

## Role of Microsurgery in Tubal Block



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Tubal block is responsible for a good percentage of female infertility. This occlusion may be due to the pelvic infections or due to peritubal adhesions following pelvic surgery, infection or endometriosis. Besides, many patients regret their earlier decision of sterilisation due to several reasons and come for recanalisation of tubes. To combat the problem of infertility for tubal block conventional conservative surgery has been attempted for many years. Due to its poor result, endoscopic surgery, microsurgery and assisted reproductive technology have come into this field with promising prospects.

Microsurgery has been introduced into the field of Gynaecology relatively late in comparison to other specialities. It was only in nineteen sixties that microsurgical concept was introduced successfully into infertility surgery. Microsurgical techniques are recently being used widely and successfully for reversal of sterilisation. Introduction of microsurgery for tubal reconstruction has significantly improved the results in restoration of fertility.

### What is Microsurgery?

Microsurgery is usually defined as surgery requiring the use of an operating microscope. However, microsurgery is not merely an use of optical aid but is a discipline of surgery which is based on some basic

principles. The principles include :-

- Adequate surgical exposure
- Magnification — either by microscope or loupe
- Gentle operative technique
- Use of delicate instruments
- Constant irrigation
- Complete haemostasis with heparinised solution to prevent tissue drying & clot formation.
- Utilisation of nonreactive fine suture (7-0 or 8-0 prolene or nylon).
- Avoidance of peritoneal abrasions and closure of all peritoneal surfaces.

Maintenance of these basic principles is essential for high success rate. Doing gross surgery under a microscope probably causes more damage than if it is done without using optical aids.

### Advantages of Microsurgery are :

- It limits the surgical damage to the peritoneum.
- It makes accurate reconstruction of the tube.
- It achieves an anatomical result which mimics as near as possible, the undamaged adnexa.

All these factors lead to high pregnancy rate with minimum chance of ectopic pregnancy.

### Selection of Case

Not all patients with tubal block are suitable for undergoing microsurgery for tubal reconstruction. So, preoperative evaluation and screening of the patient is essential to improve the success of the operation. Detailed history of patients, physical examination including pelvic examination and routine pre-operative investigations are to be supplemented by evaluation of fertility status of the couple. This includes husband's semen analysis, PCT, BBT, timed endometrial biopsy, hysterosalpingography and laparoscopy with or without hysteroscopy. Nowadays, salpingoscopy is an essential procedure to identify

endo-salpingeal pathology.

### Contra-indications :-

Certain contraindications of micro-surgery include

- Elderly patients.
- Psychological disorders
- Genital tuberculosis
- Extensive pelvic adhesions
- Inadequate length of fallopian tube
- Malignancy
- Some conditions like uterine synechiae, must be treated before undertaking reconstructive surgery.

### Counselling and Informed Consent

The couple should be explained about the operation and the possible outcome and complication. Informed consent is essential prior to operation.

### Operative procedures

The operation is always done in the proliferative phase of the menstrual cycle. Proper abdominal incision and elevation of pelvic structures are necessary for adequate exposure convenient for microsurgery.

Depending upon the pathology and the site of occlusion of fallopian tube, the reconstructive surgical procedures vary.

#### A. For the Terminal Occlusion of Oviduct :

- Salpingo-ovariolysis:** The essential features of this operation is to restore normal anatomy, normal mobility of the tubes, fimbriae and ovaries. The adhesions are carefully and systematically removed from the pelvis, both fallopian tubes, fimbriae and ovaries. After-removal of adhesions, tubal patency test is mandatory. Any spots of endometriosis will need to be vaporised or excised. Reperitonialisation of the denuded area is mandatory.
- Fimbrioplasty :** Fimbrioplasty : Fimbrioplasty is defined as the lysis of fimbrial adhesions or dilatation of fimbrial phimosis.
- Salpingostomy/Salpingoneostomy :** Salpingo-

stomy/Salpingoneostomy is the creation of new tubal ostium where the fimbrial end is totally occluded.

