



THE CENTER FOR INNOVATIVE
GYN CARE

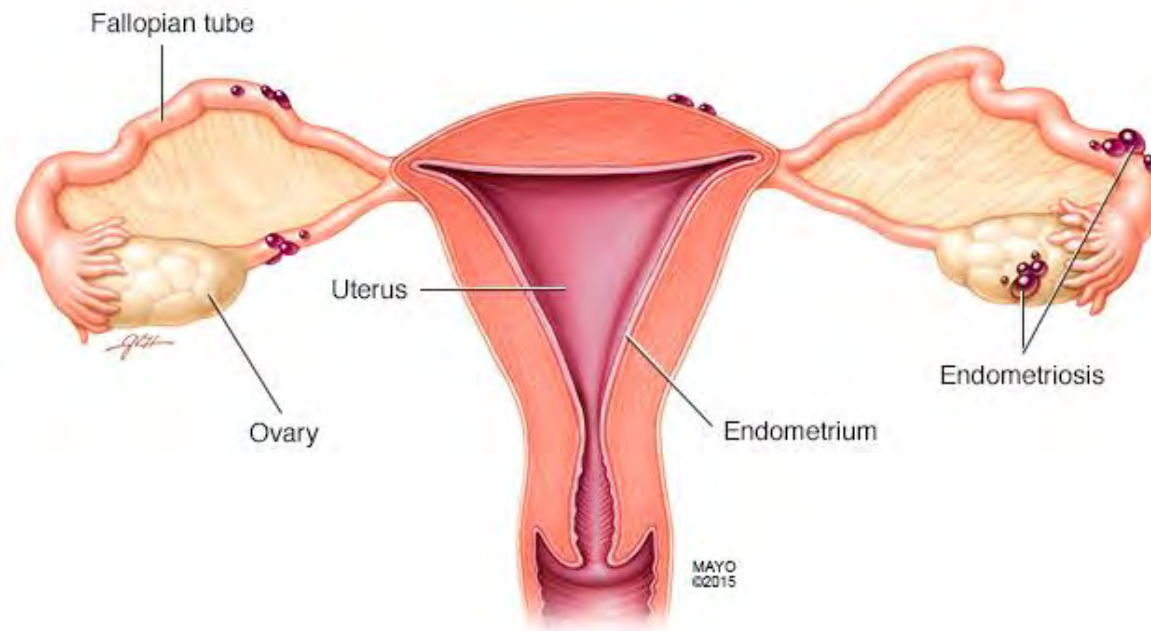
Endometriosis & Infertility

Topics

- What is Endometriosis?
- Potential Causes of Endometriosis
- Impact of Endometriosis on Fertility
 - *Factors Contributing to Infertility in Endometriosis Patients*
- Effect of Endometriosis on IVF Outcomes
- Benefits of Laparoscopic Surgery Before IVF & Egg Freezing
 - *Cauterization vs Resection*
 - *High volume vs. Low volume Surgeons*
- Questions to Ask Your Specialist

What is Endometriosis?

- Endometrial cells — the same cells that make up the lining of the uterus — grow outside the uterus.



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Stages of Endometriosis

Stage 1 (Minimal)

Few superficial implants and no significant adhesions.

Stage 2 (Mild)

Superficial and deep implants without significant adhesions.

Stage 3 (Moderate)

Multiple deep implants, small cysts on one or both ovaries, filmy adhesions.

Stage 4 (Severe)

Severe with multiple deep implants, large cysts on one or both ovaries, dense adhesions.

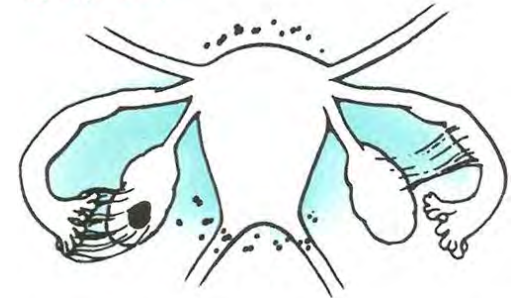
Stage I (minimal)



Stage II (mild)



Stage III (moderate)



Stage IV (severe)

