LAPAROSCOPIC EXTRAPERITONEAL PARAAORTIC LYMPHADENECTOMY

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Detection of lymph node metastasis

- The presence of lymph node metastasis is the most significant prognostic factor in the management of cervical cancer.

- 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.

CT scan in detecting node metastasis

- The accuracy in demonstrating metastatic nodes was only 75%, predominantly due to metastatic deposits in normal-sized nodes

Gynecol Obstet Invest 1984

- Preoperative CT scan when compared with surgical findings showed sensitivity for node metastasis of 34-39%, specificity of 88-96%

Eur J Gynaecol Oncol 2001

MRI in detecting lymph node metastasis

- Sensitivity : 57.1%
- Specificity : 96.8%
- Differentiation between malignant and reactive lymphadenopathy was not reliably achieved.
- In several patients, metastases were present in normal-sized lymph nodes

Clin Radiol 1994

PET in detecting node metastasis

	Pelvic lymph nodes		Paraaortic lymph nodes
Sensitivity :	53%	vs	25%
Specificity :	90%	vs	98%
PPV :	71%	vs	50%
NPV :	80%	vs	93%

- Pathologic validation of PET imaging demonstrated a low sensitivity and a high specificity for PET in patients with early-stage cervical carcinoma.

Cancer 2005

MRI versus PET/CT in detecting node metastasis

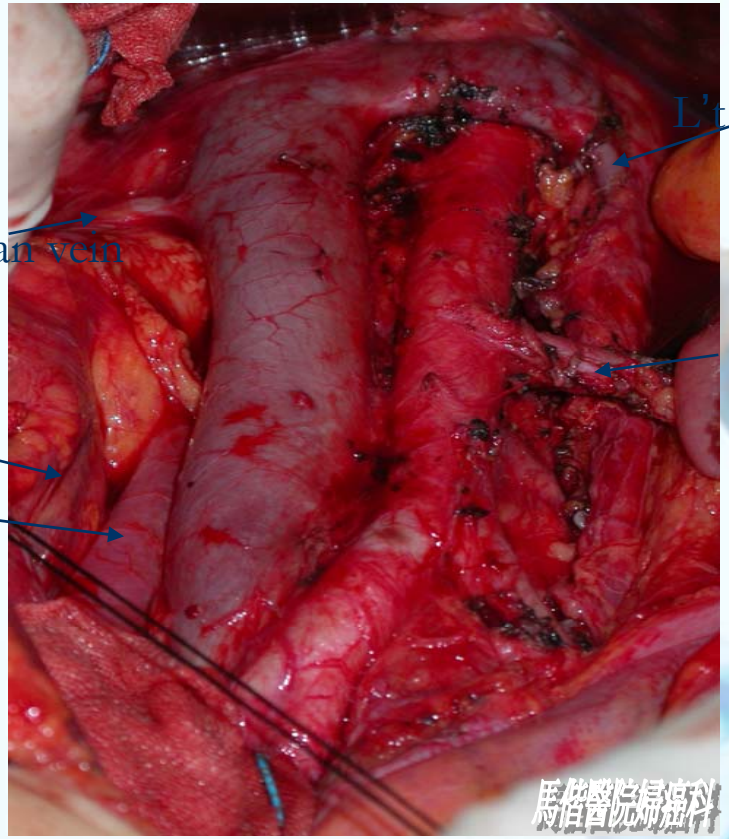
	MRI		PET/CT
❖ Sensitivity :	30.3%	vs	57.6%
❖ Specificity :	92.6%	vs	92.6%
❖ Accuracy :	72.7%	vs	85.1%

❖ PET/CT was more sensitive than MRI for detecting lymph node metastases in patients with uterine cervical carcinoma, but the sensitivity is still unsatisfactory.

Cancer 2006

The advantages of laparoscopic lymphadenectomy

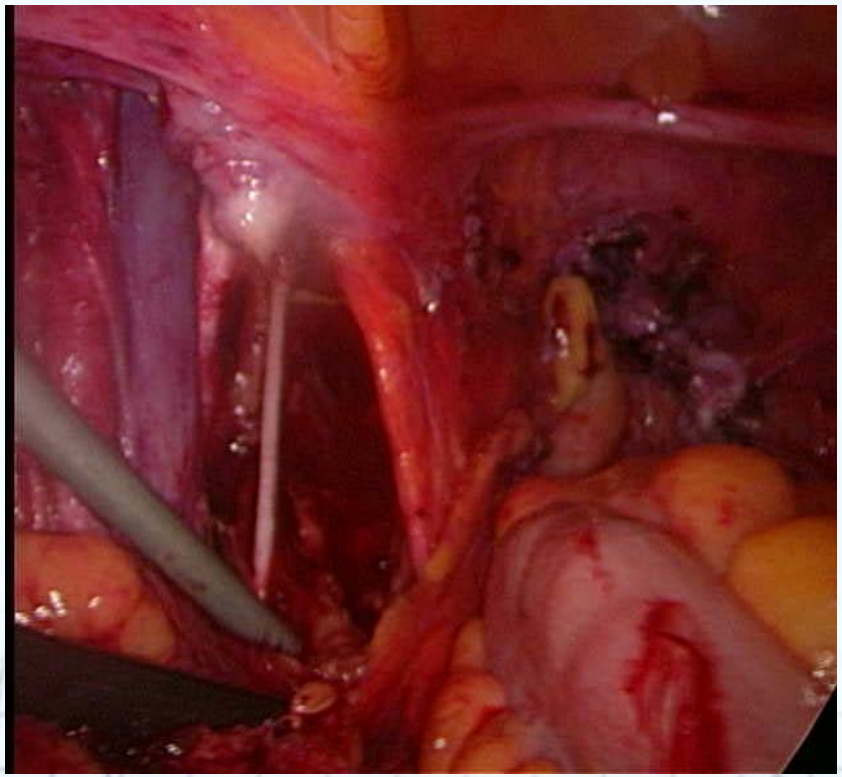
- Diagnostic lymphadenectomy by laparotomy is costly and uncomfortable, and causes major peri-operative complications and pelvic adhesions.



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

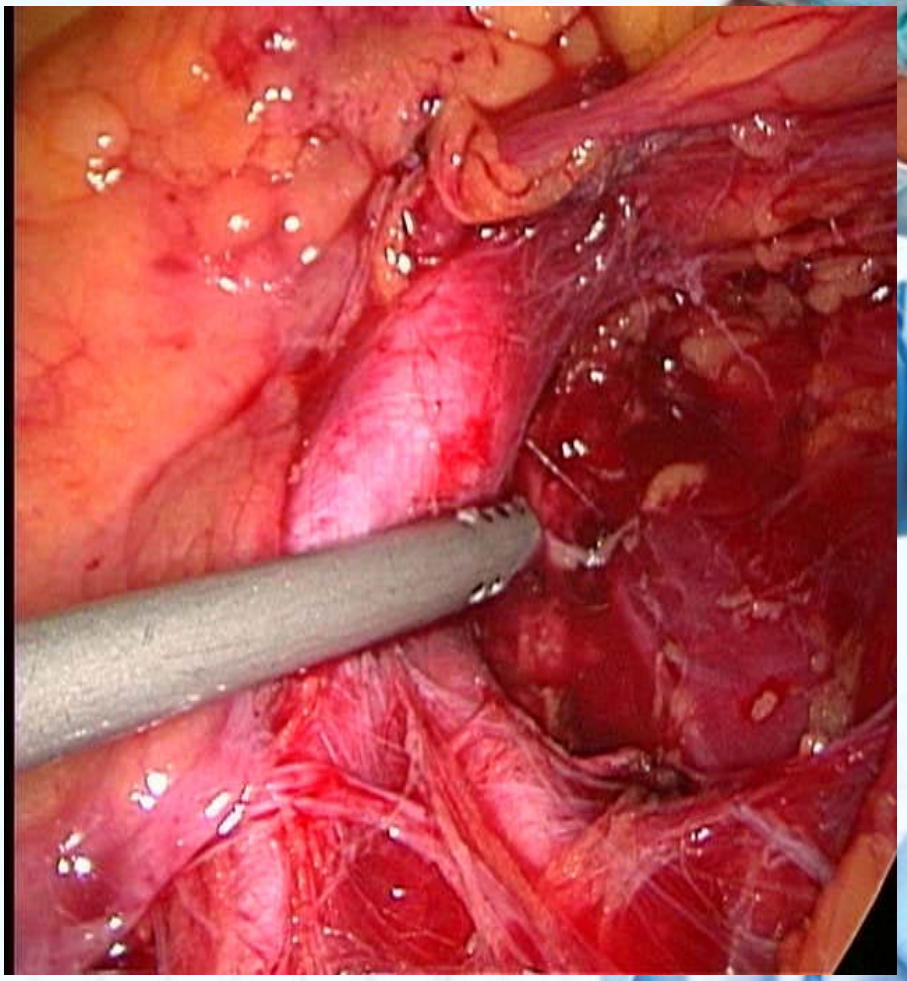
History of laparoscopic lymphadenectomy

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



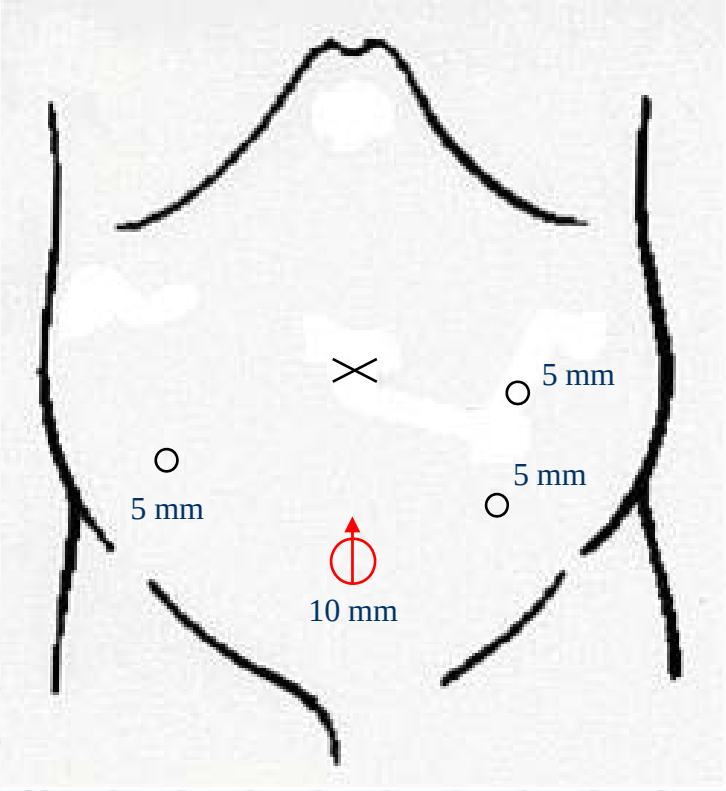
History of laparoscopic lymphadenectomy

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.

