

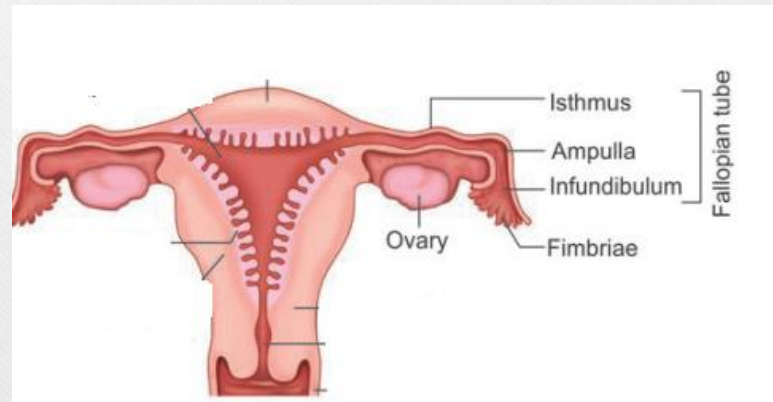
FALLOPIAN TUBES DISORDERS AND MANAGMENT IN INFERTILITY

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Introduction

The fallopian tubes named after Gabriele Falloppio (also spelled Falloppia), a 16th-century physician and surgeon, are appendages of the uterus located on either side at the superior portion of the uterine cavity.



Rao KA, Vyshnavi A, Devi R, editors. Principles and Practice of Assisted Reproductive Technology. 3rd ed. New Delhi: Jaypee Brothers Medical Publishers; 2023

Each tube is divisible into four parts and runs laterally within the mesosalpinx.

1) **interstitium**:(1.25 cm long, 1 mm wide) The proximal narrowest segment

2) **isthmus** (2.5 cm long, 2.5 cm wide)

3) **ampulla**, the middle segment (5 cm long, 2.5–5 mm wide), gradually widens and merges with the distal segment

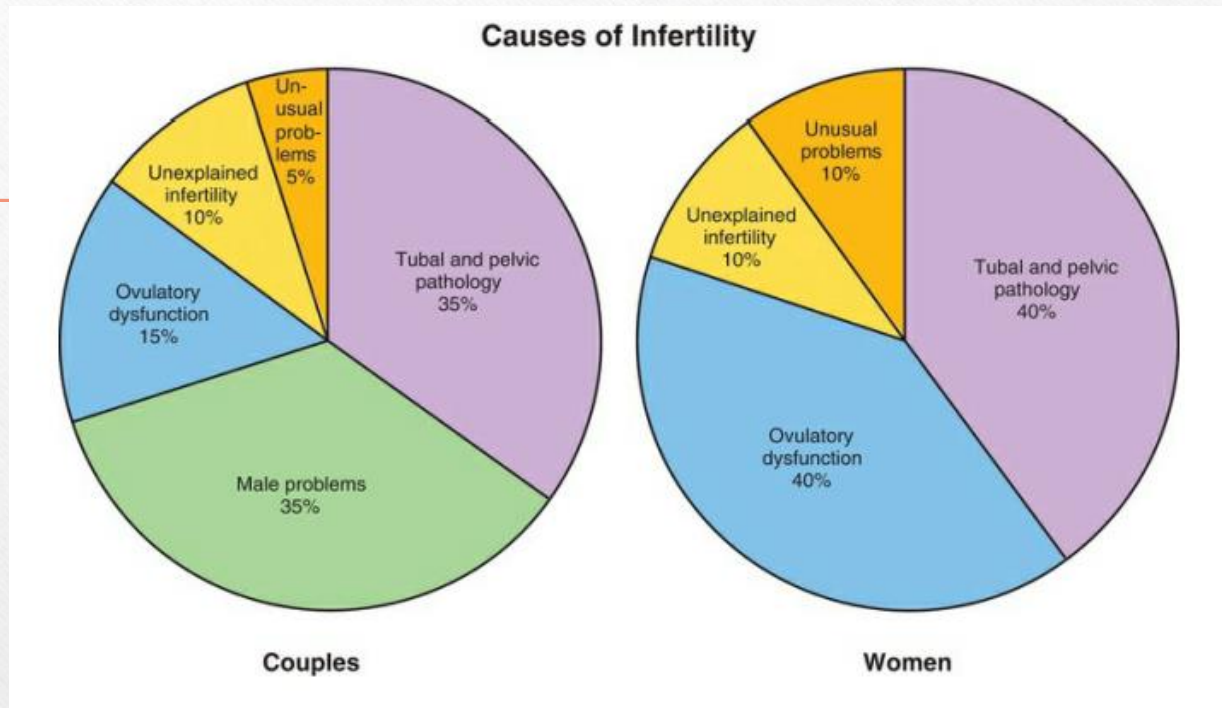
4) **infundibulum** (1.25 cm long, 6 mm wide)
that lies in close proximity to the ipsilateral ovary. Infundibulum has fimbriae that help in capturing the cumulus oophorus complex at ovulation.

❑ The uterine tubes form a **conducting channel** for gametes and embryos.

❑ the ampulla promotes **fertilization**, **nurtures** gametes and embryos, and **ensures the timely passage of the embryo to the uterus**.

The patent healthy functional tubes are hence important for fertility

Incidence :



tubal pathology accounts for 25–35% of female infertility.

Speroff L, Fritz MA. Clinical Gynecologic Endocrinology and Infertility. 9th ed. Philadelphia: Wolters Kluwer Health;2020.

Ethiology:

A) Congenital

Tubal congenital anomalies and malformation may be classified into three categories:

1. Total, Partial, or segmented absence
2. Duplication, which can affect ostia and/or the tubes
3. Multiple lumina and diverticula.

