# Endometriosis-An Overview

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# DEFINITION

**“Presence of endometrial tissue outside the lining of the uterine cavity”**

**or**

**“Proliferation of endometrium in any site other than the uterine mucosa”**

# EPIDEMIOLOGY

- Age: common in reproductive period
- True Incidence Unknown: ? 1-5% & 30 – 50 % infertility.
- Does NOT discriminate by race.
- Hereditary (↑↑ among sisters).

# SITES

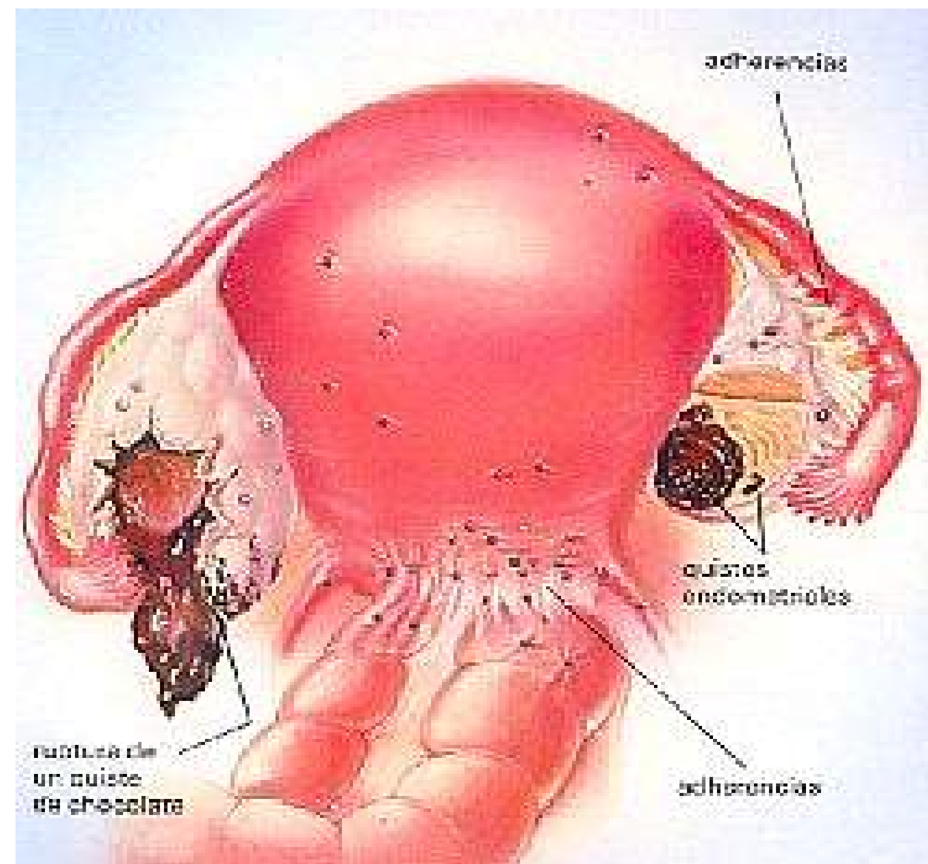
## - Pelvic

## - Extra pelvic

- Umbilicus.
- Scars

(Laparatomy & caesarian section)

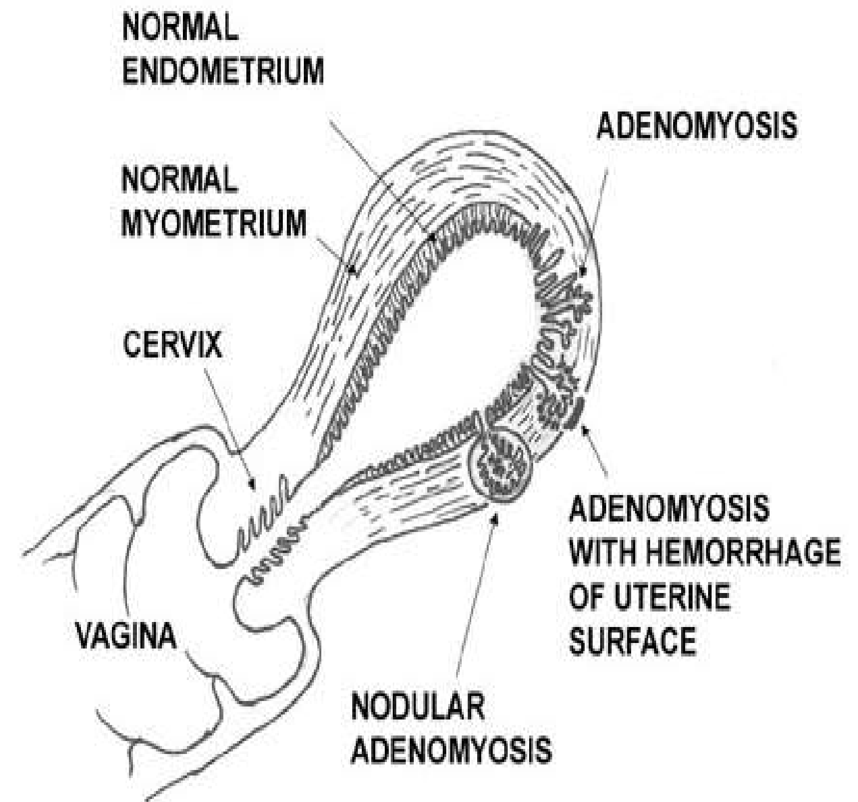
- Lungs & pleura
- Others.



# PELVIC ENDOMETRIOSIS

- Uterine= Adenomyosis (50%).
- Extrauterine:

- Ovary 30%
- Pelvic peritoneum 10%.
- F. tube.
- Vagina.
-Bladder & rectum.
- Pelvic colon.
- Ligaments.



# SCAR ENDOMETRIOSIS

- Endometriosis of abdominal wall less frequent
- Incidence in a study shown to be around 1.6%
- Mostly associated with caesarian section scar
- Poses diagnostic difficulties
- Should be in D/D of all abdominal wall lumps in females

# MRI IMAGE OF SCAR ENDOMETRIOSIS

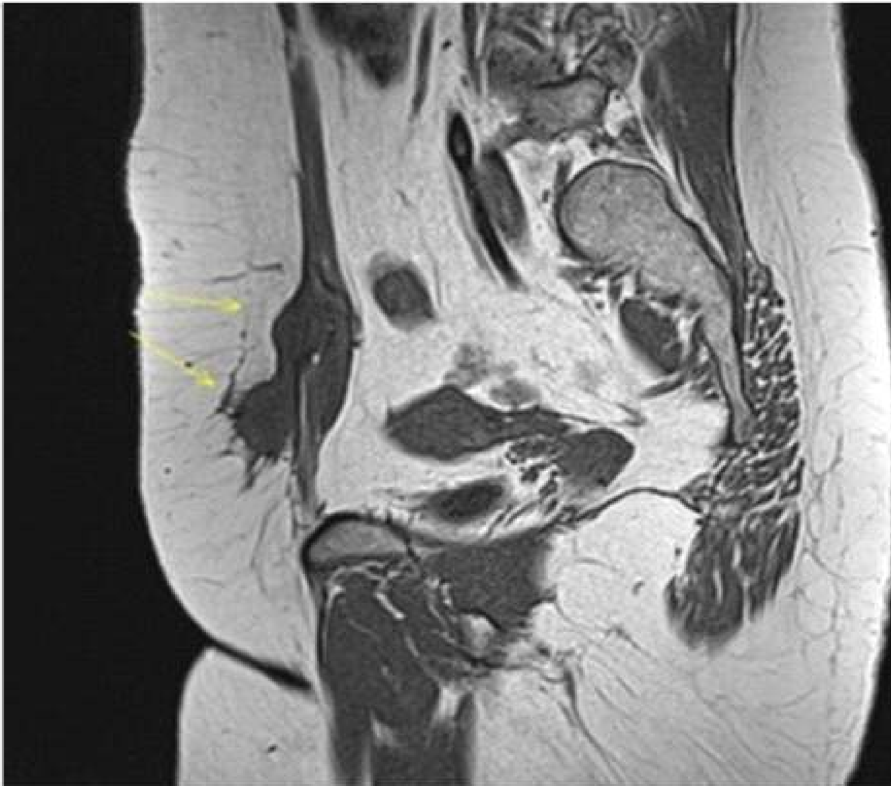


**Fig. 8**: T1w TSE: Sagittal plane with both foci visible.
***References:*** Private Practice - Berlin/DE

a) without fat-sat;