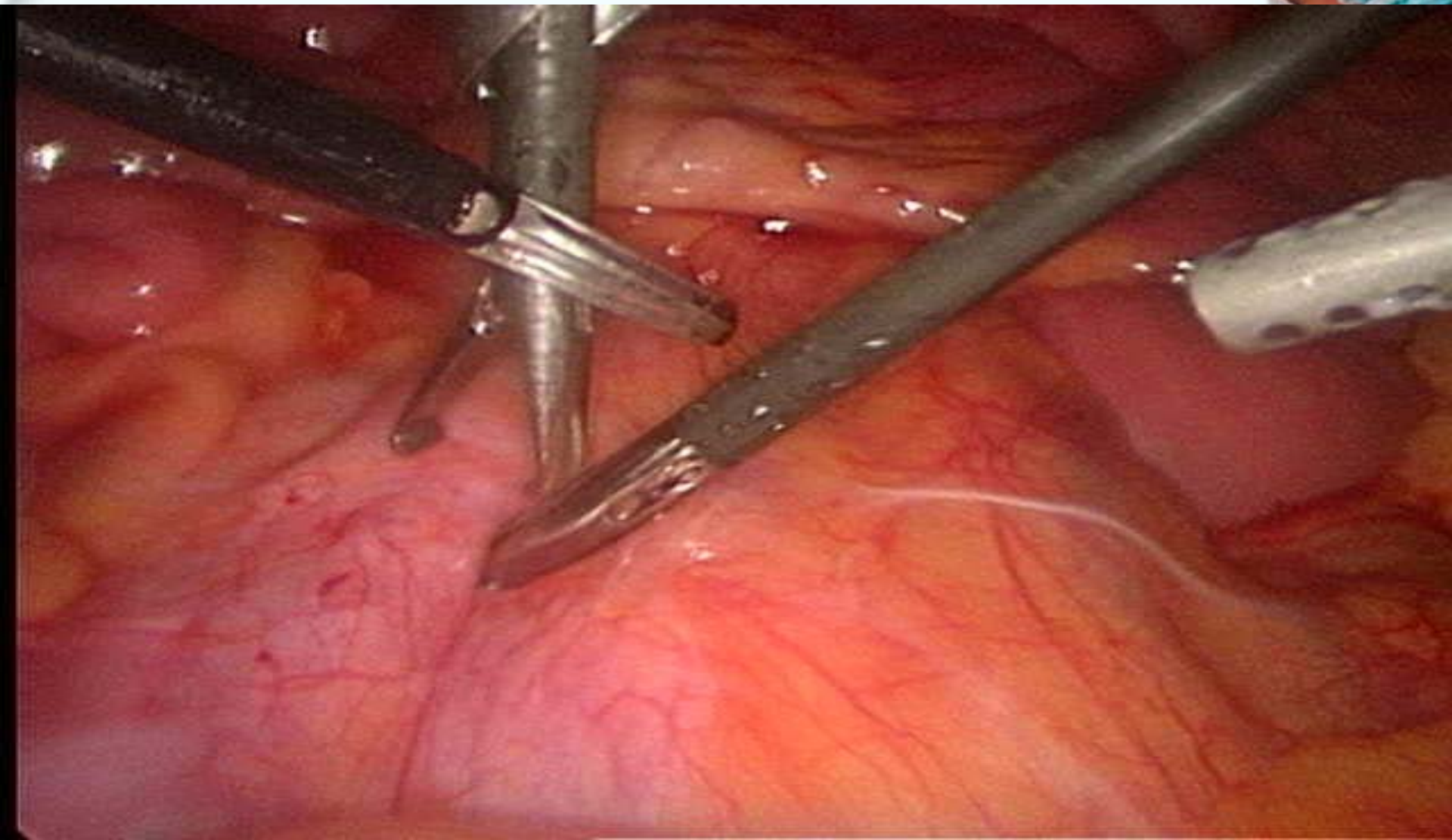


Procedures of transperitoneal para-aortic lymphadenectomy: normal lower port

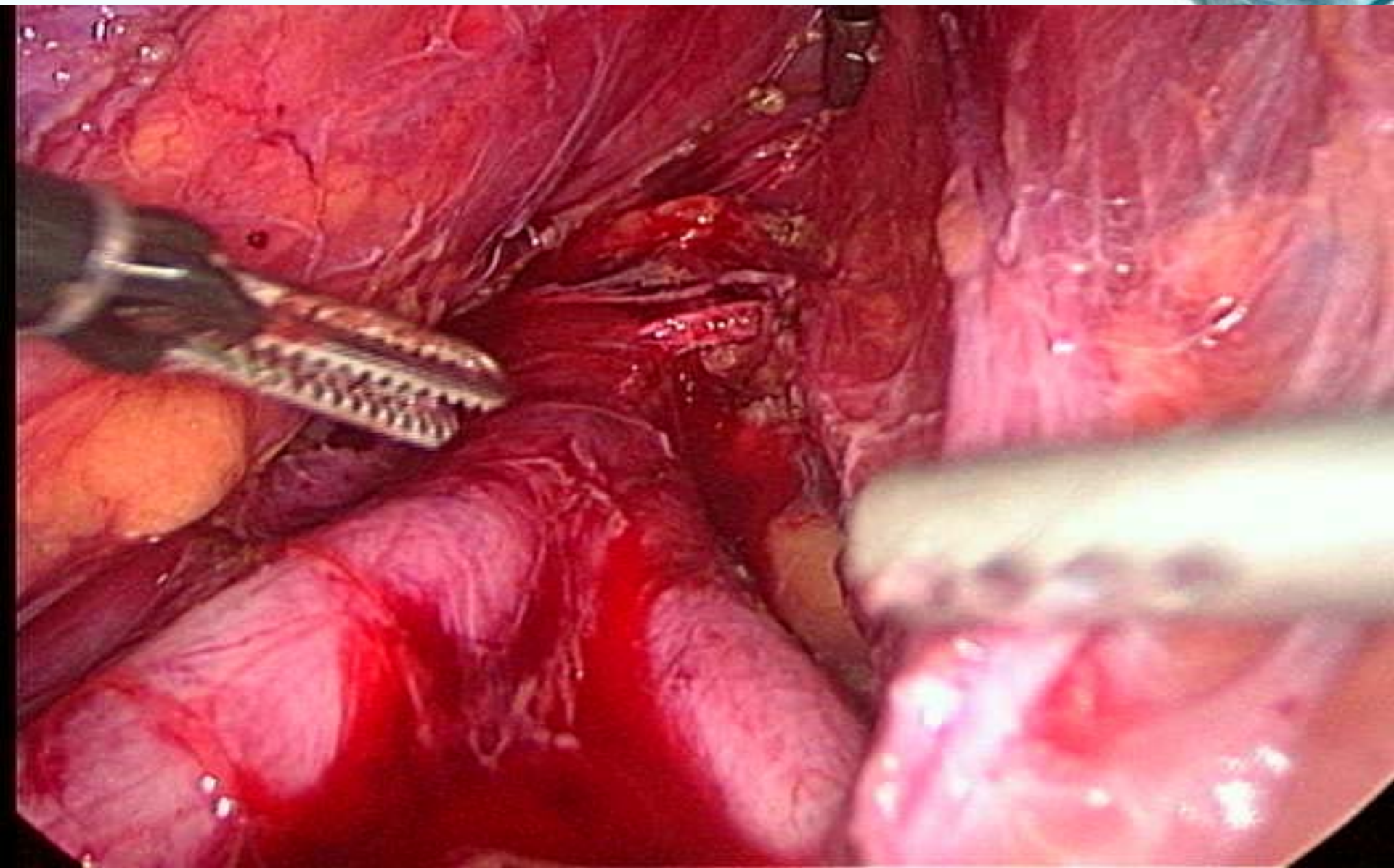
1.Trocar positions



Peritoneal incision



Check bleeding



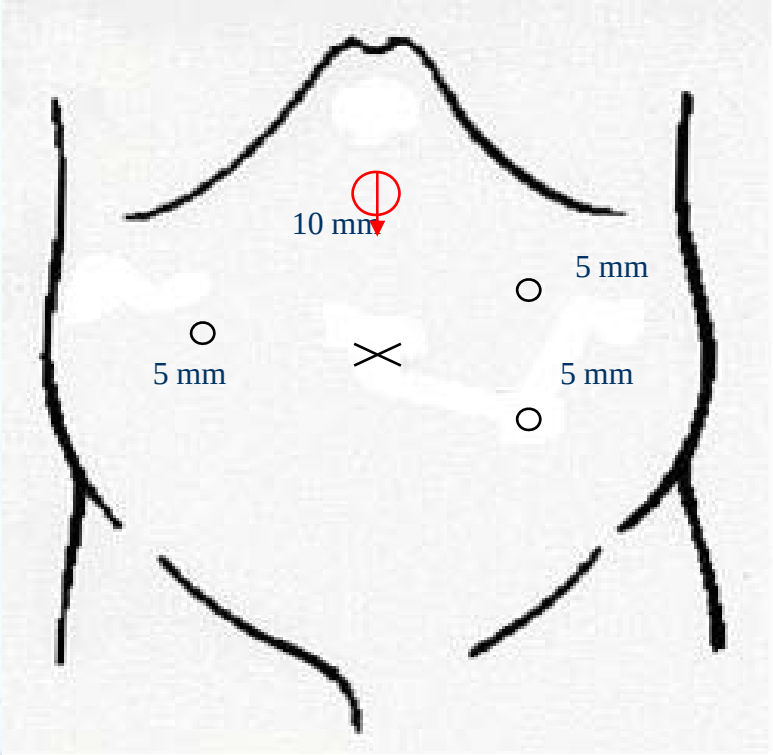
Laparoscopic para-aortic LN sampling at Mackay Memorial Hospital (Taipei)

- Invasive cervical cancer, 38 patients
- From August 1993 to July 1994
- Average time :77mins, blood loss: 116ml
- Average nodes: 15
- Conclusions: a less invasive , reliable method , lower risk

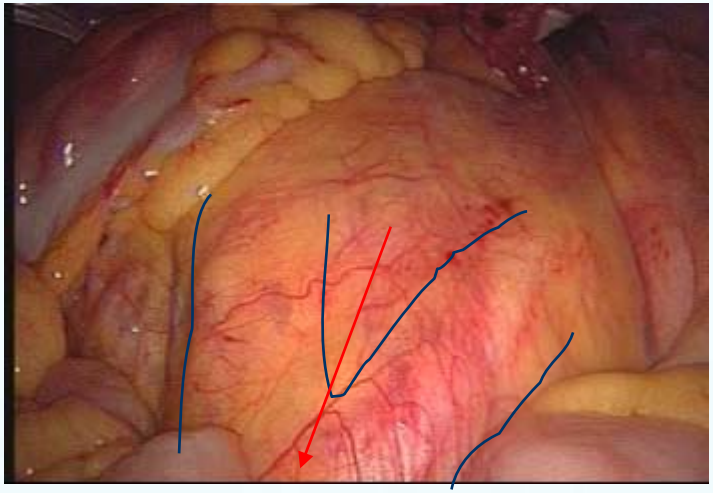
Su et al Int J Gyne Obst 1995

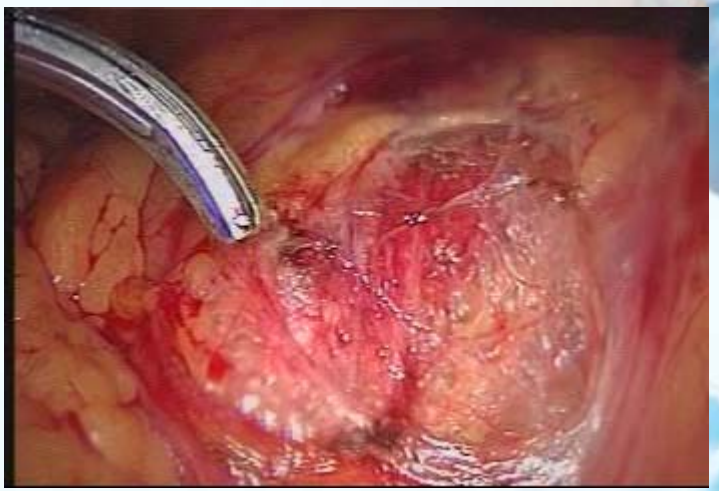
Procedures of transperitoneal para-aortic lymphadenectomy: Lee-Huang port