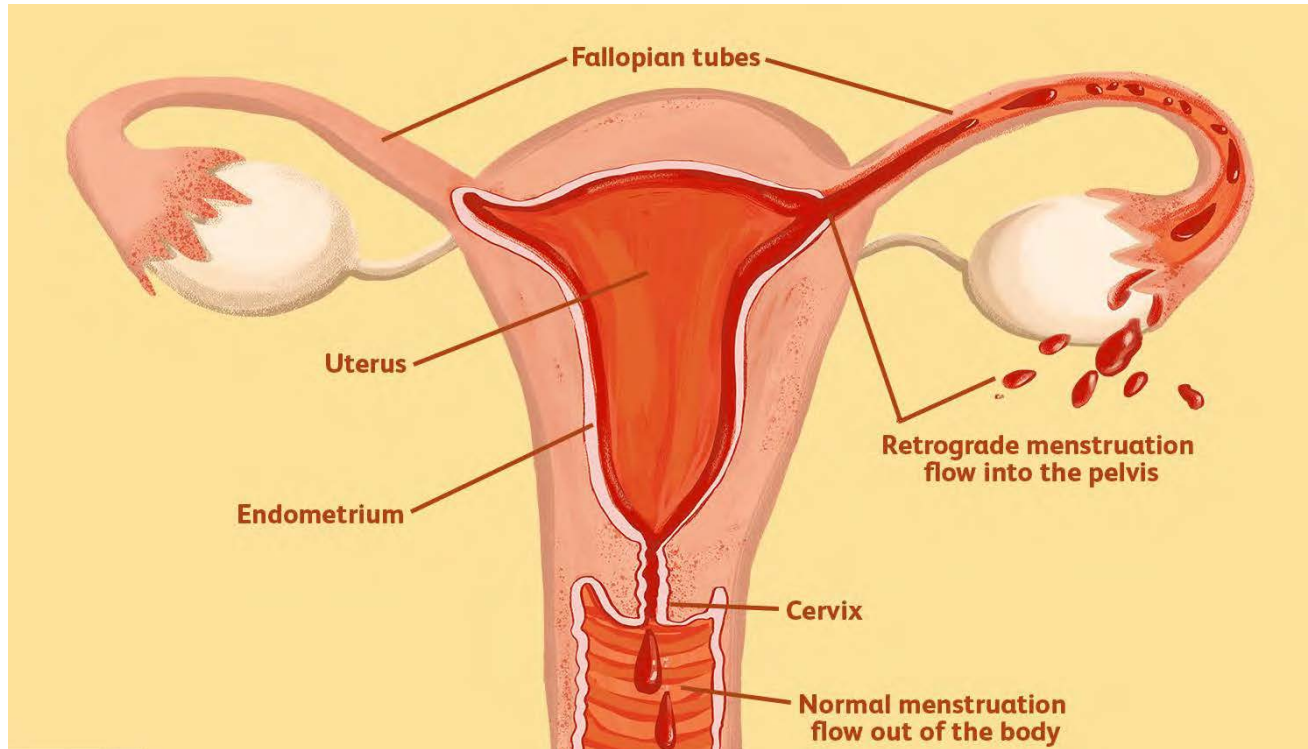




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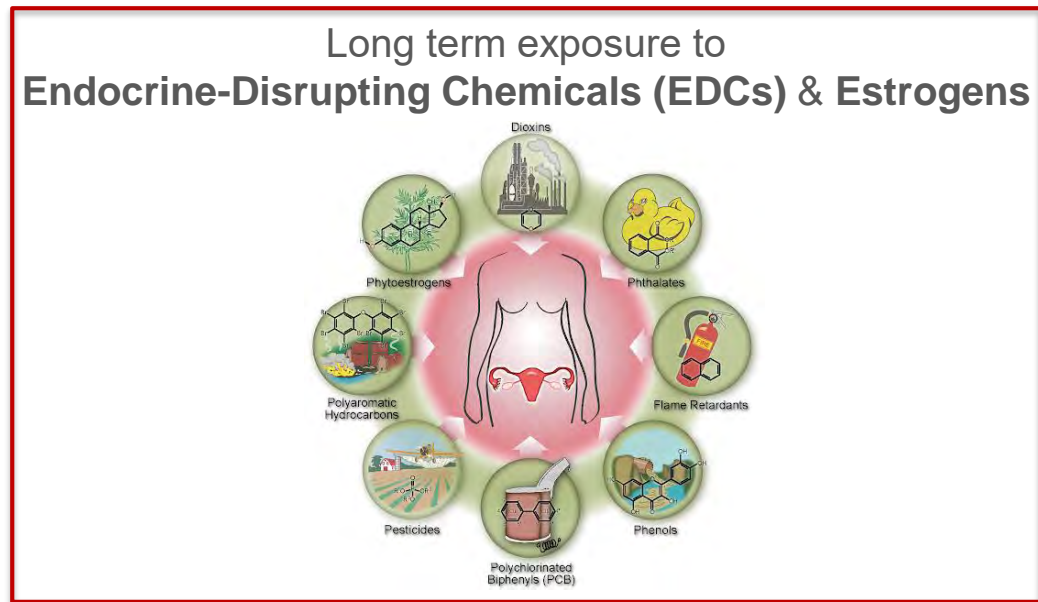
Potential Causes of Endometriosis

