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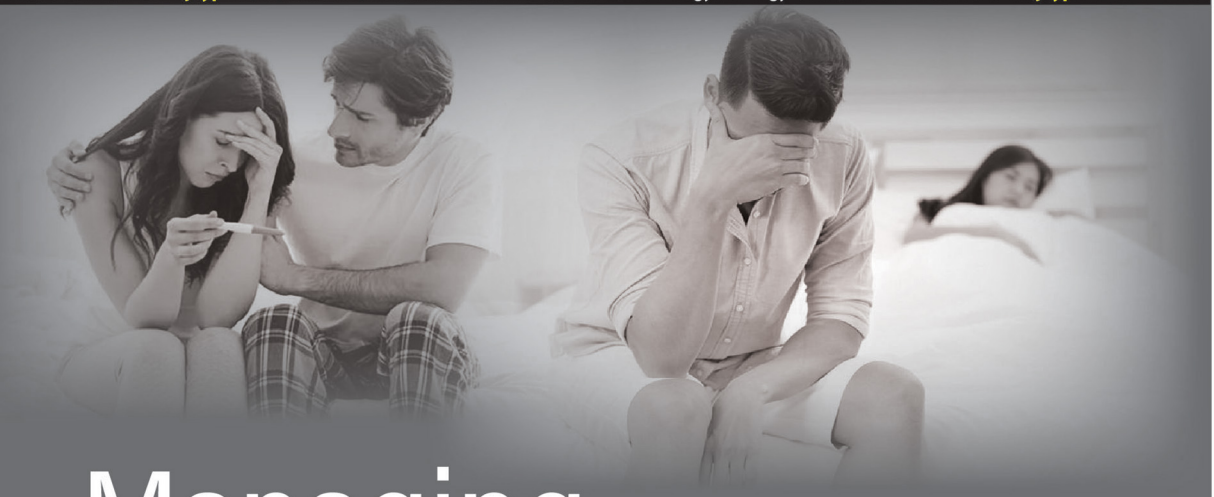

Managing SUBFERTILITY in SAFOG Region



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Foreword
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CHAPTER

4 Causes of Subfertility

INTRODUCTION

Subfertility means the inability of a couple to conceive. In case of a woman, it is the inability to become pregnant; and in case of a man, it is the inability to make a woman pregnant. A healthy couple takes an average of 1 year to achieve a pregnancy. If a couple fails to conceive after 2 years of regular sexual intercourse without contraception (2–3 times/week), they are considered to be subfertile. Statistically, among subfertile couples, 30% are due to a problem with the husband, and 30% are due to a problem with the wife, another 30% due to a problem with both partners, and 10% are unexplained. In some couples even after detailed investigations one may fail to pinpoint a reason for failure to conceive. These couples are considered as a case of *unexplained subfertility*.

There are various causes of subfertility. The cause could be in the male partner or the female partner, or the defect may be in both.

CAUSES OF SUBFERTILITY IN MALE PARTNER

The defect could be due to an inadequate production of sperms (male germ cells, spermatozoa) or in the conducting tubes (vas deferens). Sometimes it is due to the inability of the man to perform sexual intercourse (impotency).

The following are likely defects in male partner:

- Defect in production of sperms (spermatogenesis)
- Obstruction in the passages (vas deferens)
- Failure to deposit semen in the front passage (vagina).

Defect in Production of Sperms (Spermatogenesis)

The defect in testes may be so gross that sperms are not produced at all. In such cases the semen does not have any sperms. Doctors call it azoospermia.

On the other hand, defects may be that sperms produced are either in small numbers (oligospermia), or defective in their movements (asthenospermia) or in their form (morphology).

The common causes are:

- *Chromosomal defects*: In such cases, either the testes are not developed or they are underdeveloped. Usually such cases have azoospermia. The common chromosomal defect seen in males is that, men are tall, but eunuchoid type. They have one extra female chromosome (47, XXY) (Klinefelter syndrome).

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- *Undescended testes*: The testes fail to descend. In the early stages of the development of a male child inside the womb of the mother, the testes are located inside his abdomen. Gradually they move downward and eventually, come out of the abdomen to lie inside the scrotum. *This descent is essential for the production of sperms*. If for any reason, testes do not descend out of the abdomen due to the heat inside, they do not produce sperms but they can still produce male hormones. In such males, they have all the masculine features, but no sperms in their semen. It is detected at birth that the child has undescended testes and if this defect is corrected during early childhood (1–2 years), then production of sperms may initiate. If this operation is performed later in life, then damage is permanent. The production of sperms will not initiate after late surgery and it will not help fertility, but may save the man from development of serious complications later in life (cancer of testes).
- *Damage to testes*: The testes may be damaged due to the following:
  - *Injury or accidents*: Direct trauma to testes may cause functional damage.
  - *Infection*: In 20–40% cases, *mumps* can cause an infection of the testes, thereby causing permanent damage. It shows importance of vaccination in newborn babies as a preventive measure.
  - Tuberculosis and syphilis can sometimes damage testes.
  - *Surgery*: Any operation on testes, scrotum, or groin can cause damage to the testes. Since the blood supply to the testes is through the groin, it is important that during an operation for hernia the surgeon must ensure that the blood supply to the testes is not compromised. A reduced blood supply can damage the testes.
  - *X-rays*: Prolonged exposure to irradiation (accidentally or for treatment), suppresses sperm production.
  - *Chemotherapy*: The drugs used for chemotherapy for cancer are very toxic to the testes. They usually damage sperm production in the testes. Those men who need chemotherapy, and have a desire to conserve their fertility, need to deposit a large number of spermatozoa in the *cryopreservation bank* (special deep freezer, with very low temperatures). Cryopreservation can save sperms for many years. When there is need, these sperms can be brought out, thawed and used for fertility purposes, usually in in vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI) (test tube baby).
  - Tumors of the testes can cause damage to sperm production in testes.
  - *Suppression of sperm production in healthy testes*: Sperm production may be suppressed under the following circumstances:
    - Local diseases of scrotum (*hydrocele, varicocele*)
    - Hot climate and repeated hot baths
    - Any acute or chronic illness

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- Drugs, especially anticancer drugs
- Other hormonal defects in the body
- Excessive smoking and drinking of alcohol
- Deficiency of essential nutritional elements
- Toxic environment.