1.Trocar positions

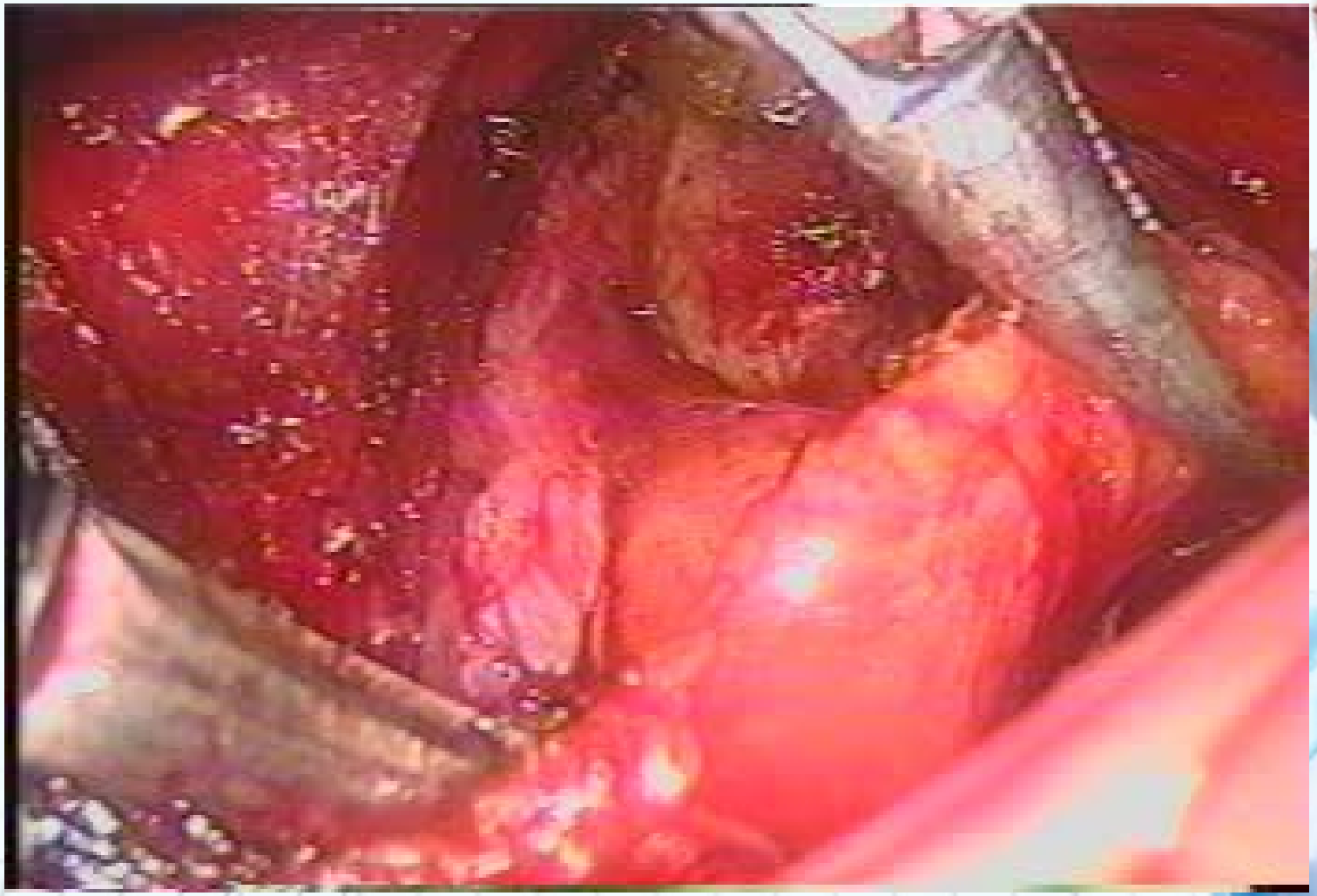


2. Open the retroperitonium

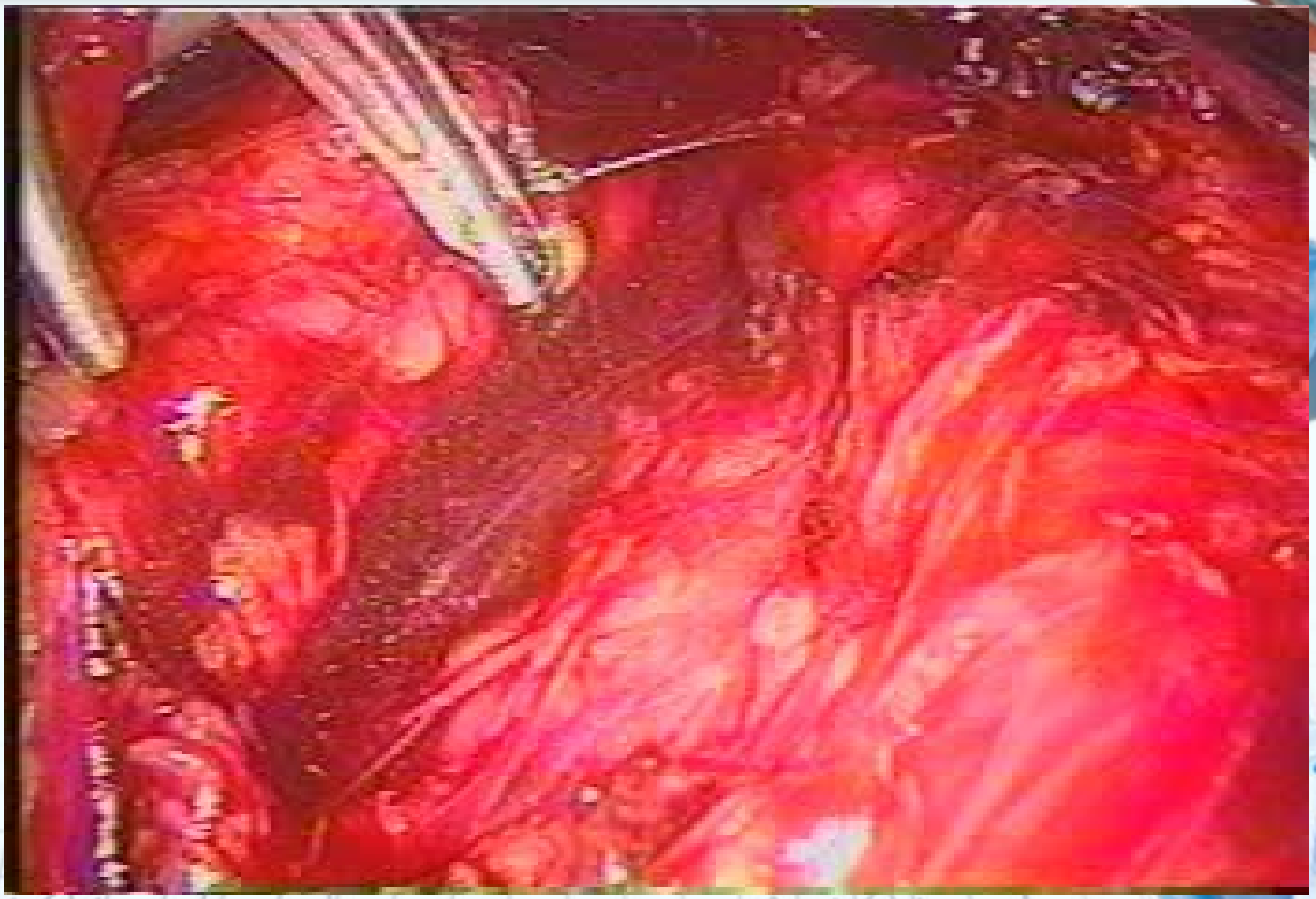




3. Right para-aortic lymphadenectomy

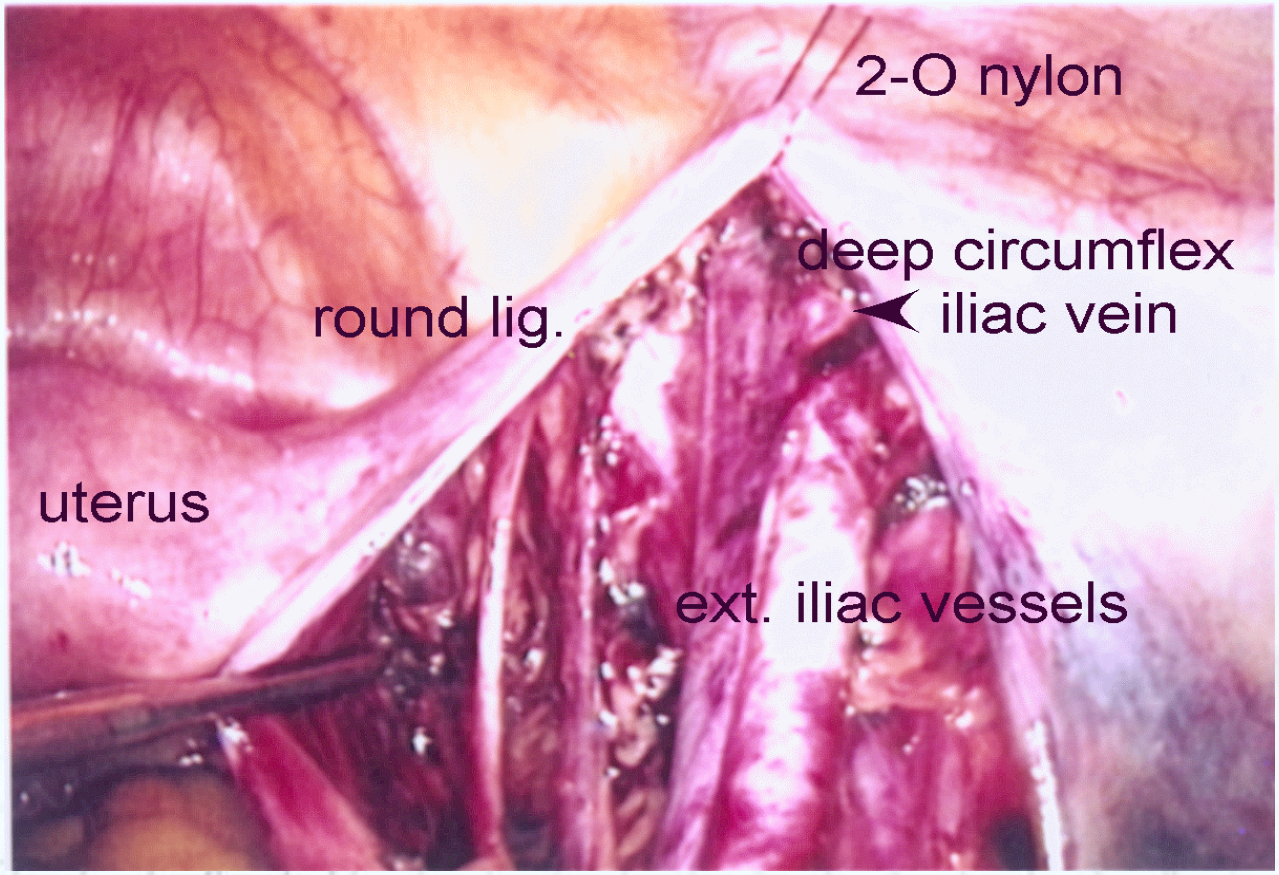


4. Left para-aortic lymphadenectomy

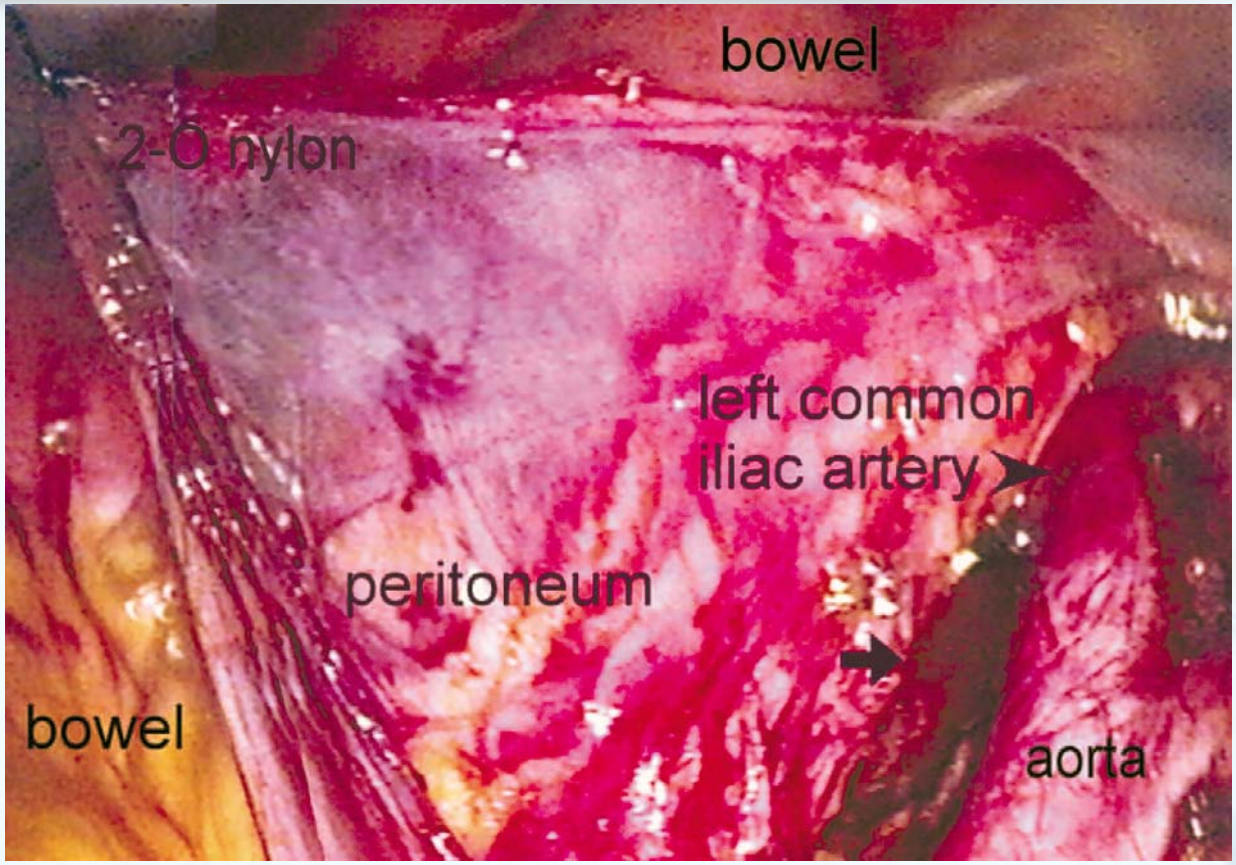


A Modified Suspension Technique for Better Exposure of Retroperitoneal Space in Laparoscopic Lymphadenectomy

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



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


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

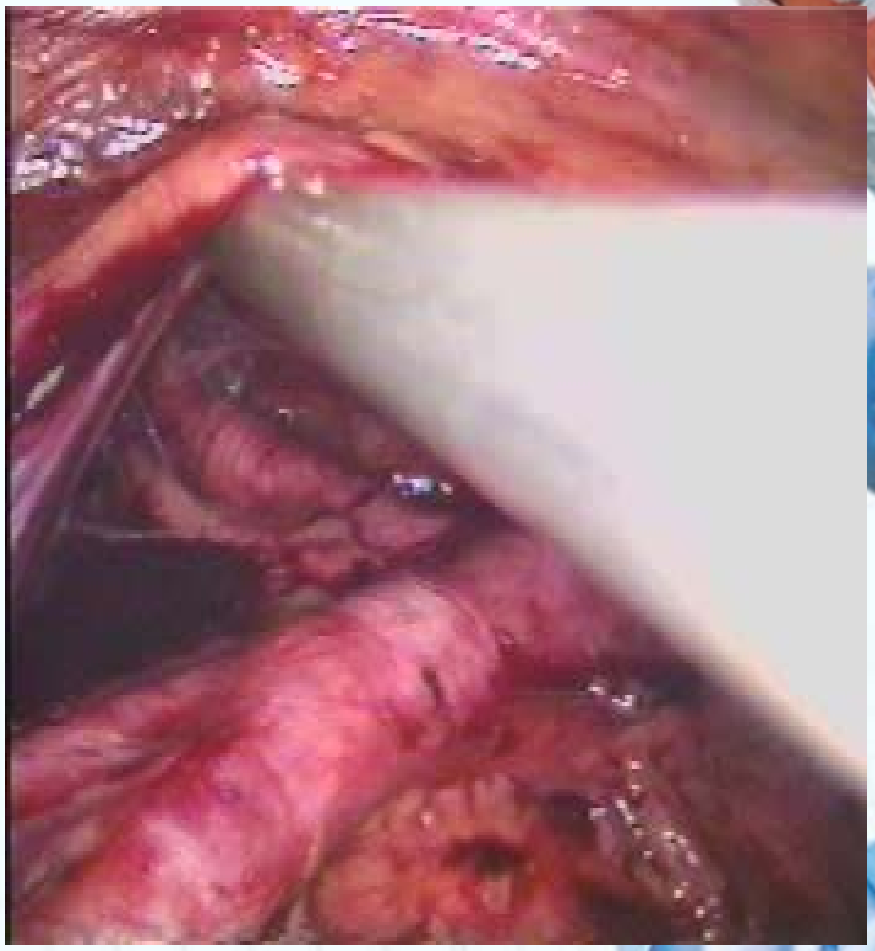
Approaches of laparoscopic paraaortic lymph node dissection

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

History of laparoscopic extraperitoneal pelvic and paraaortic lymphadenectomy

1. Laparoscopic extraperitoneal pelvic lymphadenectomy (LEPL) was first reported by Dargent in 1987.

2. The extraperitoneal laparoscopic approach for para-aortic lymph node dissection (LEPAL) was first described by Vasilev and McGonigle (1996).



History of laparoscopic extraperitoneal pelvic and paraaortic lymphadenectomy (continued)

3. LEPL was further extended for the extraperitoneal dissection of the common iliac and aortic nodes in 2000 by Dargent et al.

   [Gynecol Oncol 2000;77:87-92]

4. This novel technique of laparoscopic extraperitoneal pelvic and paraaortic lymphadenectomy (LEPPL) has been commented to gain acceptance by Querleu et al.