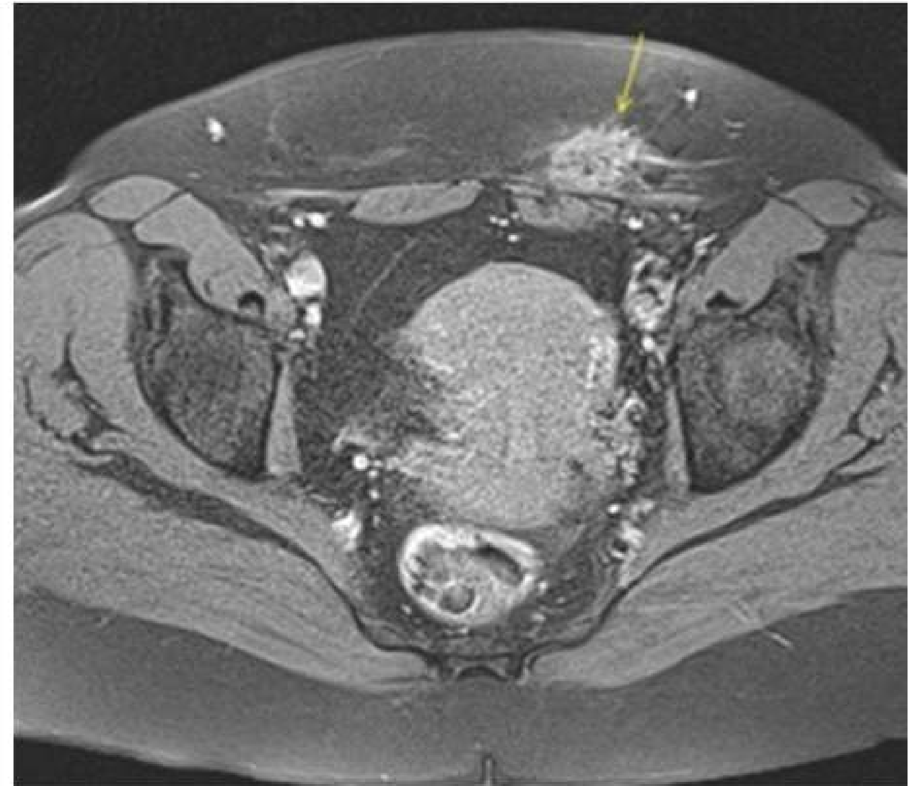


**Fig. 10**: T1w fat-sat: subcutaneous lesion.
***References:*** Private Practice - Berlin/DE

b) with fat-sat.

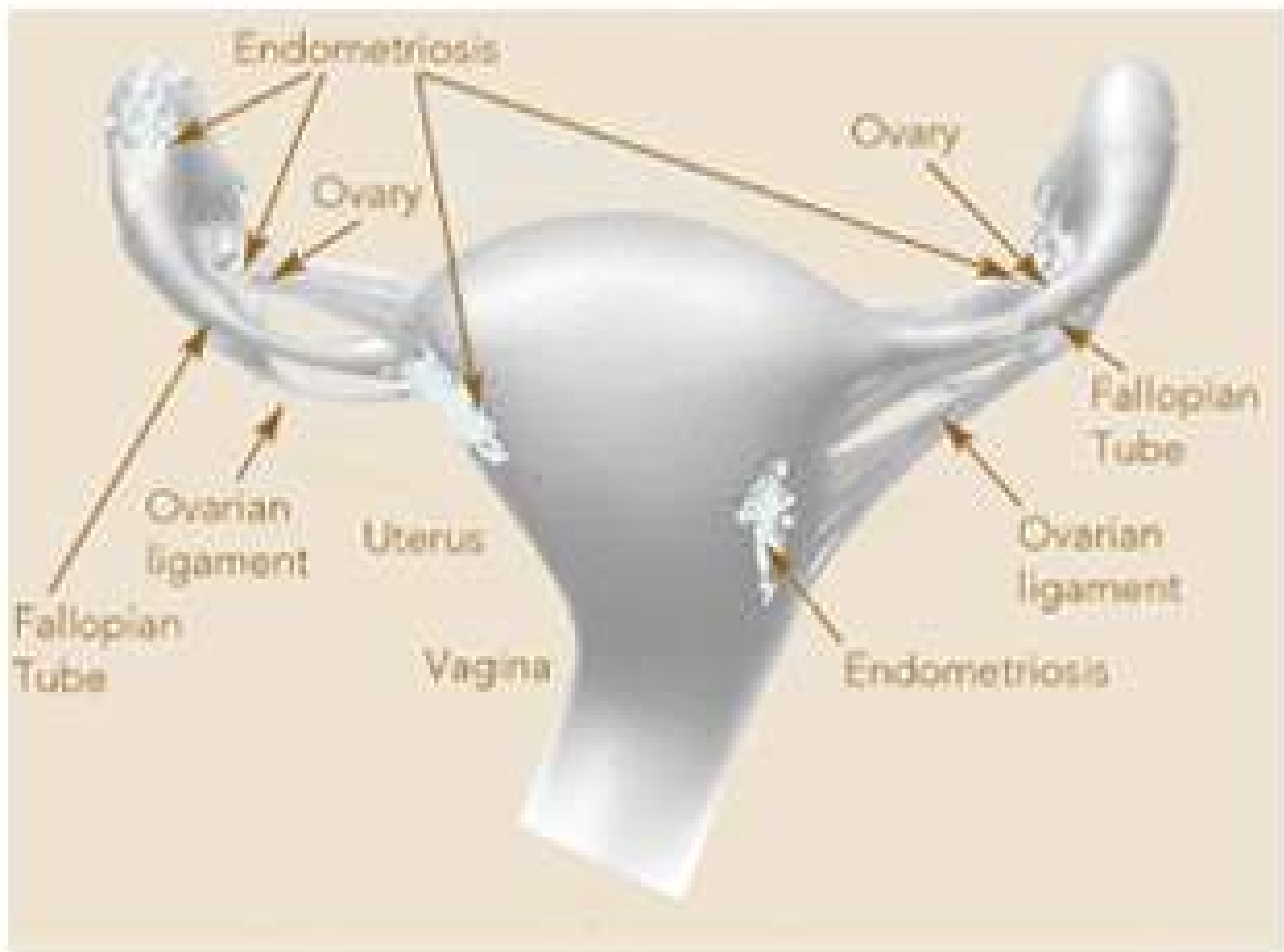
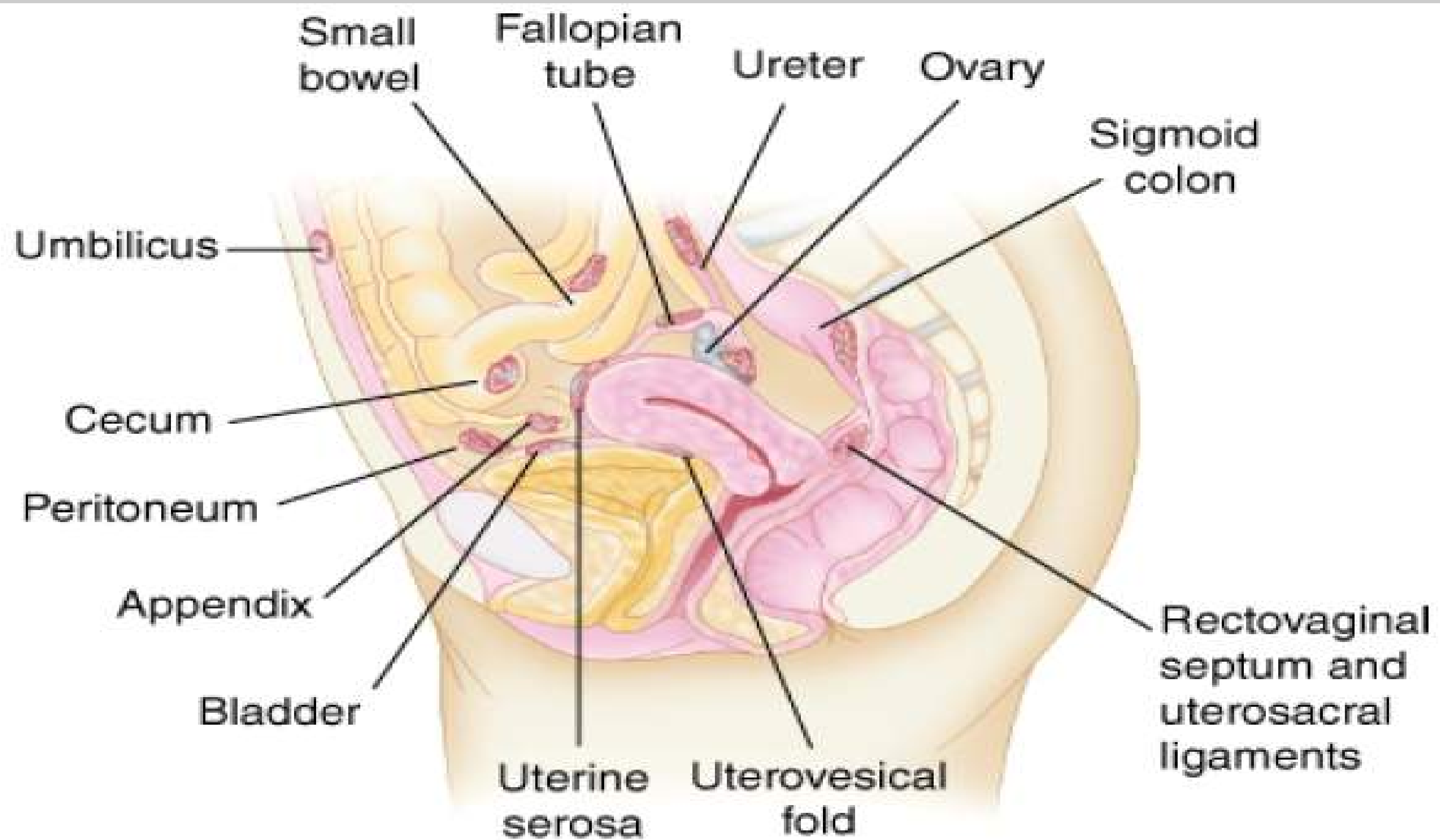