#### B. For occlusion involving part of the tube in between cornu and fimbria — Tubo-tubal anastomosis.

The end to end anastomosis is done for

- i) Reversal of sterilisation
- ii) Pathological occlusion

The types of anastomosis are

- Ampullary — Ampullary
- Ampullary — Isthmic
- Isthmic — Isthmic and
- Isthmic — Cornual

#### C. For Cornual Occlusion

- a) Tubocornual anastomosis
- b) Tubouterine implantation

In cornual occlusion, now a days, tubal canulation is preferred if it is feasible.

### Follow up :

The patient is encouraged to try for pregnancy after one normal period and regular fertility follow up is continued.

### Causes of Failure

Despite morphologically successful reconstructive surgery many women fail to conceive

This may be due to —

- Faulty surgical technique
  - incomplete removal of the pathological segment
  - inadvertant procedure
- Pre-existing epithelial pathology
- Intratubal adhesions
- Progressive inflammatory disease
- Shortened fallopian tube
- Disturbances in tubo-ovarian spatial relationship
- Postoperative pelvic infection.

### Results

The prognosis and results depend upon whether microsurgery is done for pathological conditions of

the tube or for sterilization reversal operations.

#### A) For Pathological Conditions :

In these cases the result depends on the underlying disease, coincident endometriosis or tubal damage from pelvic sepsis.

- a) **Salpingo — Ovariolysis** : Where only salpingolysis is needed the results are satisfactory. Most series quote pregnancy rates ranging from 32% - 70%. Doubling of the pregnancy outcome has been demonstrated by switching from conventional to microsurgery.
- b) **Salpingostomy / Salpingoneostomy** : So far as term pregnancy is concerned the overall result is quite discouraging, although the patency rate is much higher when microsurgical procedures are used. This indicates that endosalpingeal damage is primarily responsible and only anatomical restoration of the tube is of little help. A study reported 90% postoperative patency but only 29% intrauterine pregnancy rate after microsurgical salpingostomy for hydrosalpinx. In other series only 18% success rate was observed after terminal salpingostomy and adhesiolysis.
- c) **C) Tubo-cornual anastomosis** : This is the procedure of choice compared to implantations for cornual occlusion. In a study 42.8% success rate was observed.
- d) **Tubo-tubal Anastomosis** : In a series 33% pregnancy rate observed with a single proximal occluded site, but none with multiple occlusions.

#### B. Sterilisation reversal :

**Tubo-tubal anastomosis** : Tubotubal anastomosis for sterilisation reversal is the most successful of the microsurgical procedures.

Pregnancy success rate in these cases is quite satisfactory (50% - 80%). Some study showed even 90% success rate.

#### Prognostic factors on which success depends are manifold.

- Method of sterilisation — The methods with least injury to the tube are most successfully reversed e.g., laplication with Falope rings. Pomeroy method also gives good results. But monopolar

cautery causes deep tissue damage which makes success of reversal poor.

- Time interval between sterilisation and reversal — It is believed that there are increasing abnormalities of tubal mucosa with increasing time interval.
- Site of re-anastomosis — Sites with similarity of lumen to be approximated have better prognosis. Thus isthmo-isthmic anastomosis has best success rate.
- Length of the tube — Residual tubal length more than 7 cm showed very good result whereas length less than 4 cm had very low pregnancy rates.
- Age of the patient — After the age of 38 years, result is poor
- Concomittent pathology
- Surgical technique and skill of the surgeon

#### Conclusion

Application of reconstructive microsurgery in tubal block has markedly enhanced the ultimate success rate, i.e. term pregnancy. Microsurgery is done for both pathological conditions of the tube as well as sterilisation reversal and has best results where tubal recanalisation is done for reversal. Although for the treatment of infertility for peritoneal and tubal factor in-vitro fertilisation has its role to play, but microsurgery for tubal reconstruction will remain as one of the important approaches because :-

- It restores near normalcy in the pelvis.
- Excellent results
- Cost-effective and affordable
- One time procedure in comparison to A.R.T. which requires repeated procedures.

To conclude, though microsurgery has its own limitations and is not the answer to all cases of tubal block, its proper technical application in selected cases has brought a ray of hope to many infertile couples.

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