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Tubal Re-Anastomoses through a Mini-Laparotomy Incision

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Abstract

Objective: To assess the feasibility and reproducibility of tubal anastomosis through a mini-laparotomy incision. **Design:** Descriptive case study. **Setting:** Academic medical center. **Patient(s):** Sixteen patients with previous tubal sterilization who requested tubal re-anastomosis. **Intervention(s):** Systematization of the operative steps for tubal re-anastomosis using a mini-laparotomy incision. **Main Outcome Measure(s):** Primary outcome measures were feasibility and reproducibility; secondary measures were tubal patency, operative time, complications, and ergonomic qualities.

Index terms— microsurgery, tubal anastomosis, mini laparotomy, tuboplasty.

1 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 [1]. Due to unforeseen circumstances like the death of a child or re-marriage, 1-3% of these women eventually seek for reversal of sterilization [2]. Tubal anastomosis through a minilaparotomy incision is a minimally invasive, cost-effective, and safe technique.

2 II.

3 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.

Author ? : e-mail: aditijain95@gmail.com 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 intracervical 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

45 ringer lactate solution was done to visualize the operative field and prevent adhesions. Electrocoagulation with
46 bipolar cautery was done to achieve hemostasis. Mopping was avoided. The tubal re-anastomoses was completed
47 and chromopertubation was performed by injecting methylene blue dye from the cervical catheter to look for
48 leakage of dye through the anastomosed site thereby confirm patency. 200 ml of Ringer lactate solution with
49 5000 IU heparin, 100 mg hydrocortisone, and 1500 IU hylase kept for hydro-flotation. The abdomen was closed
50 in layers. On postoperative day 5, hydrotubation with antibiotics, hylase, hydrocortisone, and heparin was done
51 to promote healing and prevent adhesion formation. Patients were advised to use contraceptive measures for a
52 period of 3 months to allow for the restoration of tubal condition after re-anastomosis.

53 4 III.

54 5 Results

55 The mean age of study participants was 30.68 and majority were aged between 30-35 years. The most common
56 reason for tuboplasty was remarriage in our study that is 62.5% of the study population while death of more
57 children was another reason that amounted to 37.5%. In our study included 16 women who requested for tubal
58 recanalization, out of which one woman had a history of salpingectomy in view of ectopic pregnancy, therefore,
59 a total of 31 tubes were operated upon. The site of anastomoses in these women are tabulated in table ?? . The
60 most common site was isthmic-ampullary.

61 6 Table 3: Site of anastomoses

62 7 Site of anastomoses

63 No. of tubes

64 8 Isthmic-ampullary 21

65 Isthmic-isthmic 6 Ampullary-ampullary 3

66 9 Cornual-isthmic 1

67 Tubal anastomosis through a mini-laparotomy incision was performed in sixteen patients, and the patency of
68 each tube was assessed. The tubal length was more than 7cm in 27 tubes while the length of 4 tubes were
69 less than 7cm. No patient experienced perioperative or postoperative complications. Patients were discharged
70 from the hospital after a mean stay of 3 days in good general condition. Out of those who followed up, 3 women
71 conceived. One woman conceived within 2 of months surgery in-spite of being advised contraception for 3 months
72 post-operatively.

73 10 IV.

74 11 Discussion

75 Tubal sterilization is currently the most accepted form of birth control in India. However, due to unforeseen
76 events such as the death of a child or remarriage, women eventually seek reversal. Estimating how many of these
77 women would be candidates for reversal, if adequate facilities are available, is difficult. In our study, the women
78 sought reversal for two reasons, the first being desire to have children with a new husband and the second being
79 the death of the death of one or more children. Similar figures are also reported by others from our country [3],
80 [4] . With the reversal of sterilization, there is an increased risk of ectopic pregnancy. Rates of 7 and 16% ectopic
81 pregnancies after sterilization have been reported in some studies [5], [6] . However further follow up is required
82 in our study to assess the risk of ectopic pregnancy.

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

86 Garcia [7] reported the first microsurgical reanastomosis of the fallopian tube, and the techniques of tubal
87 microsurgery were advanced further by Winston [8] and Gomel [9] . Consequently, the postoperative outcomes
88 after microsurgical re-anastomosis have improved in comparison with those of macroscopic conventional reversal.

89 Principles of microsurgery such as use of fine non-inflammatory suture material, use of bipolar cautery, contin-
90 uous irrigation, avoidance of contamination, minimum tissue damage, meticulous hemostasis and microsurgical
91 instruments were used. As we could visualize the tube with naked eyes, we did not use any loupe or microscope,
92 but one can always use them for magnification. We did not use any probe to identify the two cut ends as we
93 believe they cause tubal mucosal damage. Instead, methylene blue dye was injected which stained the mucosa
94 blue, thereby aiding in easy identification. Intra-operatively, we found that if the tube length is sufficient, re-
95 anastomoses are done easily. Cornual ligation was slightly difficult for re-anastomosing due to lack of mobility.
96 Although ligation was easy at the fimbrial end, functional results are awaited. In our study, 95% showed patency
97 of tubes intra-operatively and 100% of tubes were patent in day 5 of hydrotubation. As compared to conventional
98 laparotomy access, the mini-laparotomy technique is associated with decreased risk of tissue injury, foreign body

99 contamination of the peritoneal cavity, adhesions, decreased post-operative pain and early rehabilitation. Later
100 with the advancement of laparoscopy, laparoscopic tuboplasty started, although it is associated with minimal
101 tissue injury, fewer adhesions and faster recovery, it requires longer operative time, risk of visceral injury and
102 need for general anesthesia with expertise in the laparoscopic technique.

103 V.

104 12 Conclusion

105 Mini-laparotomy tuboplasty done through a mini-laparotomy incision offers combined advantages of both
106 conventional and laparoscopic recanalization. The surgeon must use an effective technique for the reversal of
107 sterilization to minimize the failure rates and a method that causes minimal trauma and aim at preserving the
108 length of the tube so that reversal is more likely to be successful. Tubal bypass through in-vitro fertilization is a
109 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. ¹



110 Figure 1: Figure 1 :

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2

Figure 2: Figure 2 :

1

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

Figure 3: Table 1 :

2

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

Figure 4: Table 2 :

4

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

Figure 5: Table 4 :

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