

Pelvic inflammatory disease

By

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❖ Definition

PID is a clinical spectrum of infection that may involve one or more or the following structures:

The cervix (cervicitis), the endometrium (endometritis), the fallopian tube (salpingitis), the ovary (oophoritis), the uterine wall (myometritis), the uterine serosa and broad ligaments (parametritis), and the pelvic peritonium (peritonitis).

Infection & Inflammation of the **upper genital tract** i.e.

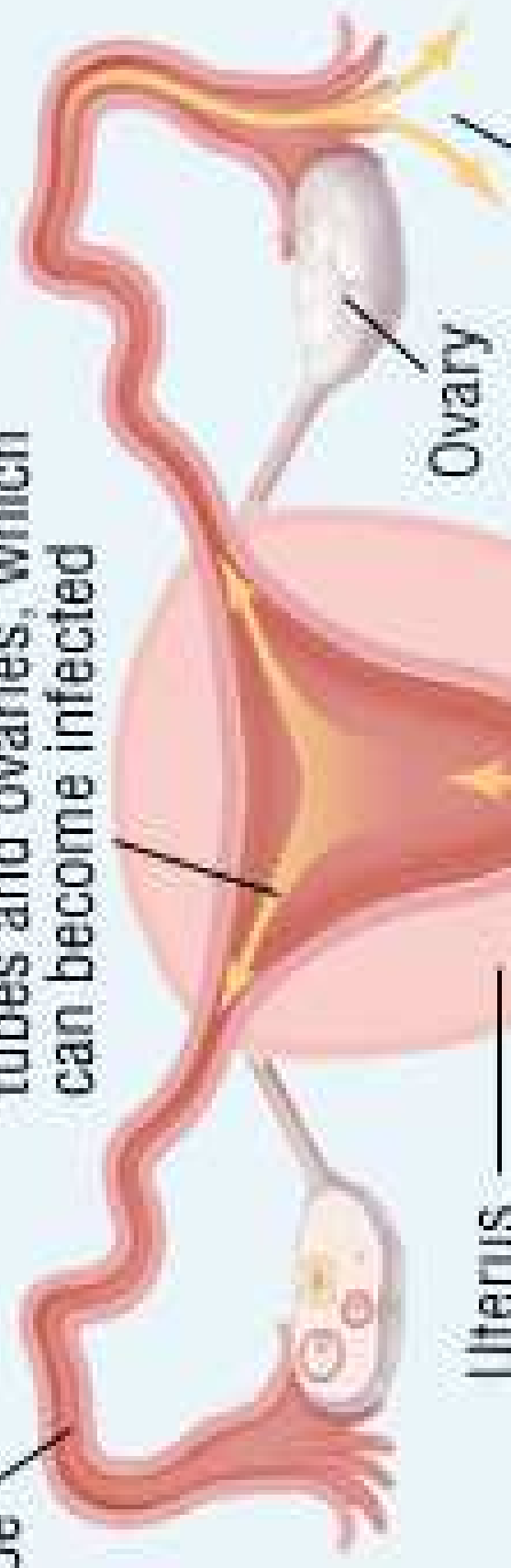
Tubes, ovaries, pelvic peritonium (+/- uterus) → **2-3%** of population.

❖ Types

Acute → last **2-3 days** → **Chronic** → **infertility**

Fallopian tube

3. Bacteria enter fallopian tubes and ovaries, which can become infected



Ovary

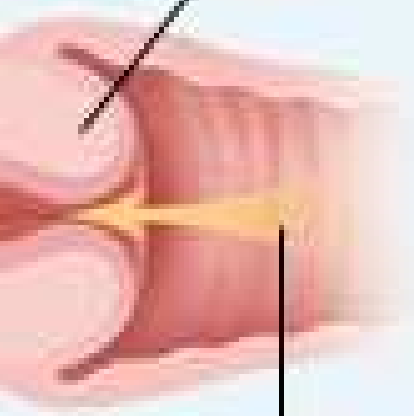
Uterus

2. Bacteria may pass through cervix and enter uterus

4. Infection can leave fallopian tubes and spread to other parts of body

1. STD-causing bacteria may enter vagina with semen

Cervix



RISK FACTORS

- Adolescence
 - History of PID
 - Gonorrhea or chlamydia, or a history of gonorrhea or chlamydia
 - Male partners with gonorrhea or chlamydia
 - Multiple partners
- Current douching
 - Insertion of IUD
 - Bacterial vaginosis
- Demographics (socioeconomic status)

PELVIC INFECTION CAUSES

■ Gynecological causes

Pelvic inflammatory disease (PID)

- Endometritis
- Salpingitis
- Tubo-ovarian abscess
- Fitz-Hugh-Curtis Syndrome

Puerperal infections

- Cesarean section
- Vaginal delivery

Post-operative gynecological surgery

- Pelvic abscess
- Post leiomyomas embolization infection
- Fistulae

Abortion-associated infections

- Endometritis
- Incomplete septic abortion

■ Non-Gynecological causes

Intestinal: appendicitis, diverticulitis, Crohn...

