Basic investigation and treatment of the infertile couple

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Infertility is defined as inability to conceive after one year of regular unprotected sexual intercourse.

1 in 6 couples find difficulty in conceiving in the first year of trying.

Half of them (8%) will subsequently conceive without the need for specialist advice and treatment.

It is divided into primary and secondary.
In normal, young couples the chances of conception after 1 month of unprotected intercourse is 25%.

- 70% by 6 months,
- 90% by 1 year.
- Only an additional 5% will conceive after waiting an additional 6 to 12 months.
<table>
<thead>
<tr>
<th>Condition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menstrual disorder</td>
<td>40</td>
</tr>
<tr>
<td>Infertility</td>
<td>32</td>
</tr>
<tr>
<td>Pelvic pain</td>
<td>8</td>
</tr>
<tr>
<td>Urinary symps and prolapse</td>
<td>5</td>
</tr>
<tr>
<td>Vaginal discharge</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>7</td>
</tr>
</tbody>
</table>
Causes of infertility

- Female factor
- Male factor
- Combined
Causes of infertility/ Female factor

- Ovulation dysfunction
- Tubal factor
- Cervical factor
- Endometriosis
- Others
Causes of infertility

- Male factor: 50
- Ovulatory: 20
- Unexplained: 10
- Tubal: 5
History taking in an infertile couple

- Duration of infertility
- Nature of infertility (primary or secondary)
History talking / male

- Evidence of previous fertility with past partners
- Previous investigations or treatment for infertility
- Past Hx infections epidydimitis or mumps orchiditis
- Testicular maldescent and orchidopexy
- Chronic disease or medication
- Testicular torsion
- Testicular injury
- Occupational Exposure to toxins
- Impotence, premature or retrograde ejaculation
History taking/Female

- Fertility in previous relationships
- Previous fertility investigations or treatments
- Length and type of previous contraceptive use
- Menstrual history
  - Amenorrhoae
  - Dysmenorrhoae
  - Heavy menstrual bleeding
  - Intermenstrual bleeding
- Obstetric history: Miscarriage, ectopic pregnancy, C/S, endometritis
History taking/ Female partner

- Chronic illnesses (diabetes, hypertension, renal)
- Previous STD’s, Pelvic infection e.g. Chlamydia
- Galactorrhoea
- Tubal surgery including salpingectomy and salpingostomy
- Ovarian surgery, Cystectomy
- Pelvic surgery for endometriosis
- Appendicectomy and other abdomino-pelvic surgery
- Sexual history Coital frequency and timing
Investigations
Of the male partner
Semen analysis remains the most commonly performed.

Samples should be collected after a period of 2–7 days of abstinence.

Standard semen analysis has a sensitivity of 89.6%, that is, it is able to detect 9 out of 10 men with a genuine problem.

Specificity 10% : ie 10% men with abnormal tests can achieve pregnancy normally.

Repeating the test reduces this chance to 2%.

A minimum of two samples 4 weeks apart should be analyzed.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>WHO 1999</th>
<th>WHO 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>2 ml</td>
<td>1.5 ml</td>
</tr>
<tr>
<td>Concentration</td>
<td>20 million/ml</td>
<td>15 million/ml</td>
</tr>
<tr>
<td>Progressive motility</td>
<td>50%</td>
<td>32%</td>
</tr>
<tr>
<td>Normal forms</td>
<td>14%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Semen analysis terminology

- **Normozoospermia**: All semen parameters normal

- **Oligozoospermia**: Reduced sperm numbers
  - Mild to moderate: 5-20 million/ml of semen
  - Severe: < 5 million/ml of semen

- **Asthenozoospermia**: Reduced sperm motility

- **Teratozoospermia**: Increased abnormal forms of sperm
Semen analysis terminology

- **Oligoasthenotateratozoospermia**: Sperm variables all subnormal
- **Azoospermia**: No sperm in semen
- **Aspermia (anejaculation)**: No ejaculate (ejaculation failure)
- **Leucocytospermia**: Increased white cells in semen
- **Necrozoospermia**: All sperm are non-viable or non-motile
Sperm Morphology

- Sperm count (number of sperm per cc)
- Motility (percentage of sperm moving)
- Sperm morphology

Normal Oval Form

Abnormal Sperm
Investigations
Of the female partner
Investigation of female

- Ovulation
- Tubal patency
A regular menstrual cycle is suggestive of ovulation.

Other symptoms may be suggestive
Confirming ovulation

- Mid luteal progesterone level more than 30 nmol/l
- Ultrasound Follicle tracking
- Spottting the LH surge
- Biphasic early morning temp chart
- Endometrial biopsy
• There is no justification for routine assessment of FSH, LH, prolactin and thyroid function in ovulatory women.
Assessment of anovulation

- Baseline (day 1–3 FSH, LH, Serum prolactin)
- Normal FSH/LH: BMI

  (PCOS) - ultra sound scan of ovaries
  - Serum androgens, SHBG
  - rarely DHEA, DHEAS, 17–OH
  - progesterone

Raised FSH/LH: Karyotype (Ovarian failure)
  autoantibody

- Low FSH/LH
  BMI (Hypog Hypog)
  Pituitary imaging

- High Prolactin
  Pituitary imaging
Polycystic ovarian syndrome

- Polycystic ovarian syndrome is a heterogeneous collection of signs and symptoms
- It has a spectrum from mild presentation to severe disturbance (Stein leventhal syndrome) of the following:
  - Menstrual irregularity
  - Anovulation
  - Hyperandrogenism
PCOS defined as the presence of 2 out of 3 of the following:
- Oligo or anovulation
- Hyperandrogenism (clinical or biochemical)
- Polycystic ovaries

after exclusion of other causes (Late onset CAH, cushing syndrome, etc)
PCOS/Ultrasound
Adams criteria