Endometriosis
Ovary
Ovary
Fallopian
Tube
Ovarian
ligament
Uterus
Ovarian
ligament
Fallopian
Tube
Vagina
Endometriosis

**FIGURE 10-3**




Source: Schorge JO, Schaffer JI, Halvorson LM, Hoffman BL, Bradshaw KD, Cunningham FG: *Williams Gynecology*: http://www.accessmedicine.com

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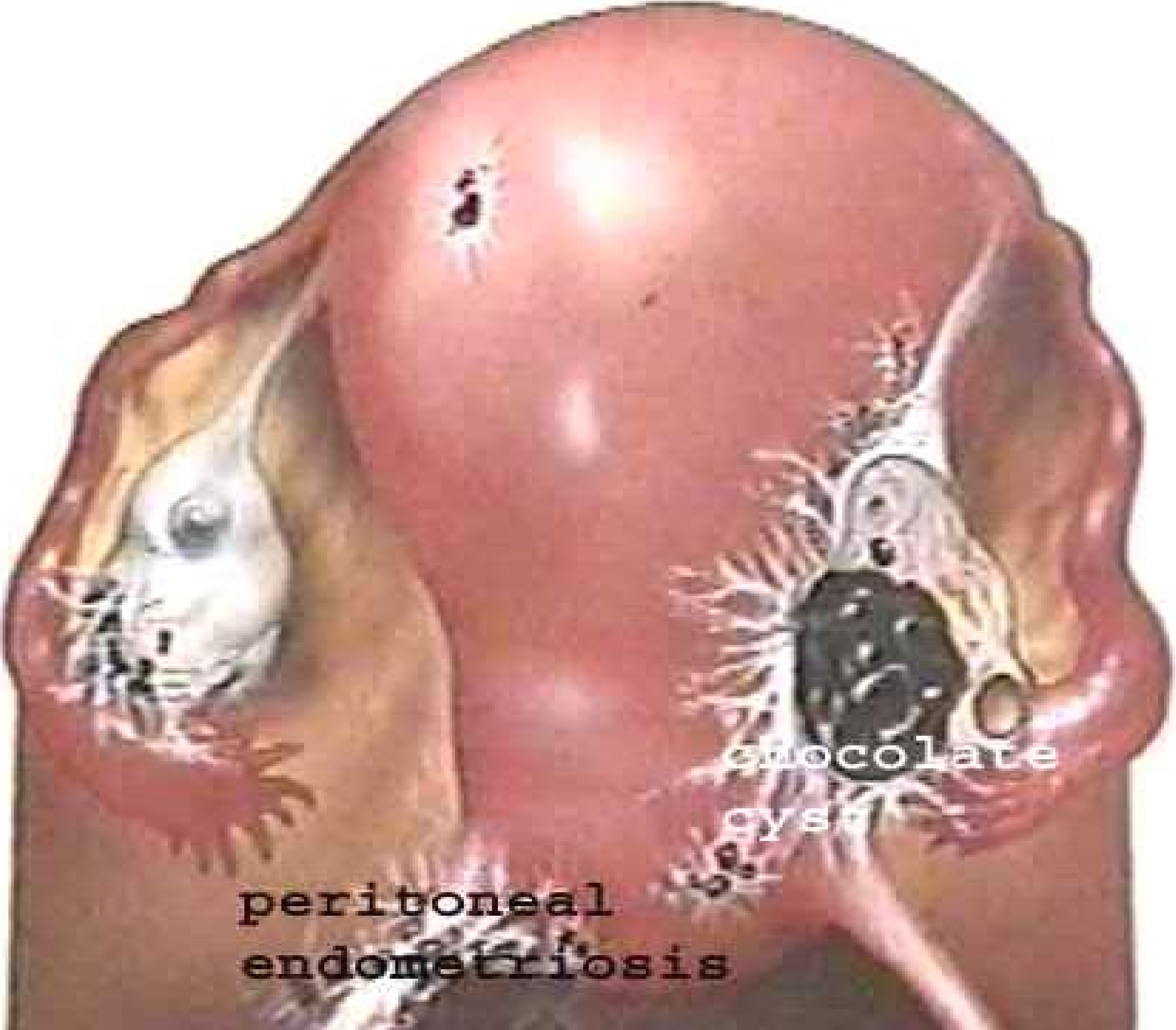
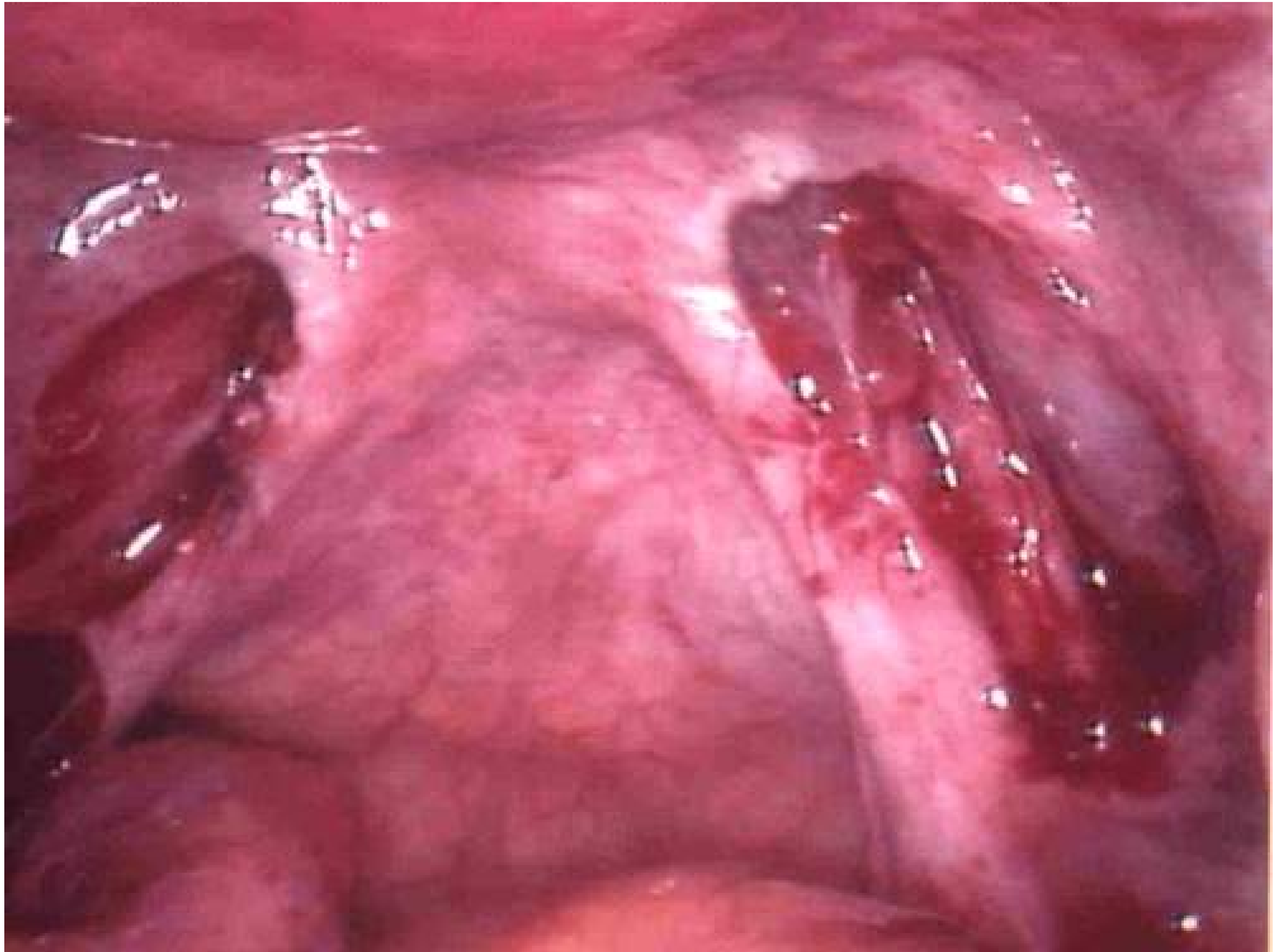
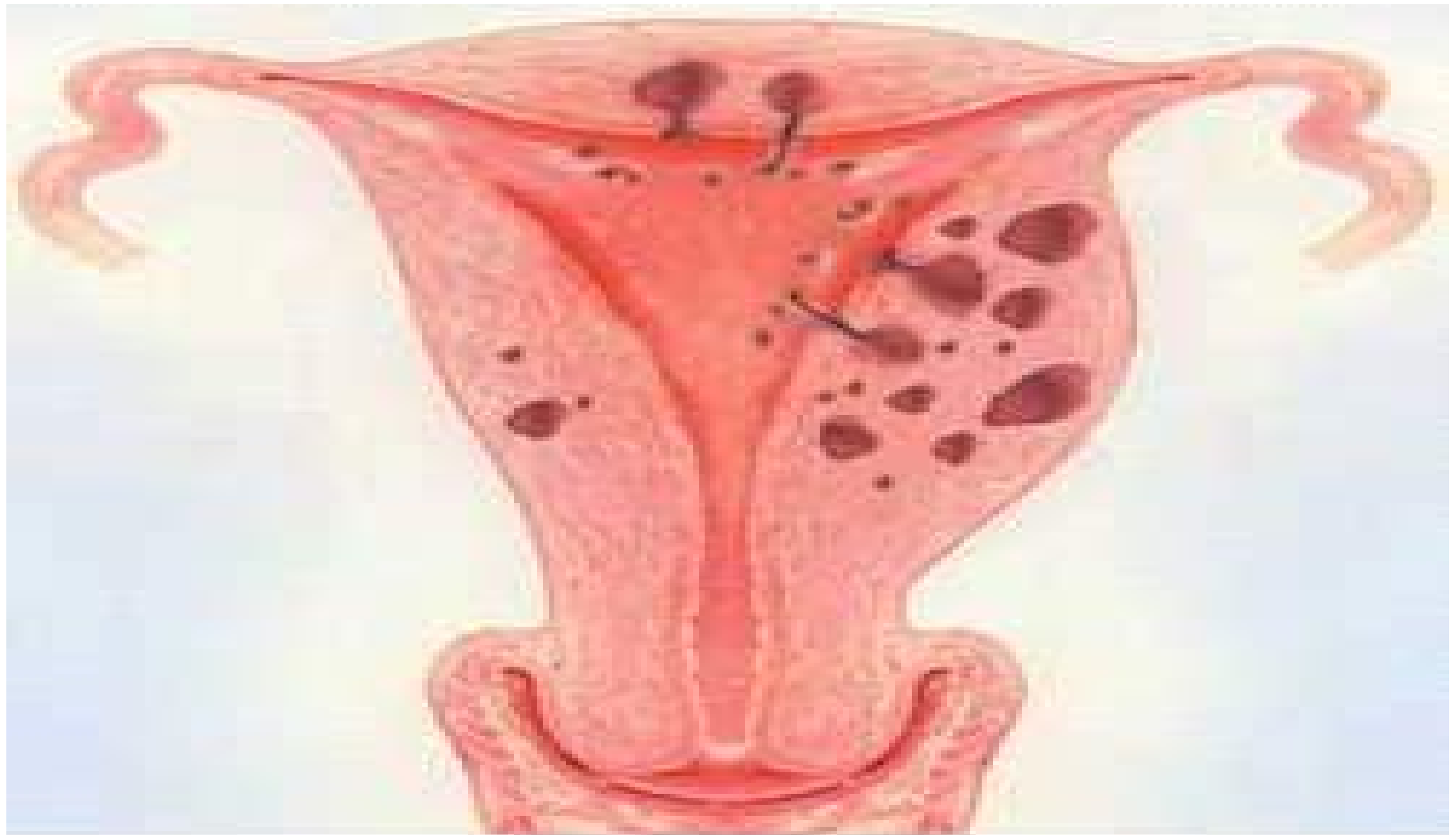
Common locations of endometriosis within the abdomen and pelvis. *(Redrawn after Olive, 2005.)*