Retrograde Menstruation



Backward blood flow into pelvis

Environmental & Hormonal Factors

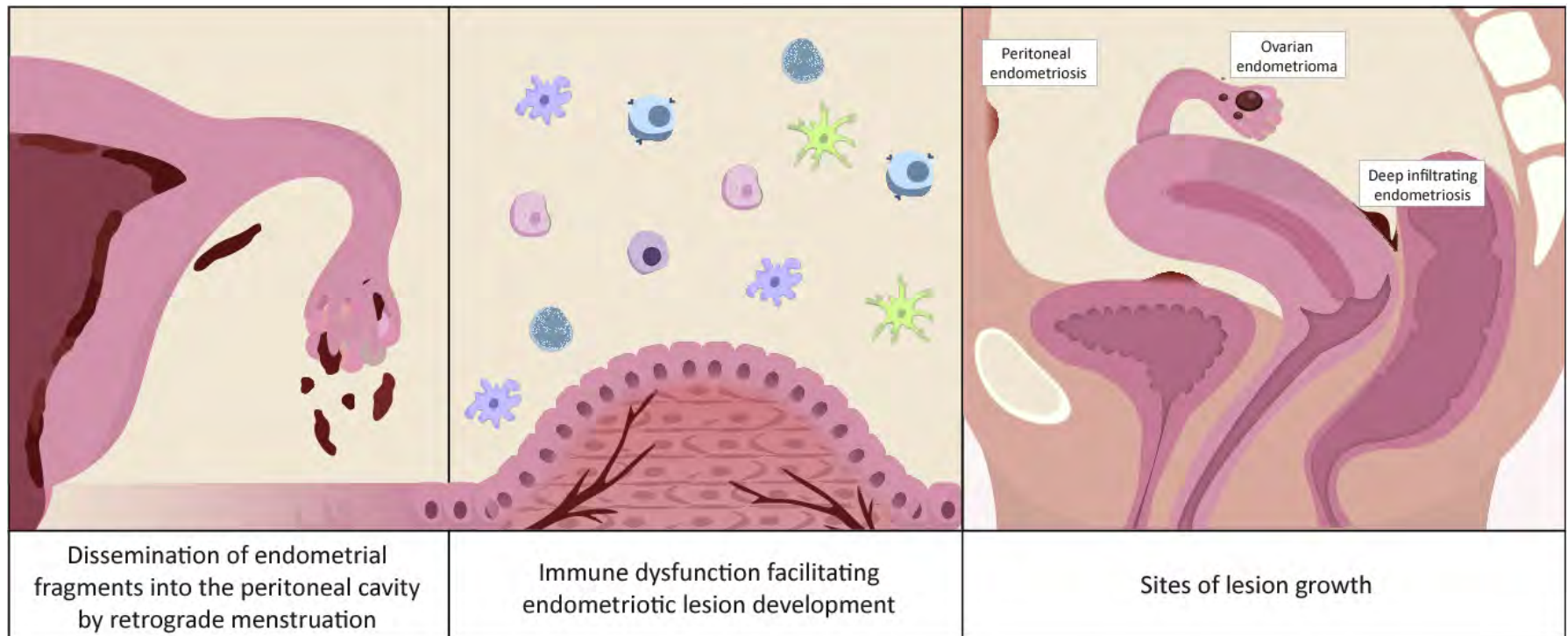


- Shorter anogenital distance
- Abnormal development of uterine endometrial tissue
- Abnormal length & form of uterus and fallopian tubes.

- Development/ progression of endometriosis

Compromised Immune System

- Compromised gut microbiota & metabolic activity
- Imbalance in the urogenital, cervicovaginal, and genital microbiota



Source: (Symons et al, 2018)

Source: (García-Peñarrubia et al., 2020)

Genetic Predisposition

- First study to investigate the role of genetics in endometriosis was in 1980 by Simpson et al.
- From 123 women who had histologically confirmed endometriosis, 6.9% had first degree relatives with endometriosis.





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Impact of Endometriosis on Fertility

Statistics

30% to 50% of women with endometriosis are infertile.



Reproductive Rate:

Healthy Couples: 15% to 20% per month

VS.

