Management of DIE

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Management of DIE and endometriosis is dependent to these items:

- Vital organ involvement
- pain symptom (VAS score)
- Infertility (Desire of pregnancy)
- AMH level
- Age
- Response to medical therapy
- History of previous endometriosis surgery
- Ultrasound and other imaging features
- Malignancy rate

Vital organ involvement

- In the case of sever hydronephrosis or decrease in cortical thickness, kidney scan should be done to evaluate the function of kidney.
- Sometimes ureteral JJ stent or nephrostomy tube should be inserted before the time of operation (to prevent excessive damage).
- If sign and symptom of bowel obstruction is present due to pressure effect of DIE, and / or more than 50% of bowel lumen was involved, operation and resection of DIE should be in mind.
- In vital organ involvement operation must be considered for saving the kidney function & preventing bowel obstruction.

Pain symptoms:

- If VAS score is 1-3 it is mild, 4 to 6 it is moderate and if it is more than "6" it is called severe and intervention is required.
- The first choice for pain management is medical therapy.
- But if there is no response to different type of medical therapy, surgical management should be considered.(If indicated, after fertility preservation)
- Special consent and appropriate counselling should be done. (about the risk of decreasing ovarian reserve , premature menopause and other complication of laparoscopy)

Malignancy rate:

- There is a recognized association between endometriosis and clear cell, low-grade serous and endometrioid ovarian cancer, but the overall risk of ovarian cancer amongst women with endometriosis remains low, with a relative risk ranging from 1.3 to 1.9, which means that at worst the life-time risk of ovarian cancer is increased from ~1 in 100 to 2 in 100.

- Recently, HE4 has proved to be a promising marker for epithelial ovarian cancer with higher specificity and sensitivity than CA125 in distinguishing malignant tumors from benign pelvic masses.
- Use of HE4 and CA125 together had the highest accuracy (94.0%) and sensitivity (78.6%) for the differential diagnosis of ovarian cancer from ovarian endometriosis.

If the endometriosis patient decides to become pregnant and does not succeed spontaneously, What should be the first option ;surgery or ART?

- It is better to decide upon ovarian reserve.
- If it is decreased, ART should be performed as the first- line therapeutic option, without surgery.(except for salpingectomy in cases of hydrosalpinx).
- With the patient's consent, surgery is usually provided to patients with these characteristics:
- Young patients (<35y)
- Short duration of infertility,
- Adequate ovarian reserve (AMH>2.5)
- Unilateral and singular endometrioma,
- Absence of associated factors for infertility,(male factor,…)
- No previous history of surgery for endometriosis.

- For patients who fall outside of these indications, (older age, lengthy duration of infertility, any other factor for infertility, AMH<2.5, multiple or bilateral endometriomas and finally history of endometriosis surgery),first-line ART seems to be preferable, (by oocyte or embryo freezing, oocyte freezing is superior to ovarian tissue freezing)

Management of DIEs:

- Ureterolysis should be done before resection of DIEs.
- complete resection of DIEs should be performed.(periuretera, bladder, vaina, US ligament, ovarian fossa, rectal wall and …)
- Complete resection of DIEs is a rule in endometriosis surgery, just with one exception:

In resection of the US ligament DIE , an important aspect is the proximity to the hypogastric nerves, which should be spared by a meticulous dissection technique. In the case that hypogastric nerve fibres are involved, a complete excision would include the resection of these as well. In the case of bilateral involvement of the hypogastric nerve, a more conservative approach should be considered to preserve bladder and sexual function. Therefore bilateral resection of US ligament till the periosteum should be avoided.

- Treatment of DIE should be carried out in specialized centers with a multidisciplinary approach .
- If adenomyosis is present and given completion of family planning and presence of respective symptoms, hysterectomy can be recommended.
- Oophorectomy should done just for pre-menopausal women.

- Consider using anti-adhesion measures such as oxidized regenerated cellulose, polytetrafluoroethylene surgical membrane, and hyaluronic acid products, as these may be beneficial in reducing postoperative adhesion formation.

Urinary system endometriosis

- the bladder is the most frequent location
- Amongst women suffering from DIE, 11% present DIE lesions that affect the bladder.
- The laparoscopic approach includes the dissection of the vesicouterine space in order to mobilize the nodule and dissect the bladder with excision of the whole nodule together with some healthy tissue.
- A cystoscopy at the end of the procedure is advisable in order to ensure water-tight closure and to check the ureteral orifices integrity

- Most patients with ureteral endometriosis (65%) presented no symptoms specific to the urinary tract.
- However most of these patients have complaints of either dysmenorrhea (80,9%) and pelvic pain (70%) that can be also related to ureteral endometriosis.
- For that and because late diagnosis of ureteral endometriosis may lead to renal function loss and ultimately to nephrectomy, a high index of suspicion in the pre and intraoperative evaluation of patients with DIE is recommended.