chocolate
cyst
peritoneal
endometriosis





Adenomyosis. Note thickened wall of uterus which can be mistaken for fibroids.

# THEORIES OF HISTIOGENESIS

- **Endometrial implantation theory**

**Retrograde**

**Vascular and lymphatic**

**Mechanical**

- **Immunological and genetic theory**
- **Composite theory**

# THEORIES OF HISTIOGENESIS

- In situ development
- Coelomic metaplasia theory
- Induction theory
- Embryonic cell nest
- Wolffian ducts
- Mulleran ducts
- Germinal epithelium of ovary

# PREDISPOSING FACTORS

1. Hyperoestrinism:
   a) Fibroid & metropathia hemorrhagica.
   b) Delayed marriage, infertility.
   c) Oestrogen secreting tumours of the ovary e.g. granulosa & theca cell tumours, or with prolonged oestrogen therapy.
2. Cervical Stenosis.
3. Insufflation.
4. Curettage.

# MACROSCOPIC APPEARANCE

| a) Diffuse (Common) | b) Localized (occasional) |
|---|---|
| * The uterus is symmetrically enlarged | * The uterus is asymmetrical enlarged |
| * Firm in consistency | * Firm in consistency |

**1) Uterine endometriosis "Adenomyosis":**

**In both types:**

**C/S a whorled appearance.**

**D.D: * No capsule.**

*** Dark brown spots.**

*** endometrial tissue.**

# MACROSCOPIC APPEARANCE

**2) Endometriosis of the ovary:**

**- The ovary is enlarged and cystic.**

**- Surface burnt match head appearance.**

**- Tunica albuginea ---> thickened.**

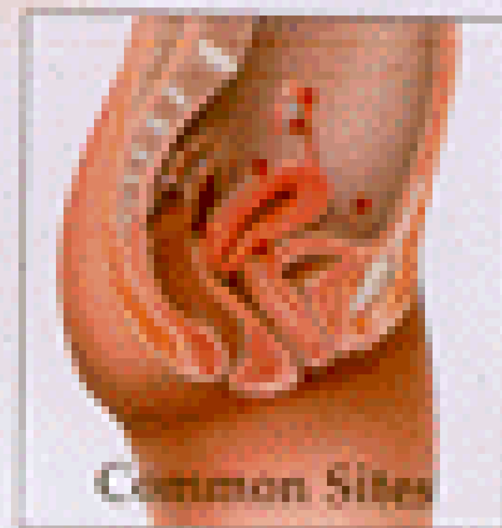
- **Chocolate or tarry cysts.**

Adhesions

Chocolate cyst

Powder burns

Classic gunmetal



# DIAGNOSIS

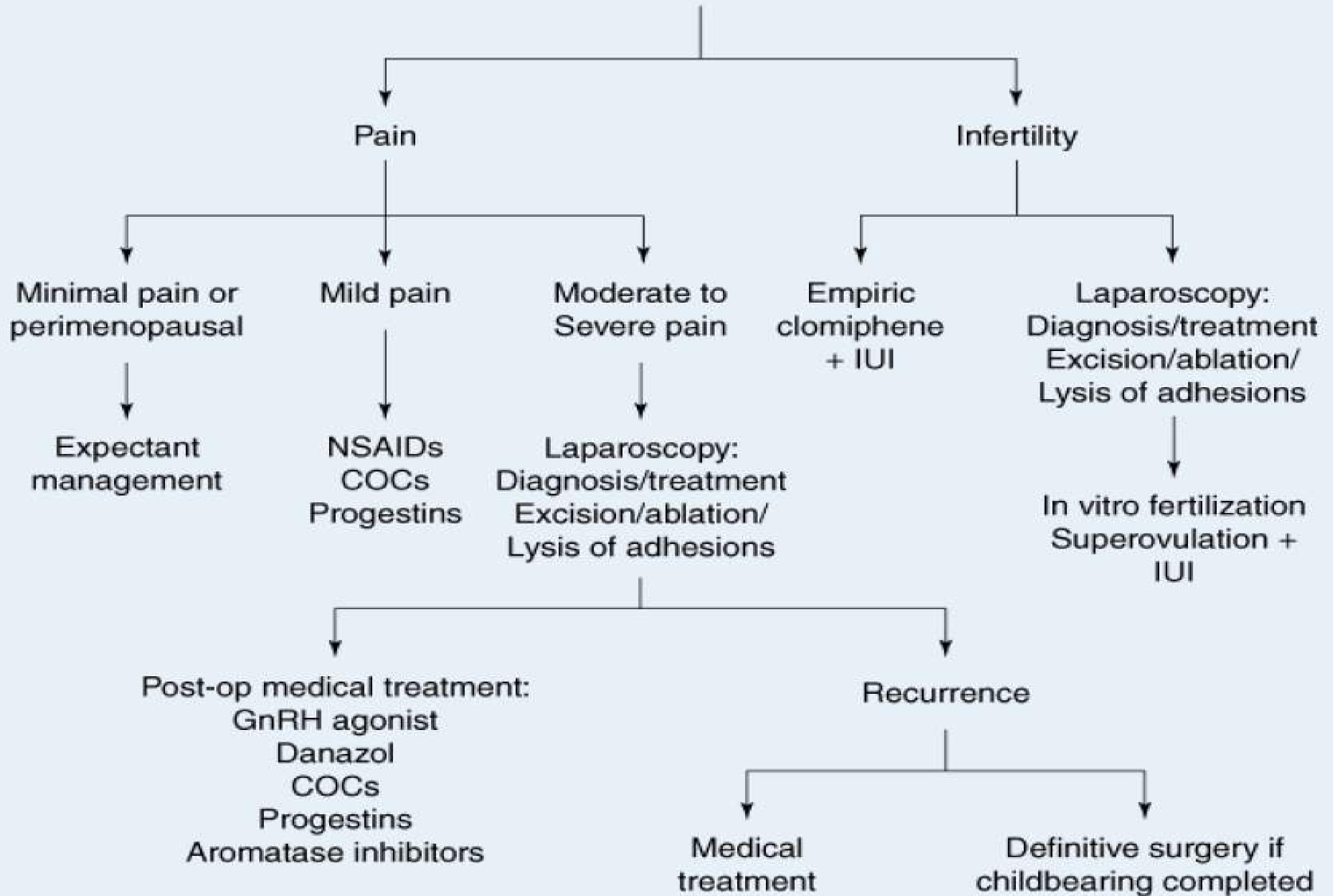
- **Endometriosis is often misdiagnosed leading to delays in treatment sometimes for several years.**
- **Delay in diagnosis:**
  - ***Progression of symptoms.***
  - ***Increasing infertility till completed reproductive failure.***

## DIAGNOSIS(Cont…)

- Symptoms (history).
- Signs (Exam).
- Investigations.

# DIAGNOSIS

| | Adenomyosis | Extra uterine endometriosis |
|---|---|---|
| Age | About 40 years | About 30 years |
| Parity | Multipara | nullipara |
| Socioeconomic | Low | high |



Symptoms suspicious for endometriosis
Pain
Infertility
Minimal pain or perimenopausal
Mild pain
Moderate to Severe pain
Empiric clomiphene + IUI
Laparoscopy: Diagnosis/treatment Excision/ablation/ Lysis of adhesions
Expectant management
NSAIDs COCs Progestins
Laparoscopy: Diagnosis/treatment Excision/ablation/ Lysis of adhesions
In vitro fertilization Superovulation + IUI
Post-op medical treatment: GnRH agonist Danazol COCs Progestins Aromatase inhibitors
Recurrence
Medical treatment
Definitive surgery if childbearing completed

# SYMPTOMS

- Asymptomatic.
- Pain (DYSMENORRHOEA):
  - Dysmenorrhea (crescendo = progressive)
  - Dyspareunia.
  - Dyschezia.
  - Dysuria.
- Backache.
- Acute abdomen.
- premenst. Tension syndrome.

# SYMPTOMS CONT…

- **Bleeding:**
  - Menorrhagia.
  - Cyclic hematuria during menstruation.
  - Cyclic bleeding per rectum during menstruation.
  - Vicarious menstruation.
- **Infertility.**
- **Mass**
- **Intermittent pyrexia.**

# SIGNS

## Pelvic examination may reveal:

**1.** Pelvic tenderness.

**2.** Fixed retroverted uterus.

**3.** Nodularity of the Douglas pouch and uterosacral ligaments.

**4. Ovaries** may **be** enlarged and tender . Ovarian cyst may **be** detected.

# INVESTIGATIONS

1. Laparoscopy .
2. Cystoscopy and proctosigmoidoscopy.
3. Histopathological examination.
4. Imaging.
5. Serum CA - 125.
6. ? IL-8 & CEA.

# LAPAROSCOPY

- **Value:**

It permits a “see and treat” approach, although its effectiveness may be limited by the nature of the disease and the surgeon's skill.

# LAPAROSCOPY *CONT....*

## Appearance:

**Endometriosis May Appear**

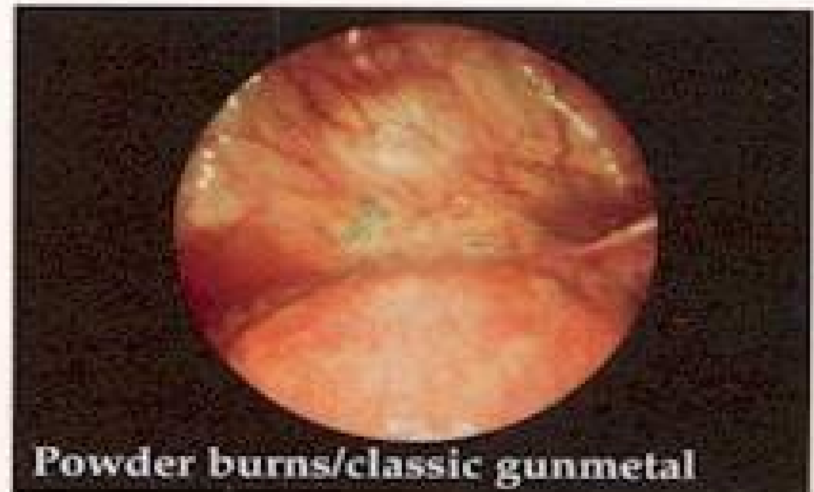
- Brown
- Black (“Powderburn”)
- Clear (“Atypical”)

**Endometriosis May Be Associated with Peritoneal Windows**

# Laparoscopic Views

**Chocolate cysts**

Two chocolate cysts on the right ovary.

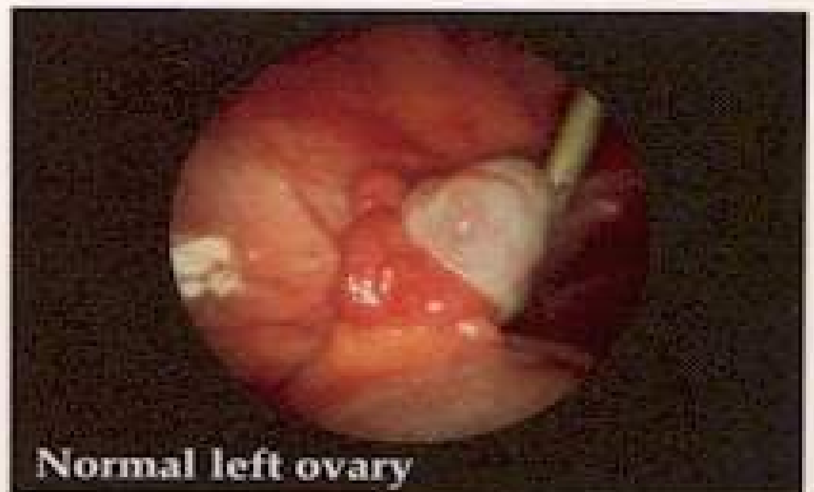


**Powder burns/classic gunmetal**

Dark lesions of endometriosis. These have been called blue-black lesions, gunpowder burns, and gunmetal lesions.