Urinary: ureteritis, cystitis

◆ Tuberculosis, Actinomycosis: chronic, acute

Presentation of PID

Symptoms

- *May be asymptomatic*
- Lower abdominal pain
- Vaginal discharge
- Dyspareunia
- Low back pain
- Abnormal vaginal bleeding, e.g. post coital or between periods

Signs

- Lower abdominal tenderness (often bilateral)
- Adnexal and cervical tenderness on bimanual palpation
- Mucopurulent vaginal discharge
- Cervicitis seen on speculum exam
- Palpable adnexal mass may be present
- Pyrexia (though may be apyrexial)

PID-Diagnosis: Clinical

- **At least one of the following:**
 - cervical motion tenderness **or**
 - uterine tenderness **or**
 - adnexal tenderness
- **One or more of the following support diagnosis:**
 - oral temperature $>101^{\circ}\text{F}$ ($>38.3^{\circ}\text{C}$);
 - abnormal cervical or vaginal mucopurulent discharge;
 - presence of abundant numbers of WBC on saline microscopy of vaginal fluid;
 - elevated erythrocyte sedimentation rate;
 - elevated C-reactive protein; and
 - laboratory documentation of cervical infection with *N. gonorrhoeae* or *C. trachomatis*.

Acute PID

Investigations

- ▶ Complete blood count
- ▶ Erythrocyte sedimentation rate
- ▶ Vaginal wet mount
- ▶ 1. WBCs suggest PID
- ▶ 2. Genetic probe or culture of vaginal secretions for gonorrhoea and chlamydia
- ▶ 3. Nucleic acid amplification tests (NAATs) for organisms
- ▶ C - reactive protein
- ▶ Urine Pregnancy Test (UPT), urinalysis
- ▶ Urine culture and sensitivity
- ▶ Urine NAATs
- ▶ Faecal occult blood test
- ▶ Tests for tuberculosis
- ▶ Tests for syphilis
- ▶ Tests for HIV

.Radiology investigations

ULTRASOUND

- may also be helpful
- insufficient evidence to support their routine use
- present of adnexa mass, hydrosalpinx or fluid collection in POD



LAPAROSCOPY

- may strongly support the dx
- not routinely done due to cost & invasive
- The Fitz Hugh Curtis syndrome
→ adhesion between liver and peritoneal surface (typical violin string appearance)



Treatment of PID

Hospital admission in sever cases

Rest

Exclude pregnancy

Adequate analgesia

Avoid sexual contact until the partner is fully treated and traced

Antibiotics

Antibiotics in PID

Outpatient regimen •

-Oral ofloxacin 400 mg and metronidazole 400 mg twice daily for 14 days

Intramuscular ceftriaxone 500 mg single dose + •
oral doxycycline 100 mg + oral metronidazole 400 mg both twice daily for 14 days

Inpatient regimen

Intravenous ceftriaxone 2 gm + doxycycline 100 mg twice daily until 24 hrs after clinical improvement then shift to oral therapy

Doxycycline and metronidazole for 14 days

Intravenous ofloxacin 400 mg twice daily + i.v metronidazole 500 mg 3 times daily for 14 days

Surgery in PID

Indications

Acute PID

- Ruptured abscess
- Failed response to medical treatment
- Uncertain diagnosis

Chronic PID

- Severe, progressive pelvic pain
- Repeated exacerbations of PID
- Bilateral abscesses / > 8 cm. diameter
- Bilateral uretral obstruction

CHRONIC PID

Failure of acute pelvic infection to resolve results in chronic tubo-ovarian masses.

- 1) Hydro Salpinx
- 2) Chronic Pyosalpinx
- 3) Chronic Interstitial salpingitis
- 4) Tubo ovarian abscess

1) **Symptoms** : Contact low abdominal pain, two backache, deep dyspareunia, menorrhagia, congestive dysmenorrhea.

Signs : Tender thickened and fixed appendages densely adherent to each other – “Frozen pelvis.”

