Infertility

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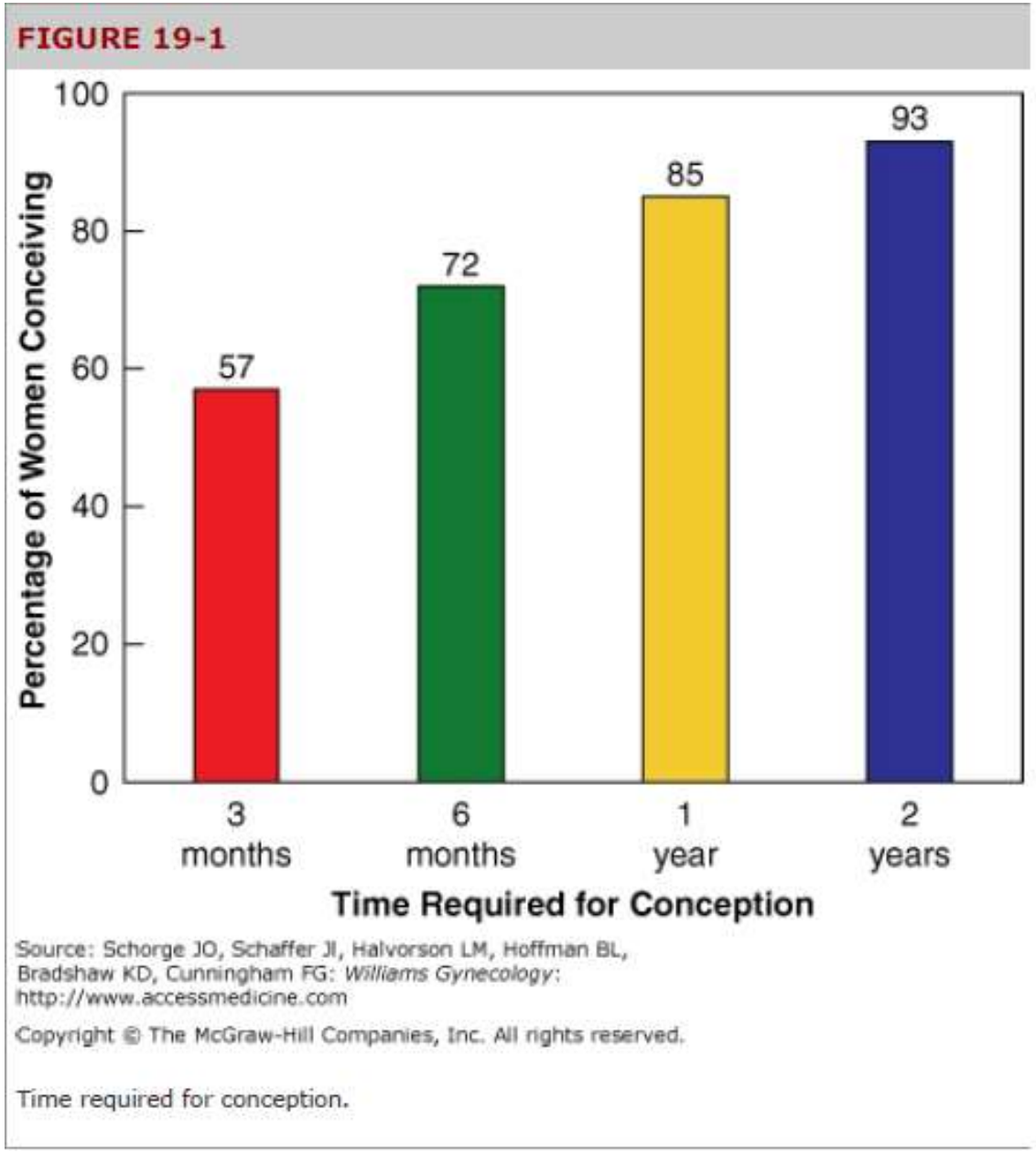
Definitions

Infertility is defined as the inability to conceive after one year of unprotected coitus. Affects 10-15% of couples

Primary Infertility , that is inability to conceive at all

Secondary Infertility , referring to infertility following at least one prior conception irrespective of the outcome of that conception

Fecundability is the ability to conceive in a single cycle



infertility is a common condition, affecting 10 to 15 percent of reproductive-aged couples. Most couples are more correctly considered to be *subfertile,* rather than infertile, as they will ultimately conceive if given enough time

Chances of conception without treatment.