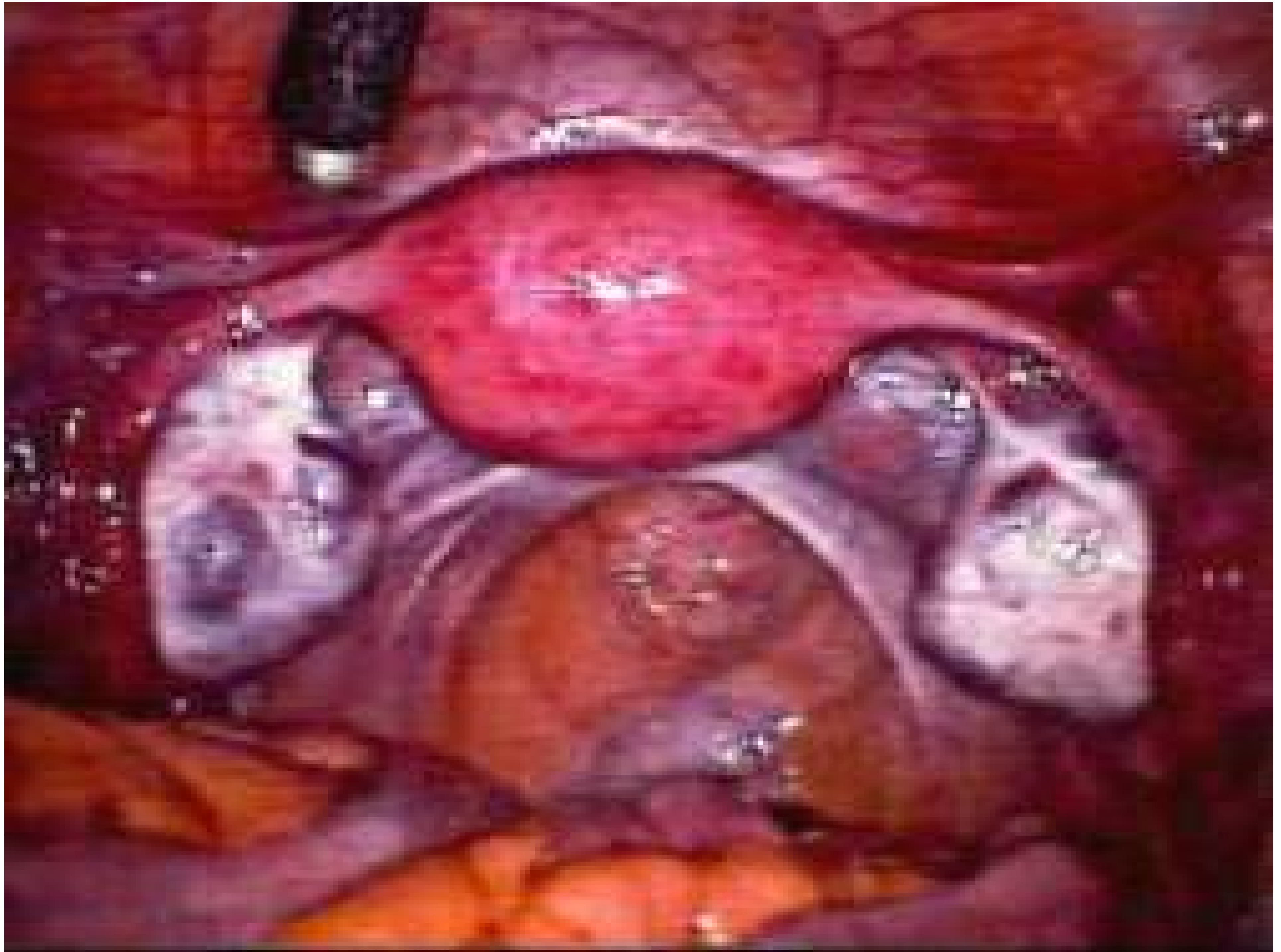
**Red/Purple raspberry spot**

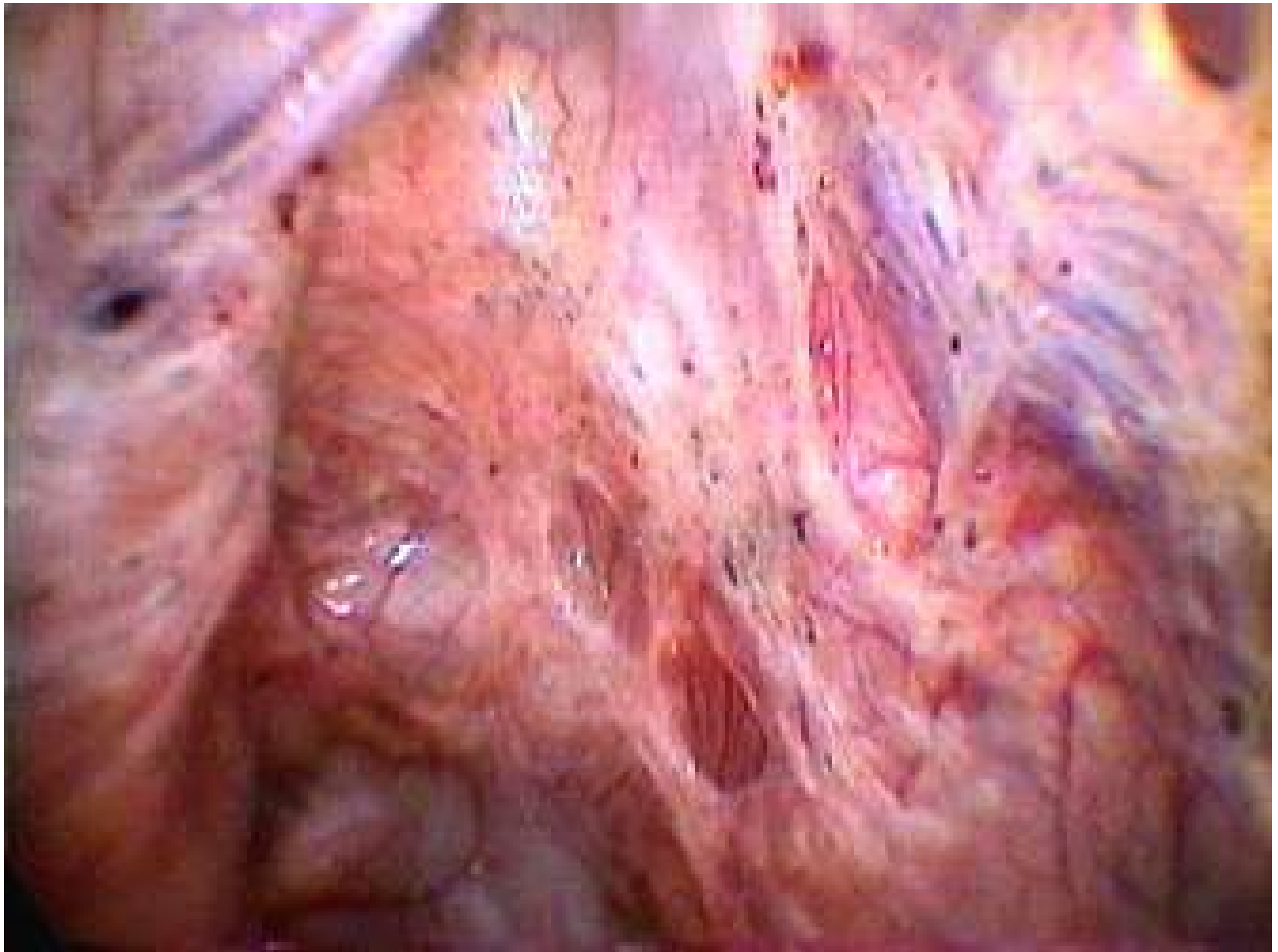
Red and purple raspberry spot on the left uterosacral ligament.



**Normal left ovary**

Soft fluffy fimbria of a normal left fallopian tube.





# DIAGNOSIS OF SCAR ENDOMETRIOSIS

- Incidence reported of cutaneous scar endometriosis following c/s is 0.03-0.4%
- Average time from surgery to clinical presentation may vary from 3months to 12 years in different cases.

# DIAGNOSIS OF SCAR ENDOMETRIOSIS

**C/F:**

- Painful palpable subcutaneous mass associated with cramps and bloating during menses.
- h/o atleast one previous surgery
- Focal pain near the surgical scar, usually cyclic.
- May present with palpable mass near the scar
- Sonography shows hypoechoic vascular and solid lesions with some cystic changes in various cases.

