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*Design:* Descriptive case study.

*Setting:* Academic medical center.

*Patient(s):* Sixteen patients with previous tubal sterilization who requested tubal re-anastomosis.

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# Tubal Re-Anastomoses through a Mini-Laparotomy Incision

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**Result(s):** The 31 tubes were successfully re-anastomosed and patency was confirmed. The mean surgical time was 15 minutes per tube.

**Conclusion(s):** Tubal re-anastomosis after tubal sterilization can be performed through a mini-laparotomy incision. Systematization of the operative steps allowed the performance of the operation at a speed. Larger series and follow-up are needed to assess postoperative pregnancy rates.

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## I. INTRODUCTION

Female sterilization is the most accepted method of birth control. Out of permanent sterilizations, 98% are female sterilizations. It is an important constituent of The National Family Planning Program in India. According to NFHS-5 (2019-2020), female sterilization accounted for 37.9% of all methods of family planning used in the country<sup>[1]</sup>. Due to unforeseen circumstances like the death of a child or re-marriage, 1-3% of these women eventually seek for reversal of sterilization<sup>[2]</sup>. Tubal anastomosis through a mini-laparotomy incision is a minimally invasive, cost-effective, and safe technique.

## II. MATERIALS AND METHODS

Sixteen women aged between 28-36 years (mean age 30.6 years), parity 1– 3, who requested reversal of tubal sterilization were included in the study. This study was conducted at Grant Government Medical College and Sir JJ Group of Hospitals, Mumbai in the year 2022.

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Pre-operatively history was taken and the patients were thoroughly investigated. Detailed obstetric and gynecological history was taken, including details of the tubal sterilization procedure. Along with routine investigations for major operations, husband semen analysis was done in a few cases where the husband's age was more than 35 years. Detailed counseling of husband and wife was done regarding the procedure of recanalization and that the results will depend on many factors such as type of tubal ligation done, site of tubal ligation, condition of fimbria, length of the tube after anastomoses. They were also counseled regarding the complications after recanalization and the alternative option of in-vitro fertilization. Written valid informed consent was taken from all the patients. The surgery was performed post-menstrually.

Microsurgical tuboplasty was performed under spinal anesthesia. Cervical catheterization is done with foley's catheter no 8 and bulb inflated. A suprapubic transverse incision of 2-2.5 cm was taken. The principles of microsurgery were meticulously followed throughout. One side fallopian tube was traced with the help of Babcock's forceps and delivered outside the abdomen. The occluded segment of the tube was identified and resected till there was complete excision of pathological tissue. The medial and lateral edges were freshened and dilute methylene blue was pushed through intra-cervical foleys, staining the mucosa blue. No probes were used. Tissue planes were precisely aligned using an atraumatic technique by vicryl 6-0 (braided polyglactin) mounted on an atraumatic spatulated micro-point needle. The first suture was taken at 6 O'clock position in the mesosalpinx following which four sutures at 6', 3', 9', and 12 O clock were taken in the muscular layer and serosa to achieve end-to-end tubal anastomoses. The mucosa was avoided. Continuous irrigation with heparinized ringer lactate solution was done to visualize the operative field and prevent adhesions. Electrocoagulation with bipolar cautery was done to achieve hemostasis. Mopping was avoided. The tubal re-anastomoses was completed and chromopertubation was performed by injecting methylene blue dye from the cervical catheter to look for leakage of dye through the anastomosed site thereby confirm patency. 200 ml of Ringer lactate solution with 5000 IU heparin, 100 mg hydrocortisone, and 1500 IU hylase kept for hydro-flotation. The abdomen was closed in layers. On postoperative day 5, hydrotubation

with antibiotics, hylase, hydrocortisone, and heparin was done to promote healing and prevent adhesion formation. Patients were advised to use contraceptive measures for a period of 3 months to allow for the restoration of tubal condition after re-anastomosis.

### III. RESULTS

The mean age of study participants was 30.68 and majority were aged between 30-35 years.

*Table 1: Age-wise distribution*

Age	Number of patients (n)	Percentage %
< 30 years	6	37.5
30- 35 years	9	56.2
>35	1	6.2
Total	16	100%

The most common reason for tuboplasty was remarriage in our study that is 62.5% of the study

population while death of more children was another reason that amounted to 37.5%.

*Table 2: Reason for tuboplasty*

Reason	Number of patients (n)	Percentage %
Death of one or more children	6	37.5
Remarriage	10	62.5
Total	16	100%

In our study included 16 women who requested for tubal recanalization, out of which one woman had a history of salpingectomy in view of ectopic pregnancy,

therefore, a total of 31 tubes were operated upon. The site of anastomoses in these women are tabulated in table 3. The most common site was isthmic-ampullary.

*Table 3: Site of anastomoses*

Site of anastomoses	No. of tubes
Isthmic-ampullary	21
Isthmic-isthmic	6
Ampullary-ampullary	3
Cornual-isthmic	1

Tubal anastomosis through a mini-laparotomy incision was performed in sixteen patients, and the patency of each tube was assessed. The tubal length

was more than 7cm in 27 tubes while the length of 4 tubes were less than 7cm.

