Surgical treatment of post-infection obstructions in women

Presentation Objectives

Etiology – Causes - Mechanism
Frequency
Clinical Symptoms
Diagnosis
Surgery Treatment options
Surgical techniques, success rate
Treatment complications
Surgery tricks and tips
Review of the literature

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Female& male surgery in human reproductive medicine

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Infection / Inflammation

- Inflammation is a localized protective response elicited by injury or destruction of tissues, which serves to destroy (Dorland's Medical Dictionary)

- Acute form: pain, heat, redness, swelling, loss of function
- Chronic form: fibrosis, induration, deformity

- Histopathology: dilatation of arterioles, capillaries, venulles with increased permeability and blood flow.

Viral sexually transmitted infections (STIs)

- Human immunodeficiency virus (HIV)
- Human papillomavirus (HPV)
- Herpes simplex virus (HSV)
- Hepatitis B (HBV)
- Significant prevention by barrier contraceptive methods

Bacterial STD/STIs

- Gonococcus (Neisseria Gonorrhea)
- Chlamydia trachomatis
- Anaerobic bb (bacterioides fragilis, Prevotella bivia, prevotella disiens)
- Coli bacteria
- Mycoplasma Hominis
- Actinomyces Israeli
- Syphilis / Tuberculosis

- Exposure to pathogens
  - low local or general immune system

Iatrogenic causes

- Extensive / radical / complicated / bad surgery
- Post-Operative adhesions
- Bilateral Tubal Ligation
    - Clips, Bipolar excision / destructive procedure
- Implant / coil Hysteroscopic sterilization
- Endometrial ablation

Acute / Chronic PID

- Pelvic inflammatory response
- Acute / Chronic salpingitis
- Pyosalpinx
- Hydrosalpinx
- Tuboovarian abscess

Pelvic inflammation disease (PID) and tubal occlusion

- Swedish report: subsequent tubal infertility
- 12% after 1 PID episode
- 23% after 2 PID episodes
- 54% after 3 PID episodes

The risk of hospitalization for PID is reduced by the use of oc pill approximately 50-60% but use of at least 12 months is necessary

Signs and symptoms of chronic PID
Indicated surgical treatment

- Severe, persistent, progressive pelvic pain, usually bilateral
- Repeated exacerbations of PID
- Tuboovarian inflammatory mass
- Severe dyspareunia
- Bilateral ureteral obstruction
- Uterus displacement, pressure and adhesions on bladder, rectum etc

Therapeutic planning

Depends on

- age
- desire for fertility
- pain relief
- duration of symptoms
- previous treatments

Endoscopic assessment of the pelvis

- Establishing diagnosis
- Allows determination of the appropriate therapy
- Patient's alleviation of symptoms and restore of anatomy and function
- Indicated mainly for pain, infertility and other symptoms

  - relieving pain

  - better prognosis for pregnancy.

Laparoscopy Vs Laparotomy

- Superior visualization
- Posterior cul-de-sac can easily visualized
- Allows a high degree of magnification of peritoneal surfaces
- Aids in the identification of subtle disease
- Laparoscopic resection relates well with histologic measurements (lesion extension and depth)

Laparotomy

Conventional macrosurgical technique

associated with

inflammation, trauma and
foreign materials (sutures) leading to

- tissue ischemia and adhesion formation
- failure of the intrinsic peritoneal fibrinolysis

Laparotomy and use of microscope
Principles of Microsurgery

- Adhesion formation can be reduced by using operating microscope (magnification)
- Reconstruction with fine, nonreactive sutures, precise haemostasis
- Continuous irrigation of tissues with warmed lactated Ringer solution + 5.000U of Heparin

Effort for LESS tissue DAMAGE

- Bipolar
- Carbon dioxide (CO2) laser + precision
  - Ineffective in the presence of blood
- Meticulous technique that maintains serosal integrity may reduce the incidence of de novo adhesions formation

Microscopic lesions diagnosis

- commonly present in tissue adjacent to visible implants / lesions
- superficial peritoneal lesions <5mm, treat with laser or bipolar

Estimation of the depth of the lesion

- <5mm depth these are superficial lesions
- >5mm depth are called deep (25% of patients)
- >10mm depth are VERY deep, occur almost exclusively in patients complaining for severe pain

Deep lesions

More extensive peritoneal disease

- excise with tissue margin of at least 2 to 4 mm
- avoid ablation of deep disease by monopolar or CO2 laser - risk for adhesions formation

Extensive inflammatory disease / lesion

- Before dissection of the pelvic side wall, the ureter must be identified and isolated
- frequently is displaced from its normal location by adhesions
- Avoid suturing
    - can lead to foreign body reaction
    - tissue anoxia and fibrosis
- Prior to surgery IVP / ureteral stenting might be useful