3months- 15%

6 months - 72%

1 year - 85%

2 years - 93%

Etiology:

Female factor (alone): 40–50%

Male factor (alone): 20%

Combination female + male: 30–40%

Unexplained: 10–25%

Evaluation of the female partner

HISTORY

1. General:

- Age of patient
- Duration of Infertility
- Frequency of Coitus
- Obstetric History
- Prior Contraceptive Use

2.GYNECOLOGIC

- Menstrual History
- History Of Recurrent Ovarian Cysts
- Endometriosis, Leiomyomas
- Sexually Transmitted Diseases or Pelvic Inflammatory Disease

3. MEDICAL

- Hyperprolactinemia,
- Thyroid Disease.
- Symptoms Of Androgen Excess
- (Acne Or Hirsutism) May Point To The Presence Of Polycystic Ovarian Syndrome
- Prior Chemotherapy Or Pelvic Irradiation For Ovarian Failure

4. Surgical

History of previous surgeries to rule out pelvic adhesive disease or tubal obstruction

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5. Others

- Normal BMI
- Cigarette Smoking
- Alcohol 5 To 8 Drinks Per Week, Caffeine Consumption Has Also Been Linked To Decreased Fecundability, More Than 250 Mg Of Caffeine Daily, Illicit Drugs

PHYSICAL EXAMINATION

- Vital signs, height, and weight should be recorded.
- Hirsutism, alopecia, or acne indicates Androgen excess
- Acanthosis nigricans - Indicates Insulin resistance, Obesity, PCOS, Less commonly Cushings
- Thyroid abnormalities
- Breast examination should be normal
- Look for evidence of cardiovascular disease

