

IN THE NAME OF GOD

# ***Female infertility***

## History

- Obstetric history including gravidity, parity, pregnancy outcomes, and associated complications.
- Menstrual history including cycle length and characteristics and onset and severity of dysmenorrhea.
- Coital frequency and sexual dysfunction.
- Duration of infertility and results of any previous evaluation and treatment.
- Medical and surgical history, including episodes of pelvic inflammatory disease or exposure to sexually transmitted infections.
- Previous abnormal cervical cancer screening results and subsequent treatment.
- Current medications and allergies.
- Occupation and use of tobacco, alcohol, and other drugs.
- Family history of birth defects, mental retardation, early menopause, or reproductive failure.
- Symptoms of thyroid disease, pelvic or abdominal pain, galactorrhea, hirsutism, or dyspareunia.

## Physical Examination

- Weight and BMI.
- Thyroid enlargement, nodule, or tenderness.
- Breast secretions and their characteristics.
- Signs of androgen excess.
- Pelvic or abdominal tenderness, organ enlargement, or mass.
- Uterine size, contour, position, and mobility.
- Vaginal or cervical abnormality, secretions, or discharge.
- Mass, tenderness, or nodularity in the adnexa or cul-de-sac.

## OVARIAN FACTOR : OVULATORY DYSFUNCTION

- disorders of ovulation account for approximately 15% of infertile couples.
- only positive proof that assures the occurrence of ovulation is pregnancy.
- Women with irregular or infrequent menses may ovulate, but not consistently, and do not require specific diagnostic tests.

# Basal Body Temperature

- BBT** is distinctly biphasic and menses beginning 12 days or more after the rise in temperature.
- the interval of highest fertility spans the 7-day interval immediately before the midcycle rise in BBT.
- intercourse , 7 days before the earliest observed rise in BBT and ending on the latest day it has been observed.
- BBT is low cost; stressful, serving as a daily reminder of unsuccessful efforts to conceive

# serum progesterone

-serum progesterone is the simplest, most common, objective, and reliable test of ovulatory function,

-serum progesterone level should 1 week before the expected onset of menses

-A progesterone concentration less than 3 ng/mL implies anovulation, except when drawn immediately after ovulation or just before the onset of menses.

# Urinary LH Excretion

- Ovulation :14-26 hours after detection of the LH surge and almost 48 hours
- greatest fertility :the day the surge is detected and the following 2 days.
- The midcycle LH surge is a relatively brief event, typically lasting between 48 and 50 hours from start to finish.
- generally beginning 2 or 3 days before the surge is expected, based on the overall length of the cycle.

## Transvaginal Ultrasonography

-serial TVUS provides detailed information about the size and number of preovulatory follicles and the most accurate estimate of when ovulation occurs

## Endometrial Biopsy

-a secretory endometrium implies recent ovulation

-In the past, endometrial biopsy for diagnosis of luteal phase deficiency, but no longer.

## CERVICAL FACTOR

- Estrogen stimulates cervical mucus production, mucus becomes more abundant and watery, less cellular, and more easily penetrated by sperm. Progesterone inhibits cervical mucus production and renders it opaque, viscid, and impenetrable.
- The postcoital test for diagnosis of cervical factor is no longer recommended.
- Abnormalities of cervical mucus production or sperm/mucus interaction are rarely.

## UTERINE FACTOR: ANATOMIC AND FUNCTIONAL ABNORMALITIES

- a relatively uncommon cause of infertility.
- include congenital malformations, leiomyomas, and intrauterine adhesions; endometrial polyps. The only functional uterine abnormality of specific interest in the evaluation of infertility is chronic endometritis.
- There are three basic methods for evaluation of the uterine cavity: HSG, TVUS or saline SHG , hysteroscopy.

**HSG:** best initial test because it also evaluates tubal patency. in women with no risk factors for tubal disease ;in women who require IVF for severe male factor.

**ultrasonography:** offers a simpler and better alternative that also may reveal unsuspected ovarian pathology (cyst, endometrioma)

**SHG:** is the most sensitive and logical diagnostic test. Hysteroscopy is definitive but has few diagnostic advantages over **SHG** and generally can be safely reserved for treatment of abnormalities already identified by less invasive and costly methods.