- When posterior cul-de-sac / rectovaginal septum is involved – sigmoidoscopy prior to surgery is advisable

Peritubal and intralumen adhesions

1 Cause mechanical obstruction & dysfunction

2 Proximal tubal obstruction

Fibrosis, salpingitis isthmica nodosa,

chronic tubal inflammation

3 Distal tubal obstruction

Surgical Approach - Post- inflammatory tubal obstruction

Peritubal adhesions, Fibria Phymosis

- distort the normal anatomic relationship of the distal tube to the ovary may cause complete fimbrial obstruction
- Filmy adhesions are elevated and excised using delicate tissue forceps
- Resect with fine-needle cautery, a scalpel or laser
- Keep intact the healthy tissue
- Release the peritubal adhesions in mild chronic PID
- Endoscopic adhesiolysis of the distal tube, using fine scissors or careful application of laser.
- Unipolar electrocautery should not be used on this tissue
- Check tubal patency with MB dye
- Most rewarding pregnancy rate of all types of tubal reconstructive surgery

1. Tubal anastomosis

- 3-8% of women who undergo sterilization come to express regret
- Results of tubal reversal dramatically improved with the introduction of microsurgical techniques
- Reported pregnancy 57 – 84%
- Risk for ectopic pregnancy of 2-7%.

Surgical Approach – Hard adhesions

Post-inflammatory tubal obstruction

- Absence of active tubal infection then leave the entire adnexa in place
- Once the continuity of the tubal lumen from the uterine cavity is broken, the chronically inflamed tube does not usually produce subsequent symptoms
- Surgery might compromise the venous drainage or the arterial blood supply to ovary

Surgical Approach – Hydrosalpinx

Post- inflammatory tubal obstruction

- mesosalpinx is clamped and cut as close to the tube as possible
- be as far as possible from the ovary in order to reduce the danger of impairing the blood supply
- minimize the operative trauma
- ovary whose tube is removed is more apt to become cystic
- tube is excised at the uterine cornu in a wedge-shaped manner
- wide fig 8 with 2.0 delayed absorbable suture is placed in the cornu
- before the wedge is excised, tight as the interstitial portion of the tube is removed
- Use endobag to remove the hydrosalpinx from intrabdominal cavity
- Another conservative option is Essure - Aldiana implants - hysteroscopic application

Surgical Approach – Post-inflammatory

Periovarian & ovarian fossa adhesions

- Inability to view and elevate the ovary of the inferolateral surface of the ovary
- Inability to mobilize the peritoneum of the ovarian fossa
- may compromise distal tubal function

Surgical Approach – Post-inflammatory Ovarian abscess / mass / lesion

- lesions beneath the cortical surface / cryptae / septa
- explore ovary to diagnose the extent of the disease
- preserve the ovary and ovarian cortex
- preserve the normal anatomic relations of the ovary with the uteroovarian ligament and fimbria ovarica

STUDY by Weiner and Wallach

- Ovarian histology in ovaries removed from patients with PID
- 40 consecutive operations
- 50% of the removed ovaries were free of inflammatory disease and with normal follicular activity

Surgical Technique – Ovarian abscess / lesion

- longitudinal incisions over the mass / cyst parallel to tube
- facilitate creation of a cleavage plane between the mass/cyst and normal ovarian tissue
- maintain the integrity of the ovarian capsule
- avoid peritoneal spillage of the contents use endobag / drainage canulla
- use bipolar forceps under constant irrigation

- Minimize thermal injury
    - to surrounding ovarian tissue
    - near the fimbria

- Ovarian reconstruction
    - Purse-string sutures of 4-0 or 5-0 polyglactin
    - Eliminate the dead space and maximize hemostasis

Surgical Approach – Post- inflammatory Adhesions of Rectovaginal and peri rectal spaces

- Laparoscopic forceps are used to elevate and isolate the tissue to be excised
- Examine the proximity of implants to vital structures such as the ureter, bladder, vessels
- Initial dissection of the anterior rectum provides a landmark of the lesion / nodule
- Subsequent lateral dissections performed, followed by further anterior dissection, permitting retrieval of this involved tissue

Helpful in dissection

- Use uterine manipulator
- Place bougie probe in the rectum and a sponge forceps in the vagina
- Hydrodissection of the peritoneal serosa

Conclusion

"Good Surgery"

is of primary importance in inflammatory / infection process and eventually adhesion formation prevention

- Follow guidelines / rules of surgery
- Laparoscopic surgery can equally create adhesions
- Balance between benefit Vs harm / risks
- Minimize bleeding and cauterization
- Use anti-adhesive barriers

- Encourage awareness for preventive measures such as condoms, oc, sexual behavior, monogamy, enhance immune system