Chronic Pelvic Infection

Investigations, imaging & diagnostic procedures

- Similar to Acute PID

Management

Antibiotics

- ▶ Broad spectrum for 3 weeks/ based on C/S
- ▶ In proved gonococcal infection as CDC guidelines-

Surgery

Indications

- ▶ Persistence of symptoms despite conservative management
- ▶ Recurrence of acute attack
- ▶ Increase in size of pelvic mass despite treatment
- ▶ Persistent menorrhagia & deterioration in general health
- ▶ Infertility

Differential Diagnosis for PID

- Endometriosis
- Appendicitis & other gastro conditions
 - Appendicitis is unilateral and right sided
 - PID is bilateral
- Ectopic pregnancy
 - Always do a pregnancy test
- Urinary tract infection or stone
- “Ovarian cysts”
- Lower genital tract infection

PID : Prevention

Primary prevention

1. **Sexual counseling**
 - Practice safe sex
 - Limit number of sexual partners
 - Avoid contact with high risk partners
 - Delay in sexual activity until 16 years of age
2. **Barrier methods & oral contraceptives reduce the risk**

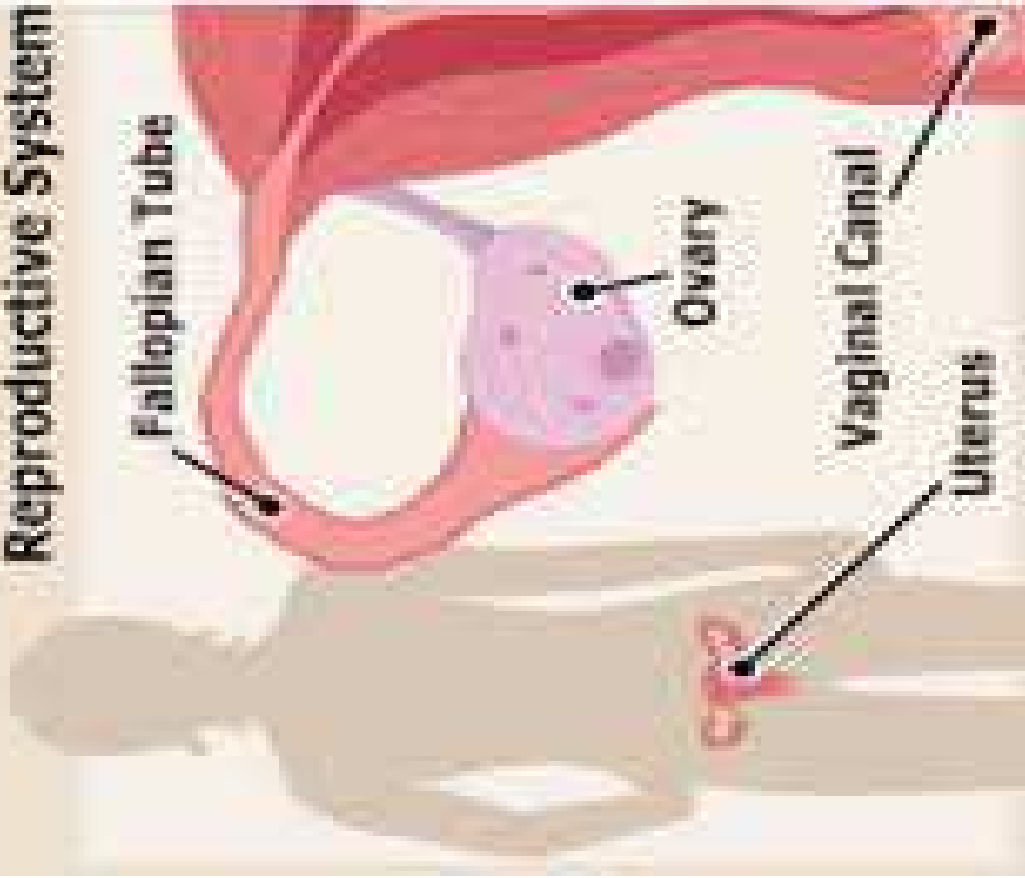
Secondary prevention

1. **Screening for infections in high risk population**
2. **Rapid diagnosis & effective treatment of STDs & UTI**