Pelvic examination-

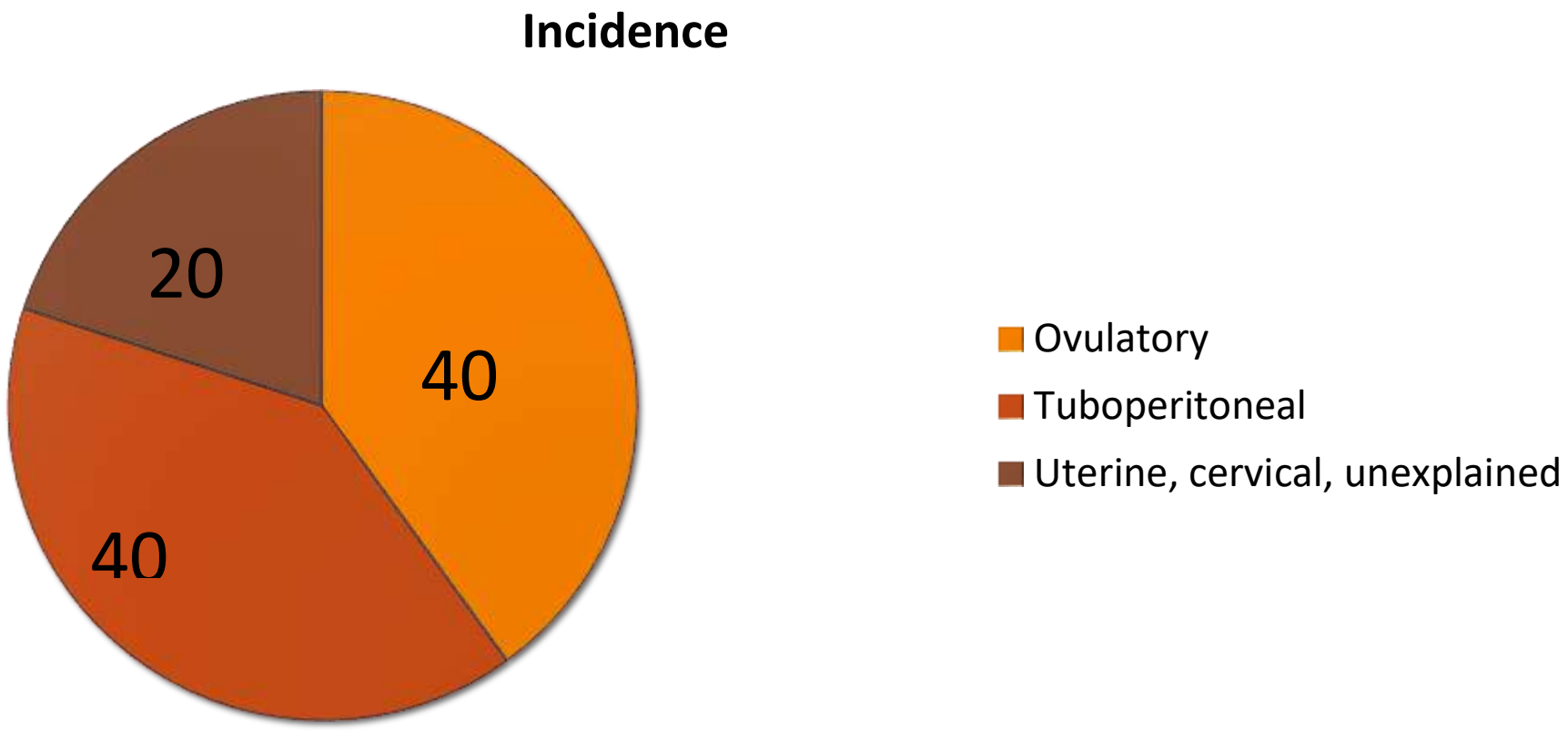
Should be able to pass the speculum through introitus, Adequate cervical mucus.