Women with Endometriosis: 2% to 10% per month

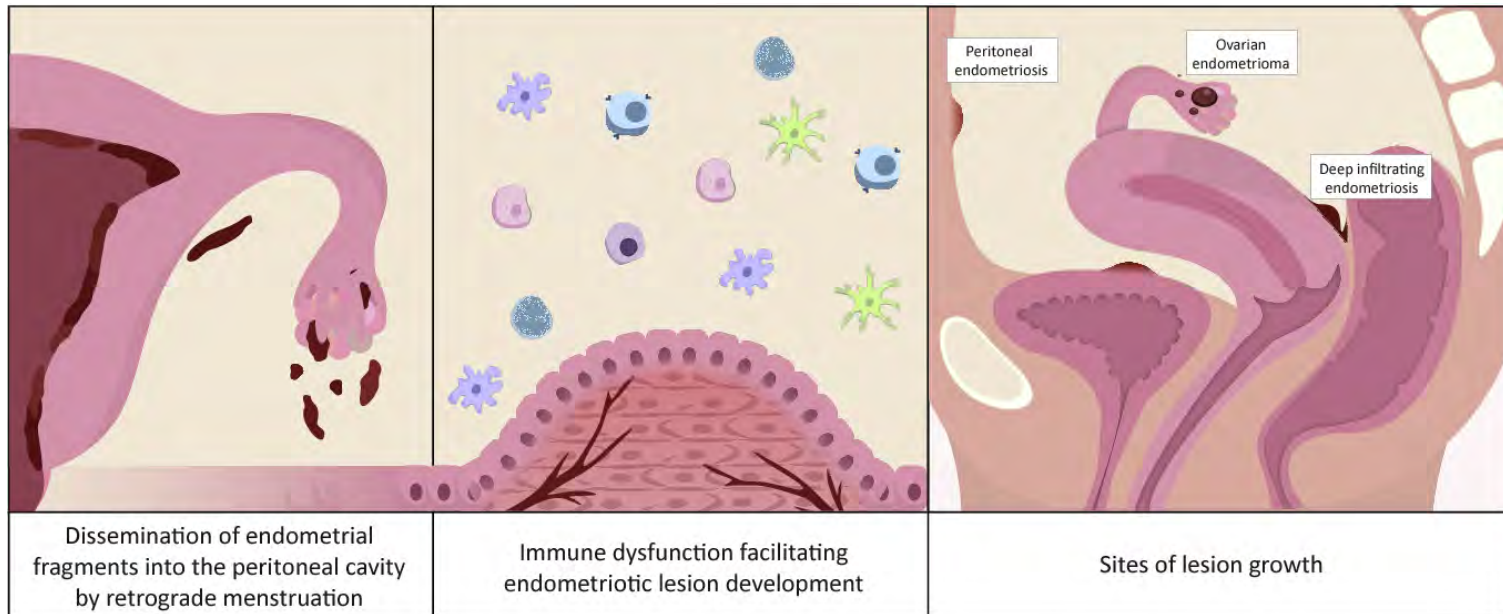
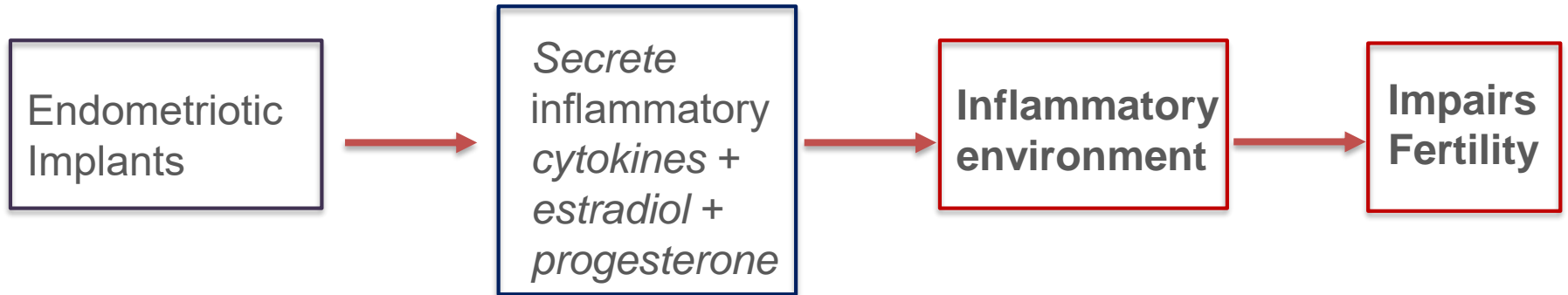




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Factors Contributing to Infertility in Endometriosis Patients