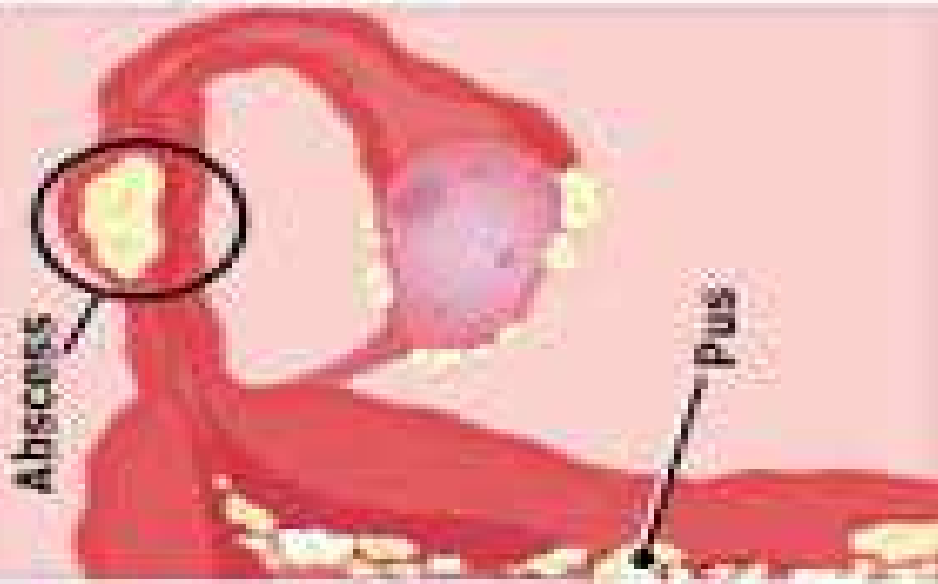
Tertiary prevention

1. **Early intervention & complete treatment**

Healthy Female Reproductive System



Reproductive System With PID



Genital Tuberculosis

Incidence

- 2-10% infertility
- 4% puberty menorrhagia

Etiology

Secondary to primary focus elsewhere (most common - lung)

Mode of Infection

- Hematogenous spread – most common
- From adjacent structures – few cases
- Ascending infection – rare

Age: 16-53 years (max.: 25-35 years)

Genital Tuberculosis

Clinical picture

- ◆ Asymptomatic 10%
- ◆ Infertility 35-60%
- ◆ Menstrual disorders 40-50%

Initially menorrhagia

Later **Oligo/ amenorrhoea**

Post-menopausal bleeding

- ◆ Pain lower abdomen
- ◆ Lower grade fever, malaise, weight loss
- ◆ Abdominal mass/ascites (matted gut, pyometra, mass, encysted ascites, doughy feel).
- ◆ Pelvic mass – usually non-tender, unless superadded infection
- ◆ Post coital bleeding/irregular bleeding PV – local lesion

Genital Tuberculosis

Pathology

Tube – Involved in 90% cases

Endosalpingitis

Patency may be present

Secondary infection with pyogenic organism

Exosalpingitis interstitial salpingitis

Uterus : Involves in 60-70% cases

Ovaries : Involves in 30% cases

Vulva / Vagina – ulcerative or hypertrophic growth

Cervix – very rare

Diagnosis of genital tuberculosis

- Varied clinical presentations
- Diverse results on imaging and laparoscopy
- Mixed lab tests
- Pelvic ultrasound - initial screening test
 - Ascites / loculated fluid (100%)
 - Adnexal mass (93%)
 - Peritoneal thickening(69%)
 - Omental thickening(61%)
 - Endometrial involvement (83%)
 - Peritoneal tubercles and adhesions
- MRI, hysterosalpingography, and endoscopy
- Diagnosed on the collective evidence from imaging techniques, endoscopy, histopathology and microbiology

Genital tuberculosis , diagnostic criteria

- Endometrial adhesions with deformity, and obliteration of the endometrial cavity,
- Obstruction of the fallopian tubes with multiple areas of constriction, and calcified lymph nodes in the adnexal region
- Advanced tuberculous endometritis may mimic severe uterine adhesions as seen in Asherman syndrome

Differential diagnosis

Site of involvement	Differential diagnosis
Tuberculous salpingitis	Pelvic inflammatory disease Ectopic pregnancy Ovarian cyst Endometriosis Carcinoma of the colon Diverticulitis
Endometrial tuberculosis	Dysfunctional uterine bleeding Endometrial carcinoma
Ovarian tuberculosis	Ovarian malignancy
Cervical tuberculosis	Carcinoma of the cervix
Vulval tuberculosis	Elephantiasis vulva