➤ Developmental or inherent anomalies of the fallopian tubes are rare and **most do not require treatment.**

Paraovarian and paratubal cysts

- ❑ About 10% of adnexal masses consist of paraovarian and paratubal cysts.
- ❑ These cysts are relatively common, usually asymptomatic, and often discovered incidentally
- ❑ They are thought to originate from mesothelium or remnants of paramesonephric (Müllerian) and mesonephric (Wolffian) ducts
- ❑ They may become clinically significant in rare instances due to their size and/or torsion.
- ❑ Distinguishing between ovarian and paraovarian cysts can be challenging

✓ **Distinguishing** between ovarian and paraovarian cysts can be challenging

✓ The "**split**" **sign**, seen on ultrasound : Separation of a paratubal cyst from the adjacent ovary when pressure is applied in TVS.

✓ **hydatids of Morgagni** : Remnants of the **paramesonephric duct** often develop within the broad ligament instead of at the fimbriated ends of the fallopian tube.

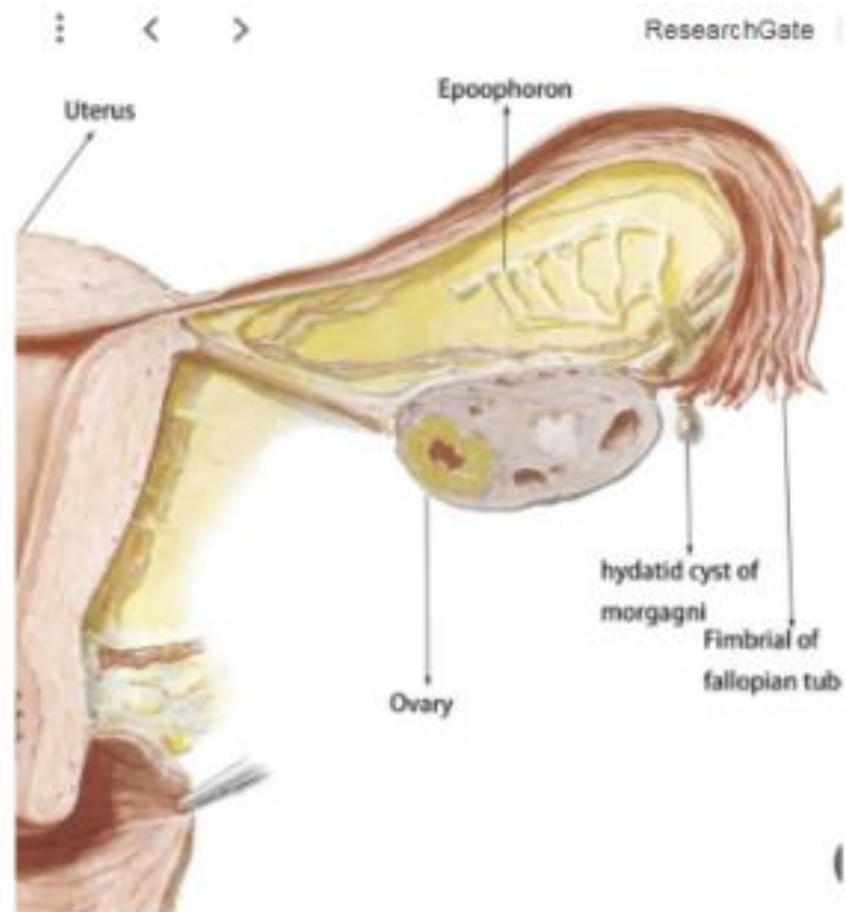
✓ They are small serous fluid-filled cysts that are more frequently identified with the advent of endovaginal ultrasonography.

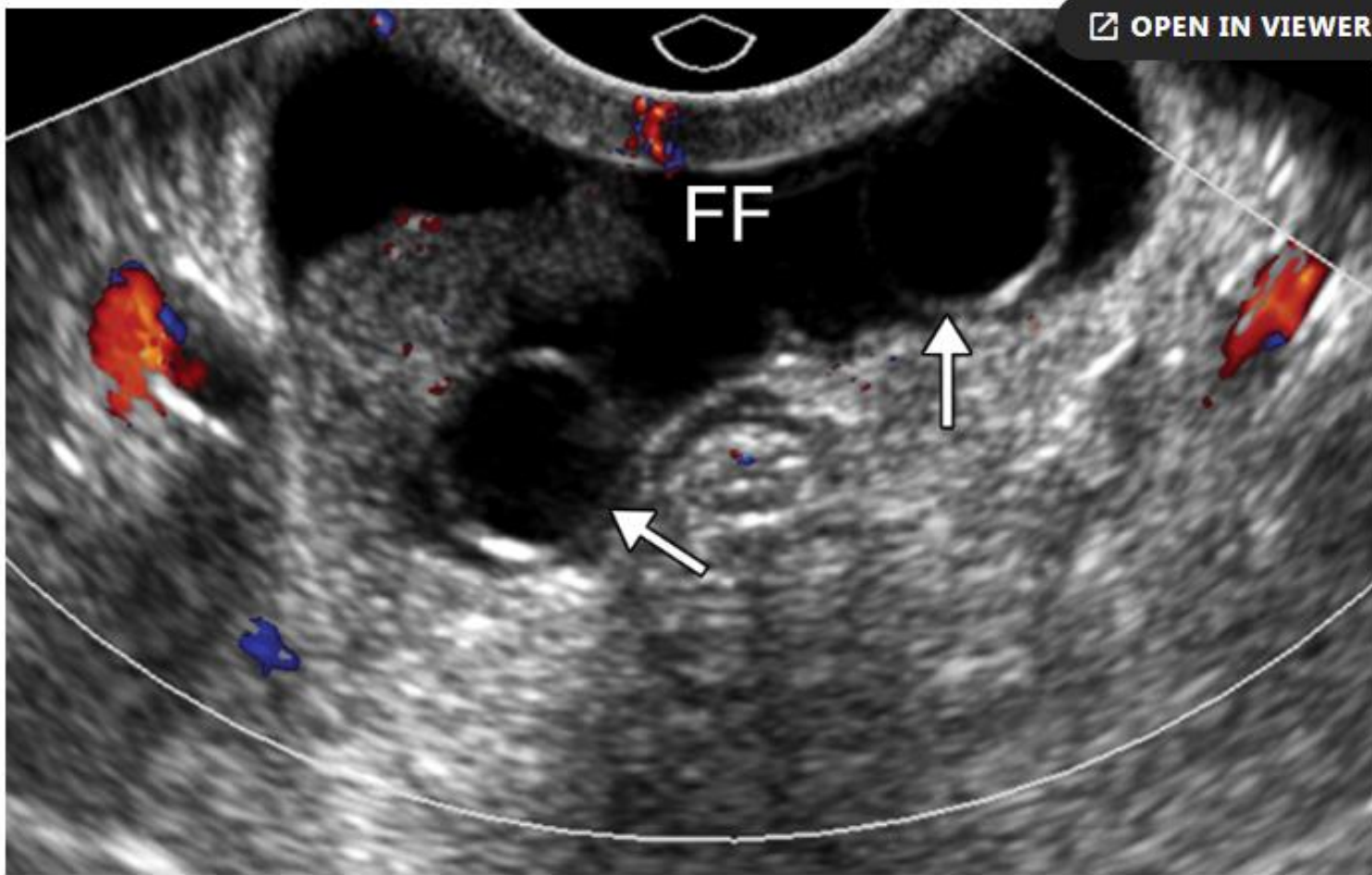
✓ **Torsion** and **large cyst size** require more **urgent treatment**.