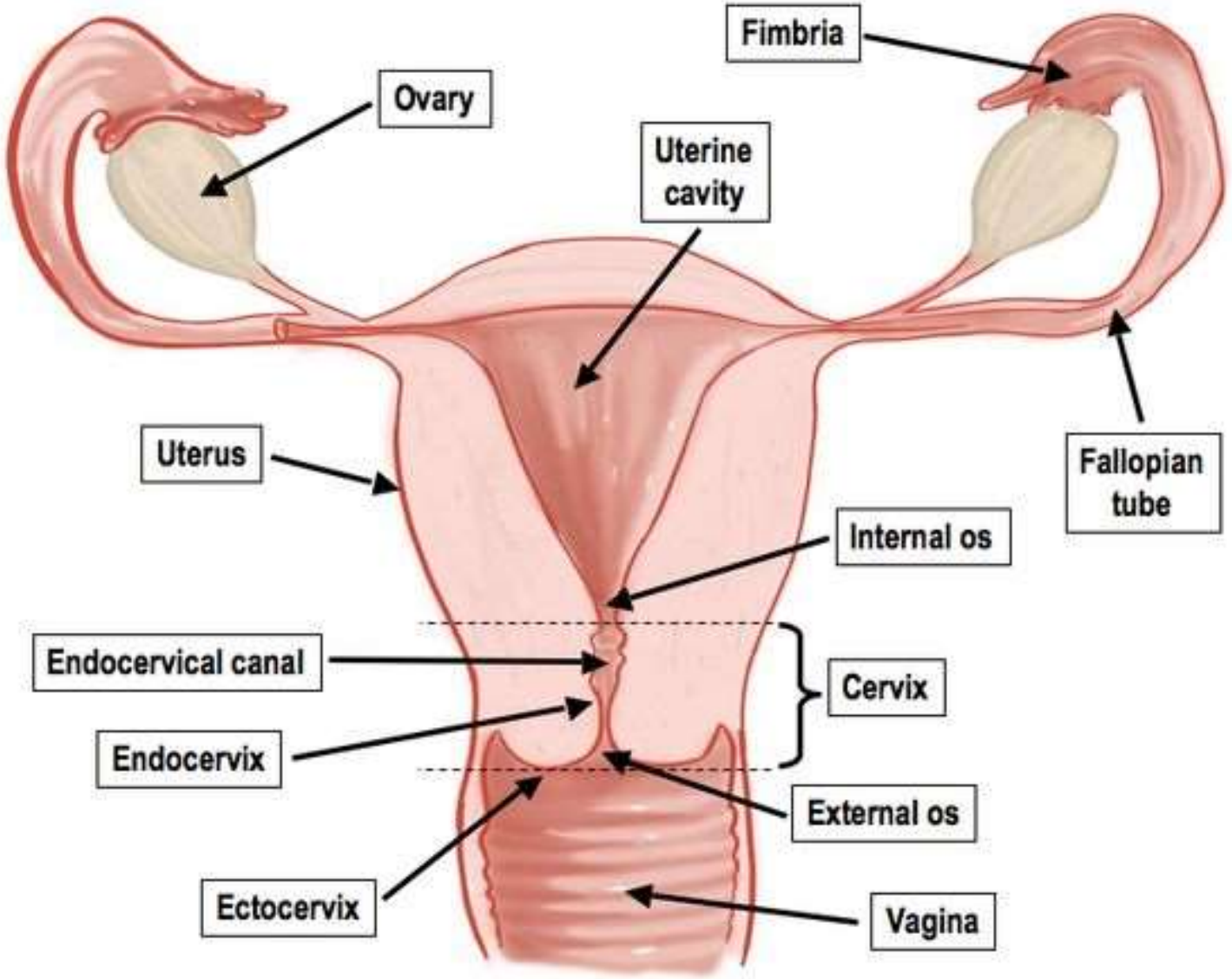
Bimanual examination-Uterus position -look for Ovarian / uterine mass

Cervical tenderness

Pap smear for screening

Culture if infection with Chlamydia and Neisseria suspected


Incidence
20
40
40
Ovulatory
Tuboperitoneal
Uterine, cervical, unexplained



Anatomy of female genital tract

Primary Infertility

1. **Ovulatory dysfunction**: 30-40% cases of female infertility

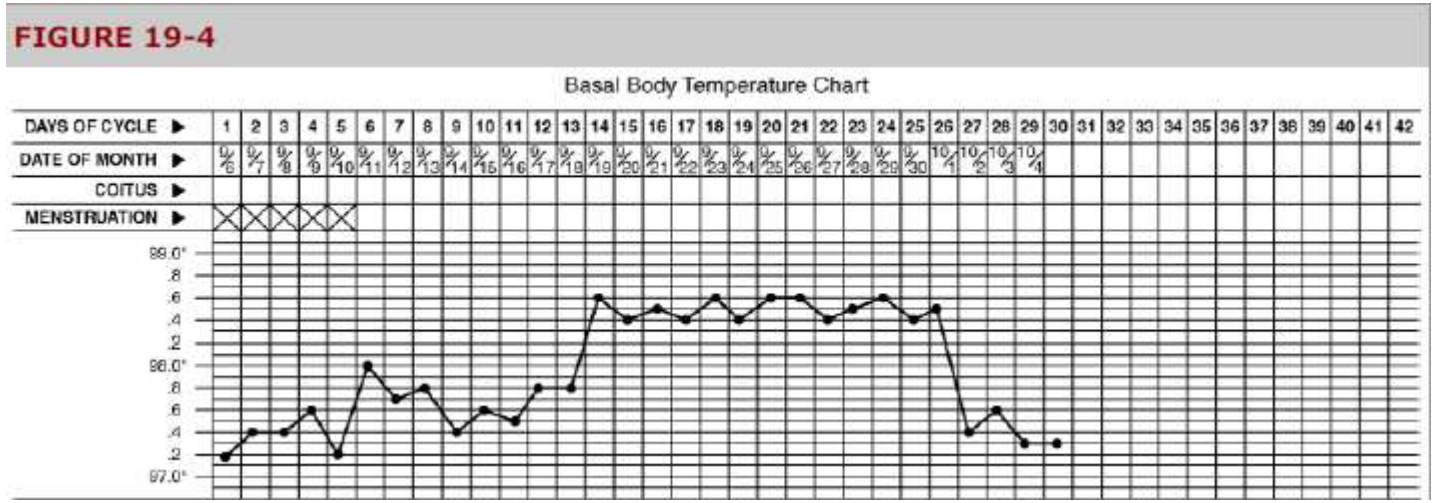
Causes:

- PCOS
- HPO axis dysfunction: Hypothalamic amenorrhoea, Hyperprolactinaemia and other endocrinopathies, Hypogonadotrophic hypogonadism
- Ovarian failure
- Decreased ovarian reserve

Documentation of Ovulation

Clinical methods: Ovulation pain (mittelschmerz), mid cycle spotting, copious and watery cervical mucus

Basal body temperature:



Calendar Method

Midluteal Serum Progesterone: In women with normal cycles- permormed on day 21-23 of a 28-day cycle to coincide with peak progesterone production. In oligomenorrheic women- repeated weekly from day 21 till menses. >10ng/mL indicative of ovulation and adequate luteal phase

Urinary LH kits are available OTC which detect the mid-cycle surge in LH in urine. Peak occurs 8-20 hrs before ovulation. Detectable for only 2 hours so do twice daily sampling

Ultrasound monitoring:

- Visualise the dominant follicle and monitor it until ovulation takes place: size of follicle decreases and fluid appears in the cul de sac and occurs when size-17-25cm
- Endometrium just prior to ovulation has a trilaminar appearance due to the effect of oestrogen.
- Inconvenient method and is used mainly in ovulation induction

Trilaminar appearance of endometrium consistent with late follicular phase

Management of Ovulatory Dysfunction

1. **PCOS:** accounts for 90% cases of oligomenorrhea and

30% cases of amenorrhea

Lifestyle modification: weight loss, healthy diet

Ovulation induction:

- ***Clomiphene citrate* (SERM)**. Ovulation rates 80%

Dosage: 50 mg daily for 5 days from day 2-5 of the cycle. Can be stepped up to 100, 150 mg daily if ovulation doesn't occur.

Once ovulation occurs continue this does for 6 cycles

USG monitoring can commence after 5 days of last dose of clomiphene

If ovulation does not occur after 3 cycles, switch over to another drug.

Side effects: Hot flushes, visual symptoms, headaches, breast tenderness, abdominal bloating, persistence of cysts, ovarian hyperstimulation, multiple pregnancy

❖*Aromatase inhibitors: Letrozole*. Effective in clomiphene resitant patients

MOA: blocks aromatase enzyme->suppresses oestrogen synthesis->low oestrogen levels->pituitary release of FSH and folliculogenesis

Advantages of clomiphene: short half life so hypooestrogenic effects do not extend into luteal phase. No depletion of oestrogen receptors so endometrial response is better

Dosage: 2.5-5 mg daily from day 3 onwards, for 5 days

❖ *Gonadotrophins*:

In women with PCOS who might respond to clomiphene and letrozole.

Preparations: HMG=FSH+LH, pure FSH, recombinant FSH.

Careful ultrasound monitoring required.