   [Int J Gynecol Cancer 2003;13(Suppl 1):6]

The advantages of laparoscopic extraperitoneal lymphadenectomy(I)

1. LEPPL is technically easier; surgically and anatomically more logical; and creates fewer peritoneal adhesions than its transperitoneal counterpart.

2. The application of LEPPL to the common iliac and aortic nodes is the principal technique for patients with advanced-stage cervical cancer, which are often subjected to extended field irradiation.

3. Extraperitoneal approach to the paraaortic node dissection has been associated with less radiation-associated gastrointestinal morbidity.

The advantages of laparoscopic extraperitoneal lymphadenectomy(II)

4. These authors have confirmed the feasibility of the left extraperitoneal route of LEPPL for systematic paraaortic lymph node samplings for patients with cervical cancer.
5. Major complication of the new LEPPL: the formation of giant lymphocysts

   Solution: Incision of peritoneum of the paracolic gutter at the end of the procedure and allows the intraperitoneal drainage of the extraperitoneal dissection area.

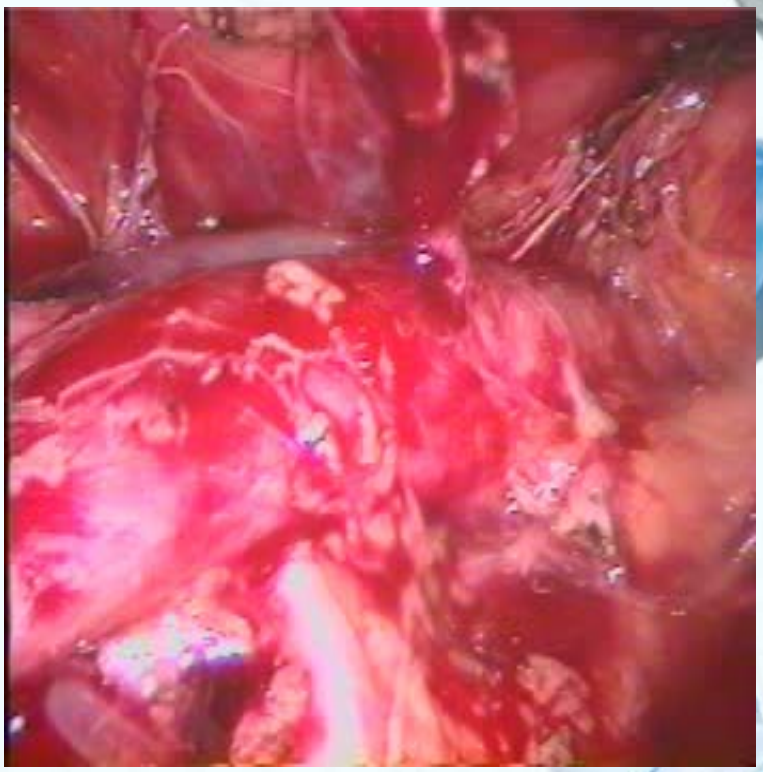
Laparoscopic Extraperitoneal Lymphadenectomy

- Mehra et al. --this approach identifies those cervical and endometrial cancers requiring extended field radiation as part of their adjuvant therapy and can be used efficaciously in staging early ovarian cancers to determine the need for adjuvant chemotherapy.