❑ Hydatid of Morgagni has been found in **over half of** patients with **unexplained infertility**, potentially acting as an obstacle for fimbria in picking up the ovum.

❑ Removal of these cysts can **improve ovum pick-up** and enhance fertility in patients without other causes of infertility ; their surgical resection leads to favorable results on fertility

- El-Kharoubi AF. Tubal pathologies and fertility outcomes: a review. Cureus. 2023 May 11;15(5):e38881
- Rasheed SM, Abdelmonem AM: Hydatid of Morgagni: a possible underestimated cause of unexplained infertility. Eur J Obstet Gynecol Reprod Biol. 2011, 158:62-6.

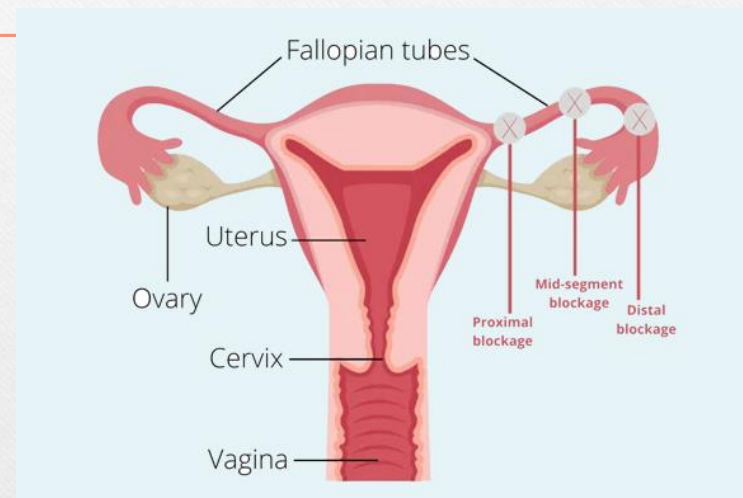




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B) Acquired :

- A. Proximal –tubal Disease
- B. Mid-tubal Disease
- C. Distal tubal Disease



Cause of proximal tubal disease

<i>Pseudo-obstruction</i>	<i>True anatomic blockage</i>
Plugs of mucus and amorphous debris	Salpingitis isthmica nodosa
Mucosal agglutination and viscous secretions	Pelvic inflammatory disease
Cornual spasm	Endometriosis
	Cornual polyps
	Intrauterine synechiae

Pathology and blockage of proximal tube account for 10–25% of tubal disease.

Causes of mid-tubal disease

Prior surgery

- Fibrosis/ scarring

Endometriosis

PID

Distal Tubal Disease

➤ 85% of tubal infertility is due to distal tubal disease.

➤ Distal tubal disease includes hydrosalpinges and fimbrial phimosis

➤ Hydrosalpinx is an end stage of distal tubal disease where the distal is completely occluded

➤ stenosed fimbrial opening due to adhesions results in fimbrial phimosis.

Causes of distal tubal disease

Pelvic inflammatory disease	85% sexually transmitted diseases • <i>Neisseria gonorrhoeae</i> • <i>Chlamydia trachomatis</i> • <i>Mycoplasma hominis</i> • 15% iatrogenic
Tuberculosis	
Peritonitis of any cause	
Tubal damage from previous surgery	
Endometriosis	

C)Iatrogenic:

1)Tubal Sterilization

As many as 30% of women regret their decision for sterilization. Thus, tubal sterilization is an iatrogenic cause of tubal infertility that needs to be addressed.

2)Salpingectomy

Women who have had to have bilateral salpingectomy for ectopic gestations, tubal or tubo-ovarian pathology often needs assisted reproductive techniques (ARTs) to conceive

Salpingitis isthmica nodosa (SIN)

- ❖ The isthmic portion of the fallopian tube can develop a nodular swelling of up to [a few centimeters](#) in diameter, although it can also affect other parts of the fallopian tube
- ❖ Its prevalence in healthy, [fertile women](#) ranges from [0.6% to 11%](#), but it is significantly more likely to occur in cases of [ectopic pregnancy](#) and [infertility](#)

Diagnosis :

- ❑ Hysterosalpingography is the first line of effective diagnostic method for salpingitis isthmica nodosa
- ❑ Laparoscopy shows fibrosed tubal segments.
- ❑ Myosalpingeal hypertrophy encasing endosalpingeal diverticula is noted on histopathological examination

Treatment:

- There is **no conservative** treatment for SIN.
- ~~Fertility management~~ for patients with SIN often involves ~~assisted~~ **reproductive technology**
- with studies showing an **80%** chance of live birth by the **fifth** cycle of IVF
- **Salpingectomy** is recommended for **symptomatic patients** when **fertility is not** a concern
- Following tubocornual anastomosis, the term **pregnancy rate** was **45%** when the resected isthmus portion was **less than 1 cm** and **22%** when it was **more than 1 cm**

Pelvic inflammatory disease

- ❑ Pelvic inflammatory disease (PID) is the most frequent cause for ~~tubal disease of which the~~ **single largest cause** is **Chlamydia trachomatis** infection.
- ❑ Estimates suggest that among **women aged 35 to 44**, **33.6%** have experienced at least **one episode of salpingitis**, and **16.1%** have experienced at least **one episode of PID**, while **10.7%** have only experienced **one episode of salpingitis** without any additional PID episodes

Pelvic inflammatory disease :

- ❑ PID can result in scarring, adhesions, and partial or total occlusion of the fallopian tubes. This may lead to the loss of ciliated epithelial cells in the inner layer of the fallopian tube, impeding ovum transit and increasing the risk of infertility and ectopic pregnancy.

Tubal Assessment Test:

➤ **active pelvic infection** is an absolute contraindication to performing tubal patency tests. The testing may be performed **after treatment** and resolution of active pelvic infection.

➤ Thorough **history taking** and **clinical examination** play an invaluable role to assess whether a patient has a high index of suspicion for pelvic infection.

Evaluating for Pelvic Infections

❑ Even though laparoscopy was considered the gold standard to diagnose salpingitis, almost 20% of PID may show no evidence of salpingitis.

❑ about 15% of PIDs are iatrogenic with endometrial curettage, biopsy, or HSG.

❑ Intrauterine contraceptive device insertion being the main causative procedure.

❑ maintaining meticulous asepsis during the above procedures and avoiding unwarranted investigations will help decrease tubal infertility from iatrogenic PID

Chlamydia trachomatis :

Chlamydial infection is the most common infective cause of tubal disease. The **detection of antibodies** to *C. trachomatis* has been associated with tubal pathology.

Chlamydia antibody test has **sensitivity** of only **40–50%** and **positive predictive value** (PPV) of **60%**, but high **negative predictive value** (NPV) of **80–90%** for detection of distal tubal disease compared to laparoscopy.

chlamydia antibody test (CAT):

- 1) microimmunofluorescence (MIF)
- 2) enzyme-linked immunosorbent assay (ELISA)
- 3) immunofluorescence (IF) assays

ASRM suggests that the CAT has **limited clinical utility**. But in women **with low index of suspicion** for tubal disease based on **history** and **clinical examination**, a **negative CAT** test reliably **rules out the chance of tubal obstruction**

The infection can be treated by treating the **couple with a 14–21 day course of doxycycline**.

Tuberculosis :

❑ Female genital tuberculosis (FGTB) causes extensive **tubal and endometrial damage**.

❑ **Ruling out of TB and curative treatment** when diagnosed should be done **prior to tube testing**, and is ideal in women with hypomenorrhea, thin endometrium, or features of chronic PID.

❑ FGTB often **coexists with other causes of PID** like **chlamydia** and **gonorrhea**.

✓ Genital TB may be diagnosed when one or two of the tests turn positive for TB.

A) Premenstrual endometrial aspiration or biopsy and nucleic acid amplification (NAA) [TB polymerase chain reaction (PCR)] allow for rapid diagnosis and help to detect mycobacterial DNA in 80.9% of genital TB-suspected patients.²¹

✓ the PCR cannot differentiate between active and latent infection and may be unreliable in identifying the cases that actually require treatment

B)endometrial sampling and TB stain, BACTEC culture, histopathological examination for tubercles
diagnostic laparoscopy are used in conjunction with TB PCR to diagnos genital TB

✓TB when diagnosed has to be treated with appropriate antitubercular agents for 9 months.

Ultrasound Evaluation Of Fallopian Tubes

- ✓ The clinical history and examination in conjunction with the TVS findings decide whether the patient has a high index of suspicion for tubal disease.
- ✓ The healthy fallopian tubes are not seen on routine two- dimensional or three-dimensional (2D/3D) ultrasound imaging of the pelvis unless filled or surrounded by fluid.
- ✓ The distended tubes on ultrasonography (USG) are:
 - Thin- or thick-walled (in chronic cases)
 - Elongated or folded, tubular, and retort-shaped fluid distended structure
 - Separate the uterus and ovary

- A “**cogwheel**” appearance from thickened longitudinal folds in a hydrosalpinx when imaged in cross section is pathognomonic of a hydrosalpinx.
- ~~“**Beads on a string**” sign is noted when incomplete stations are present.~~
- **Atypical hydrosalpinx** appearance without any pseudo septation may lead it to be mistaken for an ovarian or paraovarian cyst.
- Densely adherent, thick, and multiloculated distended tubes may mimic a complex ovarian tumor.

Tubal Patency Tests

Hysterosalpingography:



Hystrosalpingography:

- ❖ Hysterosalpingography is an **inexpensive** and **widely available** screening test to rule out **unilateral** or **bilateral** tubal block and provides a permanent visual record of the uterus and tubes.
- ❖ It involves instillation of approximately **10 mL water-soluble radiocontrast** transcervically and serial X-ray imaging of the pelvis to visualize the uterine cavity, delineate the tubes, and to assess peritoneal spill.

➤ **Cornual tubal spasm** is the main reason for lower accuracy of this diagnostic imaging technique

➤ contraindications : PID and pregnancy

➤ it is ideally performed in the **late follicular phase** (day 7–12) following a normal menstrual cycle.