*Table 4: Fallopian tube length after tuboplasty and pregnancy outcome*

Tube length	< 7 cm	>7cm	Total
No. of tubes	4	27	31
No. pregnancies	0	3	3

No patient experienced perioperative or postoperative complications. Patients were discharged from the hospital after a mean stay of 3 days in good general condition. Out of those who followed up, 3 women conceived. One woman conceived within 2 of months surgery in-spite of being advised contraception for 3 months post-operatively.

the first being desire to have children with a new husband and the second being the death of the death of one or more children. Similar figures are also reported by others from our country [3], [4]. With the reversal of sterilization, there is an increased risk of ectopic pregnancy. Rates of 7 and 16% ectopic pregnancies after sterilization have been reported in some studies [5], [6]. However further follow up is required in our study to assess the risk of ectopic pregnancy.

### IV. DISCUSSION

Tubal sterilization is currently the most accepted form of birth control in India. However, due to unforeseen events such as the death of a child or remarriage, women eventually seek reversal. Estimating how many of these women would be candidates for reversal, if adequate facilities are available, is difficult. In our study, the women sought reversal for two reasons,

Before undertaking tubal surgery for infertility, a thorough investigation of the couple is mandatory to exclude other factors which may be responsible for infertility. Pre-operative HSG was avoided as all patients had history of tubal ligation.

Garcia [7] reported the first microsurgical re-anastomosis of the fallopian tube, and the techniques of tubal microsurgery were advanced further by Winston [8]

and Gomel <sup>[9]</sup>. Consequently, the postoperative outcomes after microsurgical re-anastomosis have improved in comparison with those of macroscopic conventional reversal.

Principles of microsurgery such as use of fine non-inflammatory suture material, use of bipolar cautery, continuous irrigation, avoidance of contamination, minimum tissue damage, meticulous hemostasis and microsurgical instruments were used. As we could visualize the tube with naked eyes, we did not use any loupe or microscope, but one can always use them for

magnification. We did not use any probe to identify the two cut ends as we believe they cause tubal mucosal damage. Instead, methylene blue dye was injected which stained the mucosa blue, thereby aiding in easy identification. Intra-operatively, we found that if the tube length is sufficient, re-anastomoses are done easily. Cornual ligation was slightly difficult for re-anastomosing due to lack of mobility. Although ligation was easy at the fimbrial end, functional results are awaited. In our study, 95% showed patency of tubes intra-operatively and 100% of tubes were patent in day 5 of hydrotubation.



*Figure 1:* Patency of dye confirmed with methylene blue dye



Figure 2: Incision line of microsurgical tuboplasty (2 to 2.5cm)

As compared to conventional laparotomy access, the mini-laparotomy technique is associated with decreased risk of tissue injury, foreign body contamination of the peritoneal cavity, adhesions, decreased post-operative pain and early rehabilitation. Later with the advancement of laparoscopy, laparoscopic tuboplasty started, although it is associated with minimal tissue injury, fewer adhesions and faster recovery, it requires longer operative time, risk of visceral injury and need for general anesthesia with expertise in the laparoscopic technique.

## V. CONCLUSION

Mini-laparotomy tuboplasty done through a mini-laparotomy incision offers combined advantages of both conventional and laparoscopic recanalization. The surgeon must use an effective technique for the reversal of sterilization to minimize the failure rates and a method that causes minimal trauma and aim at preserving the length of the tube so that reversal is more likely to be successful. Tubal bypass through in-vitro fertilization is a costly affair that not all can afford, hence the need for tuboplasty is rising. Therefore one can definitely try and master tuboplasty through a mini-laparotomy incision.

## REFERENCES RÉFÉRENCES REFERENCIAS

1. International Institute for Population Sciences (IIPS) and ICF. 2021. National Family Health Survey (NFHS-5), India, 2019-21: Mumbai: IIPS.
2. Grunert GM, Drake TS, Takaki NK. Microsurgical re-anastomosis of the fallopian tubes for reversal of sterilization. *Obstetrics and Gynecology*. 1981 Aug 1; 58(2): 148-51.
3. Brar MK, Kaur J, Kaur S. A study of microsurgical re-anastomosis of the fallopian tubes for reversal of sterilization. *J ObstetGynaecol India*. 2000; 6:75-.
4. Henry A, Rinehart W, Piotrow PT. Reversing female sterilization. *Population reports (Washington, DC). Series C, Female sterilization*. 1980 Sep (8): C97-123.
5. Chi IC, Gardner SD, Laufe LE. The history of pregnancies that occur following female sterilization. *International Journal of Gynecology & Obstetrics*. 1979 May; 17(3): 265-7.
6. Wallach E, Tatum HJ, Schmidt FH. Contraceptive and sterilization practices and extrauterine pregnancy: a realistic perspective. *Fertility and sterility*. 1977 Apr 1; 28(4): 407-21.
7. Garcia CR. Oviductal anastomosis procedures. *Human sterilization*. 1972:116.
8. Winston RM. Microsurgical reanastomosis of the rabbit oviduct and its functional and pathological sequelae. *BJOG: An International Journal of Obstetrics & Gynaecology*. 1975 Jul; 82(7): 513-22.
9. Gomel V. Tubal reanastomosis by microsurgery. *Fertility and Sterility*. 1977 Jan 1; 28(1): 59-65.