# ETIOLOGY OF SCAR ENDOMETRIOSIS

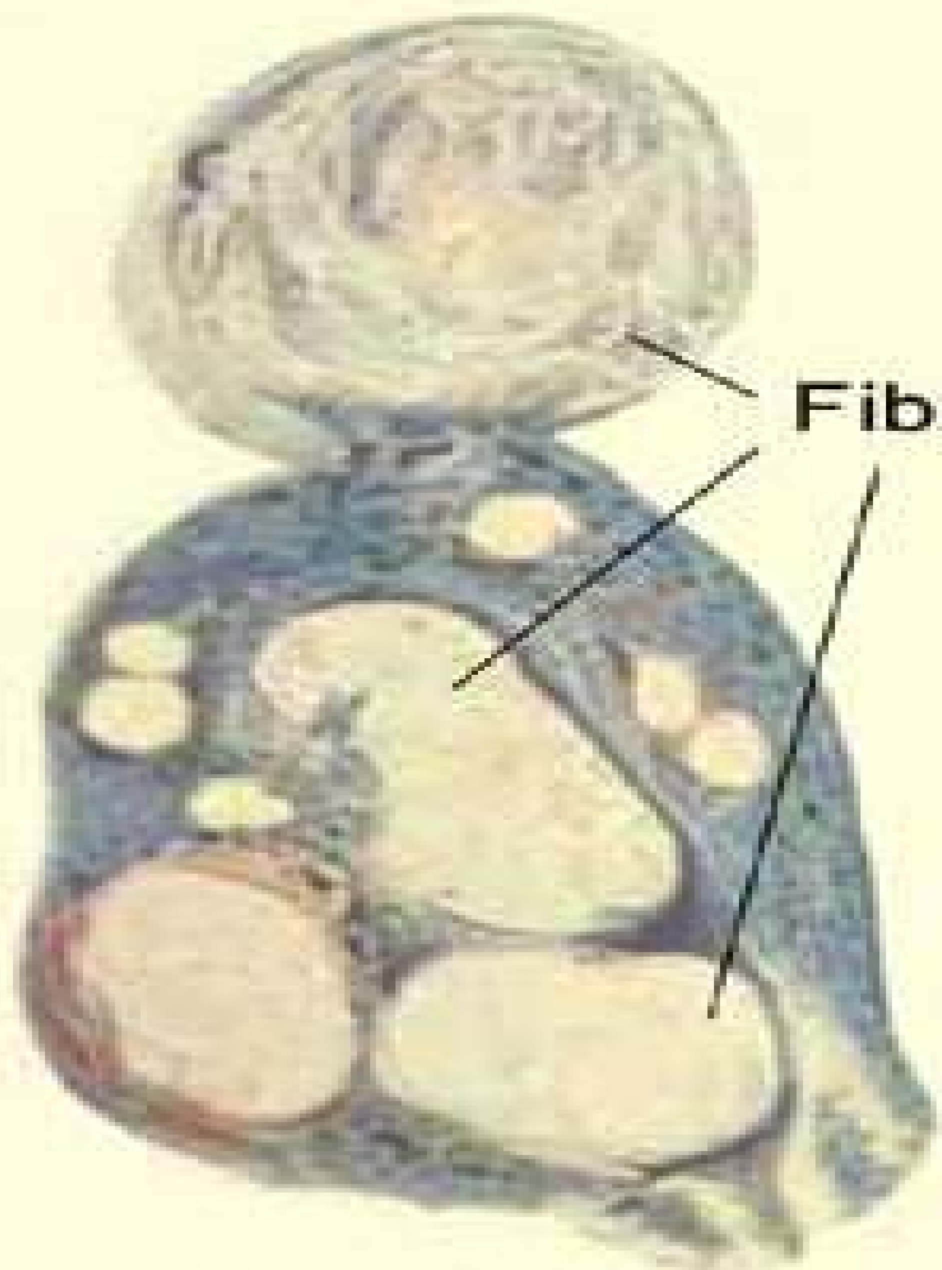
- Many theories have been proposed but the cause still remains controversial.
- Role of the immune system with drop in regulatory capacity of NK cells
- Mechanical transportation of cells after gynaecological procedures
- Estrogen stimulation of the scar has an important role
- Coexistance of pelvic and scar endometriosis is rare but can occur.

# INVESTIGATIONS

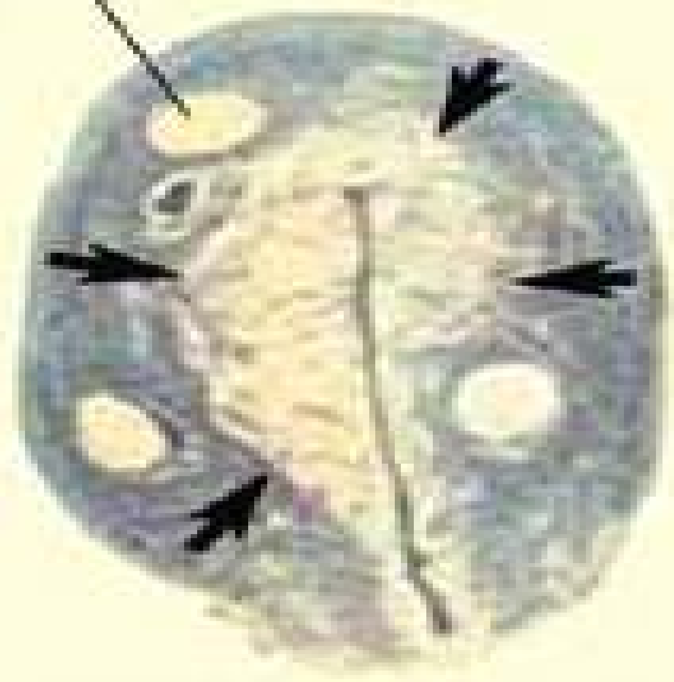
- Sonography and colour doppler in addition to clinical data.
- CT scan and MRI
- CT shows a solid well circumscribed lesion
- MRI is more useful for small lesions because of high spatial resolution and better distinction between the muscles and subcutaneous tissue.
- However **biopsy** is confirmatory, reveals endometrial glands and stroma in excised lesion.

# DIFFERENTIAL DIAGNOSIS

1. Ovarian cysts.
2. Pelvic inflammatory disease .
3. Other causes of nodularity in Douglas pouch as tuberculous peritonitis and metastases of ovarian cancer.
4. Causes of haematuria , bleeding per rectum and acute abdominal pain if the patient is presented by one of these symptoms.
5. Asymmetrical enlarged uterus.




Fibroid Uterus



Adenomyosis

# OVARIAN ENDOMETRIOSIS (ENDOMETRIOMA)

- Formed by invagination of the ovarian cortex after accumulation of menstrual debris from bleeding of endometriotic implants.

# RECTOVAGINAL SEPTUM ENDOMETRIOSIS

- Nodules are formed by hyperplasia of smooth muscles and fibrous tissue surrounding the infiltrated tissue.
- No cyclical bleeding as the endometriotic tissue are enclosed in nodules.

# D/D OF SCAR ENDOMETRIOSIS

- Easily confused with other conditions like keloids, hematoma, stitch granuloma, abcess, inguinal and incisional hernia.

# CLASSIFICATION / STAGING

- Several Proposed Schemes.
- Revised AFS System: Most Often Used.
- Ranges from Stage I (Minimal) to Stage IV (Severe).
- Staging Involves Location and Depth of Disease, Extent of Adhesions.

# AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE
# REVISED CLASSIFICATION OF ENDOMETRIOSIS

Patient's Name ______________________ Date ______________________

Stage I (Minimal) - 1-5
Stage II (Mild) - 6-15
Stage III (Moderate) - 16-40
Stage IV (Severe) - >40
Total ______________

Laparoscopy ________ Laparotomy ________ Photography ________
Recommended Treatment ______________________
______________________
Prognosis ______________________

| | ENDOMETRIOSIS | <1cm | 1-3cm | >3cm |
|---|---|---|---|---|
| PERITONEUM | Superficial | 1 | 2 | 4 |
| | Deep | 2 | 4 | 6 |
| OVARY | R Superficial | 1 | 2 | 4 |
| | Deep | 4 | 16 | 20 |
| | L Superficial | 1 | 2 | 4 |
| | Deep | 4 | 16 | 20 |

| POSTERIOR CULDESAC OBLITERATION | Partial | Complete |
|---|---|---|
| | 4 | 40 |

| | ADHESIONS | <1/3 Enclosure | 1/3-2/3 Enclosure | >2/3 Enclosure |
|---|---|---|---|---|
| OVARY | R Filmy | 1 | 2 | 4 |
| | Dense | 4 | 8 | 16 |
| | L Filmy | 1 | 2 | 4 |
| | Dense | 4 | 8 | 16 |
| TUBE | R Filmy | 1 | 2 | 4 |
| | Dense | 4* | 8* | 16 |
| | L Filmy | 1 | 2 | 4 |
| | Dense | 4* | 8* | 16 |

## EXAMPLES & GUIDELINES

### STAGE I (MINIMAL)

| | | | |
|---|---|---|---|
| **PERITONEUM** | | | |
| Superficial Endo | – | 1-3cm | - 2 |
| **R. OVARY** | | | |
| Superficial Endo | – | < 1cm | - 1 |
| Filmy Adhesions | – | < 1/3 | - 1 |
| TOTAL POINTS | | | 4 |