Rates of multiple pregnancy and miscarriage high

- *Laparoscopic ovarian diathermy*

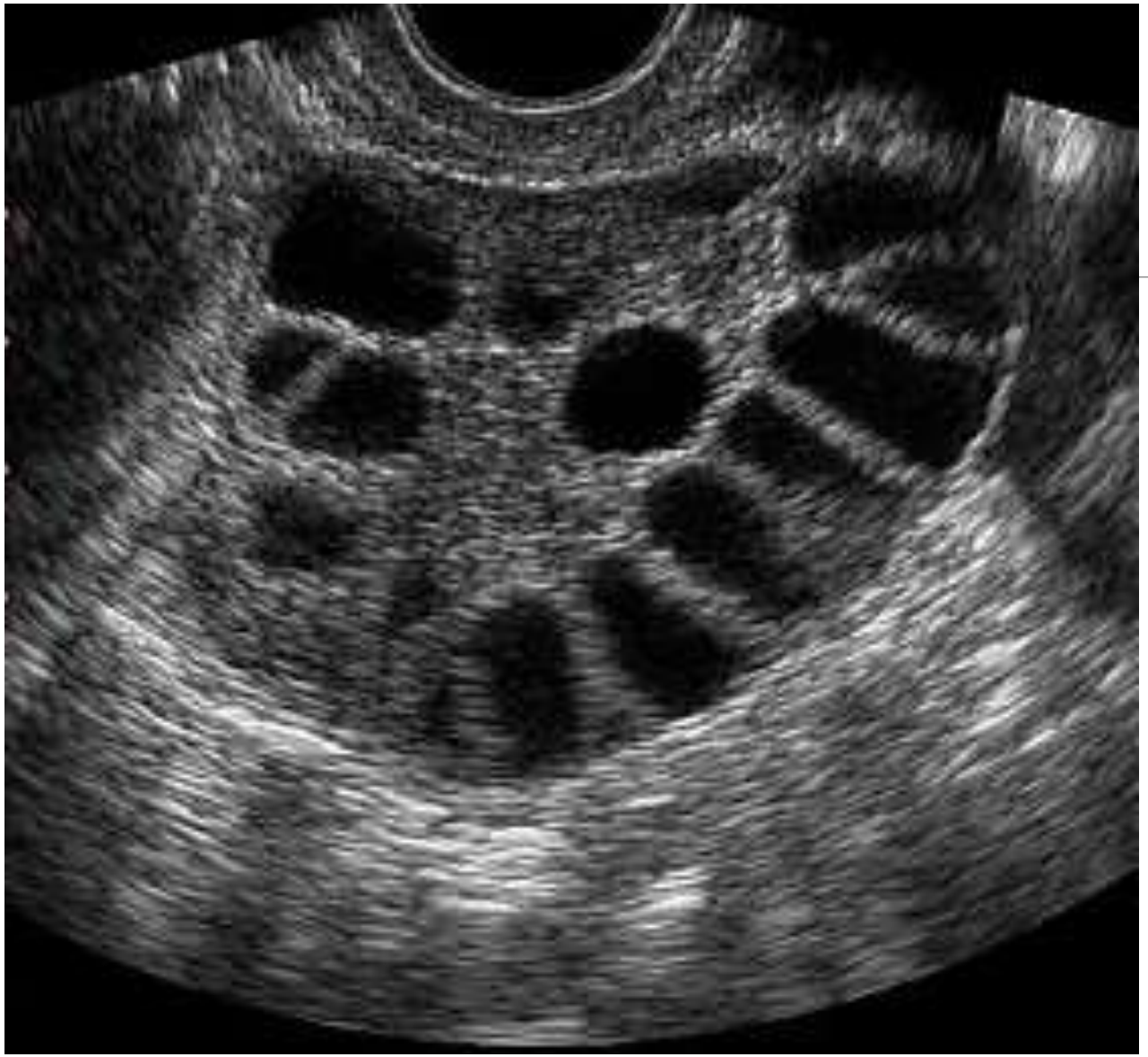
Surgical method of choice

Higher rates of ovulation with less resistance to ovulation-inducing agents

Less rates of miscarriage, multiple pregnancy and OHSS since it's a one-step procedure