Inflammatory Environment

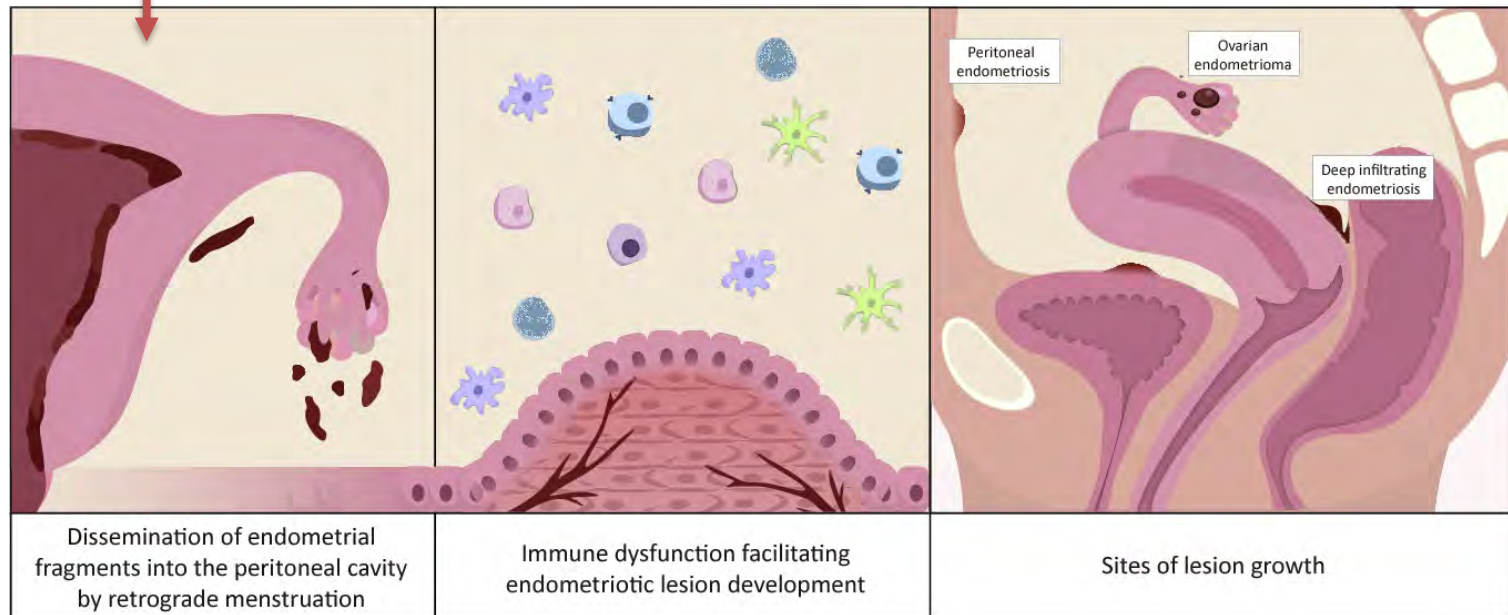


Source: (Symons et al, 2018)

Inflammatory Environment

- **Peritoneal Inflammation**

The chronic inflammation creates an uncondusive environment for embryo development, & inhibits sperm motility and fallopian tube motility.

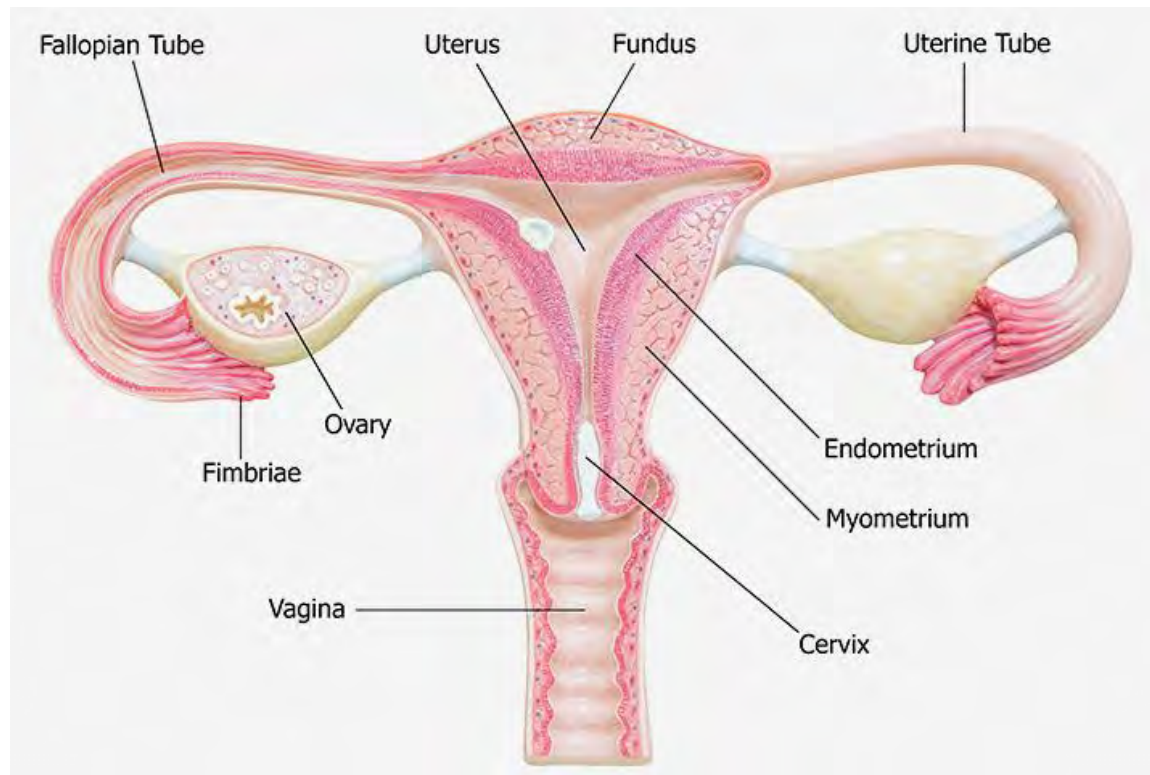


Source: (Symons et al, 2018)

Inflammatory Environment




- **Abnormal Endometrium**

Leads to implantation failures as a result of the immune systems response of autoantibodies to antigens in this area.



Other Factors

In women with endometriosis:

- **Pelvic Anatomic Distortion**  Prevents ovum capture & fertilization.
 - **Diminished Ovarian Reserve**
 - Introduction of free radicals by ovarian endometriomas, causes compression of the ovarian cyst  follicle loss
 - **Compromised Quality of Oocyte & Embryo**
 - Embryos develop at a slower rate, and show higher rates of abnormal development compared to healthy women.
 - In a 2014 prospective cohort study, women with endometriosis were found to have oocytes with increased granule loss & zona pellucida hardening
- 
- This in turn interferes with fertilization & the ability of the embryo to undergo hatching and implantation.