➤ Hysterosalpingography has a low **sensitivity** of **53–65%** and a high **specificity** of **83–87%**, **PPV** of **38%**, and **NPV** of **94%**

HSG is a reliable indicator of tubal patency if bilateral spill is noted on evaluation

- HSG with an oil-based radiopaque dye
 - increased live birth rates.
 - oil embolization
 - granulomatous reactions
-
- water-based dye is preferred
 - better image quality and safety.
-
- The conventional HSG is safe as radiation exposure is only 0.4–5.5 mGy, much below the 100 mGy safety threshold for teratogenicity.

The information so gathered may be used to categorize tubal disease into three, based on which we can decide appropriate management

-
- **Category 1:** Normal: Good chance for future fertility
Very low incidence of ectopic pregnancy
 - **Category 2:** Patent tube with tubal disease:
 - 2a—mild tubal disease
 - 2b—moderate tubal diseaseModerate prognosis and outcome future fertility
Highest incidence of ectopic pregnancy
 - **Category 3:** Patent or blocked tubes, severe tubal disease:
ART ideal
Very low incidence of ectopic pregnancy.

❑ An abnormal HSG helps predict proximal tubal blockage and hydrosalpinges with moderate accuracy while it is very inaccurate in diagnosing or ruling out distal tubal obstruction and peritubal adhesions. Although an HSG might look normal, hydrosalpinges remain undiagnosed.

❑ Advanced HSG may be done with using fluoroscopic guidance, manipulation, tubal cannulation, and tubal pressure to yield more information and increase reliability of testing

Sonohysterosalpingography

- SonoHSG is similar to HSG, using ultrasonography and sterile saline instead of fluoroscopy and contrast media, and is another, but less common, method for evaluating tubal factor.
- Tubal patency can be observed by the appearance of fluid in the cul-de-sac with the saline infusion, the test does **not differentiate** between **unilateral** and **bilateral** patency.
- Where available, sonohysterosalpingography is a better alternative to HSG, as it has higher **sensitivity** and **specificity** of **76–96%**, and **67–100%, respectively**.

Hysterosalpingo-contrast sonography

HyCoSy is similar to sonoHSG, but either contrast media or a more recently developed gel comprised of **hydroxyethyl cellulose** and **glycerol** is used for demonstrating fallopian tubes.

Wang Y, Qian L: Three- or four-dimensional hysterosalpingo contrast sonography for diagnosing tubal patency in infertile females: a systematic review with meta-analysis. Br J Radiol. 2016, 89:20151013.

Laparoscopy and Chromopertubation

❑ Laparoscopy is the **gold standard** for diagnosing tubal patency and inflammation.

❑ Advantage:

- ❑ It is a minimally invasive procedure
- ❑ allows visualization of the pelvic anatomy and pathology, and spill of dye from the tube is seen.
- ❑ allows diagnosis assessment and management of peritubal disease, adhesions, and endometriosis.
- ❑ enables biopsy of suspicious lesions for further evaluation
- ❑ allows for surgical correction of pathology detected, where feasible.(provided appropriate consent is taken)

❑Disadvantage :

❑it is not without error as around 3% of patients diagnosed with bilateral tubal block conceive spontaneously

❑requires general anesthesia

❑creation of pneumoperitoneum as well as surgical skill experience to perform

Jacobson and Weström laparoscopic criteria to diagnose and grade salpingitis.

Minimum visual criteria to diagnose salpingitis	• Pronounced tubal surface • Hyperemia • Tubal wall edema • Presence of exudates on tubes and from fimbriae when patent
Mild salpingitis	• Minimum visual criteria, mobile tubes • Patent ostia
Moderate salpingitis	• More evident inflammation, patchy fibrin deposits on tubes • Loose tubal and pelvic adhesions • Tubes not freely mobile
Severe salpingitis	• Intense congestion • Dense adhesions to pelvic structures • Pyosalpinx • Tubo-ovarian masses
Each adnexa should be graded separately	
The overall grade is that of the more severe pathology	

Reference	Main Objective	Study Design	Study population	Compared Methods	Key Finding	Advantage/Limitation
Kamphuis.et al.2024 Netherlands	Hysterosalpingo-foam sonography vs HSG	Multicenter Rct	1160 infertile women HYFoSy group; HyFoSy>581 HSG:579	HYFoSy vs HCG	LBR:46%in HyFoSy vs47%in HSG.none significant difference	Ad:less pain/noradiation/lower cost Lim:similar outcomesThe potential therapeutic effect of bothunknown
Elsharkawy.S.et al 2023 Egypt	Spontaneous pregnancy rate after HSG vs salineinfusion sonogram under high pressure	Single – center RCT	183 women HSG:92 SIS treat :91	HSG vs High-pressure SIS	Tubal patency:HSG 84.9%vs SIs treat 87.3% Pregnancy :HSG14%vs SIs treat 38%(p<0.001)	Ad:SIS under pressure may improve pregnancy rate.Lim:single center/short follow up
Dreyer K.et al.2017. Netherlands	Oil-based versus water based contrast during HSG in infertile women	Multicenter RCT	1119 women withunexplained infertility Oil-based contrast:554 Water-based contrast:565	HSG with oil-based vs water-based contrast media	Oil –based contrast increased preagnancy and LBR(RR=1.37-1.38;p<0.01)	Ad:therapeutic “flushing” effect.. Lim:heterogeneity among center/short follow up duration/papulation restriction

Management Of Tubal Infertility

- ❖ Preventive approaches
- ❖ Identifying and treating pelvic infection/inflammation
- ❖ In established tubal disease, management depends on:
 - ❑ Site and extent of the tubal disease:
 - ❑ Unilateral or bilateral
 - ❑ Proximal or distal
 - ❑ Mild/moderate/severe tubal disease

☐ The decision between **surgery** and **IVF** should be based on the following

☐ The age of woman

☐ Ovarian reserve

☐ Prior fertility status

☐ Number of children desired

☐ Site and extent of tubal damage

☐ Presence or absence of other factors necessitating IVF

☐ Surgeon's experience

☐ Success rate of IVF program

☐ Patient preference, that is, religious belief, cost, and insurance coverage for each option

Prevention of Tubal Infertility

Prevention of tubal pathology from emerging is **the best way** to mitigate tubal causes of infertility.