# Hysterosalpingography

-HSG :the size and shape of the uterine cavity, uterine developmental anomalies (unicorn , septate, bicorn , and didelphys), submucous myomas and intrauterine adhesions. HSG also may reveal endometrial polyps, SHG is a more sensitive method for their detection. A slow injection of contrast medium helps to minimize the risk that a cavitory lesion will be obscured and go undetected.

-The two anomalies cannot be differentiated by HSG alone; additional evaluation is required to establish an accurate diagnosis :septate and bicorn (standard or three-dimensional ultrasonography ,SHG, magnetic resonance imaging [MRI], or laparoscopy)

## ***TVS and Saline SHG***

The accuracy of **saline SHG** exceeds that of **HSG**, by revealing both the double uterine cavity and the shape of the fundal contour.

**3Dultrasonograph** :a coronal view and providing accurate and information about external and internal contours of the uterus. 100% specificity and sensitivity for diagnosing congenital uterine anomalies and its concordance with specificity and sensitivity of laparoscopy and hysteroscopy.

# Hysteroscopy

- Hysteroscopy is the gold standard method for both diagnosis and treatment of intrauterine pathology
- hysteroscopy was reserved for treatment of disease identified by other less invasive methods.
- Septate uterus :reproductive failure and obstetrical complications.
- consider pre-emptive surgical correction of a septate uterus, especially in women over age 35, women with infertility of long duration, women with other indications for surgical treatment, and women who require IVF or other treatments associated with increased risk of multifetal gestation and pregnancy loss.

# Uterine Myomas

-Displacement of the cervix, decreasing exposure to sperm  
Enlargement or deformity of the uterine cavity, interfering with sperm transport  
Obstruction of the interstitial segment of the fallopian tubes  
Distorted adnexal anatomy, interfering with ovum capture  
Distortion of the uterine cavity or increased or abnormal myometrial contractions, inhibiting sperm or embryo transport  
Impaired uterine blood flow, chronic endometritis, or decreased endometrial receptivity, interfering with implantation.

-submucous myomas reduce IVF success rates by approximately 70% and intramural myomas by approximately 20-40%, and sub serosal myomas have no adverse impact on outcomes.

-consider not only the size, number, and location of myomas and the risks and benefits of the procedure but also age, duration of infertility, ovarian reserve, other infertility factors, and the treatments they require.

## **Intrauterine Adhesions:**

-Hysteroscopy is the method of choice for treatment of intrauterine adhesions and is both safer and more effective than blind curettage.

-estrogens is 2-6-mg estradiol daily for 4 weeks, adding a progestin (medroxyprogesterone acetate 10 mg daily) during the last week

## **Endometrial Polyps:**

-polypectomy may improve reproductive performance in infertile women. Treatment must be individualized, depending on the size of a polyp, associated symptoms, and circumstances leading to its discovery.

## **Chronic Endometritis:**

-Mucopurulent cervicitis is highly associated with chlamydia (*Chlamydia trachomatis*) and mycoplasma (*Mycoplasma*) infection, and both organisms, in turn, are associated with chronic endometritis, which likely plays a role in the pathogenesis of tubal factor infertility.

## TUBAL FACTOR: TUBAL OCCLUSION AND ADNEXAL ADHESIONS

- A history of pelvic inflammatory disease (PID), septic abortion, ruptured appendix, tubal surgery, or ectopic pregnancy strongly suggests the possibility of tubal damage.
- HSG and laparoscopy are the two classic methods for evaluation of tubal patency
- proximal tubal obstruction is essentially an all-or-none phenomenon, distal tubal occlusive disease exhibits a spectrum ranging from mild (fimbria agglutination) to moderate (varying degrees of fimbria phimosis) to severe (complete obstruction).

## Hysterosalpingography:

- doxycycline 100 mg twice daily for 5 days, beginning 1-2 days before HSG

- Usually, only three basic films are required (a scout, one film to document the uterine contours and tubal patency, and a post evaluation film to detect any areas of contrast loculation).