Obstruction in the Passages

Obstruction in the tubes (vas deferens) on both sides causes absence of sperms in the semen (azoospermia).

The causes of obstruction are:

- *Congenital*: During development of the child in mother's womb the tubes develop defectively and remain closed.
- *Infections*: Gonococcal infection of the tubes cause blockage on both sides. Sometimes *tuberculosis* or other infections may cause blockage of both tubes.
- *Surgery*: Injury to the tube during repair of hernia in the groin may cause blockage. But blockage of one tube does not cause azoospermia whereas blockage of both tubes, as during vasectomy (operation for family planning), will cause azoospermia.

Failure to Deposit Semen in Vagina

- *Impotence*: The impotency may be temporary or permanent and it may be only for a particular partner. The most common cause of impotency is *psychological*, other causes are uncommon.
- *Malformation of penis*: Particularly in hypospadias, semen is deposited outside the female front passage.
- Noncooperation of female partner (vaginismus).

CAUSES OF SUBFERTILITY IN FEMALE PARTNER

Following are the causes of subfertility in female partner:

- Defect in production of female egg (ovulation)
- Obstruction in the passage
- Hostility of passage to husband's spermatozoa.

Defect in Production of Female Egg (Ovulation)

In the absence of the female egg, pregnancy cannot take place.

Absence of menstruation: Amenorrhea (absence of menstruation) in most of the cases is associated with absence of production of egg. Nevertheless, all cases of absence of menstruation may not include failure of production of egg. It is common to see pregnancy during absence of menses due to breastfeeding (lactation).

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Those women who have either menstrual irregularity or absence of menstruation (amenorrhea) are likely cases of either infrequent ovulation or absence of ovulation. Those who are overweight or grossly underweight are likely to have infrequent ovulation. Sometimes patients take hormonal treatment to regulate their menstrual cycles. Most of these hormonal preparations suppress ovulation. They may regulate menstrual cycles but in the process they inadvertently may be suppressing their ovulation which could be the cause of subfertility.

Obstruction in the Passages

The site of obstruction is mostly in the female tubes. When both tubes are blocked, subfertility occurs. Congenital absence of vagina creates obstruction to the menstrual flow which leads to absence of menstruation and subfertility. In a case of absent uterus, there will be amenorrhea and subfertility.

The common causes of tubal obstruction are as follows:

- *Infection*: Tuberculosis, gonococcal, chlamydial or infection following abortion or after child birth may cause blockage of the female tubes on both sides.
- *Sexually transmitted infections (STI)*: Gonococcal, chlamydia, and bacterial vaginosis (BV).
- *Endometriosis*: This is the condition in which lining of the womb is misplaced and it is present outside the cavity of the womb. It causes multiple problems in women and one of them is subfertility. The mechanism by which the patients with endometriosis and subfertile is not known with clarity but it is presumed that in these patients there is infrequent production of egg and also some interference with the functions of the tubes. Most of the patients suffer from subfertility but they can be helped by modern techniques of ART.
- *Tumors (fibroids)*: They cause subfertility only when they obstruct lumen of both tubes. This is due to mechanical obstruction of the tubes, but it is not common.

Hostility of Passages to Husband's Spermatozoa

In couples who fail to conceive despite the production of healthy sperms and egg, and there is no obstruction in the passage, there is possibility that the secretions of the vagina are hostile to the husband's sperms.

The hostility may be in the vagina, cervix, or womb.

In such a couple, the husband may have healthy sperms in sufficient number, but the wife fails to conceive because sperms are killed during their passage through the neck of the womb. The secretions may interfere with fertility due to *physical or chemical* changes. The secretions may become too thick and interfere physically with the passage of the sperms.

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CAUSES IN FEMALE AND MALE

- Infrequent coitus (sexual intercourse)
- Apareunia
- Painful sexual intercourse

Infrequent Coitus (Sexual Intercourse)

Due to infrequent coitus, the time of production of the egg may be missed in each menstrual cycle. This may be due to a lack of knowledge, or low potency of the husband, social, and professional engagements of the couple.

Erectile Dysfunction

There may be erectile dysfunction (ED) or premature ejaculation (PE).

There could be difficulty in performance of coitus on the part of the male partner. Generally, these difficulties lead to failure of implantation of semen into the vagina. Hence, they need some kind of treatment for these sexual difficulties and for achievement of pregnancy. Physicians can help to overcome these difficulties with psychosexual medical treatment.

Apareunia

The couple may fail to have proper coitus due to sheer ignorance. Sometimes the woman may not relax to allow proper coitus. She may become too tense (vaginismus) and does not allow proper penetration. It may be due to psychological factors, childhood sexual abuse, fear of coitus or due to a local cause.

Painful Sexual Intercourse

In the presence of pelvic infection, endometriosis or any other pelvic disease the coitus may be painful. In such cases semen may not be deposited high up in the front passage of the wife. Sometimes a woman may not relax to allow proper coitus, and complain of pain leading to improper penetration.

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Managing SUBFERTILITY in SAFOG Region

This manual is a basic book to understand Infertility and how to go about in management. Especially written for SAFOG countries in simple language, easy to understand and follow treatment protocols. This book will help students and general practitioners.



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