(Gynecol Oncol. 2004;93:189–193)

- Burnett et al. (46 patients)-- median lymph node of 14 (range, 0–60).

(Gynecol Oncol. 2004;95:189–192)



LEPAL: Surgical Procedure at MMH(I)

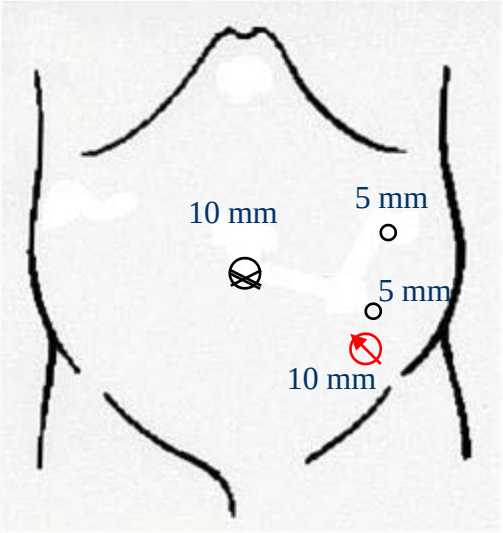
1. Intraperitoneal laparoscopy to look for intraperitoneal disease
2. Initiation of left extraperitoneal approach
3. Finger dissection to create extraperitoneal space
4. Insertion of accessory trocars
5. Development of pneumo-extraperitoneal space
6. Identification of left ureter and iliac vessels to create space to aortic area

LEPAL: Surgical Procedure at MMH(II)

7. Identification of right ureter and right common iliac artery
8. Identification of inferior mesenteric artery and inferior vena cava
9. Performance of lymph node dissection
10. Removal of lymph nodes by tissue bag and sent for frozen section
11. Marsupialization of the extraperitoneal space for drainage

Left extraperitoneal paraaortic lymphadenectomy (LEPAL)

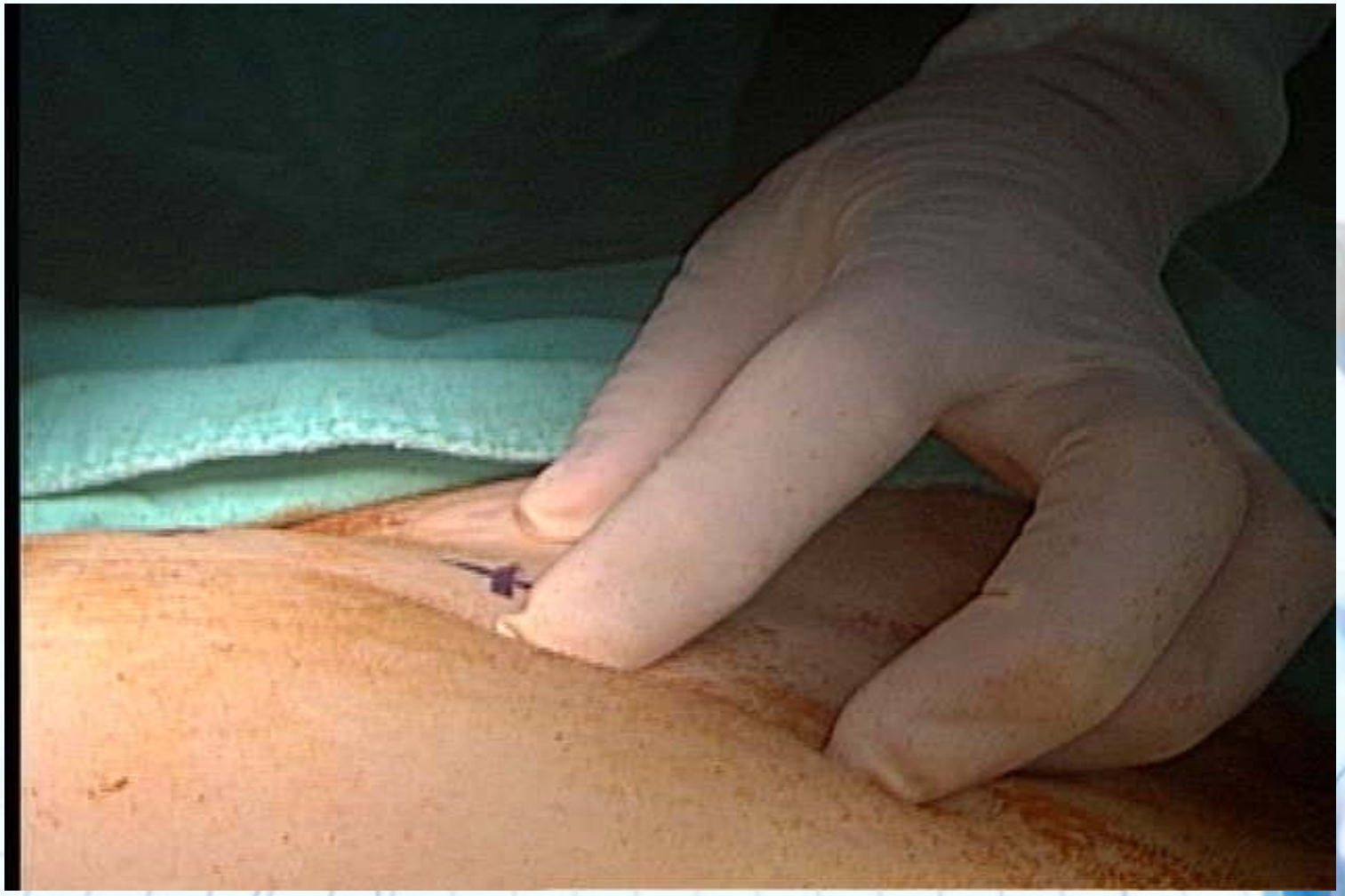
1. Trocars positions



Trocars positions

Intraperitoneal laparoscopy to look for intraperitoneal disease

Finger dissection to create extraperitoneal space (I)

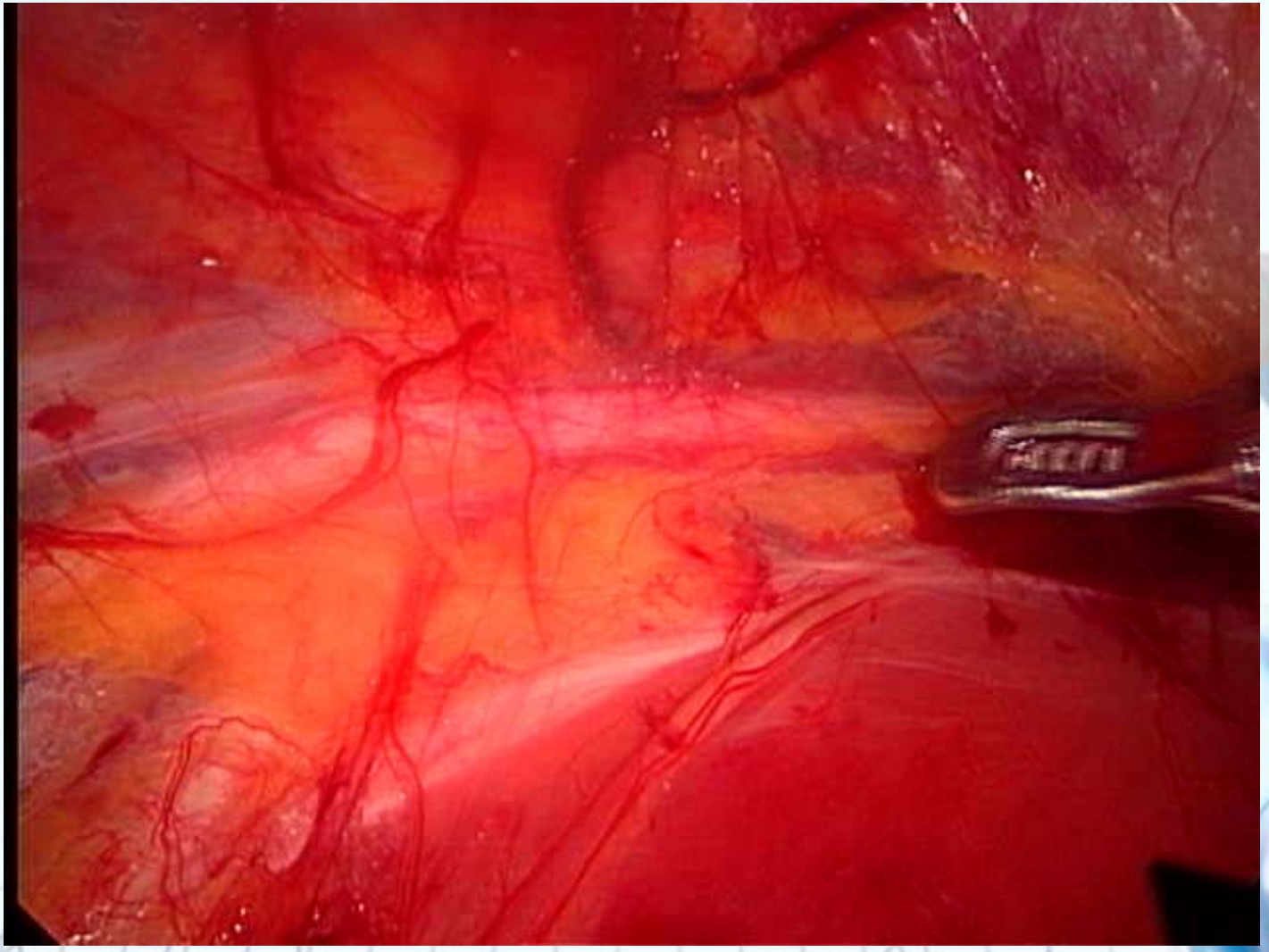


Finger dissection to create extraperitoneal space (II)