Strategies include:

- General education and awareness to decrease the incidence of sexually transmitted infection (STI) and PID
- Proper precautions to reduce the incidence of iatrogenic PID/peritubal adhesions
- Early identification and treatment of STI and PID and treatment of the partners
- Identifying patients with unfavorable reproductive microbiome and optimizing their health to reduce the risk of infections.

Reproductive Tract Microbiome

Women undergoing IVF with tubal factor infertility (a pathology associated with infections) were found to be more likely to have a vaginal microbiota consistent with **bacterial vaginosis** (BV) by analysis of smears.

Studies have shown that presence of unfavorable non-lactobacillus dominant microbiomes are significantly more in infertile women.

Distal Tubal Obstruction

Distal tubal occlusive disease exhibits a **wide spectrum of severity** ranging from adherent fimbrial folds to varying degrees of phimosis, to complete obstruction with hydrosalpinges.

- **Fimbriolysis** refers to the separation of adherent fimbria,
- **fimbrioplasty** describes the correction of phimotic but patent fimbria
- **neosalpingostomy** involves the reopening of a completely obstructed tube.

surgical success **inversely relates to the severity of disease**. The extent and character of **associated tubo-ovarian adhesions**, the **tubal thickness**, and the condition of the **internal ampullary mucosal** architecture are all variables that affect prognosis

- ❑ For the **milder forms** of distal tubal disease, postoperative **live birth** rates can exceed **50%**. Results achieved with **surgery**
- ❑ for more **severe disease** have varied widely, but **success rates** are lower (**10–35%**) and risk **for ectopic pregnancy** is higher (**5–20%**)
- ❑ Postoperative tubal patency rates far exceed pregnancy rates
patency is more easily restored than function because mucosal regeneration is slow and often fails altogether.
- ❑ The majority of pregnancies occur within the **first 2 years after** surgical treatment of distal tubal obstruction.

Treatment :

- I. In younger women with mild distal tubal occlusive disease, laparoscopic surgery may be viewed as an alternative to IVF, But when disease is severe or pregnancy does not occur during the first postoperative year IVF is the logical choice.
- II. For older women with any significant degree of distal tubal disease, IVF is generally the first and best option because cycle fecundability after distal tubal surgery is low (1–2%), time is limited, and IVF is both more efficient and more effective.

hydrosalpinges:



hydrosalpinges:

The presence of unresolving hydrosalpinx is pathognomonic of severe tubal disease and is associated with poor ART outcomes.

In vitro fertilization was developed primarily to allow pregnancy in women with tubal infertility, but paradoxically IVF outcomes were poorer in women with extensive tubal disease as in hydrosalpinges.

- ❑ Pregnancy, implantation, and delivery rates are decreased 50%
- ❑ Abortion rates are increased

Mechanism :

- 1) At the molecular level, hydrosalpinges have been associated with **reduced $\alpha\beta3$ integrin** and **leukemia inhibitory factor (LIF)** expressions as well as **decreased HOXA10** (homeobox gene) expression in the endometrium that hamper implantation
- 2) The **mechanical effects** exerted by hydrosalpinx through the uterine cavity may cause changes in endometrial peristalsis that may washout or hinder implantation of the transferred embryo.
- 3) The hydrosalpingeal fluid is considered the main culprit for deleterious IVF outcomes though why it is so, is still unclear.

Diagnosis :

1) TVS (2D) The best method to detect hydrosalpinx (sensitivity: 84.6%; specificity: 99.7%).

