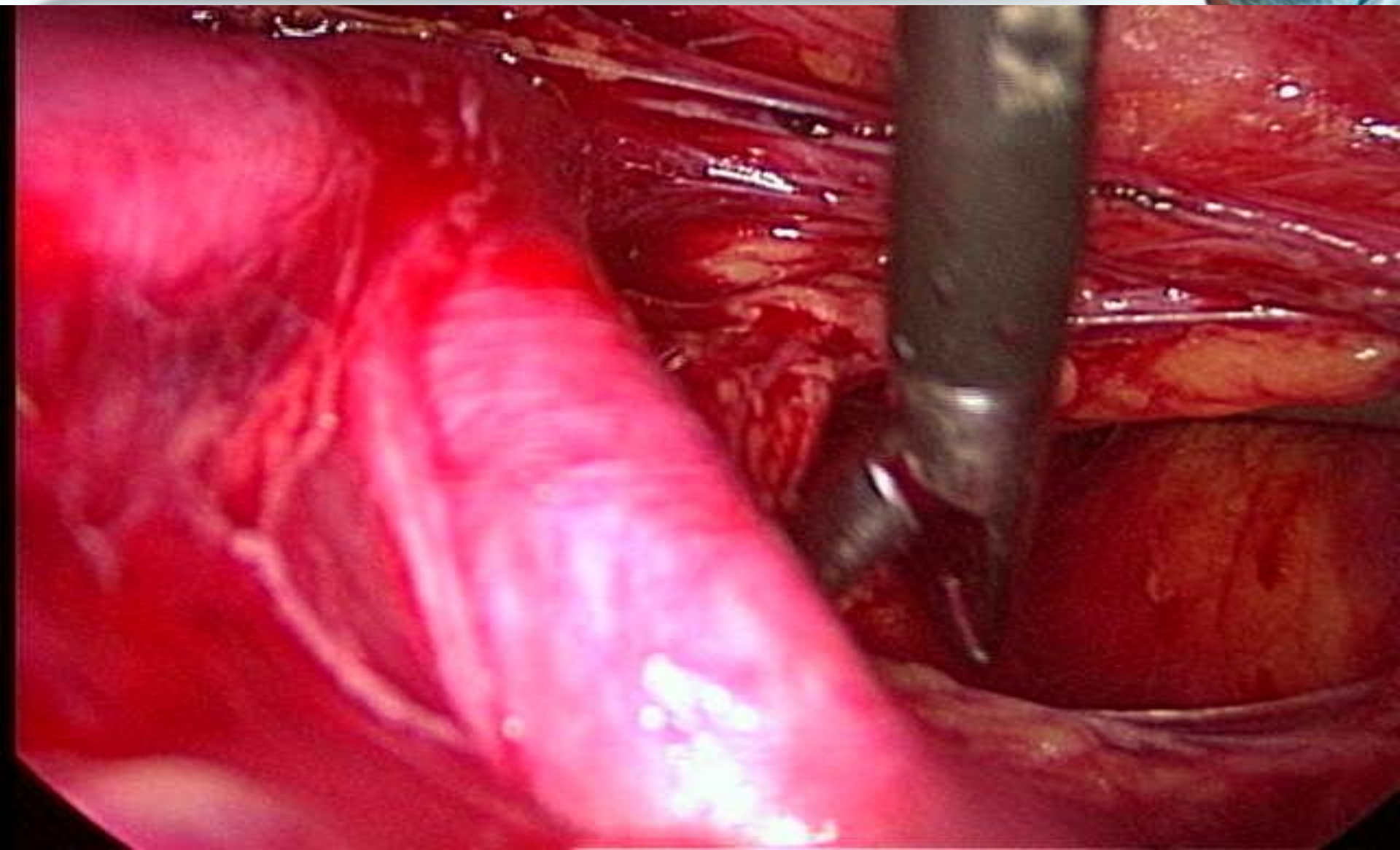
## 1.Trocar positions



# Right paraaortic lymphadenectomy(I)

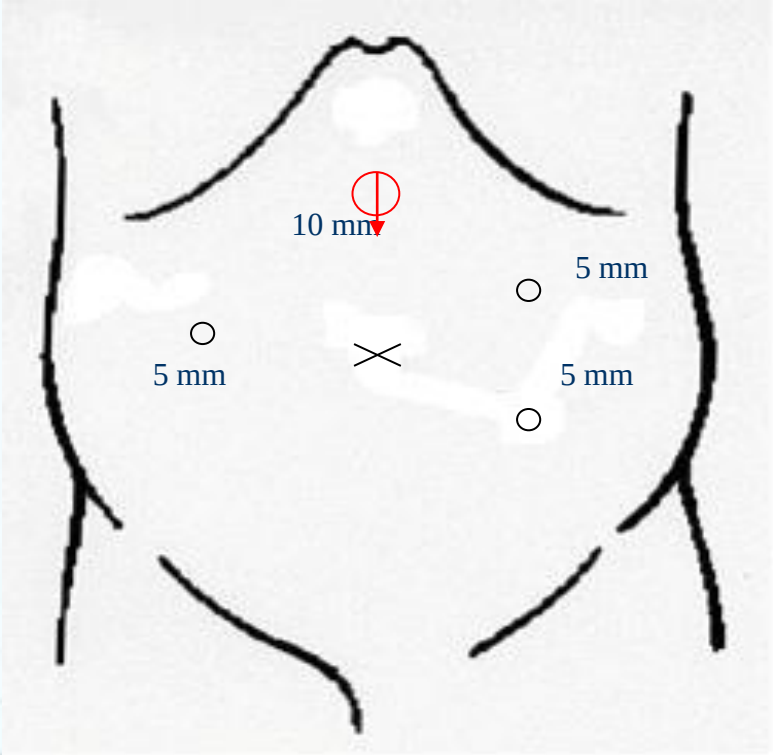


# Left paraaortic lymphadenectomy

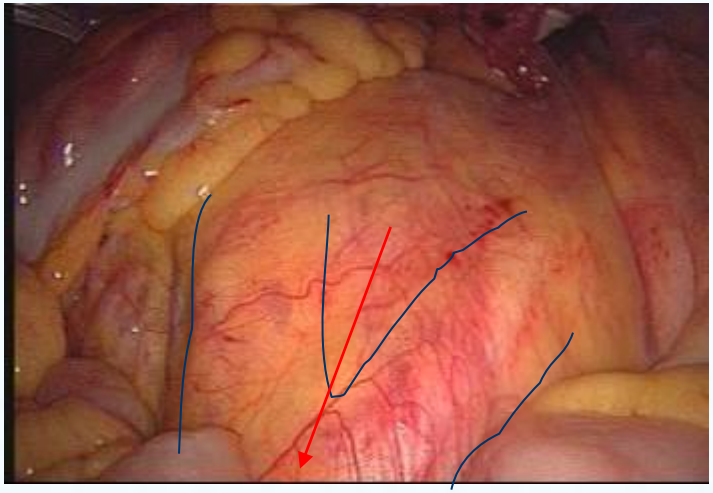


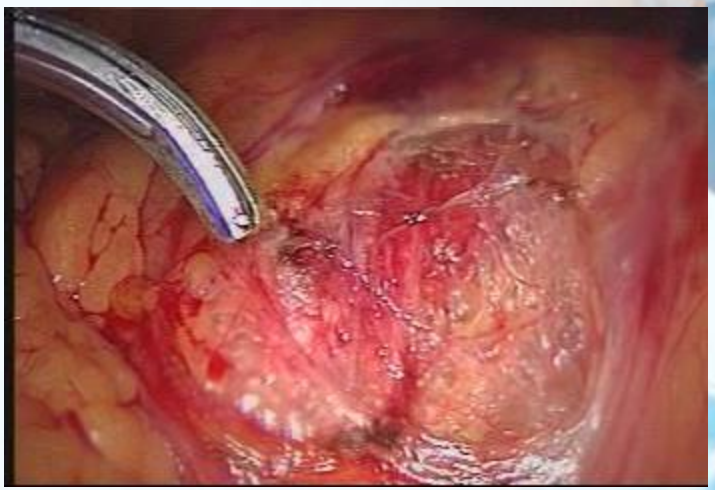
# Procedures of transperitoneal paraaortic lymphadenectomy: Lee-Huang port