Bowel endometrisis

- Deep endometriosis involving the bowel has been reported to be 5-12% of women affected by endometriosis, about 90% is localized on the sigmoid colon or the rectum
- Medical treatment of rectovaginal DIE may reduce the symptoms
- Surgical removal of rectovaginal DIE lesions is required when lesions are symptomatic.(impairing bowel, urinary, sexual, and reproductive functions)

There is 3 types of bowel surgery for bowel endometriosis:

- -Shaving or peeling,
- -Disk excision,
- -Segmental resection and reanastomosis.

Shaving method:

- Superficial rectovaginal endometriosis can be shaved off the rectal wall while leaving the mucosa intact.

*There is 3 steps:

- Separation of the anterior rectum from the posterior vagina and nodule,
- Excision or ablation of the DE nodule from the posterior part of the cervix
- Resection of the posterior vaginal fornix and vaginal closure.

- -resection of nodules measuring up to 6 cm

Air leak test

- At the end of surgery, we should check the bowel to detect any leakage: Administer air into the rectal lumen while the pelvis is filled with water or to fill the bowel with diluted methylene blue

- **Complication:**

1-Bowel perforation during shaving that sutured:1.7%

2-Late bowel perforation + colostomy:0.03 to 2.2%

3-Rectovaginal fistulas

Disk Excision:

- Before performing a discoid excision, the extent of the bowel circumference involvement has to be evaluated.
- Discoid resection is defined as the full-thickness discoid removal of an endometriotic nodule from the anterior wall of the rectosigmoid using a circular stapler or suturing.
- The technique was described as a singular discoid/circular resection for endometriotic nodules up to 2.5 cm or as a double circular stapler resection for nodules greater than 2.5cm up to 4.2 cm

Segmental colorectal resection:

- Segmental resection is the main procedure used to manage bowel diseases in colorectal surgery.
- In our center we perform it, when the nodule is greater than 3 cm, or more than 50% of bowel lumen is involved, and when multiple bowel nodules are present.
- -Mobilization of the rectum is carried out at least 20 mm below the rectal nodule ,The proximal dissection line is close above the lesion.
- -In the case of multiple rectosigmoid lesions, these may be removed *en bloc* using a long segmental resection,

- It should be noted that the farther cranial intestinal sections (proximal to rectosigmoid) are difficult to access by palpation,Therefore, there may be a risk of missing small or additional ‘difficult-to-identify’ nodules and, consequently, leaving them behind after surgery.

- With simultaneous resection of the dorsal vaginal fornix and intestinal anastomosis, the application of an omentum flap may be considered.

- A diverting stoma may temporarily be created in women with concomitant rectal and vaginal sutures or with very deep anastomosis. The use of a surgical drain close to the anastomosis is recommended

Complications:

- -Rectovaginal fistulas and leakage: two major, 0 to 18.1% (specially when lesion is located below 8 cm from the anal verge)
- Anastomotic stenosis,
- Bleeding of the anastomosis site,
- Some functional complications : anal incontinence, major dyschesia, and fecal urgency.
- Sexual dysfunction and bladder atony due to hypogastric nerve injury.

Recurrence:

- Rectal shaving of a voluminous rectal nodule (>3cm) may lead to higher recurrence.
- Lower risk of recurrence when segmental resection or disc excision are performed compared with rectal shaving

Appendectomy:

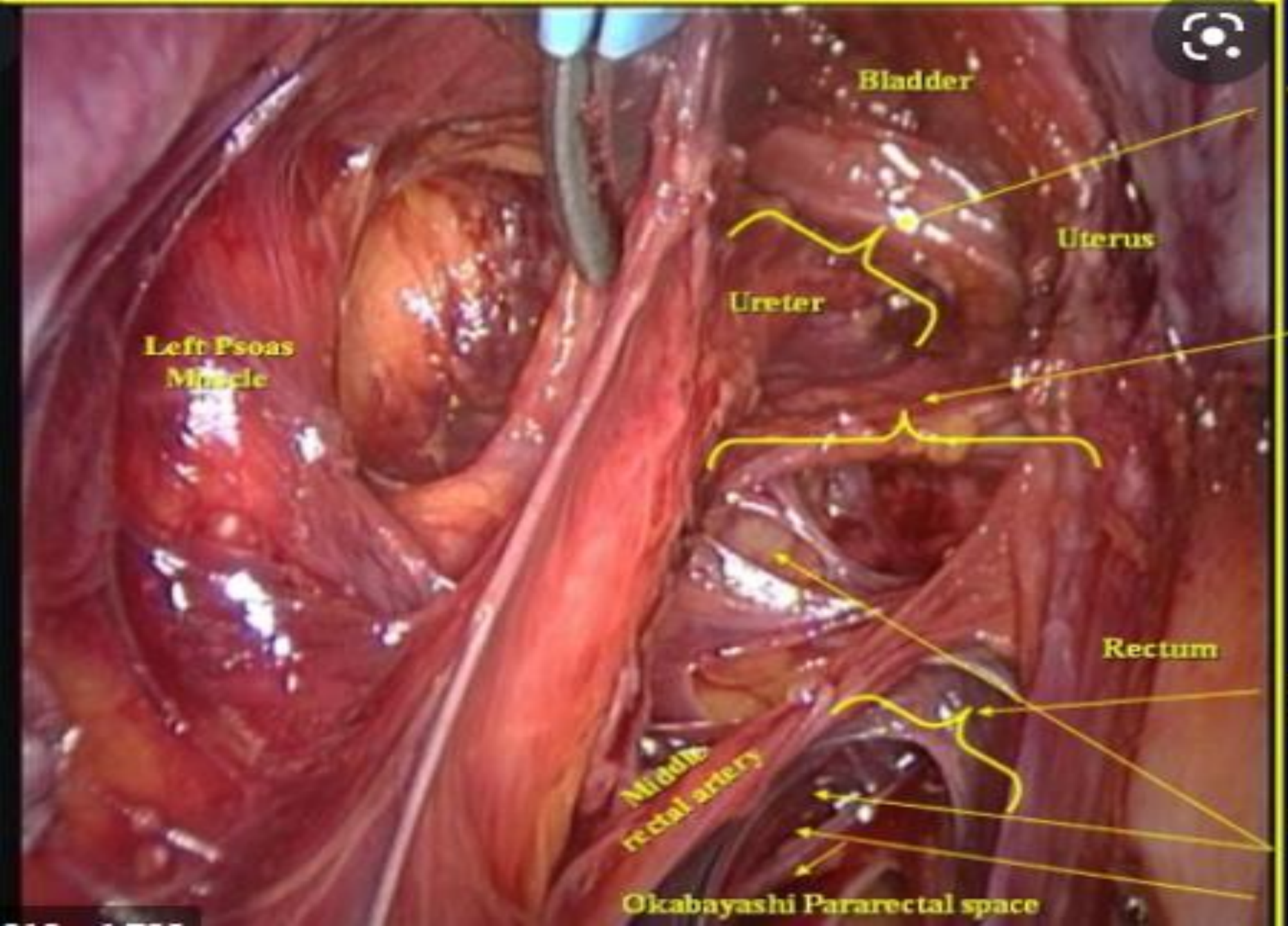
- It is mandatory to counsel the patient with endometriosis scheduled for surgery about the risk of appendix excision , specifically in patients with risk factors for appendiceal endometriosis (adenomyosis, large right endometrioma, deep posterior pelvic endometriosis, ileocecal involvement,…)
- Appendectomy should be performed using a selective approach, in case of gross abnormalities of the appendix during surgery(enlargement, dilation, tortuosity, or discoloration of the organ or the presence of suspected endometriotic implants)

Surgical management of pain: (LUNA and presacral neurectomy)

- -Laparoscopic uterosacral nerve ablation(LUNA) is not beneficial in reducing endometriosisassociated pain.
- -LUNA has Complications such as uterine prolapse and intraoperative ureteral transection.
- -Laparoscopic presacral neurectomy was 87% efficacious in reducing severe midline pelvic pain in patients without endometrisis or mild endometriosis, therefore we do not recommend performing this procedure.
  -The adverse effects associated with presacral neurectomy are constipation and bladder and urinary symptoms

Nerve-sparing laparoscopy

- A systematic review of four RCTs comparing conventional to nerve-sparing operative laparoscopy in painful deep endometriosis investigates the rate of urinary retention, defined as the need to self catheterise at discharge and 90 days after surgery for painful deep endometriosis


Bladder
Uterus
Ureter
Left Psoas Muscle
Rectum
Middle rectal artery
Okabayashi Pararectal space
Vesico-Uterine Ligament (anterior parametrium)
Cardinal Ligament (lateral parametrium)
Recto-Vaginal Ligament (posterior parametrium)
Inferior Hypogastric Plexus
Pelvic Splanchnic