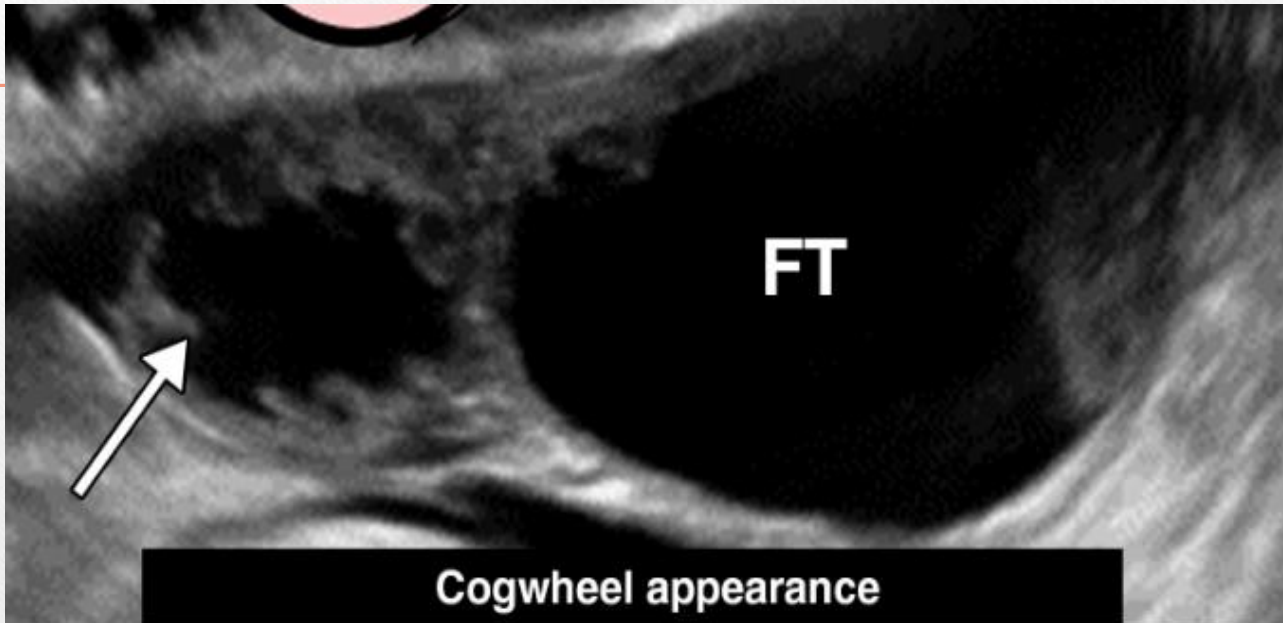
2) Hysterosalpingography

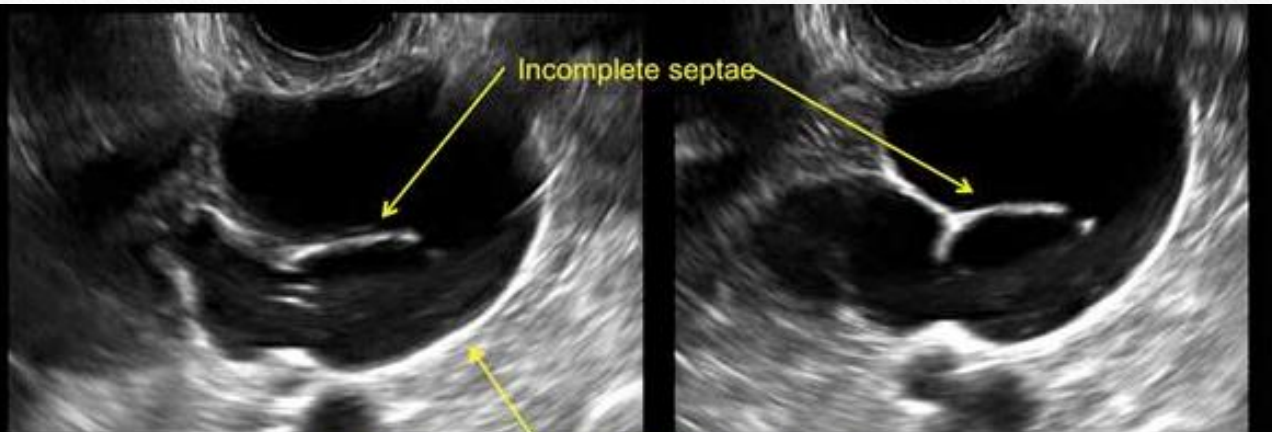
3) Hysterosalpingo contrast- sonography

4) Pelvic MRI

5) Diagnostic laparoscopy (gold standard)

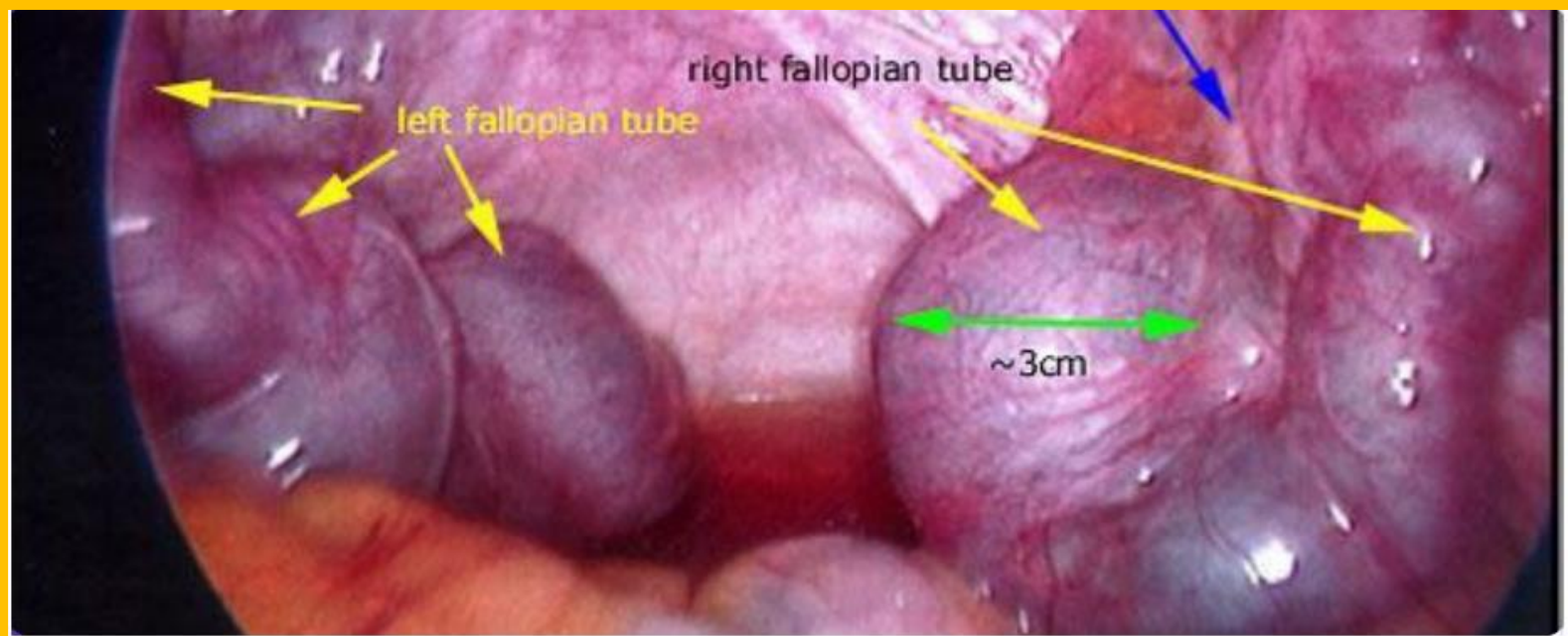






Thick hyperechoic wall indicates chronic/
longstanding





Management :

- 1) Laparoscopic salpingectomy
 - 2) Laparoscopic occlusion of the fallopian tubes
 - 3) Ultrasound-guided aspiration of hydrosalpingeal fluid
 - 4) Hysteroscopic placement of Essure
-

data demonstrate clearly that laparoscopic salpingectomy or tubal occlusion **improves IVF pregnancy** rates in women with hydrosalpinges

- removal or proximal occlusion of unilateral hydrosalpinx seems to improve chances of spontaneous pregnancy.
-
- A retrospective series including 25 women with unilateral hydrosalpinx reported 88% pregnancy rate without IVF with an average time to pregnancy of 5.6 months
 - Salpingectomy does not significantly decrease serum AMH concentration, ovarian response to stimulation, or clinical pregnancy rates with IVF

Ultrasound-guided aspiration of hydrosalpingeal fluid at the time of oocyte retrieval has been **effective in improving IVF outcome** as compared to **no intervention**, **simpler**, and **less costly** than **surgical options**.