## 1.Trocar positions

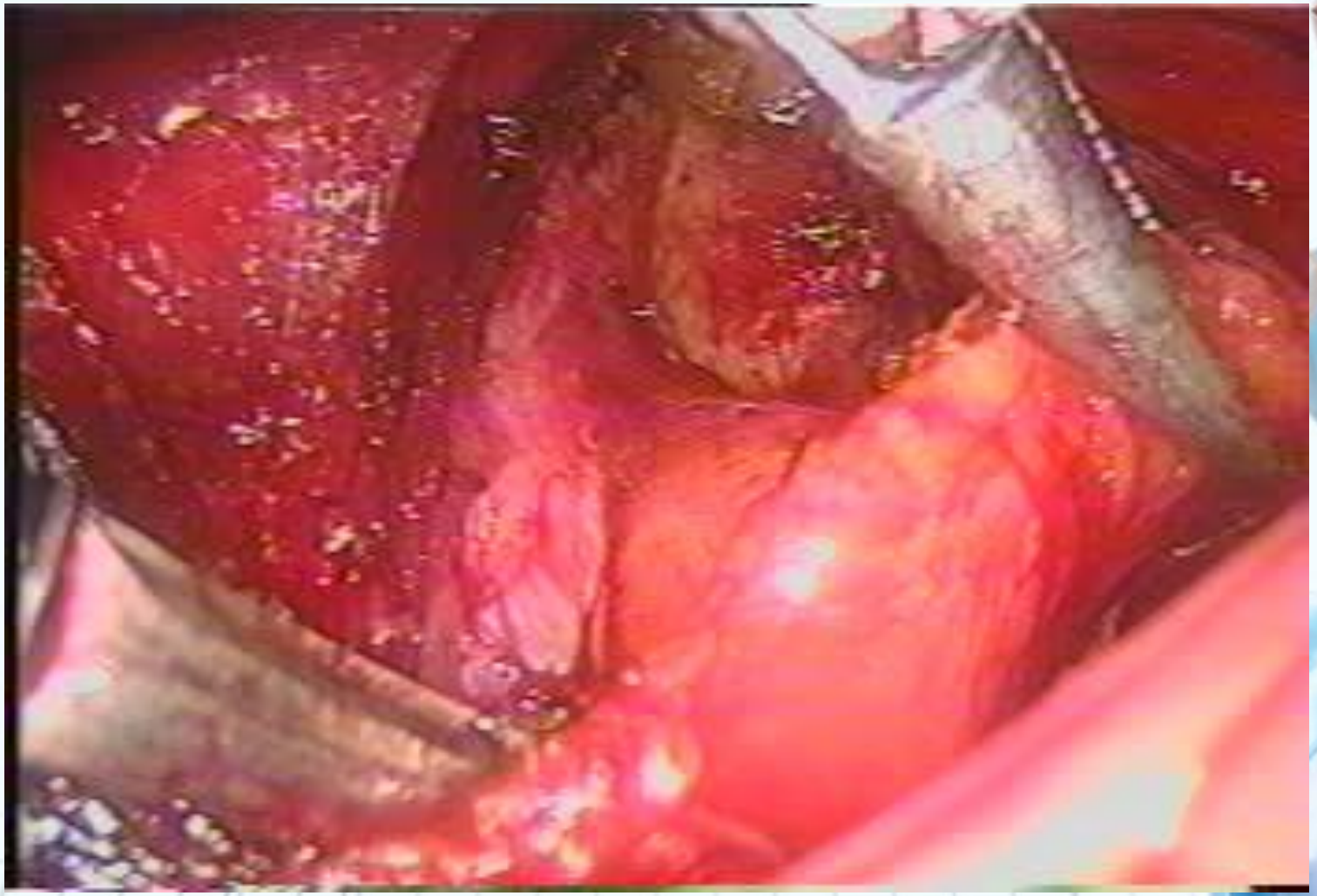


# 2. Open the retroperitonium

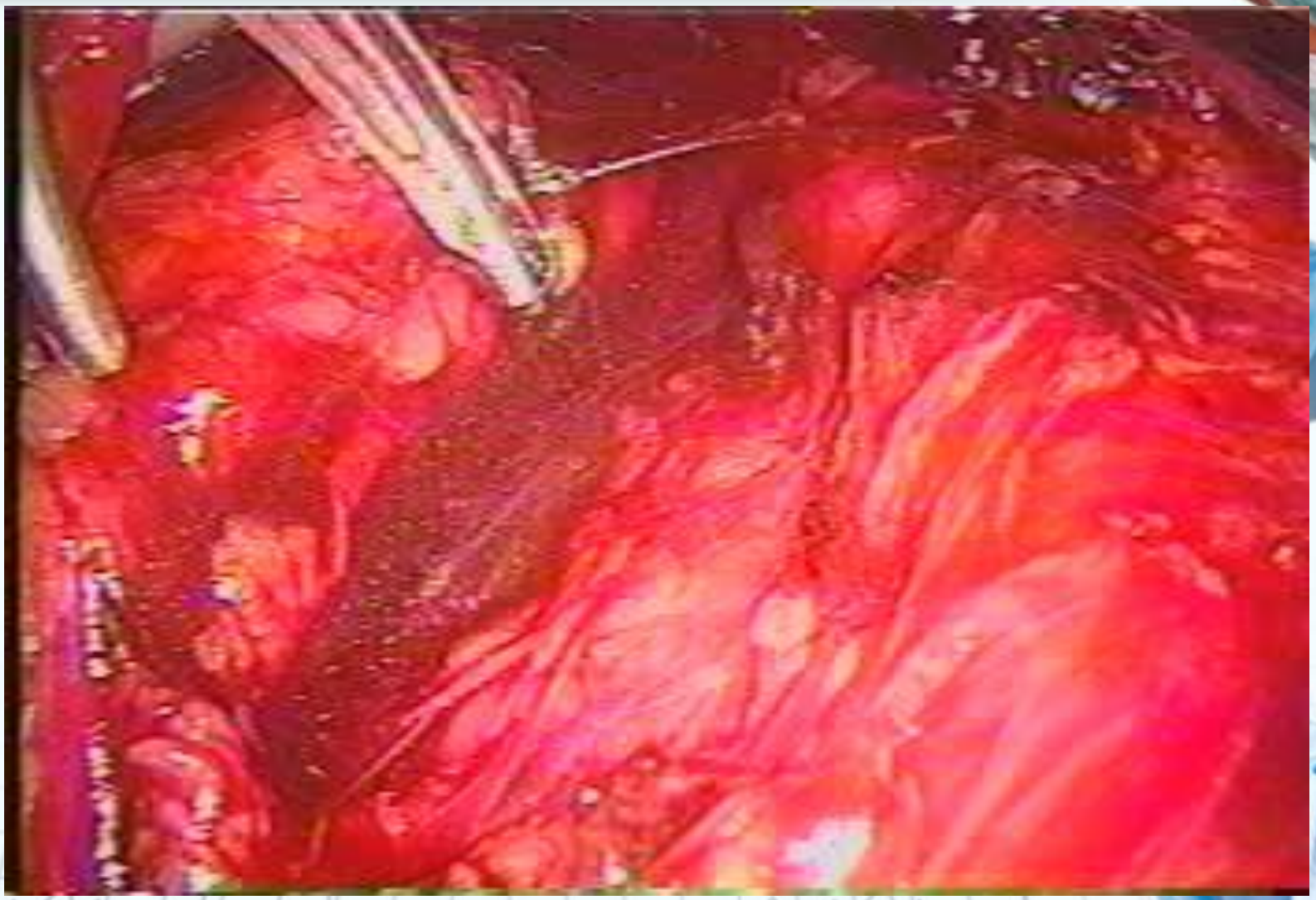




# 3. Right paraaortic