

TUBAL DISEASE AND MICROSURGERY



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TUBAL PHYSIOLOGY

The fallopian tubes project off each side of the body of the uterus and form the passages through which the egg (ovum) is conducted from the ovary into the uterus. The fallopian tubes are relatively long structures (each approximately 10cms). The outer end of each tube is funnel-shaped, ending in long finger-like processes called *fimbriae*. The fimbriae act as a collection apparatus which ensures that ova are caught and channelled down into the fallopian tube. The fallopian tube itself is a muscular highly movable tubular structure capable of highly coordinated movement. The lining of the tube is folded and lined with microscopic hair-like projections called *cilia*, which are also responsible for the movement of eggs, sperm and embryos. The tubal lining is capable of producing a fluid that can act as a nutritive medium for the egg.

Both the muscular walls and cilia move in such a way as to waft ova progressively along from the ovaries to the uterus. Cells lining the tubes produce substances that alter sperm so that they can fertilise an ovum. Fertilisation also occurs in the fallopian tube, then the embryo continues down the tube towards the uterus.

In summary, the fallopian tubes serve, or assist in, the following functions:

- Sperm transport;
- Sperm capacitation;
- Ovum pick-up;
- Ovum maturation;
- Fertilisation;
- Embryo transport.

TUBAL DISEASE

Tubal abnormalities account for between 25% and 30% of all female infertility problems, and about 60% of all patients on ART (Assisted Reproduction Technology) programmes suffer from tubal damage.

The major cause of tubal damage, other than from elective sterilisation, occurs through pelvic infection. The source of the infection often cannot be traced, however, some of the known causes of pelvic infection are:

- Sexually transmitted diseases (e.g. Gonorrhoea, Chlamydia);
- Infection after childbirth, miscarriage, pregnancy termination or I.U.D.;
- Post-operative pelvic infection (e.g. perforated appendix, ovarian cysts);
- Endometriosis

In addition to tubal blockage, any pelvic inflammatory disease can also produce bands of tissue which link abdominal organs together. These fibrous bands are called adhesions and can substantially alter the functioning of the fallopian tubes. So after pelvic infection, a combination of scarring and adhesion formation may damage the tubes and render the woman infertile.

TREATMENT

The surgeon will have previously assessed the damage and pin-pointed the location of the blockages at procedures such as hysterosalpingogram (H.S.G) and/or laparoscopy, before deciding on treatment alternatives and how to proceed.

The degree of surgical success likely to be achieved (in terms of pregnancy), depends on the severity of the tubal damage. If a previous infectious process has caused scarring of the fallopian tube, the delicate lining of the structure may have been irreversibly damaged. All operations can result in re-establishing patency in a certain percentage of cases but, in order for pregnancy to occur, full physiological functioning of the tubes must also return so that the tube can capture the ovum and succeed in transporting it to the uterus.



SALPINGOLYSIS

This procedure entails division of adhesions surrounding the tubes. Success rates may vary according to the area of damage.

Salpingostomy and Tubal Re-anastomosis These include a variety of procedures which may involve removing the damaged portion of tubes and rejoining the healthy ends of the tube together.

A simple block in the middle-section of the tubes is relatively easy to repair by removing the damaged part then re-anastomosing the healthy ends together.

Sterilisation reversal involves similar techniques. The success rates may vary from 50-80%, depending upon the type of sterilisation technique used, whether other tubal damage has since occurred, and provided the sterilisation was performed no more than five years before reversal. Pregnancy rates for reversal of diathermied tubes, however, are poor.

Damage to the fimbriae, however, can have an extremely poor prognosis. Success rates for fimbrial reconstruction vary up to about 20%, depending upon the extent of damage to the internal lining. Adhesion formation around the ovary and fimbria is often difficult to repair, as the capacity for the fimbria to pick up the ovum may be irreversibly damaged.

PRINCIPLES OF MICROSURGERY

Microsurgery basically entails using fine suture material, careful tissue handling and manipulation under a microscope.

The technique includes:

- Using a microscope—for adequate magnification;
- Avoidance of all unnecessary trauma;
- Employing delicate surgical instruments;
- Employing fine suture (stitching) material;
- Delicate handling of pelvic contents;
- Delicate sponging—no gauze swabbing as this tends to be too abrasive;
- Ensuring the operative area is kept moist;

- Ensuring that no bleeding or clots are left behind—as this predisposes to adhesion formation;
- Ensuring precise suturing;
- Ensuring that all powder is removed from surgical gloves—this too can be abrasive.

The operation may take from 2-4 hours depending on the extent of pelvic damage and whether both sides are affected. The length of stay in hospital is usually from 3-5 days. Sometimes a “check laparoscopy” is performed about 1 week after surgery to see that tubal patency is maintained and to remove any small adhesions that may have started to reform.

There is a risk of ectopic pregnancy (i.e. a pregnancy that occurs outside the uterus—usually in the fallopian tube) following tubal damage and surgery. This is due to damage to the lining, which may cause slow, or even no, movement of the embryo down the tube. Ectopic pregnancy may also be caused by adhesions binding down and kinking the tube, causing the embryo to be trapped and implant in the tube wall.

ASSISTED REPRODUCTIVE TECHNOLOGY

Occasionally the pelvic damage is too extensive, and the surgeon may suggest removal of the badly damaged tube. The couple may then choose to transfer to an ART programme to use IVF etc. The surgeon may also attempt to “tidy up” the pelvic contents prior to ART by making the ovaries more accessible for laparoscopic ovum pick-up. However, this trend seems to be dying out due to the increasing popularity and efficacy of vaginal ultrasound pick-up techniques for IVF.