Disadvantages- invasive, risk of surgically induced premature menopause and periadnexal adhesions

- *In vitro fertilisation*: Final stage in management of PCOS



Ultrasound picture of PCOS

2. **Hyperprolactinemia**

Cause of anovulatory infertility

Dopamine agonists used to counter this: **bromocriptine dose:2.5mg** slowly stepped upto 15mg daily, SE:postural hypotension; cabergoline:05mg tablets, given twice weekly

3. **Hypothyroidism**: Thyroxine. Once euthyroid normal ovulation will commence

4. **Hypogonadotrophic amenorrhoea**: Low levels of FSH and LH due to hypothalamic or pituitary dysfunction. Ovulation induction with pulsatile GnRH therapy or gonadotrophins

5. **Hypergonadotrophic amenorrhoea**: Have no oocytes and are candidates for ovum donation and IVF

6. **Hypothalamic amenorrhoea**: low BMI in anorexia nervosa and malnutrition therefore nutritional rehabilitation required

Complications of ovarian induction: Ovarian hyperstimulation syndrome, Multiple pregnancy

Fig. 11.2 USS appearance of hyperstimulated ovaries

2. Uterine Factor Infertility

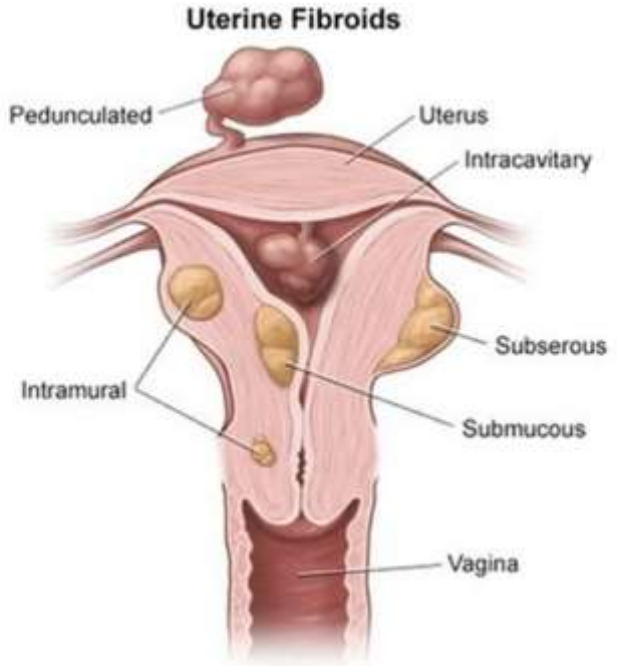
Causes:

Submucous fibroids

Endometrial polyps

Congenital uterine anomalies

Intrauterine synechiae (Asherman syndrome)



Evaluation of Uterine Cavity

- **Hysterosalpingography**
  - Submucous fibroids seen as filling defects
  - Intrauterine synechiae appear as irregular filling defects
  - Bicornuate and septate uterus will show two separate horns
- **Transvaginal sonography and sonohysterography**
  - TVS: assessing pelvis and uterine cavity
  - Sonohysterography good for picking up small polyps and fibroids