- Contrast can be introduced using a common metal “acorn” cannula, a cervical vacuum cup device, or a balloon catheter. the latter techniques require less fluoroscopic time and smaller volumes of contrast, produce less pain, and are easier to perform. Slow injection of contrast (typically 3-10 mL) helps to minimize the discomfort.

**False positive** : cornual spasm transiently; catheter placement allowing contrast to take the path of least resistance is the more common cause

-Peritubular adhesions surrounding an otherwise normal and patent tube can sequester contrast as it escapes from the tube, resulting in a focal loculation that can be misinterpreted as distal obstruction.

**False negative:** contrast entering a widely dilated hydrosalpinx is diluted to yield a blush that is misinterpreted as evidence of tubal patency.

when HSG reveals obstruction :high probability (approximately 60%) that the tube is open, but when HSG demonstrates patency, there is little chance the tube is actually occluded (approximately 5%).

# Laparoscopy

-definitive test for the evaluation of tubal

-Examination :the anterior and posterior cul-de-sacs, the ovarian surfaces and fossae, and the fallopian tubes. -Injection of a dilute blue permits evaluation of tubal patency

-**panoramic view** of the pelvic reproductive anatomy and a **magnified view** of the uterine, ovarian, tubal, and peritoneal surfaces. identify milder degrees of distal tubal occlusive disease (fimbria agglutination, phimosis), pelvic or adnexal adhesions, endometriosis. treat disease: Lysis of filmy or focal adhesions and excision or ablation of superficial endometriosis

**SHG IN TUBAL DISEASE** : having greater sensitivity than HSG for detection of intrauterine pathology. has been viewed as a means to evaluate tubal patency at the same time, much like HSG.

relied on observations of fluid accumulation in the cul-de-sac as an indication of tubal patency

### **Chlamydia Antibody Tests:**

- chlamydia antibody tests can be as accurate as HSG or even laparoscopy
- chlamydia antibody tests might be used to select patients likely to benefit most from laparoscopy
- effective if limited to women with unexplained infertility (including a normal HSG), identifying those most likely to have undetected tubal factors

## Tubal Surgery in the Era of ART

- The decision between surgery and IVF should be based on:
- age of woman
- Ovarian reserve
- Prior fertility status
- Number of children
- desired Site and extent of tubal
- damage Presence or absence of other factors
- IVF Surgeon experience
- rate of IVF program
- Patient preference

Younger women, women with normal/high ovarian reserve, proven fertility, desiring multiple children will comprise more appropriate **candidates** for surgical repair.

## Sterilization Reversal

- new relationships, changes in family planning, death of a child. common in younger women, unaware contraceptive options, decision for sterilization was influenced by a third party (partner, other family member, friend, or physician), sterilized postpartum or after an abortion.
- important prognostic factor sterilization reversal is age. The type and location of procedure and the final length of the repaired fallopian tubes.
- Younger women, those whose sterilization was performed using rings and clips, and women having no other infertility factors have the best prognosis; success rates are lower for older women, sterilized by cautery (particularly multiple burn techniques), and women with other infertility factors.

## Distal Tubal Obstruction:

- In younger women with mild distal tubal occlusive disease, laparoscopic surgery may be viewed, when disease is severe or pregnancy does not occur during the first postoperative year, IVF is the logical choice.
- 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.

## Proximal Tubal Obstruction

- -10-25% of all tubal obstructions observed with HSG: Mucus plugs, cellular debris, or utero tubal spasm can cause pseudo proximal obstruction.
- Efforts to establish a certain diagnosis of true proximal tubal occlusion are justified.
- 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%).

## Treatment of UNEXPLAINED INFERTILITY

- clomiphene and IUI**: is significantly higher than can be expected in couples with unexplained infertility receiving no treatment
- gonadotropins and IUI** :should be considered for couples who fail to conceive during treatment with clomiphene and IUI and when clomiphene treatment fails to stimulate multiple follicular development, especially when IVF is not a viable option; gonadotropins and IUI could also be utilized as the first alternative .
- IVF**: is clearly the most effective treatment for couples with unexplained infertility, regardless whether it is the first or the last treat

***THANK YOU  
FOR  
ATTENTION***