lymphadenectomy

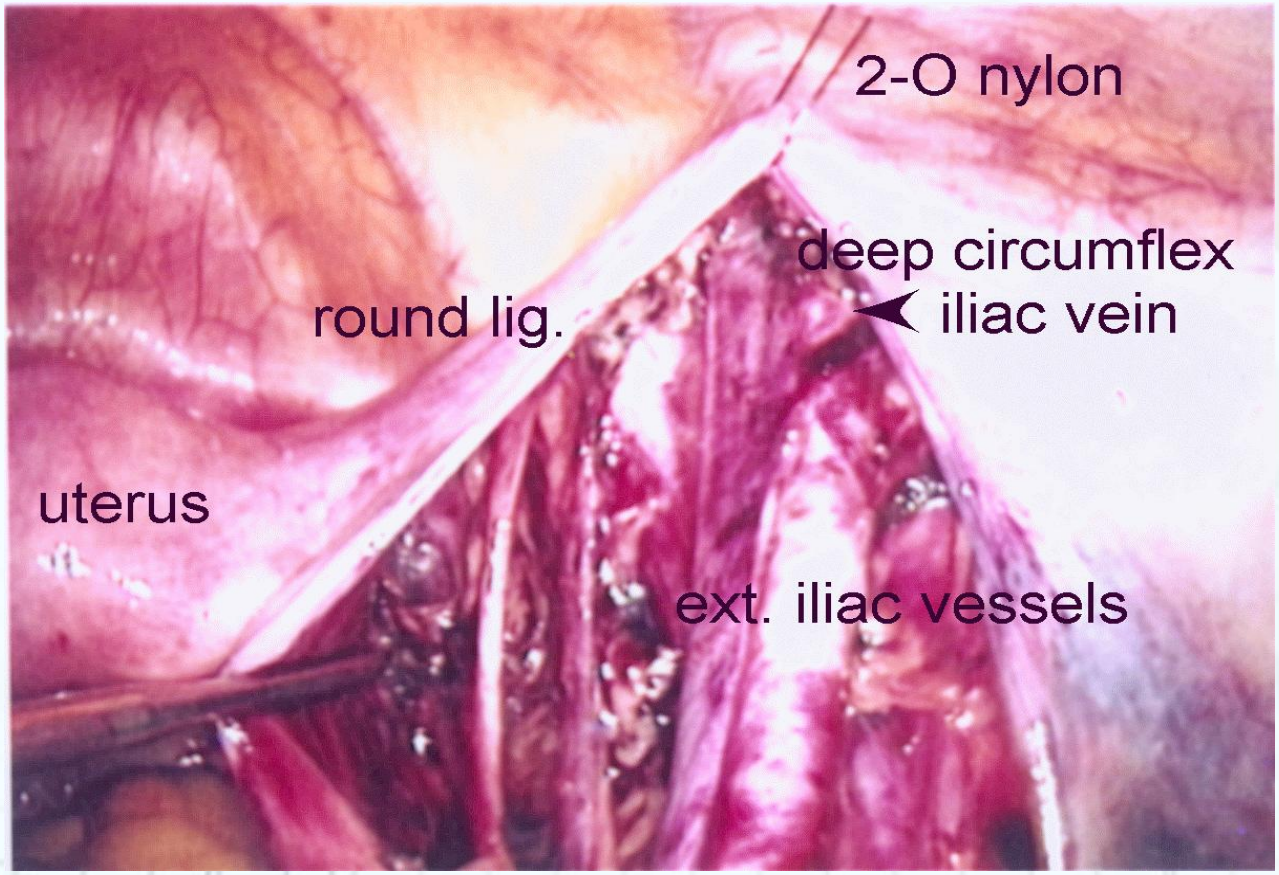


# 4. Left para-aortic lymphadenectomy

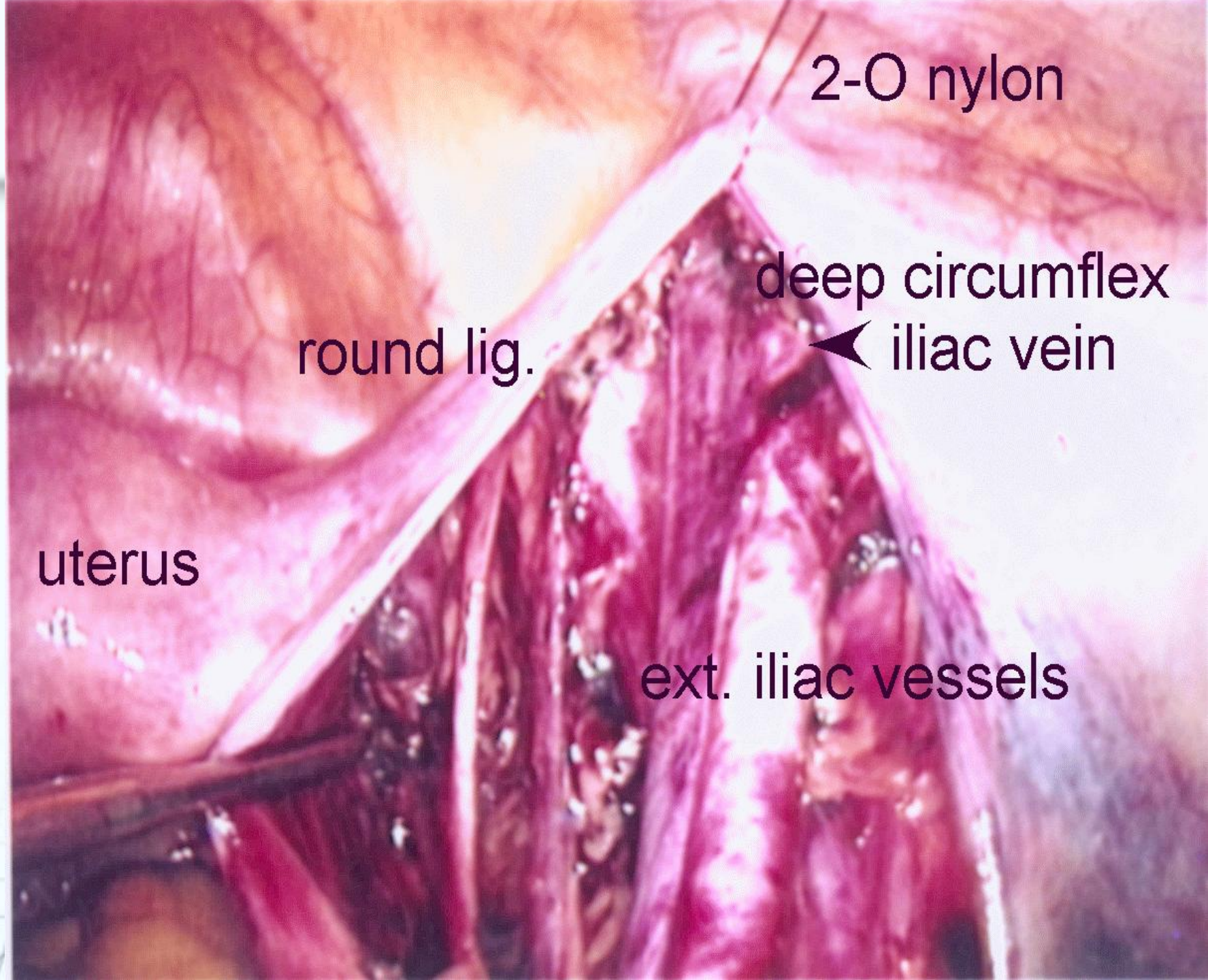


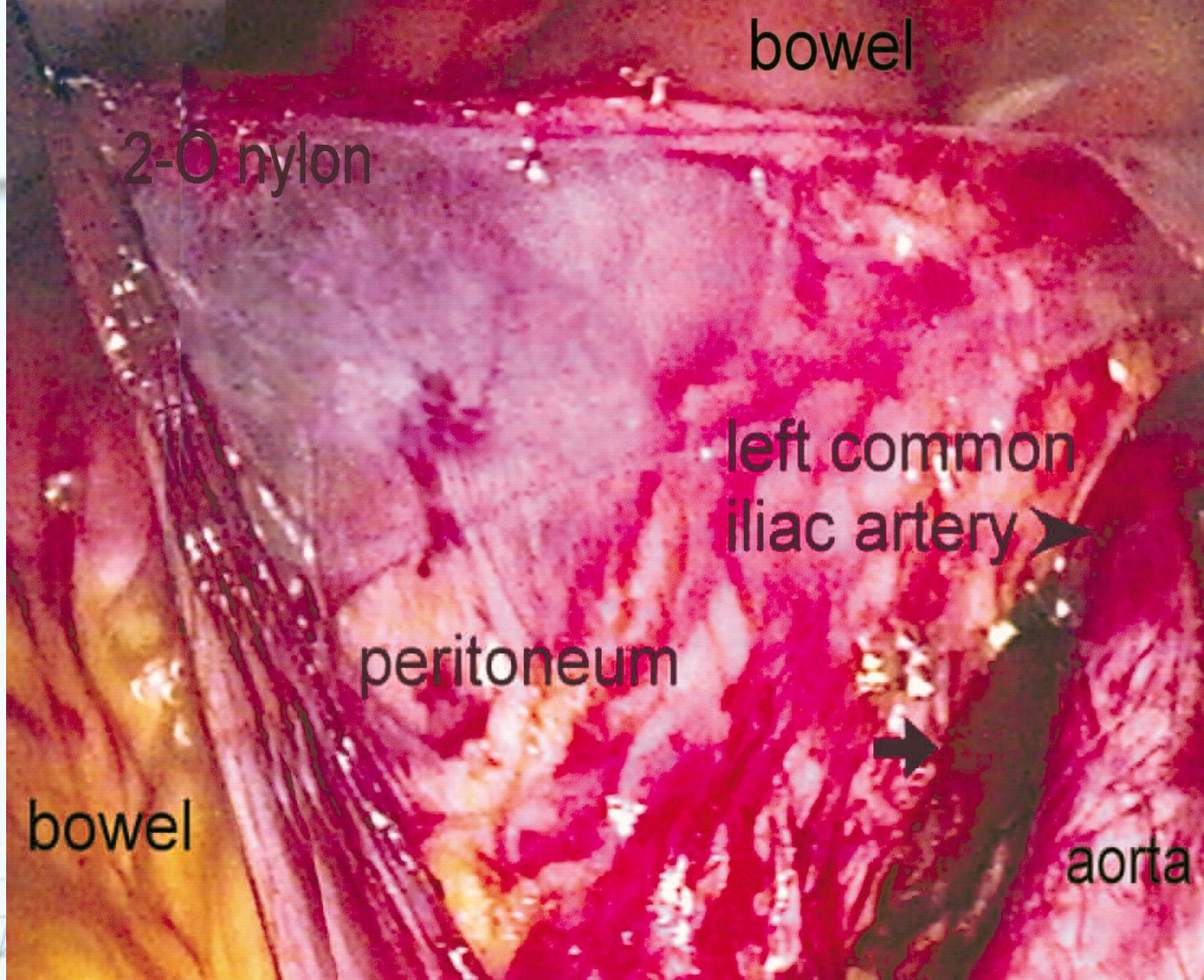
# A Modified Suspension Technique for Better Exposure of Retroperitoneal Space in Laparoscopic Lymphadenectomy

MC Huang, **KL Wang,** HS Chen, YC Yang, TH Su.