### STAGE II (MILD)

| | | | |
|---|---|---|---|
| **PERITONEUM** | | | |
| Deep Endo | – | > 3cm | - 6 |
| **R. OVARY** | | | |
| Superficial Endo | – | < 1cm | - 1 |
| Filmy Adhesions | – | < 1/3 | - 1 |
| **L. OVARY** | | | |
| Superficial Endo | – | < 1cm | - 1 |
| TOTAL POINTS | | | 9 |

### STAGE III (MODERATE)

| | | | |
|---|---|---|---|
| **PERITONEUM** | | | |
| Deep Endo | – | > 3cm | - 6 |
| **CULDESAC** | | | |
| Partial Obliteration | | | - 4 |
| **L. OVARY** | | | |
| Deep Endo | – | 1-3cm | - 16 |
| TOTAL POINTS | | | 26 |

### STAGE III (MODERATE)

| | | | |
|---|---|---|---|
| **PERITONEUM** | | | |
| Superficial Endo | – | > 3cm | -4 |
| **R. TUBE** | | | |
| Filmy Adhesions | – | < 1/3 | - 1 |
| **R. OVARY** | | | |
| Filmy Adhesions | – | < 1/3 | - 1 |
| **L. TUBE** | | | |
| Dense Adhesions | – | < 1/3 | - 16* |
| **L. OVARY** | | | |
| Deep Endo | – | < 1 cm | -4 |
| Dense Adhesions | – | < 1/3 | -4 |
| TOTAL POINTS | | | 30 |

### STAGE IV (SEVERE)

| | | | |
|---|---|---|---|
| **PERITONEUM** | | | |
| Superficial Endo | – | > 3cm | - 4 |
| **L. OVARY** | | | |
| Deep Endo | – | 1-3cm | - 32** |
| Dense Adhesions | – | < 1/3 | - 8** |
| **L. TUBE** | | | |
| Dense Adhesions | – | < 1/3 | -8** |
| TOTAL POINTS | | | 52 |

*Point assignment changed to 16

**Point assignment doubled

### STAGE IV (SEVERE)

| | | | |
|---|---|---|---|
| **PERITONEUM** | | | |
| Deep Endo | – | > 3cm | - 6 |
| **CULDESAC** | | | |
| Complete Obliteration | | | - 40 |
| **R. OVARY** | | | |
| Deep Endo | – | 1-3cm | - 16 |
| Dense Adhesions | – | < 1/3 | - 4 |
| **L. TUBE** | | | |
| Dense Adhesions | – | > 2/3 | - 16 |
| **L. OVARY** | | | |
| Deep Endo | – | 1-3cm | - 16 |
| Dense Adhesions | – | > 2/3 | - 16 |
| TOTAL POINTS | | | 114 |

# REVISED AFS 1985

- Stage I (minimal) 1 – 5.
- Stage II (mild) 6 – 15.
- Stage III (moderate) 16 – 40.
- Stage IV (severe) > 40.

# TREATMENT : CONSIDERATION

- Age.
- Symptoms.
- Stage.
- Infertility.

# TREATMENT (RATIONALE)

- **Recognize Goals:**
  - Pain Management
  - Preservation / Restoration of Fertility
- **Discuss with Patient:**
  - Disease may be Chronic and Not Curable
  - Optimal Treatment Unproven or Nonexistent

# ENDOMETRIOSIS & IVF

- The presence of endometriosis does not generally impair the results of IVF but it increases the risk of infection.

- It is preferable not to cauterize ovarian endometrioma if IVF or ICSI is indicated for fear of destruction of ovarian tissues.

# LINES OF TRT.

- Expectant.
- Medical.
- Hormonal.
- Surgical.

# (I) EXPECTANT TREATMENT

- Young , asymptomatic infertile patient with mild endometriosis.

- If pregnancy is not achieved within 12 - 18 months of observation:

  - hormonal or surgical treatment is indicated .

# (II) MEDICAL TREATMENT

- **Symptomatic patients with minimal or mild lesions:**

1. Analgesics : for pain.
2. Prostaglandin inhibitors.
3. Pregnancy.
4. Opoids.
5. NSAID.

# (III) HORMONAL TREATMENT

- Oestrogen.
- Combined oestrogen-progestogen Pills.
- Progestins.
- Danazol.
- GnRH agonists.

# INDICATIONS OF HORMONAL TRT.

1. Small endometriotic; lesions.
2. Recurrence after conservative surgery.
3. Preoperative for 6-12 weeks to decrease size.
4. Postoperative for residual lesions.
5. When operation is contraindicated or refused by the patient.

# AIM OF THE HORMONAL THERAPY

## (A) Pseudopregnancy :

*1.* Combined low - dose contraceptive pills(6 - 18 months to inhibit ovulation and menstruation and induce decidualization of endometriotic tissues).

*or*

*2.* Progestins (to avoid oestrogen's side effects medroxy progesterone acetate Depo medroxy progesterone acetate (DMPA) can be given in a dose of 150 mg IM every I - 3 months .

# AIM OF THE HORMONAL THERAPY CONT….

**(B) Pseudomenopause (induction of amenorrhoea) by**:

1. Danazol.
2. Gn RH analogues.
3. Gestrinone.
4. Gossypol.

# DANAZOL

- Weak Androgen (isoxazole derivative of 16 – alpha ethinyl testosterone).
- Suppresses LH / FSH.
- Causes Endometrial Regression, Atrophy.
- Expensive.
- Dose 400 – 800 mgm orally /day/ 6 – 9 months.
- Side-Effects: Weight Gain, Masculinization, Occ. Permanent Vocal Changes

# GnRH-a

- Initially Stimulate FSH / LH Release.
- Down-Regulates GnRH Receptors–"Pseudomenopause".
- Long-Term Success Varies.
- Expensive.
- Use Limited by Hypoestrogenic Effects.
- May be Combined with Add-Back (? >1 Year ), using E2/progesterone preparation.

# GnRH-a

Addback (E2/progesterone preparation)

- Reduce effect on bone mineral density.
- Relieve hot flushes.

# GOSSYPOL

- Is a phenolic compound extracted from the seed , stem and root of the cotton plant.
- It is a sup - pressor of FSH and LH , producing endomelrial atrophy in about 50% of patients after 3 months .
- Dose : 20 mg daily for 2 months then 25 mg twice weekly for maintenance .
- Side effects : include electrolyte disturbance especially hypokalaemia and alteration of hepatic and renal functions .

# GESTRINONE

- **It is a synthetic 19 Nor steroid exhibits marked anti - progesterogenic and anti - oestrogenic as well as mild androgenic and anti -gonadotrophic properties .**
- **The endocrine effects of Gestrinone are similar to those of Danazol which leads mainly to inhibition of ovarian steroidogenesis .**
- **The dose is 2.5 - 5 mg orally twice weekly**

# SURGICAL TREATMENT (LAPAROSCOPY / LAPAROTOMY)

- Excision / Fulguration
- Resection of Endometrioma.
- Lysis of Adhesions, Cul-de-sac Reconstruction.
- Uterosacral Nerve Ablation.
- Presacral Neurectomy.
- Appendectomy.
- Hysterectomy +/- BSO.

# CONSERVATIVE SURGERY

1. **Large adnexal masses .**
2. **Failure of medical and hormonal treatment.**
3. **Severe endometriosis** *(follow principles of microsurgery).*

# THE PRINCIPLES OF MICROSURGICAL TECHNIQUE

1. The use of magnification by microscope or head loupes.
2. gentle handling of tissues.
3. meticulous tissues dissection.
4. precise haemostasis.
5. careful approximation of tissues.

# THE PRINCIPLES OF MICROSURGICAL TECHNIQUE CONT...

6. Irrigation of the field with heparinised Ringer's lactate.
7. The use of non - or delayed absorbable suture material , cat gut should be avoided as it is irritant to the tissue.
8. Contamination of the pelvis with foreign material as talc powder from gloves should be avoided as it provokes inflammation .
9. Intra - operative dextran 70.
10. postoperative corticosteroids and prophylactic antibiotics may be used .

# MANAGEMENT OF SCAR ENDOMETRIOSIS

- Usually includes wide excisional and hormonal suppression.
- If the excision is complete, no need for medical treatment
- Infact the literatures report the usage of progesterones contraceptive pills and danazol is ineffective.
- Recently gonadotropin agonist has been proposed, it causes prompt improvement in symptoms but no change in the lesion size.

# PROGNOSIS OF SCAR ENDOMETRIOSIS

- High rate of recurrence.
- Chances of malignant transformations has been quoted in some studies.
- When complete excision of the lesion is performed, total resolution of the symptoms.

# CONCLUSION

- Endometriosis is a mystery tour as it requires decision making at every stage by the physician and the patient.
- Endometriosis still stand as one of the most-investigated disorders in gynecology. So , is one of the highest priorities for research.

# THANK YOU