- > 12 follicles in one plane
- Size 2-9 mm
- Dense stroma
- Ovarian volume > 10ml or ovarian area > 5.5 cm square
Clinical presentation

Women with polycystic ovaries may experience a range of clinical and biochemical features that define PCOS:

- Menstrual and ovulatory disturbance
- Hirsutism
- Acne
- Recurrent early miscarriage
- Obesity
- LH levels ↑
- Testosterone and androstenedione levels ↑
### Table 45.3 Classification of disorders of ovulation

- **Hypogonadotrophic (WHO type I)**
  - Central Low FSH*
  - Hypo-oestrogenic
  - Normal prolactin
  - Low oestradiol

- **Normogonadotrophic (WHO type II)**
  - Normal FSH
  - Normo-oestrogenic Ovarian axis Normal oestradiol
  - Normoprolactinaemic Normal prolactin

- **Hypergonadotrophic (WHO type III)**
  - Ovarian failure High FSH
  - Low oestradiol
  - Normal prolactin

- **Hyperprolactinaemic**
  - Central Low FSH
  - Low oestradiol
  - High prolactin
Tubal patency testing

- Hysterosalpingogram
- Diagnostic laparascopy and dye test (Lap & Dye)
- Fertiloscopy
- Hystero contrast Sonography (HyCosy)
METHYLENE BLUE PATENCY TEST

TUBAL AMPULLA

PATENCY TEST
Treatment options for subfertile men

- **What doesn’t work**
  - Abstaining from coitus until ovulation
  - Treatment with gonadotrophin injections, androgens (mesterolone) or antioestrogens (clomifene or tamoxifen)
- **Stopping adverse drugs and drug misuse**
  - Sulfasalazine
  - Anabolic steroids
- **Timing and lifestyle changes**
  - Transient oligozoospermia
  - Incidence of spontaneous conception each month is 1-2%
- **Treating accessory gland infection**
  - Semen cultures are rarely useful
  - Empirical Antibiotics
  - Antioxidants (vitamins C and E)
Infertility treatment/Male

- Mild male factor **IUI**
- Severe male factor: **IVF /ICSI**
- Azoospermia: Obstructive azoospermia: surgery or **MESA, PESA, TESA, TESE**
- Non-obstructive azoospermia : Surgical sperm retrieval
- Ejaculatory failure: Drug, sperm recovery
- Hypothalamic hypogonadism: Gonadotrophins
Infertility treatment/Ovulatory disorder

- **WHO type I**
  - Pulsatile GnRHa
  - Gonadotrophins

- **WHO type II**
  - Clomifene or tamoxifen
  - Metformin
  - Gonadotrophins
  - Ovarian drilling

- **WHO type III**
  - Ovarian failure
  - Oocyte donation

- **Hyperprolactinaemia**
  - Bromocriptine
  - Cabergoline
Clomifene citrate is an orally active synthetic non-steroidal compound with oestrogenic as well as anti-oestrogenic properties. It has traditionally been the treatment of choice in women with anovulatory PCOS. It is administered in an initial daily dose of 50 mg on days 2–6 of menstrual cycle. The dose can be increased by 50 mg per day till ovulation is achieved, up to a maximum of 150 mg per day. Couples are advised to have intercourse every other day from day 9 of the cycle for.
Clomifene citrate

- A course of 6 to 12 cycles can be used in women who respond to the drug.

- It is necessary to monitor follicular response, at least in the first cycle of treatment, with TV scans to minimize the risk of multiple pregnancy.

- Mid-luteal progesterone levels are checked in each cycle.
Clomifene citrate

- Ovulation is expected to occur in 80% and pregnancy in 35–40% women on clomifene (Imani et al. 2002).

- *Approximately* 20–25% of women show no response to clomifene citrate and are considered to be resistant.

- Further management includes gonadotrophins and ovarian drilling, **IUI or IVF**
Infertility treatment / tubal

- **Mild:** Tubal surgery
  - Proximal tubal obstruction: tubal cannulation

- **Moderate to severe:** *IVF*
The success of surgical treatment depends on
- the extent of tubal damage,
- age of the woman,
- experience and training of the operator
- availability of suitable equipment.

Surgery has been shown to be effective in minor or moderate tubal damage, but of no benefit to women with severe tubal disease (Akande et al. 2004).

Data from a case series have suggested that pregnancy rates following surgical treatment of proximal occlusion, mild distal block and flimsy adhesions are comparable to those after IVF.
Tubal factor infertility

- However greater access to assisted reproduction in recent years has significantly reduced the role of tubal surgery in these patients
- Tubal surgery has the advantage of reduced risk of ovarian hyperstimulation syndrome and multiple pregnancy
- More than one conception can occur after successful tubal surgery
Treatment of infertility/Endometriosis

- **Minimal**: surgical ablation, SO/IUI
- **Moderate, severe**
  - Surgery
  - IVF
- **Empirical Treatment**
  - clomiphene
  - IUI
  - SO/IUI
Treatment of Unexplained infertility

- **Empirical Treatment**
  - Clomiphene
  - IUI
  - SO/IUI
  - IVF
Subfertility is a common condition affecting couples. Thorough investigations and giving reasonable time for natural conception are required before embarking on complex and expensive treatment. However, cultural factors mean that even a slight delay in conception is associated with a great amount of stress and provoke a series of consultations and treatments.
Thank you