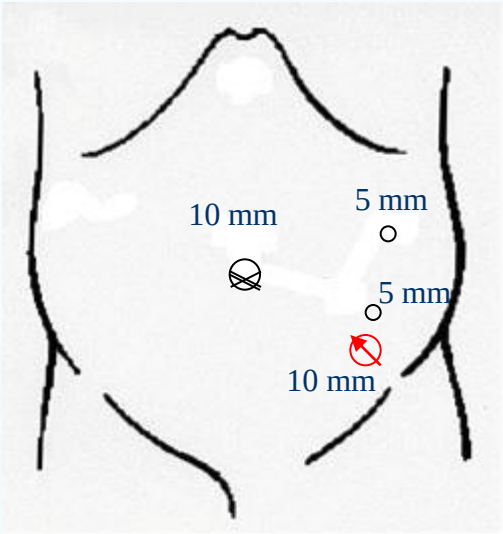

J Am Assoc Gynecol Laparosc 9(4): 531-535, 2002.


2-O nylon
deep circumflex
iliac vein
round lig.
uterus
ext. iliac vessels

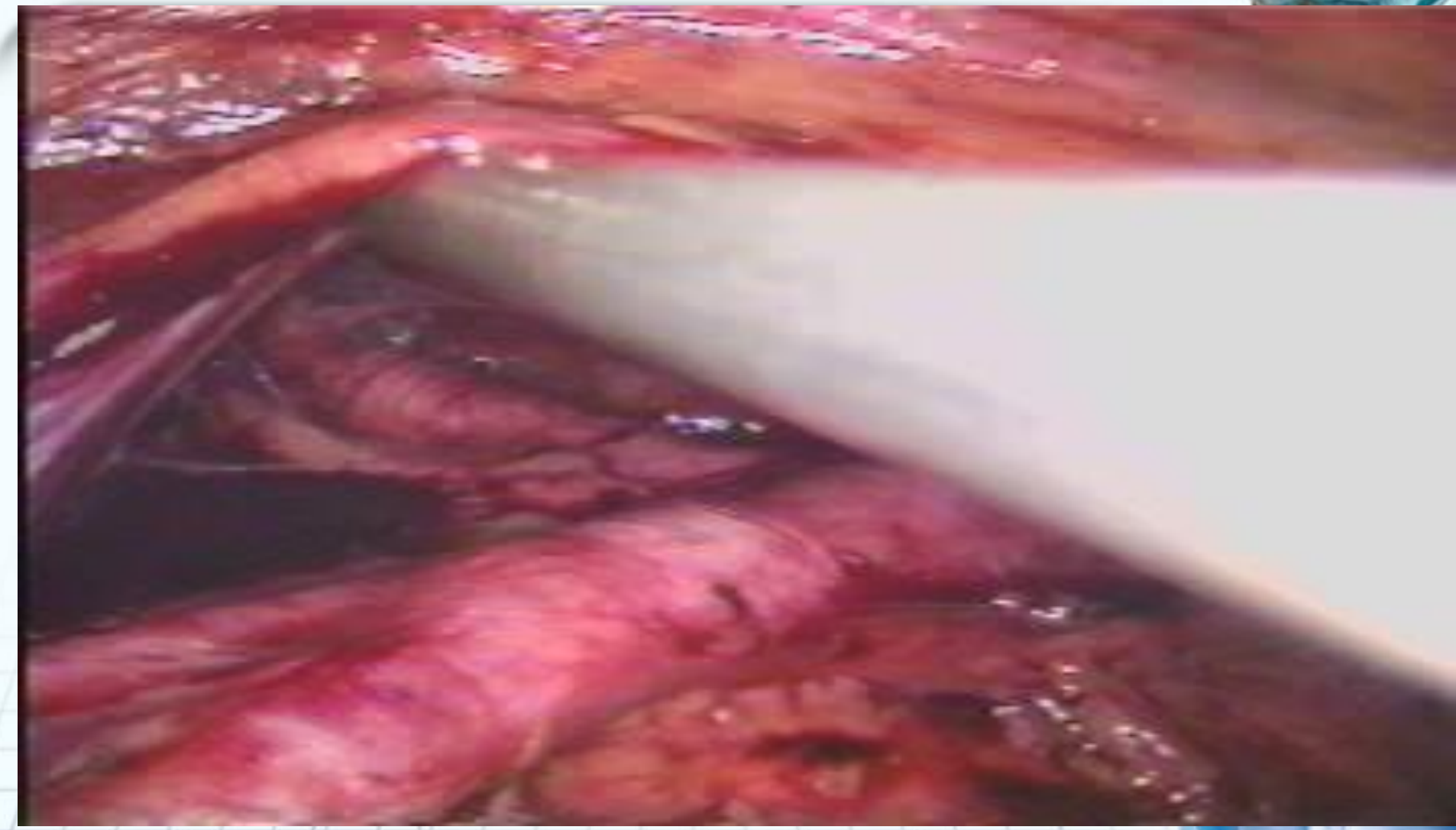

bowel
2-O nylon
left common
iliac artery
peritoneum
bowel
aorta

# Left Extraperitoneal paraaortic lymphadenectomy (LEPAL)

## 1. Trocar positions



# Laparoscopic Extraperitoneal Lymphadenectomy (I)



# Laparoscopic staging operation in (early staged) EmCa?

- Feasibility
- Controversial issues: **peritoneal cytology, vaginal recurrence**
- QOL
- Efficacy (long-term RR, DFS, OS)
- Cost-effectiveness

# Increased positive peritoneal cytology by laparoscopy?

Using a uterine manipulator with an intrauterine balloon during the laparoscopic surgery might be associated with positive cytologic conversion

*Chu et al, Gyn Onc, 2006*

Laparoscopic surgery does not increase the positive peritoneal cytology among women with endometrial carcinoma

*Eltabbakh et al, Gyn Onc, 2007*

To date there is no definitive consensus on the prognostic significance of positive peritoneal cytology alone

*Stephanie et al, Gyn Onc, 2009*

# Vaginal recurrence and laparoscopic op

Several reports of vaginal recurrence after LAVH for endometrial cancer, including early disease

*Chu et al, Gyn Onc, 2003*

Cervical occlusion techniques, such as preoperative suture closure of the cervix, can decrease the rate recurrence.