However, salpingectomy and proximal tubal occlusion **fare better** than fluid aspiration with regard to **ongoing pregnancy**, **clinical pregnancy**, **ectopic pregnancy**, and **miscarriage rates**.

- Hysteroscopic placement of Essure coils are relatively easy
- ~~clinical pregnancy, implantation, and live birth rates~~
are **significantly lower** than laparoscopic management
- miscarriage rate is **higher**

hydrosalpinx aspiration and Essure can be regarded as a **second-line intervention** for women under high risk
Of intra-abdominal adhesions. prone to complications with pelvic surgery.

Author	Titel	Study Ddsign	Study Pppulation	Interventi on	Main Results	Conclusio n
Zhang,etal 2025/china	Tubal occlusion inpatient with hydrosalpinx modifies the uterineenviron ment and improves in IVF outcomes	Retrospectiv e cohort study	976 women diagnosed with hydrosalpinx befor IVF/ICSI cycle(23-42years old)	Laparoscopic tubal occlsion or proximal ligation prior to IVF vs. Untreated hydrosalpinx group	CPR:higher in surgery group(47.8 %)vsuntreat ed(33.4%)L BR:39.6% vs28.2% early MR 8.4% vs 15.1%	Tubal occlusion before IVFsignificantly improves uterine receptivity .surgeryshould be considered before ET
Hashish R.A.et al. 2024/Egypt	Hystroscopic tubalElectrocoagulation versus Laparoscopic tubal disconnection forthe management of hydrosalpinx and subsequent pregnancy outcomes	Randomized Controlled Trial (RCT)	112infertile women with unilateral or bilateral hydro saipinx before IVF	GroupA;lapra scopic tubal disconnection Group B: hysteroscopic tubal electrocoagula tion	GruopA had significantly higher CPR and LBR Gruop B Showed shorter oprative time but lower pregnancy success	Laprascopic tubal disconnection provides superor pregnancy outcomes compared to hysteroscopic disconnectioni n women with hydro salpinx

Proximal Tubal Obstruction

- ❑ Proximal tubal occlusions represent 10–25% of all tubal obstructions observed with HSG, many of which are not real (20–40%)
- ❑ Mucus plugs, cellular debris, or uterotubal spasm can cause pseudo proximal obstruction
- ❑ Repeated HSG can decrease the number of false-positive tests of tubal patency

in a case series including 98 infertile women with a diagnosis of proximal tubal occlusion based on an HSG, repeating the procedure revealed bilateral tubal patency in 14 patients (14%), patency of 1 tube in 12 others (12%), and confirmed bilateral occlusion in 72 patients (74%).

Treatment:

1)Proximal tubal cannulation

If proximal occlusion is not due to SIN, tubal cannulation using hysteroscopic or fluoroscopic methods is a proven alternative to traditional microsurgical repair

2)Microsurgical segmental tubal resection and anastomosis

- This use For true proximal tubal obstruction. Experienced surgeons can achieve pregnancy rates ranging between 50% and 60%.
- the number of surgeons having the necessary expertise is fast declining.
- Outcomes vary with the cause of the obstruction
- reocclusion rates are relatively high with causes other than SIN.

Author	Article Title	Study Design	population	intervention	Results	conclusion
Mody P et al 2023/india	Recanalization of proximal Fallopian Tub obstruction in the treatment of infertility	Prospective observational study	72 women with proximal tubal obstruction confirmed by HCG	Transecervical fallopian tub underfluotoscopic guidance using selective catheterization/cannulation	Technical success:100% Conception rate:12.8-50% Re-occlusion:20-50%. No major complication	FTR is asafe,minimally invasive,effective treatment forProx.tubal obstruction particulary before IVF
Liang X,et al 2024/china	Proximal tubal obstruction: Efficacy ofselfctive tubal cannulation versus IVF	Randomized Controlled Tial(RCT)	220 women(20-38Y)diagnosed withunilateral orbilateral prox tubal confirmed by HSG and laparoscopy	Group A: Selective tubalcannulation under fluoroscopic guidance Group B: IVF and embryo transfer	CPR:PTC:47.3% vs52.7%(Ivf) LBR:38.2% vs42.7% Complication:2.7 % vs6.4% (lower in cannulation group)	Selective tubal cannulation is a safe,minimally invasive ,cost-effective alternative to IVF for women with isolated proximal tubal obstruction
De Silva PM.et al/2017	Fallopian tube catheterization in the treatment of proximal tubal obstruction	systematic review and meta-analysis	27 study involvin 1720 patient undergoing tubal catheterization for prox.tubal obstruction attempting natural conception	Fallopian tube catheterization (selective cannulation for proximal tubal obstruction	CPR:27%% (95% CI =25–30%) LBR:22%(95% CI = 18–26%) Ectopic pregnancy rate^4%(95% CI 3–5%),	Catheterization is an alternative strategy to IVF in patient with proximal tubal obstruction

Bipolar tubal disease

involves both proximal and distal tubal obstructions.

Success rates with surgery have been extremely poor and IVF represents the best treatment option.

When cannulation fails, microsurgery may be considered if IVF is not an option.

*Thanks For
Your Attention*