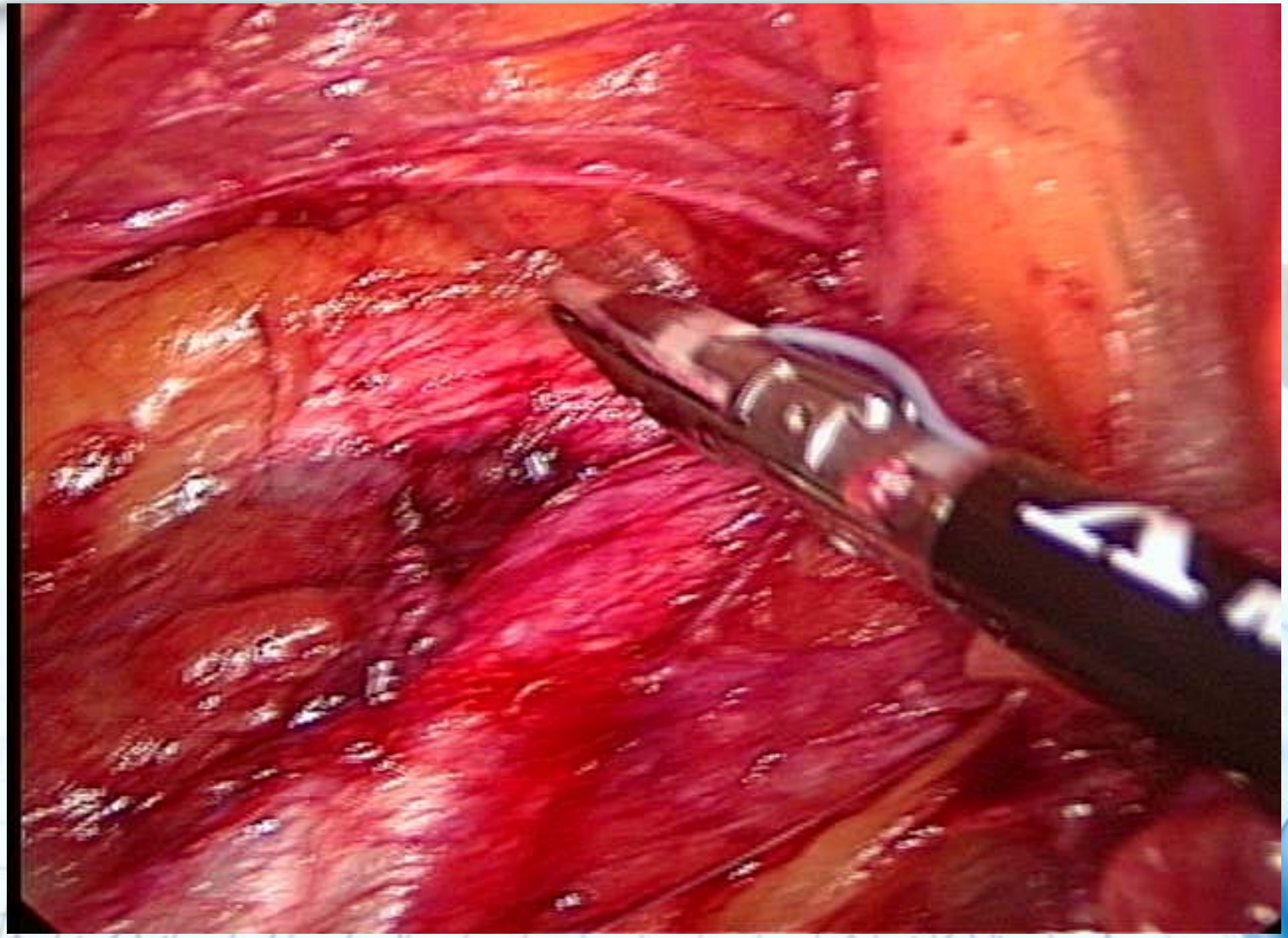
Insertion of accessory trocars(I)

Insertion of accessory trocars(II)

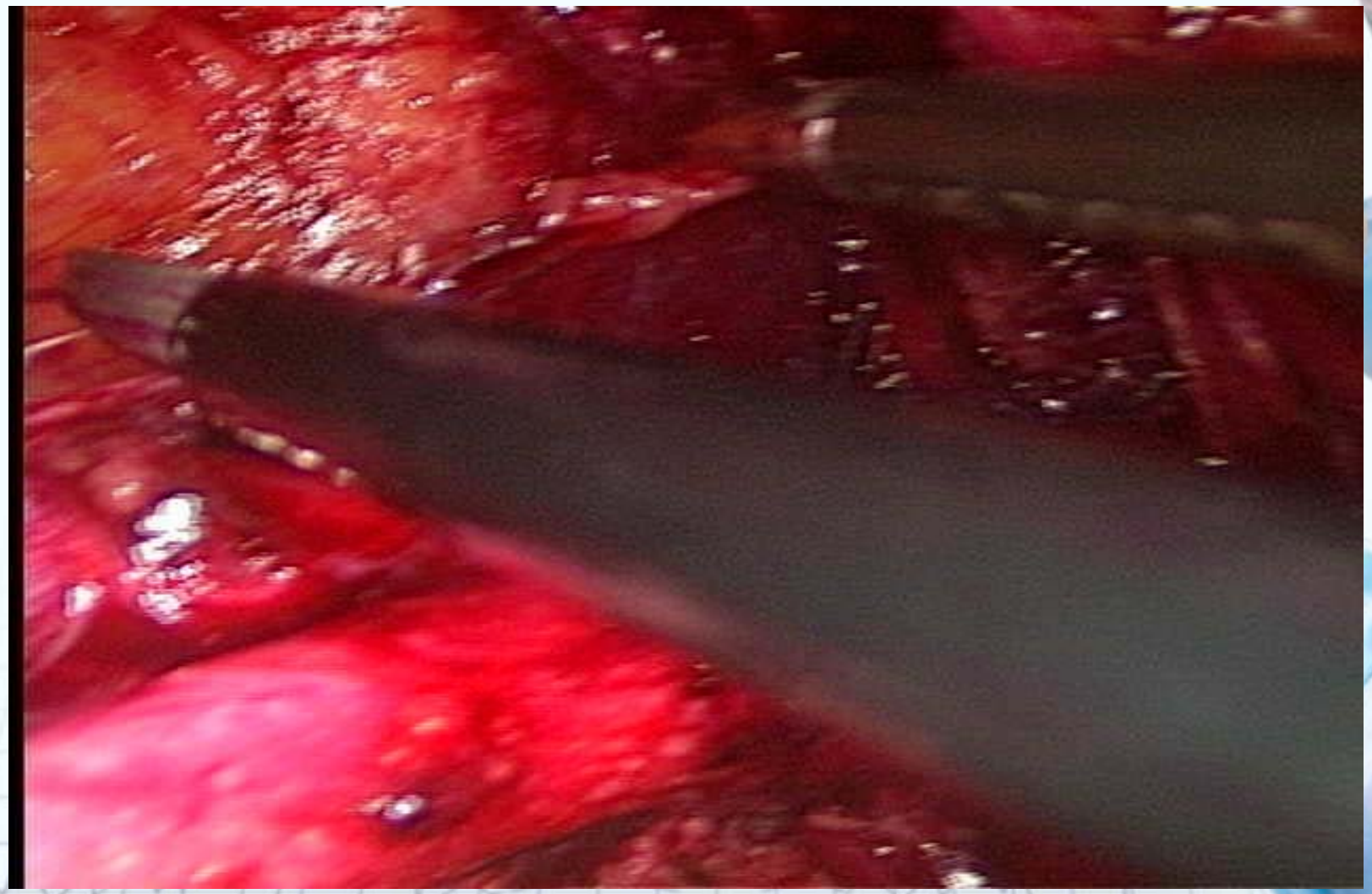
Identification of left ureter and iliac vessels to create space to aortic area