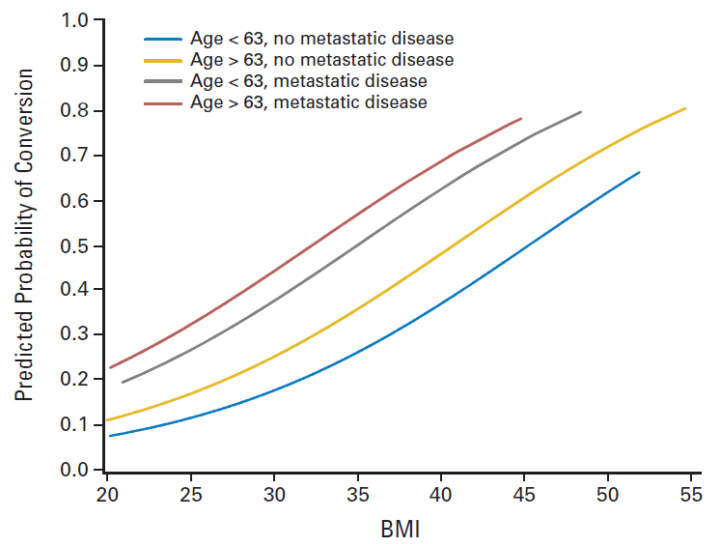
# Laparoscopy in obese pts with EmCa

- 55 pts with BMI > 40, including >50 require ventilation with high airway pressure

- only one case converted to laparotomy

  - comorbidities present in 76% (26/34), 29% (10/34) with one, 26% (9/34) with two, 21% (7/34) > 2.
  - mean post-op stay: 4.04 (3-7 ) days
  - only one complication with incisional port site hernia
  - no major anaesthetic complications

*O'Gorman et al, Eur J Gynaecol Oncol, 2009*




# GOG LAP-2 trial

**Table 3.** BMI and Conversion Rates by Institution Enrollment

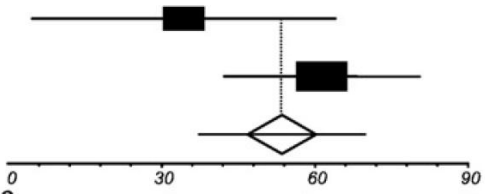
| No. of Patients Enrolled | BMI (kg/m$^2$) Mean | BMI (kg/m$^2$) Median | Conversion Rate (%) |
|---|---|---|---|
| 1-50 | 29.6 | 28.1 | 27.0 |
| 51-100 | 29.8 | 28.6 | 28.3 |
| 101-150 | 30.5 | 29.7 | 23.5 |
| 151-200 | 29.1 | 27.7 | 14.9 |
| 201-250 | 29.4 | 27.9 | 25.3 |
| 251-300 | 28.7 | 27.2 | 22.5 |
| 300+ | 31.9 | 30.3 | 34.7 |

No proportional risk of conversion if BMI < 30

Five prospective randomized clinical trials comparing laparoscopic and laparotomy in EmCa (single institute)

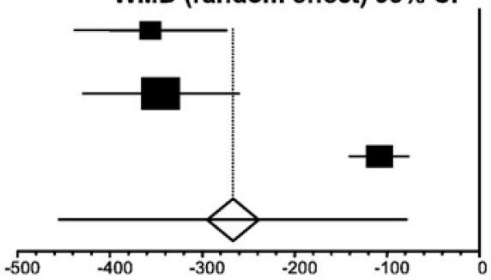
# Meta-analysis of randomized trials

| Study | LS Means | LT Means | WMD (random effect) 95% CI |
|---|---|---|---|
| **Operative time** | | | |
| Fram *et al.* | 136.2 | 101.9 | 34.3 (4.596 to 64.004) |
| Zullo *et al.* | 196.7 | 135.3 | 61.4 (42.253 to 80.547) |
| Total 95% (CI) | | | 53.481 (95%CI=37.284 to 69.678) |




Test for heterogeneity: Cochran Q=2.224, *P*=0.136
Test for overall effect: Z=3.785, *P*=0.0002

| | | | WMD (random effect) 95% CI |
|---|---|---|---|
| **Blood loss** | | | |
| Fram *et al.* | 145.5 | 501.6 | -356.1 (-437.821 to -274.379) |
| Tozzi *et al.* | 241.3 | 586.1 | -344.8 (-428.976 to -260.624) |
| Zullo *et al.* | 173.9 | 282.5 | -108.6 (-139.763 to -77.437) |
| Total 95% (CI) | | | -266.859 (-454.815 to -78.902) |



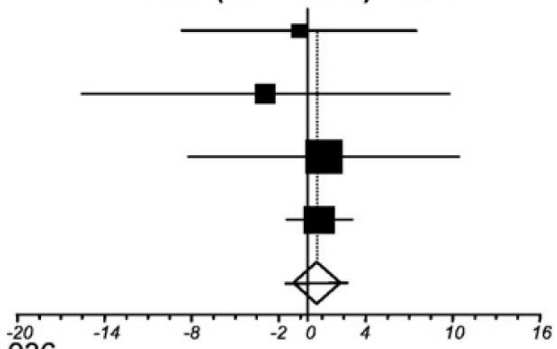

Test for heterogeneity: Cochran Q= 51.835, *P*< 0.0001
Test for overall effect: Z= -2.783, *P*=0.005

Laparoscopy is associated with more op time, less blood loss

*Palomba et al, Gynecologic Oncology, 2009*

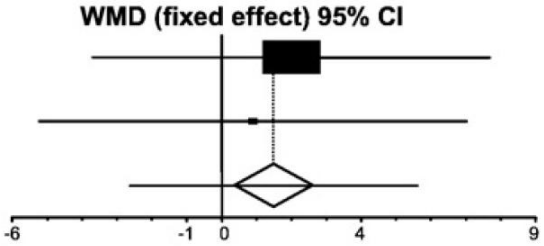
# Meta-analysis of randomized trials

| Study | LS Means | LT Means | WMD (fixed effect) 95% CI | WMD (random effect) 95% CI |
|---|---|---|---|---|
| **Pelvic nodes yield** | | | | |
| Fram *et al.* | 21.3 | 21.9 | | -0.6 (-8.679 to 7.479) |
| Zorlu *et al.* | 18.2 | 21.1 | | -1.1 (-8.214 to 10.414) |
| Tozzi *et al.* | 19.3 | 18.2 | | 0.8 (-1.446 to 3.046) |
| Zullo *et al.* | 11.5 | 10.7 | | 0.715 (-1.179 to 2.610) |
| Total | | | | 0.620 (-1.466 to 2.707) |