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Effects of Endometriosis on IVF Outcomes

Effects of Endometriosis on IVF Outcomes

- In a 2002 Meta-analysis of 22 studies, researchers investigated the IVF outcomes for patients with endometriosis and the results showed:
 - Endometriosis patients had significantly lower chances of achieving pregnancy
 - Endometriosis patients had a *DECREASE* in fertilization, implantation rates & # of oocytes

Advanced stages of endometriosis do not present favorable conditions for IVF treatment.



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Benefits of Laparoscopic Surgery Before IVF & Egg Freezing

Benefits of Surgery: Before IVF & Egg Freezing

“Restoration of a normal uterine anatomy by surgical intervention could help improve IVF outcomes in infertile women with severe endometriosis.”
(Park et al, 2019)

- In a 2014 Cochrane Review, Duffy et al. reviewed several randomized controlled trials and found that:

Laparoscopic surgery for endometriosis



Increased live birth & ongoing/clinical pregnancy rate.

Cauterization vs. Resection



Cauterization

- Other names: Ablation, Fulgeration
- *Method: burning* the endometriotic implants to destroy the abnormal endometriotic implants.
- Less effective than resection given it may leave unseen portions of disease, which leads to faster recurrence of endometriosis.
- Burning of endometriosis implants cannot be used when the disease involves the bowel, bladder, ureters, or pelvic sidewall and vessels, since significant injury can occur to those structures.

Resection

- Other names: Excision
- *Method: surgically removes all lesions*, limiting thermal injury & adhesion formation.
- Can be used with a retroperitoneal approach to remove extensive disease near vital structures such as the ureter, bladder, and bowel.
- Performed by advanced GYN surgeons.

High Volume Surgeon vs. Low Volume Surgeon

“The experience of the surgeon may affect the live birth rate after IVF in women with surgically removed endometriomas” – Olivier Donnez, MD, PhD

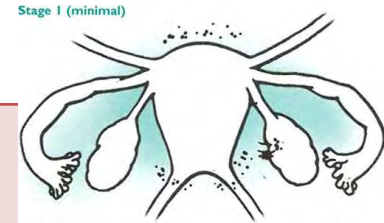
- **Low Volume= Perform under 10 surgeries per year**
- Less experienced in their field
- More likely to use abdominal (open) routes of surgery.
- Studies show low volume surgeons have higher complication rates

- **High Volume = Perform over 50 surgeries per year.**
- Highly experienced in their field
- Use minimally invasive surgical approaches
- Studies show high volume surgeons have lower complication rates

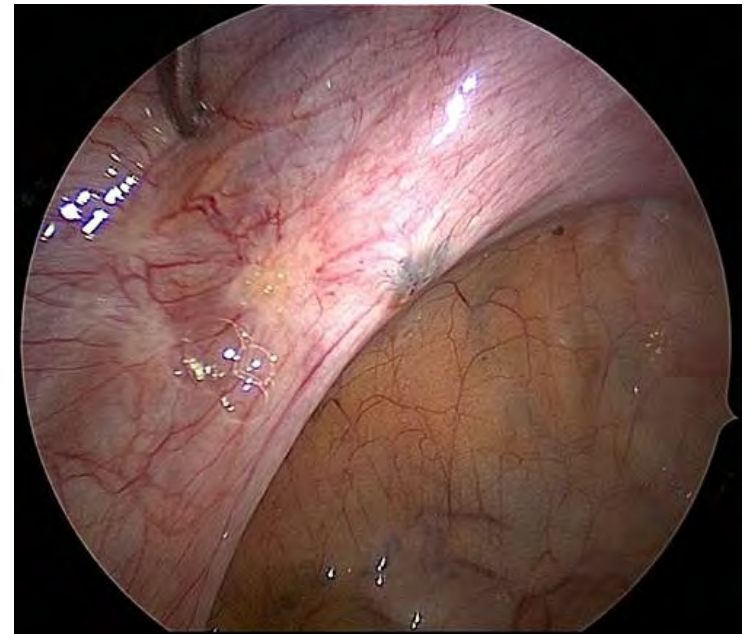
Stages of Endometriosis

Stage 1 (Minimal)

Few superficial implants and no significant adhesions.



Small lesions involving the left uterosacral ligament and sidewall.