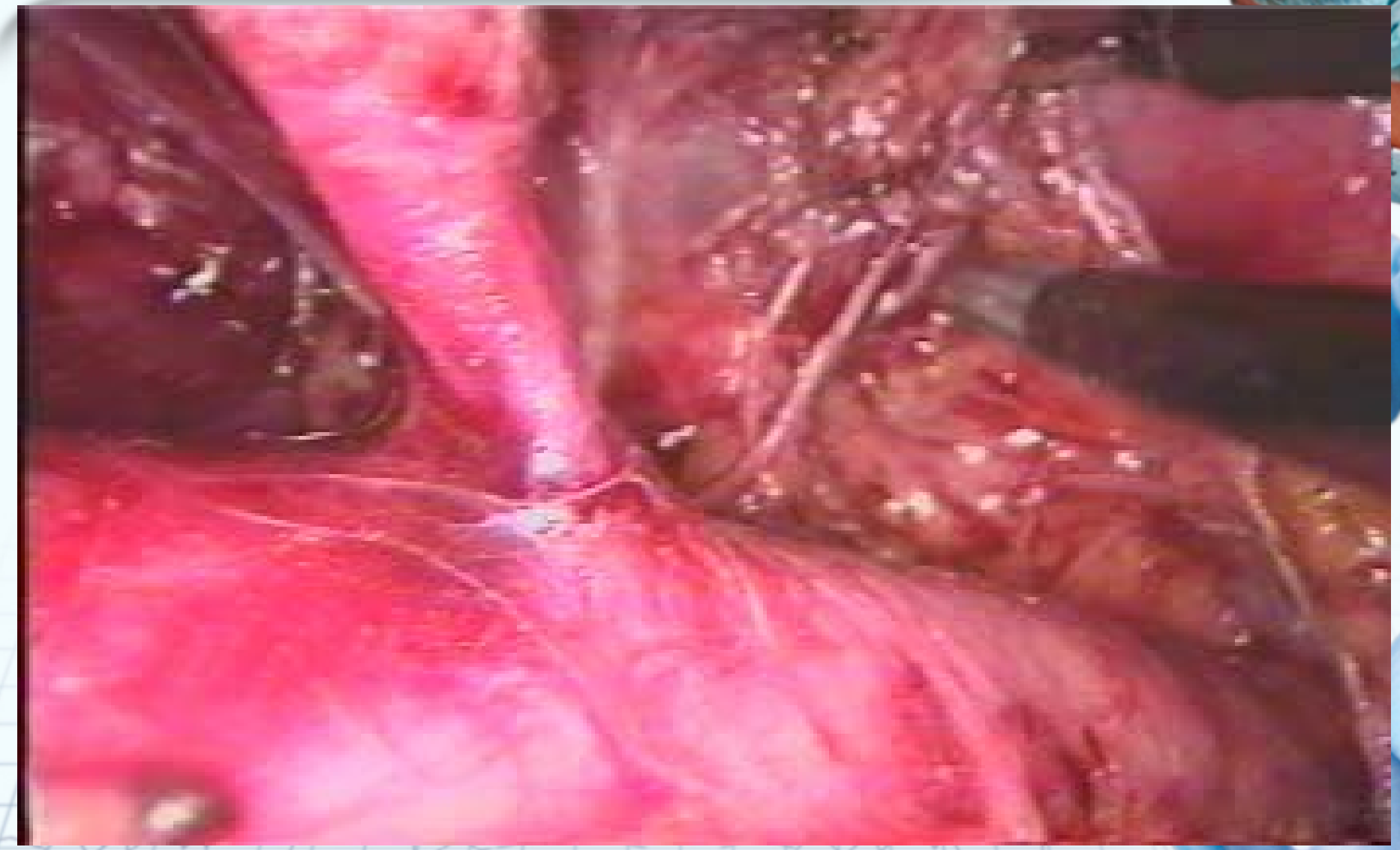


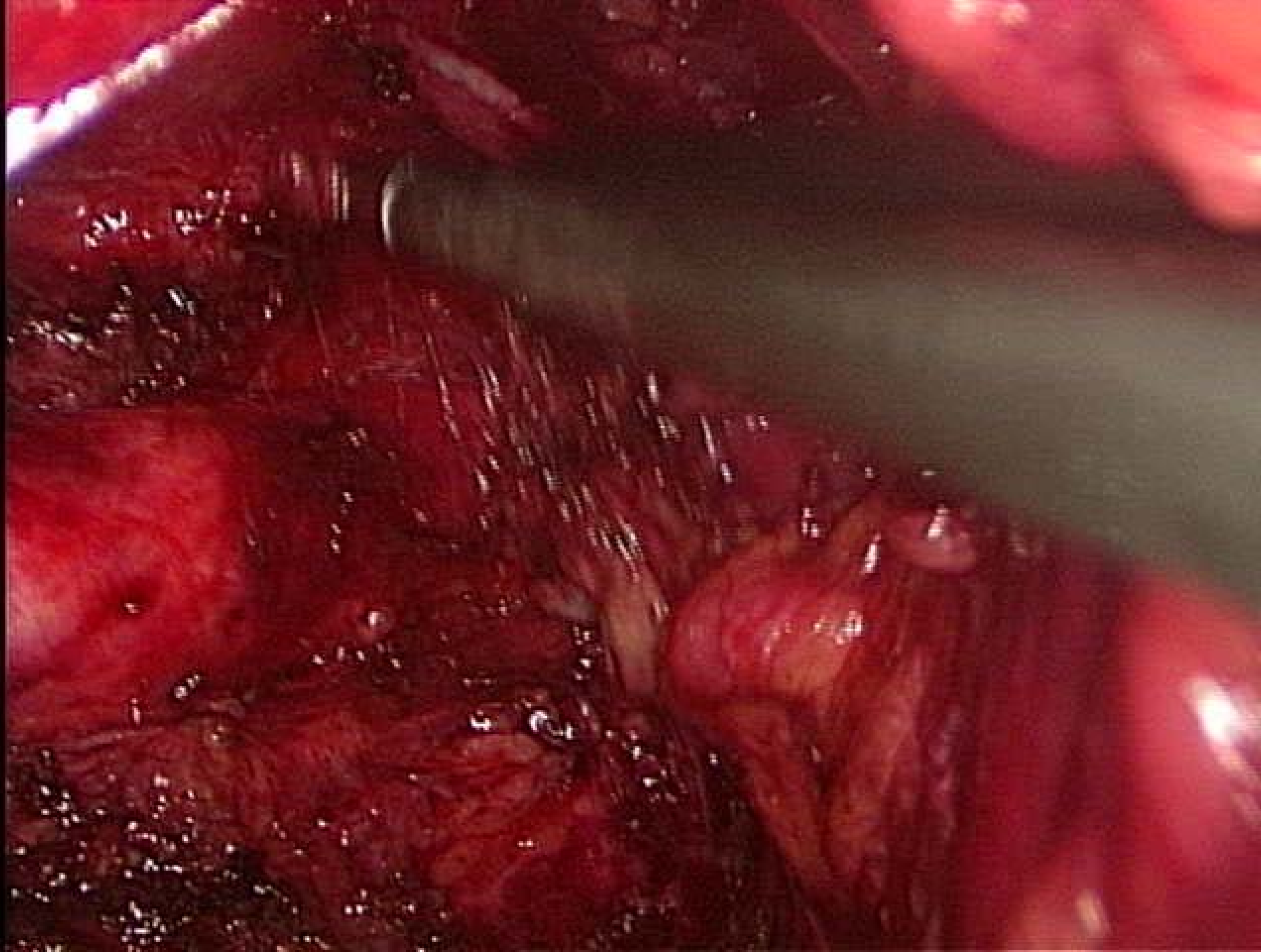
Identification of right ureter and right common iliac artery



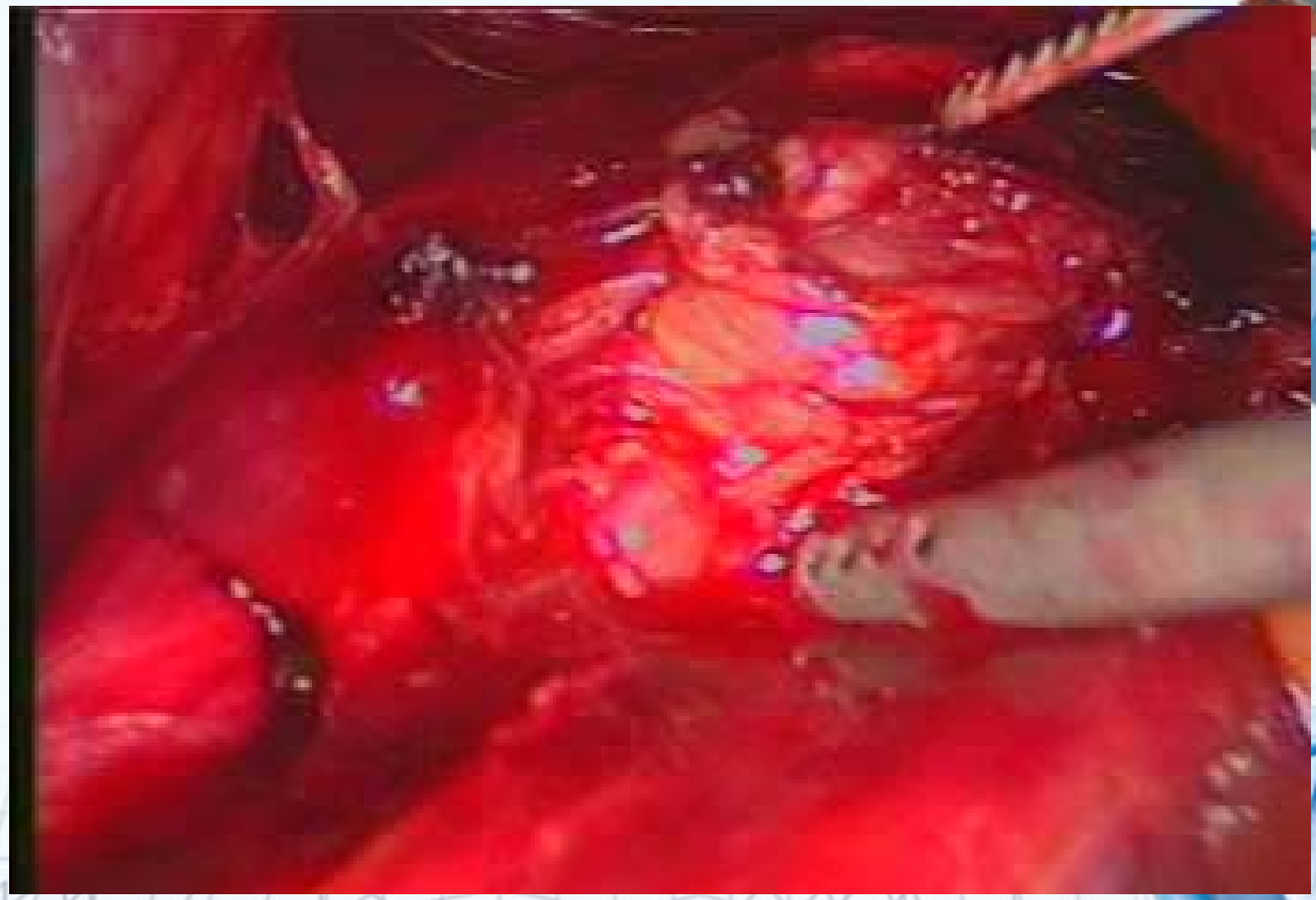
Identification of inferior mesenteric artery and inferior vena cava