Filling defect due to
submucous fibroid on HSG

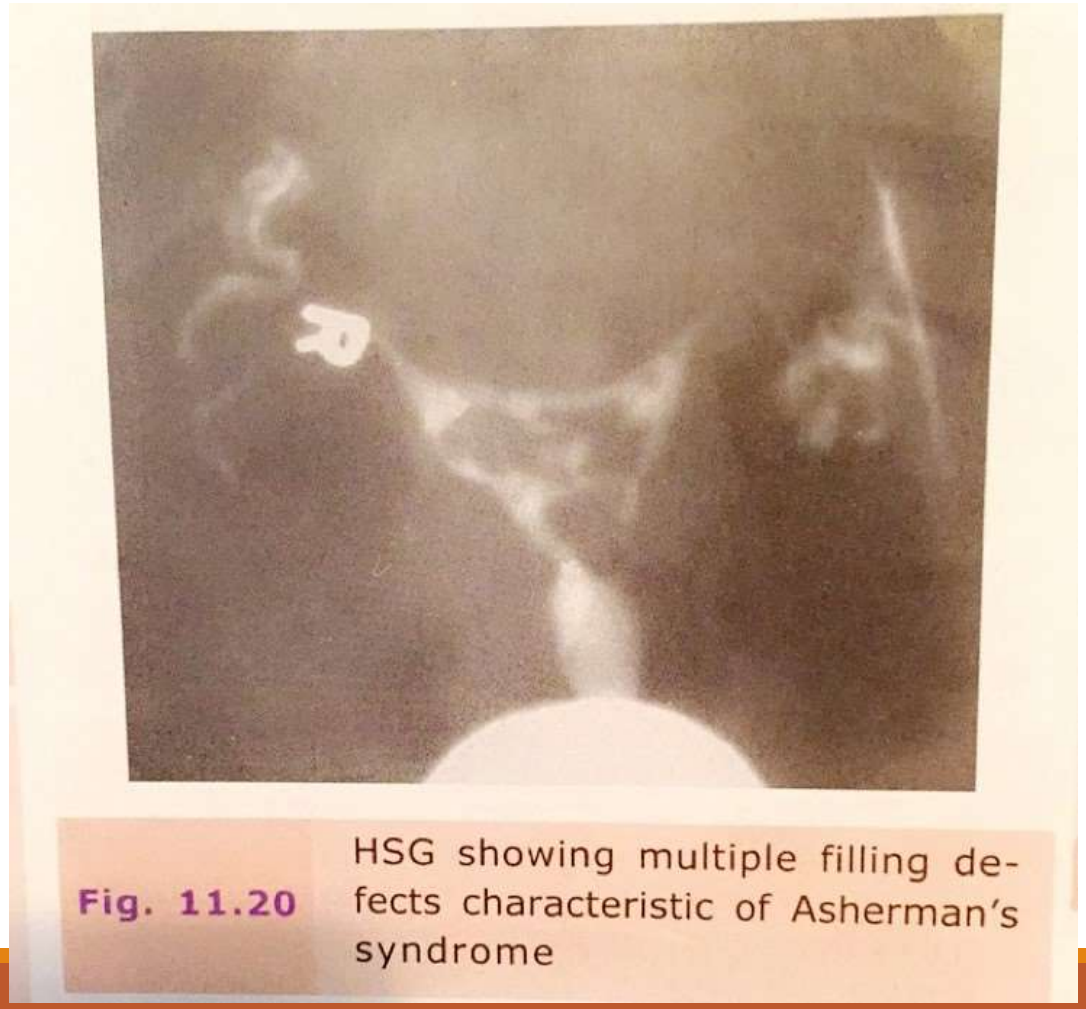


Fig. 11.20 HSG showing multiple filling defects characteristic of Asherman's syndrome

- **3-D ultrasound**: very accurate
- **Hysteroscopy**
  - Gold standard to assess endometrial cavity
  - Best performed in early proliferative phase
  - CO_2 and liquid distension media can be used to visualise the uterine cavity and tubal ostia
  - Polyps, submucous fibroids, intrauterine synechiae can be diagnosed and treated in the same sitting

Management

Hysteroscopy

- Endometrial polyps
- Large and submucous fibroid
- Lysing of intrauterine synechiae
- Uterine anomalies with recurrent miscarriage: hysteroscopic septal resection under laparoscopic guidance

Laparoscopy or laparotomy

THANK YOU