Test for heterogeneity: Cochran Q= 0.114, *P*= 0.936
Test for overall effect: Z= 0.583, *P*=0.560

| | | | | |
|---|---|---|---|---|
| **Para-aortic nodes yield** | | | | |
| Tozzi *et al.* | 12.3 | 10.3 | | 2 (-3.681 to 7.683) |
| Zullo *et al.* | 5.8 | 4.9 | | 0.9 (-5.212 to 7.012) |
| Total | | | | 1.491 (-2.614 to 5.596) |

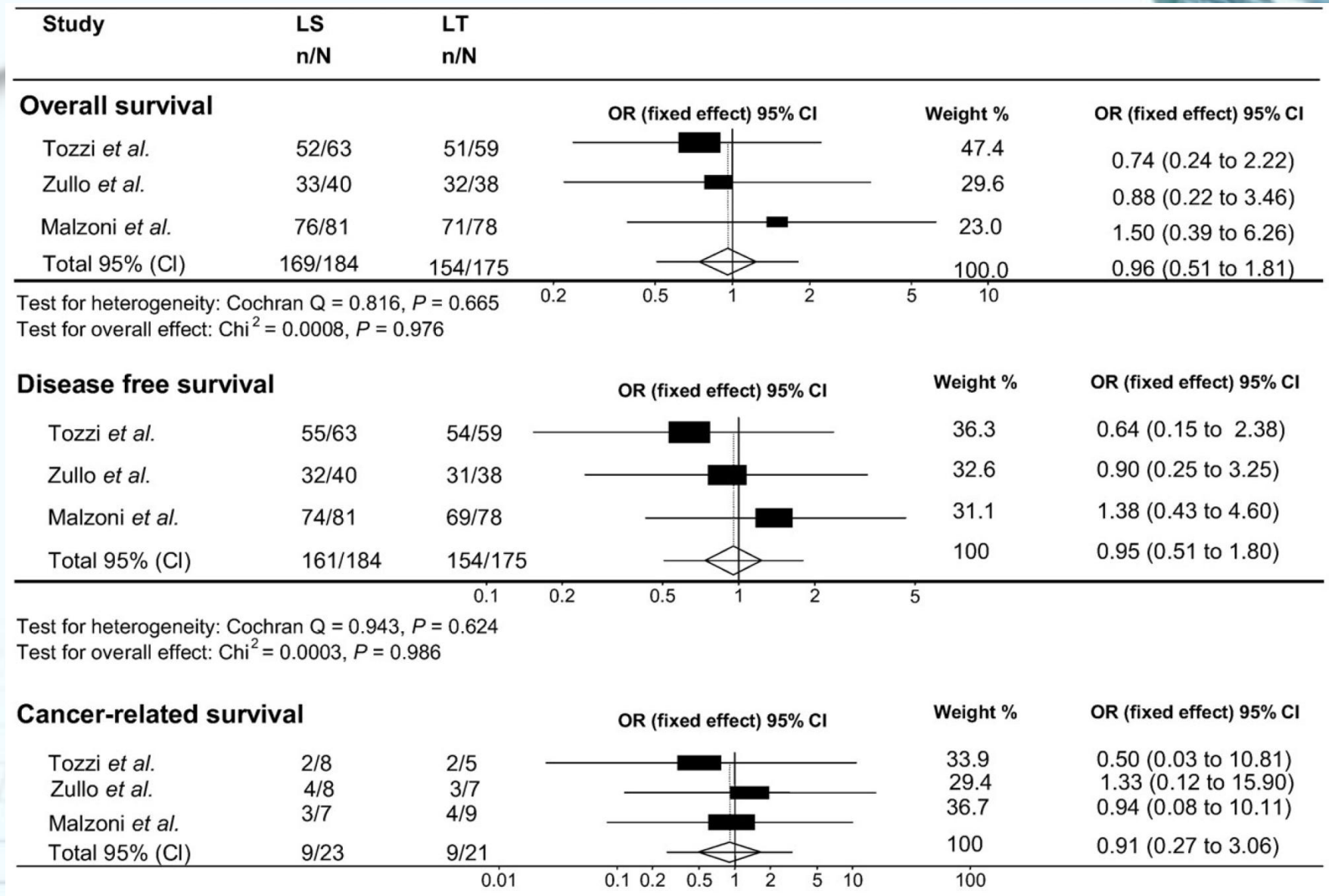



Test for heterogeneity: Cochran Q= 0.069, *P*= 0.793
Test for overall effect: Z= 0.712, *P*=0.477

No difference in the LN yield

*Palomba et al, Gynecologic Oncology, 2009*

# Meta-analysis of randomized trials




*Palomba et al, Gynecologic Oncology, 2009*

# Conclusion of five randomized clinical trials

- LS offers short-term postoperative recovery

  blood loss, hospitalization days, pain killer

- Intra-operative and postoperative complications were fewer
- The number of lymph glands resected was the same with both techniques
- The LS was associated with a better quality of life after surgery
- With respect to long-term results, no significant differences were found in relation to overall, disease-free or cause-specific survival

