



## Reversal of tubal ligation under 4x magnification

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**OBJECTIVE(S)** : To evaluate the use of 4x magnification for tuboplasty.

**METHOD(S)** : Tuboplasty under 4x magnification was carried out on 28 women who underwent tubectomy reversal for various reasons.

**RESULTS** : Loss of a male child was the commonest (64.28%) reason for tubectomy reversal. All the women had an interval of less than 6 years between tubectomy and its reversal. Fifty percent of the women who conceived had become pregnant within one year of tuboplasty and 94.12% of them had either bilateral or unilateral isthmo-isthmic or isthmo-ampullary anastomosis. All those who conceived had residual tubal length of more than 6 cm. Of the 23 previously laproligated women 17 (73.91%) conceived. Fifteen of these 17 had term pregnancies, one had ectopic pregnancy and one had early abortion.

**CONCLUSION(S)** : Tuboplasty under 4x magnification gives good success rate for reversal of tubal ligation and is recommended for use at peripheral centers where operating microscope facilities are not available.

**Key words** : tuboplasty, tubectomy reversal, 4x magnification

### Introduction

Amongst the major health problems in India, population explosion ranks first. In developing countries, sterilization is one of the most popular method of contraception and in India, over 70% of all sterilizations are in women<sup>1</sup>. But the popularity and success of tubectomy program largely depends upon the success of its reversal. Hence, many newer methods from naked eye macrosurgery to microsurgery to tissue gluing have been adopted in an effort to make sterilization 100% reversible. This study was 'need based' and a compromised approach of using 4x magnification was adopted in an effort to make tuboplasty more accessible for centers with limited resources.

### Methods

Twenty-eight women who requested tubectomy reversal

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(TR) from April 1989 to May 2003 were included in this study. A detailed history with special reference to reason for reversal, duration of sterilization, and history of sepsis following the procedure was taken. In all the cases, laparoscopy was done pre-operatively to ascertain the site and type of tubectomy, and condition and length of the remaining tubes. Tubal recanalization was carried out in the postmenstrual phase. The blocked or ligated ends of the fallopian tube were excised along with the fibrotic area, if any. Temporary splinting of the cut end was done by Rompson's venesection cannula or epidural catheter. Complete hemostasis was achieved by indigenously prepared point cautery. Under 4x magnification, end-to-end anastomosis was done in two layers (musculo-muscular and sero-muscular) with 6-0 or 8-0 vicryl/propylene depending upon the availability. Throughout the surgery, the tissues were irrigated with a solution of ringer lactate with hyaluronidase and hydrocortisone. Tubal patency was checked at the end of the surgery. Post-operatively, antibiotic coverage (ampicillin 500mg orally 6 hourly, gentamycin 80 mg intramuscularly 12 hourly and metronidazole 400 mg intravenously 8 hourly) was given for 8 days and hydrotubation was done within 48-72 hours of the operation. At the time of discharge, the woman was advised not to

abstain from sexual activity. If she did not conceive within 6 months, hysterosalpingography was done to check the tubal patency.

## Results

All the 28 women were in the age group of 25 to 35 years and their parity ranged from one to six. Eighteen women presented for tubal recanalization because of the death of the male child ( $P=0.040$ ) while seven because of remarriage (Table 1). Twenty-three women had previous laparoligation with falope rings out of which eight had concurrent voluntary termination of pregnancy. Five had undergone interval minilap (Pomeroy) tubectomy. Isthmus was the common site for tubectomy. Ten women had bilateral isthmo-ampullary anastomosis, five had bilateral isthmo-isthmic anastomosis and four had isthmo-isthmic anastomosis on one side and isthmo-ampullary anastomosis on the other side (Table 2). Of the 23 falope ring laparoligated women, 15 had term pregnancy (65.21%), one had ectopic gestation (4.34%) and one had an abortion (4.34%). None of the five women who had minilap tubectomy conceived after tuboplasty, but two of them had patent tubes after 6 months of tubal recanalization (Table 3).

Overall pregnancy rate was 60.71% (17 out of 28) (Table 4). Out of 17 women who had conceived, 16 (94.12%) had tuboplasty at isthmic region of the tube, either unilateral or bilateral (Table 4).

**Table 1. Reasons for tuboplasty.**

Sr No.	Reason	Number	Percent
A	Death of male child	18	64.28
B	Death of all children	1	3.57
C	Desire for male child	1	3.57
D	Tubectomy done without consent	1	3.57
E	Remarriage	7	25.00
	Total	28	100

A vs BCDE –  $P = 0.04$ ; Z value 2.14

**Table 3. Type of tubectomy and success rate.**

Type of tubectomy		Term pregnancy	Abortion	Ectopic preg	Patent tubes	Blocked tubes	Lost to follow up
Laparoligation	23 <sup>a</sup> (82.14)	15 (65.22%)	1 (4.34%)	1 (4.34%)	1 (4.34%)	-	5 (21.73%)
Minilaplignation	5 (17.85) <sup>a</sup>	—	—	—	2(40%)	1 (20)	2 (40%)

<sup>a</sup>One in each category had male factor. Figure in brackets represent percentages.