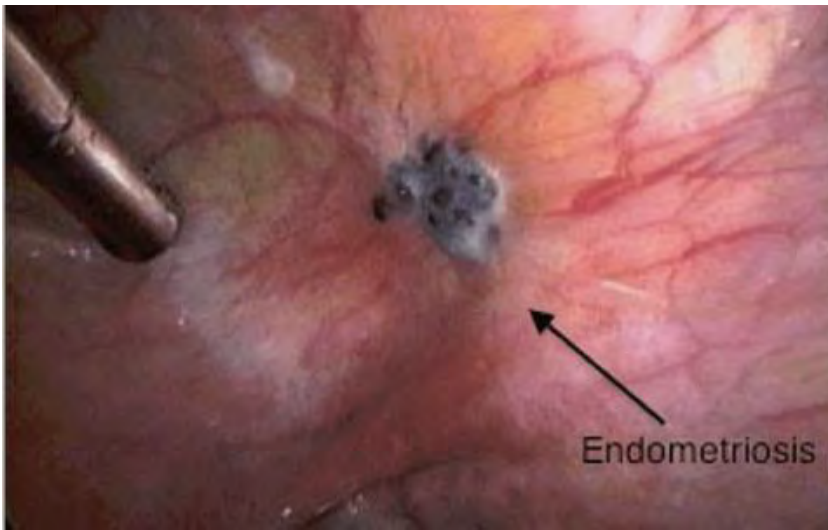
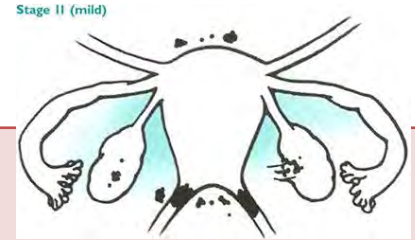


Note the black and clear lesions involving the left uterosacral ligament.

Stages of Endometriosis

Stage 2 (Mild)

Superficial and deep implants without significant adhesions.



Deep black implant involving the posterior cervix



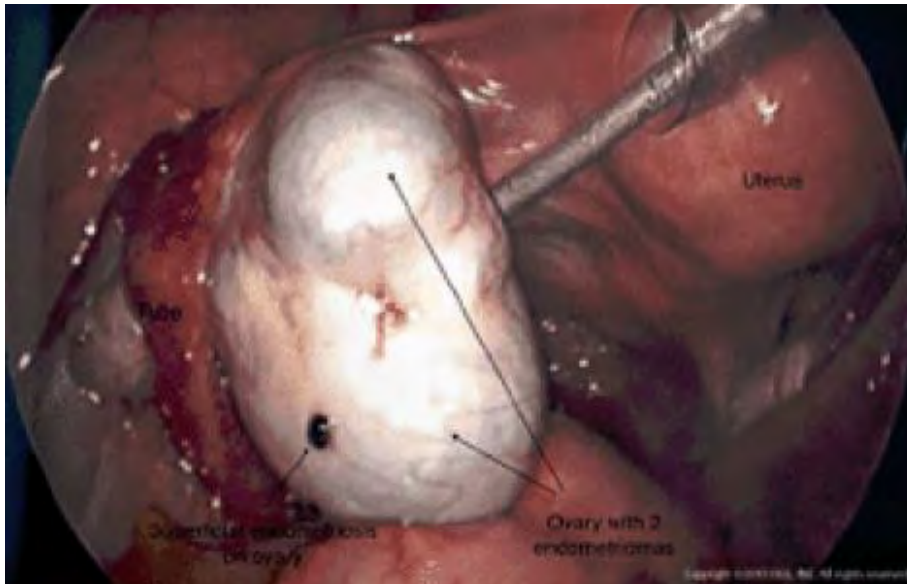
Deep clear lesion involving the right uterosacral ligament and sidewall.

Stages of Endometriosis

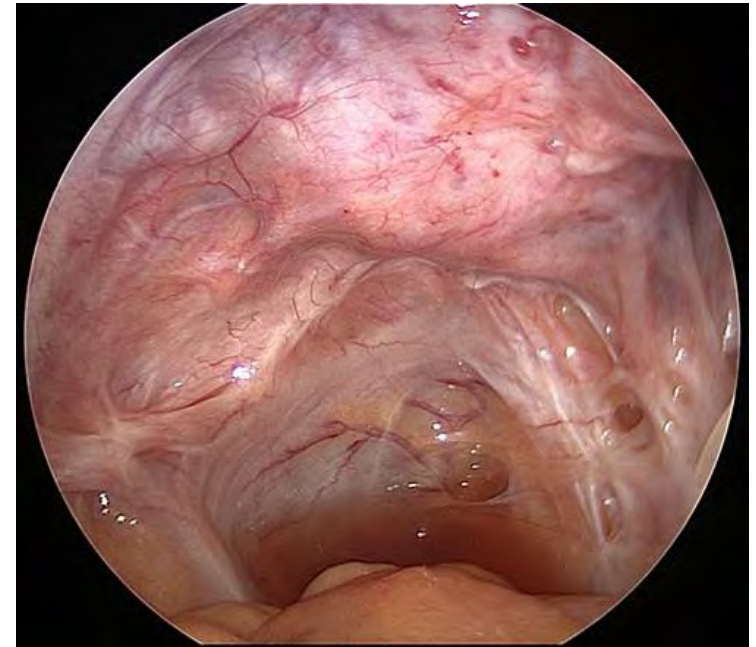
Stage 3 (Moderate)

Multiple deep implants, small cysts on one or both ovaries, filmy adhesions.