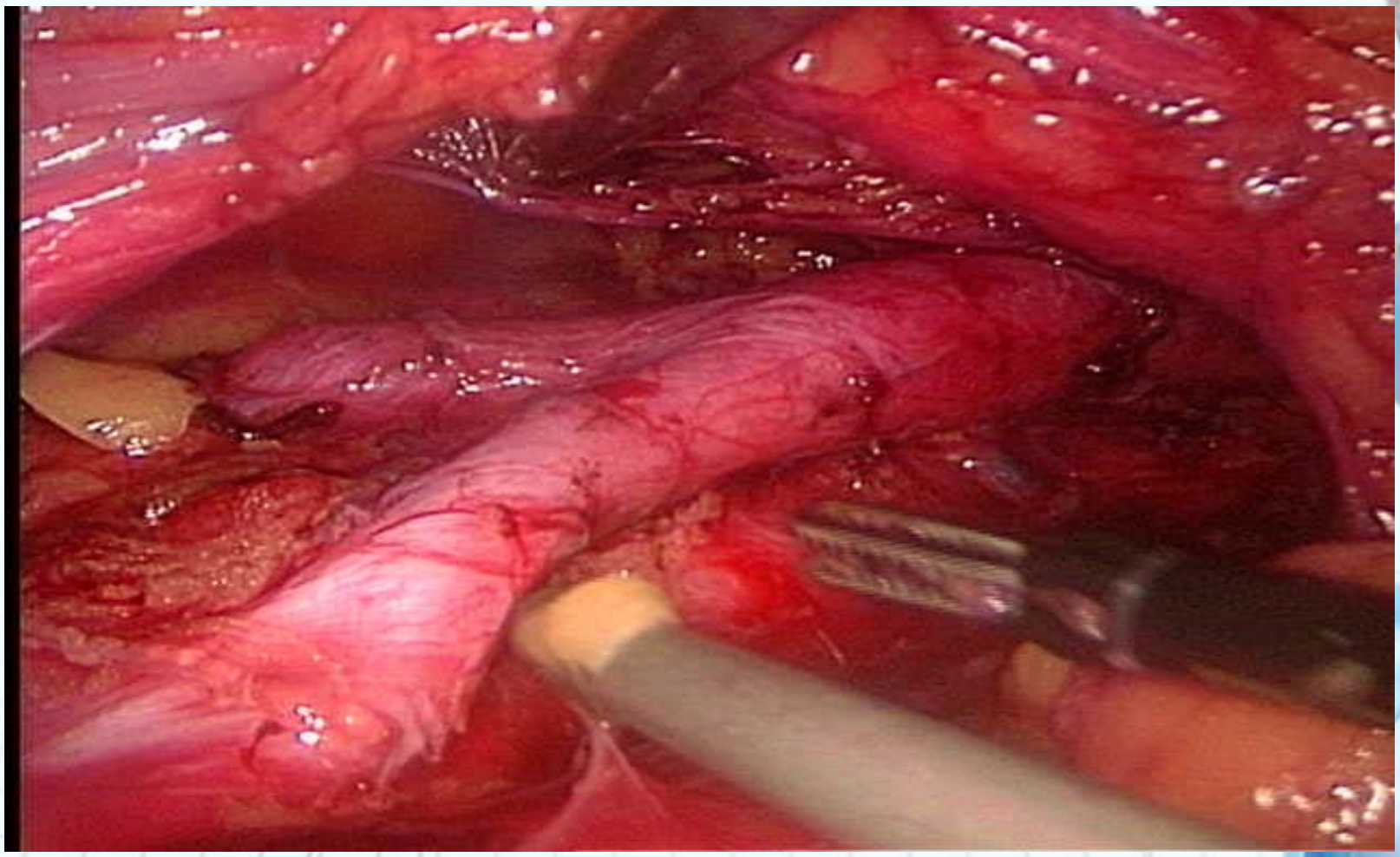


Performance of lymph node dissection

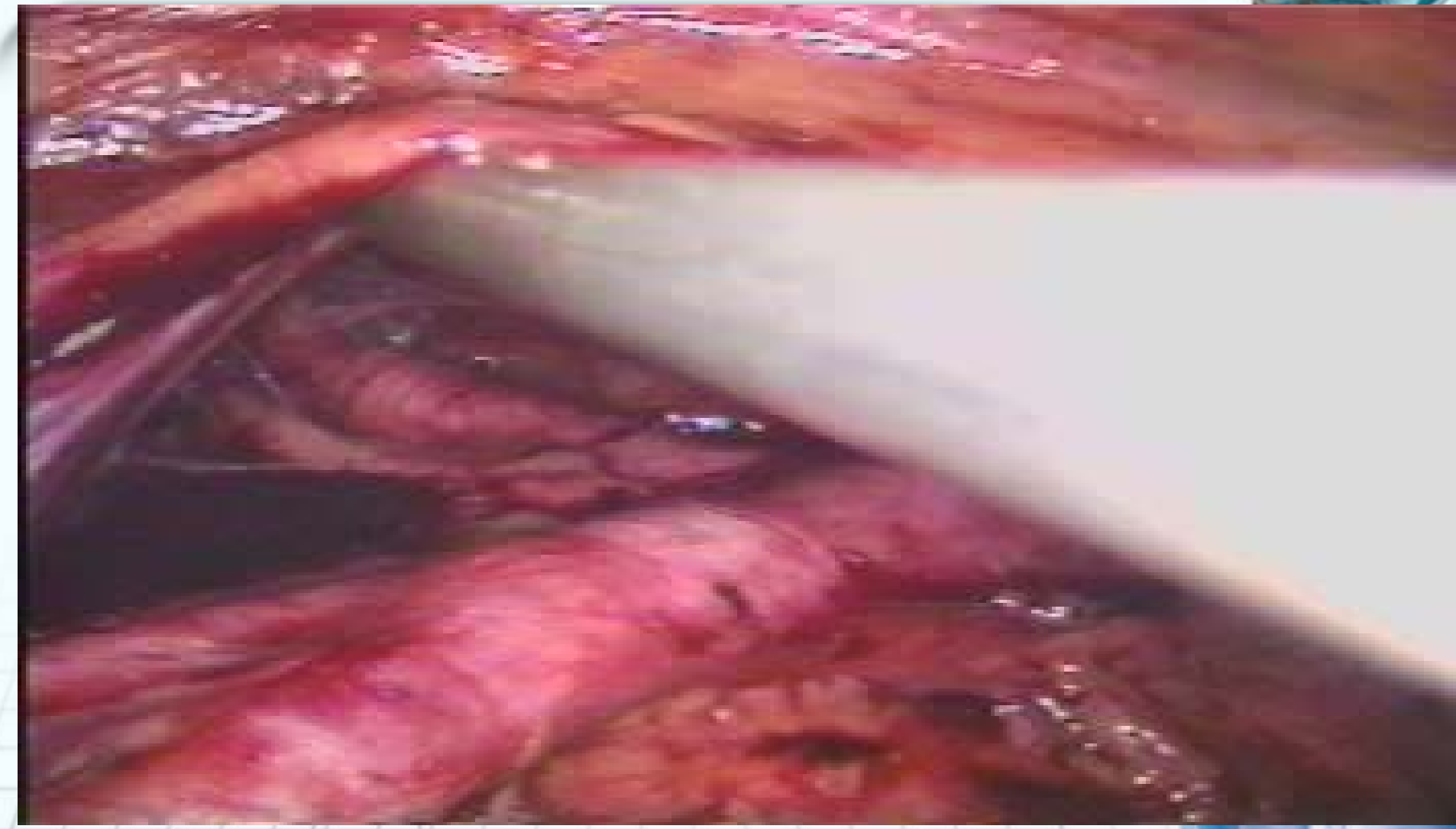


Removal of lymph nodes by tissue bag and sent for frozen section

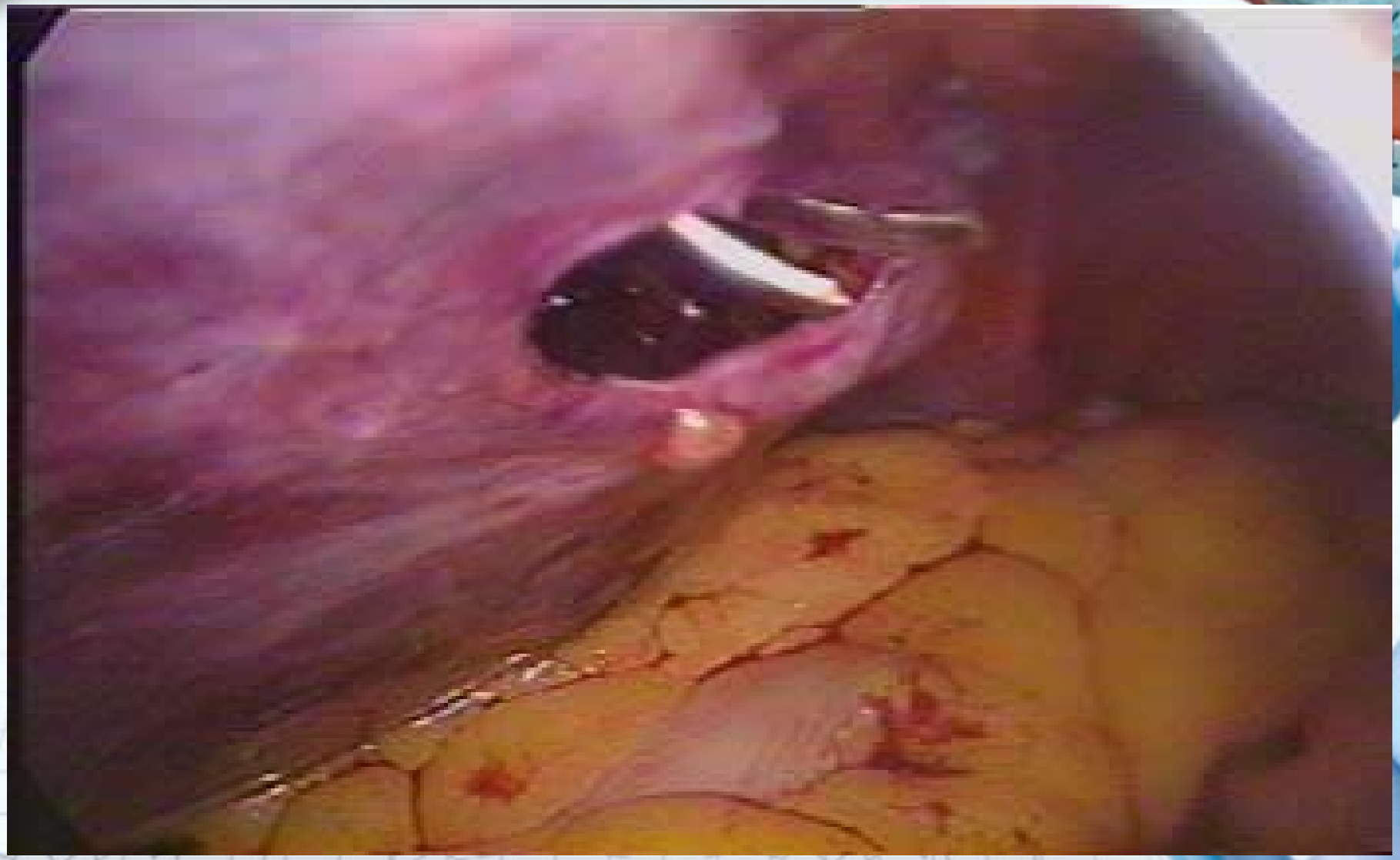
Check Bleeding (I)



Check Bleeding (II)



Marsupialization of the extraperitoneal space for drainage



Our retrospective result

- From 2006 to 2009, laparoscopic extraperitoneal para-aortic lymph nodes dissection were performed in 40 cervical cancer cases in Mackay Memorial Hospital, Taipei, Taiwan.
- Mean age is 51.7 years.

Mean operative time

- Mean operative time is 176.06 minutes. (range 70 to 415 minutes)
  - From 2006 to 2007, mean operative time is 201.67 minutes. (range 90 t0 415 minutes)
  - From 2008 to 2009 After 2008, mean operative time is 144.71 minutes. (range 70 to 275 minutes)

Blood loss

- Mean blood loss is 69.13 mL (range 10 to 350 mL).
- The blood loss is comparative to the literatures published in the world.

The number of removed nodes

- Total 367 para-aortic lymph nodes were removed.
- Mean number of removed para-aortic lymph nodes is 9.17 (range 2 to 21 nodes)
  - Removed para-aortic lymph nodes below IMA is about 10 nodes.
  - Removed para-aortic lymph nodes above IMA is about 10 nodes.
  - Eight patients were found to be para-aortic metastases during this procedure.

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Pretherapeutic extraperitoneal laparoscopic staging of locally advanced cervical carcinoma

- Postoperative hospital stay : ~ 1.4 days
- Median follow-up of 26.8 months (average 32.9)
- Overall 5-year survival rate was 58.3%.
- Pretherapeutic laparoscopic assessment of patients with locally advanced cervical cancer offers valuable information for individualized treatment planning with minimal morbidity.
- This appears to be a therapeutic effect with resection of positive nodes followed by a tailored CCRT.

LeBlanc & Querleu Gynecol Oncol 2007

Safety, feasibility, and costs of outpatient laparoscopic extraperitoneal aortic nodal dissection

- No intraoperative complications.
- No patient required overnight hospitalization.
- First reported outpatient laparoscopic extraperitoneal aortic lymph node dissection for locally advanced cervical cancer.
- Outpatient LEPSS appears to be a safe and feasible procedure in the hands of an experienced surgeon, however further study is warranted.
- From a cost analysis perspective, outpatient LEPSS appears equivalent to PET scan and MRI, but is more expensive than CT scan.

Tillmanns T and Lowe MP Gynecol Oncol 2007

Early experience of robotic-assisted laparoscopy for extraperitoneal para-aortic lymphadenectomy up to the left renal vein

- Robotic-assisted laparoscopy using Da Vinci system.
- 6 patients: 1 man with a pT2 non-seminomatous germ cell tumour of the left testicle treated by chemotherapy with an incomplete response (mature teratoma), 4 locally advanced cervical cancer, and 1 bulky cancer of the vaginal cuff.
- Conclusion: robotic-assisted lymphadenectomy using Da Vinci system was safe and effective with a short learning period for an experienced oncological team.

Narducci F, Lambaudie E, Houvenaeghel G, Collinet P, Leblanc E. Gynecol Oncol 2009

Conclusion

1. Laparoscopic paraaortic lymphadenectomy leads to minimal postoperative peritoneal adhesions.
2. Our institutional experience allows us to conclude that LEPAL is feasible, and permits an accurate assessment of the extent of disease for patients with gynecologic cancer.


Thanks for Your Attention