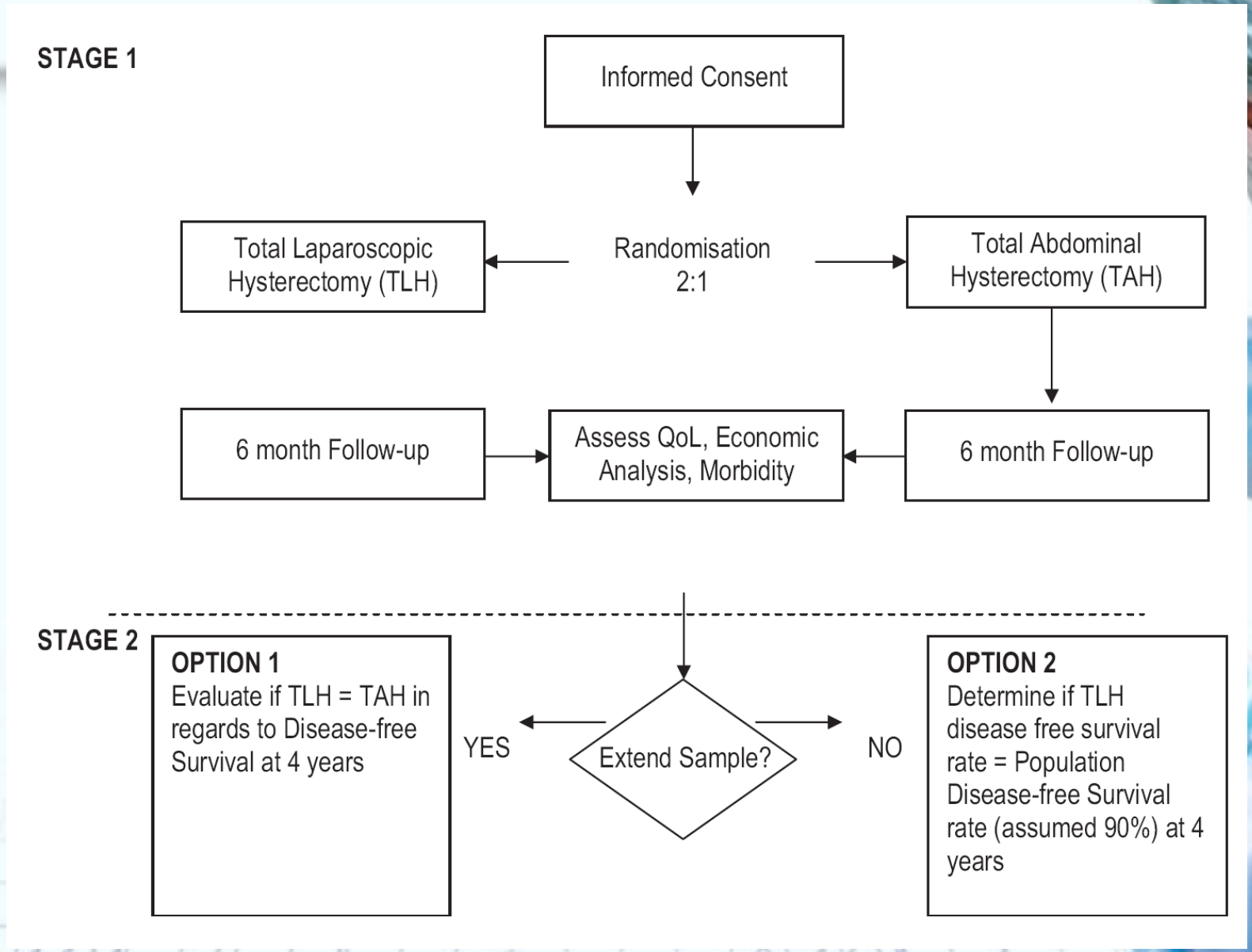
# National prospective randomized clinical trials

| Trial | Registered date | Expected end date |
|---|---|---|
| Netherlands | Jan, 2007 | Jun, 2012 |
| LACE 1 trial | Oct, 2005 | Jan, 2010 |
| GOG LAP-2 | Apr, 1996 | Not reported |

# Phase-3 clinical trials

- GOG LAP 2 and the LACE001 trial
  - Compare total laparoscopic hysterectomy (TLH) with total abdominal hysterectomy (TAH) for the treatment of early stage endometrial cancer, whereby bilateral salpingo-oophorectomy, pelvic and paraaortic lymph node dissection is performed according to tumor stage and grade.

# LACE 1 (laparoscopic apporach for cancer of endometrium) trial



# Laparoscopy Compared With Laparotomy for Comprehensive Surgical Staging of Uterine Cancer: Gynecologic Oncology Group Study LAP2

**Table 2.** Pathology Findings

| Pathology | Laparotomy | | Laparoscopy | | *P* |
|---|---|---|---|---|---|
| | No. of Patients | % | No. of Patients | % | |
| Surgical stage | | | | | .841* |
| IA | 310 | 35 | 609 | 37 | |
| IB | 266 | 30 | 451 | 28 | |
| IC | 104 | 12 | 193 | 12 | |
| IIA | 20 | 2 | 37 | 2 | |
| IIB | 32 | 4 | 61 | 4 | |
| IIIA | 42 | 5 | 96 | 6 | |
| IIIC | 84 | 9 | 143 | 9 | |
| IVB | 28 | 3 | 39 | 2 | |
| Unstaged† | 0 | 0 | 1 | < 1 | |

# GOG LAP-2 trial

**Table 4.** Complications and Adverse Events

| Complications and Adverse Events | Laparotomy | | Laparoscopy | | |
|---|---|---|---|---|---|
| | No. of Patients | % | No. of Patients | % | *P* |
| Postoperative adverse events (grade ≥ 2) | | | | | |
| Any | 191 | 21 | 240 | 14 | < .001 |
| Urinary tract infection | 27 | 3 | 35 | 2 | |
| Fever | 33 | 4 | 55 | 3 | |
| Pelvic cellulitis | 8 | 1 | 14 | 1 | |
| Abscess | 6 | 1 | 17 | 1 | |
| Venous thrombophlebitis | 12 | 1 | 14 | 1 | |
| Pulmonary embolus | 12 | 1 | 20 | 1 | |
| Bowel obstruction | 12 | 1 | 14 | 1 | |
| Ileus* | 68 | 8 | 66 | 4 | |
| Pneumonia | 19 | 2 | 15 | 1 | |
| Wound infection | 33 | 4 | 53 | 3 | |
| Urinary fistula | 1 | < 1 | 6 | < 1 | |
| Bowel fistula | 2 | < 1 | 6 | < 1 | |
| Congestive heart failure | 11 | 1 | 12 | 1 | |
| Arrhythmia* | 22 | 2 | 15 | 1 | |

# GOG LAP-2 trial

**Table 4.** Complications and Adverse Events

| Complications and Adverse Events | Laparotomy | | Laparoscopy | | |
|---|---|---|---|---|---|
| | No. of Patients | % | No. of Patients | % | *P* |
| Perioperative and postoperative period | | | | | |
| Blood transfusion | 66 | 7 | 143 | 9 | .280 |
| Antibiotics | 211 | 23 | 274 | 16 | < .001 |
| Readmission | 59 | 7 | 96 | 6 | .413 |
| Reoperation | 22 | 2 | 48 | 3 | .523 |
| Treatment-related deaths | 8 | 1 | 10 | < 1 | .404 |
| Hospital stay > 2 days | 845 | 94 | 867 | 52 | < .001 |

# QLF (LAP-2)

- Laparoscopy is associated with better postsurgery QLF

  Body image: 6 months

  Physical functioning: 6 weeks

  Resumption to normal activities: 6 weeks

# Laparoscopy for early EmCa

## Conclusion

- Comprehensive surgical staging of EmCa can be performed using laparoscopy without increased intra-operative injuries, with fewer post-operative complications, and with shorter hospital stay.
- Laparoscopy, when assumed to be feasible, worth the extra operative time and surgeon training.
- Long-term survival and recurrence data is not mature.

Thanks for Your Attention