Stage III (moderate)



An Endometrioma to the left ovary

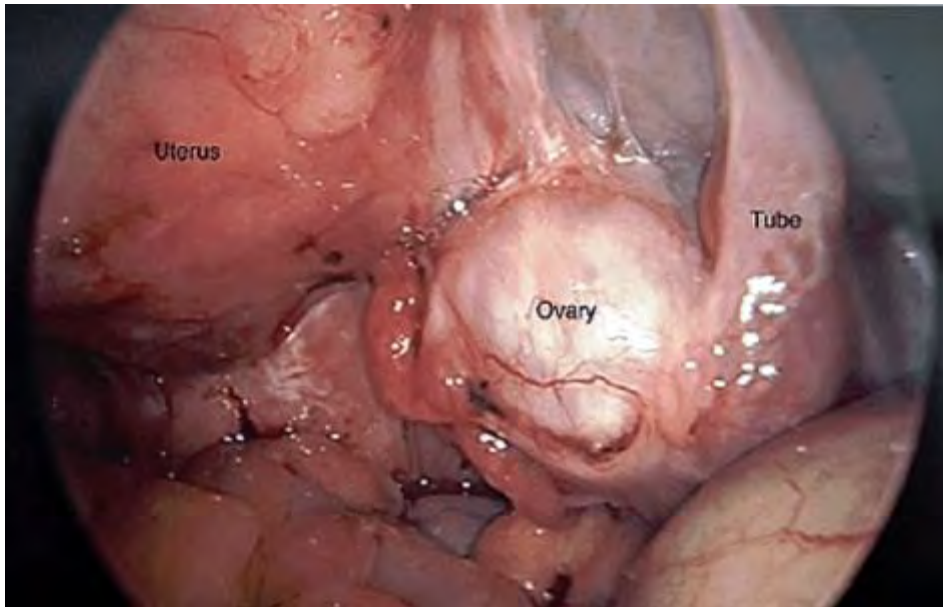
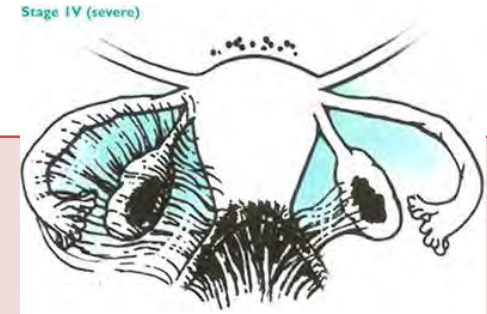


Dense thick adhesions involving the right sidewall and cul de sac (base of the pelvis).

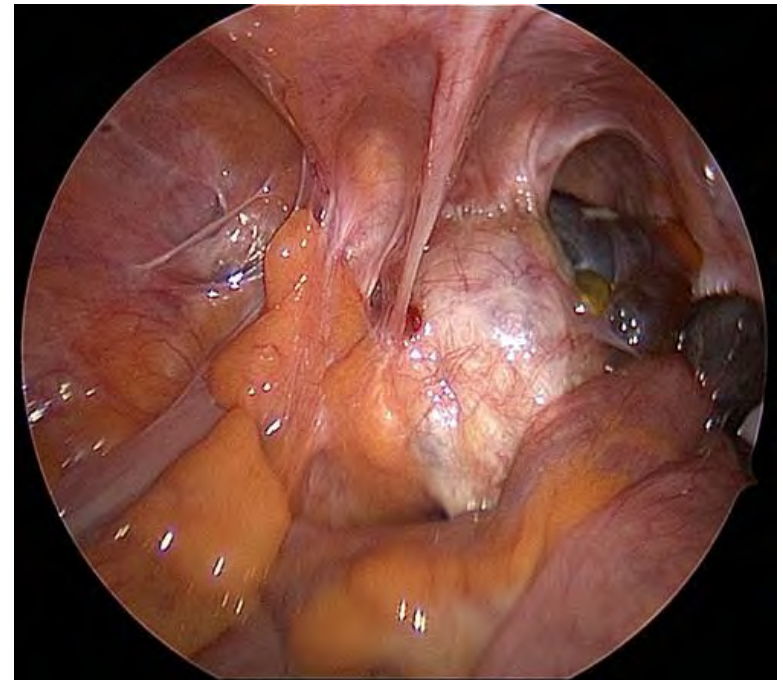
Stages of Endometriosis

Stage 4 (Severe)

Severe with multiple deep implants, large cysts on one or both ovaries, dense adhesions.



Black endometriosis implants on the uterus, ovarian endometrioma (cystic collection of endometriosis), and a swollen tube due to blockage from the disease. Adhesions are seen connecting the uterus and ovary to each other and to the bowel just beneath the uterus.



Large Endometrioma extending to the base of the pelvis (black) and involving the ovary, bowel, and left sidewall.

Questions To Ask Your Specialist

GYN Specialist

- How many surgeries do you perform per year for endometriosis?
- What method will you use to remove my endometriotic lesions? Do you resect or cauterize?
- If I want to get pregnant, will this surgery improve my chances of getting pregnant?
- What is the typical recovery time after surgery?

IVF Specialist

- Do you suggest treating my endometriosis before I start my IVF cycles?



Questions?

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