**Table 2. Type of tuboplasty during tubectomy reversal.**

Type of Anastomosis	No.	%
A. Bilateral isthmo-ampullary	10	35.71
B. Bilateral isthmo-isthmic	5	17.85
C. Bilateral ampullo-ampullary	2	7.14
D. Ampullo-ampullary + salpingostomy	2	7.14
E. Isthmo-isthmic + isthmo-ampullary	4	14.28
F. Isthmo-isthmic+ isthmo-interstitial	1	3.57
G. Unilateral Isthmo-ampullary (other side inoperable)	1	3.57
H. Isthmo- ampullary+ cornuo- ampullary	1	3.57
I. Ampullo- ampullary+ cornuo- ampullary	1	3.57
J. Ampullo- fimbrial +salpingostomy	1	3.57
Total	28	100

ABEFGH vs CDIJ –  $P = 0.0051$  Z value – 4.28.

## Discussion

In a keen desire to limit the family, tubectomy is being accepted comparatively earlier in the obstetric career by Indian women. In the long post-tubectomy reproductive life, the need for tubectomy reversal may arise (Table 1). Death of one or more children has been reported as the commonest (67.85%) reason for tubectomy reversal<sup>2</sup>. In our study, death of the male child was the commonest (64.28%) reason for tubectomy reversal.

The technic of tuboplasty is an important determinant of its success. When done macroscopically (conventional), pregnancy rate after tubectomy reversal has been reported to be as high as 50%<sup>3</sup>. With the microsurgical technic (with microscope), term pregnancy rates of 46%<sup>4</sup> and 56%<sup>5</sup> have been reported. With the compromised approach in our study with microsurgical principles employed under 4x magnification, term pregnancies were 53.57% (15/28) while ectopic gestation and abortion were 3.57% (1/28) each. All the pregnancies were in women who had laparoscopic tubectomy by falope rings. In the 23 women with laprosterilisation with falope rings 65.22% (15/23) had term pregnancy while 4.34% (1/23) each had an abortion and an ectopic pregnancy. None of the five women with previous

**Table 4. Type of tuboplasty and pregnancy outcome.**

Type of Tuboplasty	Total	Term pregnancy	Abortion	Ectopic pregnancy	Patent tubes	Blocked tubes	Lost to follow-up
Bilateral isthmo-ampullary	10 (35.71)	5 (50.00)	1 (10.00)	1 (10%)	2 (20.00)		2 (20.00)
Bilateral isthmo-isthmic	5 (17.85)	4 (80.00)	-	-	-	-	1 (20.00)
Bilateral ampullo-ampullary	2 (7.14)	-	-	-	-	-	2 (100.00)
Ampullo-ampullary +salpingostomy	2 (7.14)	-	-	-	1 (50)	-	1 (50)
Isthmo-isthmic+isthmo-ampullary	4 (14.28)	3 (75.00)	-	-	-	-	1 (25.00)
Isthmo-isthmic+isthmo-interstitial	1 (3.57)	1(100.0)	-	-	-	-	-
Unilateral isthmo-ampullary other side not possible	1 (3.57)	-	-	-	1 (100)	-	-
Isthmo-ampullary+cornuo-ampullary	1 (3.57)	1(100.0)	-	-	-	-	-
Ampullo-ampullary+cornuo-ampullary	1 (3.57)	1(100.0)	-	-	-	-	-
Ampullo-fimbrial+salpingostomy	1 (3.57)	-	-	-	-	1 (100)	-
Total	28(100.00)	15 (53.57)	1 (3.57)	1 (3.57)	3 (10.71)	1 (3.57)	7 (25.00)

Figures in brackets represent percentages. Overall pregnancy rate: 53.57%

tubectomy by Pomeroy method conceived, though 40% (2/5) had patent tubes after 6 months of reversal. Irani and Penkar<sup>6</sup> reported a pregnancy rate of 71% with 9.5% ectopic gestation in tubectomy reversal cases when microsurgical technic was employed macroscopically and 76% success rate with tubal recanalization after tubectomy with Pomeroy method. A pregnancy rate of 70.5% has been reported in cases of falope rings when interval between sterilization and reversal was less than 12 months<sup>5</sup>.

The site of tubectomy and hence the site of recanalization is another important factor in determining the results of tubectomy reversal. It is suggested that the isthmus of the falopian tube is an ideal site for sterilization considering the possible need for reversal<sup>2,5</sup>. We could achieve 80% term pregnancies after bilateral ithmo-isthmic and 50% term pregnancies after bilateral isthmo-ampullary anastomosis (Table 4). 93.33% (14/15) of women who had term pregnancy had isthmo-isthmic or isthmo-ampullary anastomosis on at least one side. But our numbers are too small for meaningful percentages. Sapre et al<sup>4</sup> had 55% term pregnancies after isthmo-isthmic and 40% after isthmo-ampullary anastomosis.

All those in our study who conceived did so within 2 years of tuboplasty; 50% of them conceived within 1 year. Mohanalakshmi et al<sup>7</sup> observed that 88.88% of pregnancies resulted within 23 months and 33% within 11 months of tubectomy reversal. Out of 31 women who had more than 6 cm residual length of the tube, 35.48% conceived<sup>7</sup>. In our study all women who conceived had residual length of more than 6 cm.

In the present study, only the first conception was taken into consideration while compiling the data. However it was

observed that the subsequent conceptions were easy and during 14 years of follow up three women completed their family and one was retubectomized with concurrent voluntary termination of pregnancy. In spite of 'high risk' status of post-reversal conceptions, majority of our women were delivered at home by a dai (untrained midwife), without any complications.

## Conclusion

With the increase in the number of sterilizations in the country, the need for their reversal is also growing. The approach advocated by us is good, cheap and affordable, as it requires only 4x magnifier. Hence it is very practical in developing countries like ours, especially in peripheral centers. For the best results tissue respect and meticulousness is a must.

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