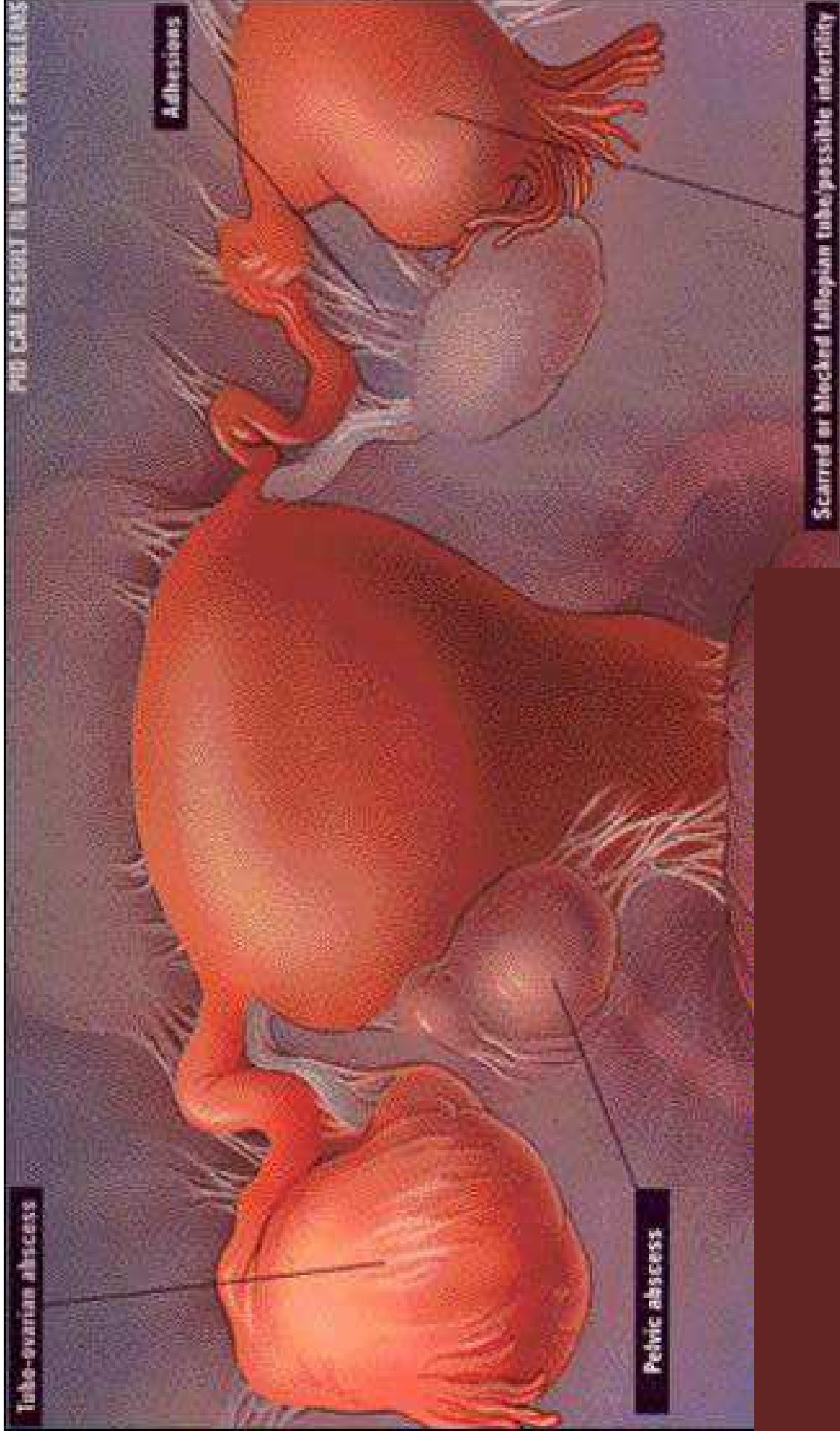
Tubo-ovarian abscess

PID CAN RESULT IN MULTIPLE PROBLEMS

Adhesions

Pelvic abscess

Scarred or blocked fallopian tube/possible infertility



Treatment of Genital tuberculosis

Medical treatment

Antituberculous drugs (adequate dose and duration)

Surgical

As in chronic PID

Failure of medical treatment for 9 months

PID : Chronic complications & sequelae

Complications

1. Dyspareunia
2. Infertility : due to tubal factor
 - 12 % after single episode
 - 25 % after two episodes
 - 50 % after three episodes
3. Increased risk of ectopic pregnancy
 - 6-10 % increase in risk following H/O PID
4. Formation of adhesion or hydrosalpinx or pyosalpinx & tubo -ovarian abscess
5. Chronic pelvic inflammation
 - Due to recurrent or associated pyogenic infection/ T.B.
6. Chronic pelvic pain and ill health

Thank you