

A PROSPECTIVE STUDY OF 100 CASES OF MICROSURGICAL TUBOPLASTY FROM GOVT. KASTURBA GANDHI HOSPITAL, MADRAS

By

T. K. MOHANALAKSHMI, C. SELVAKUMARI, S. JAYA AND R. THIRUPURASUNDARI

SUMMARY

A 5 year study of 100 cases of microsurgical tuboplasty of which 74% were for reversal and 26% were for infertility. The pregnancy rate was 39% in reversal and 23% in infertility. The factors which affected the pregnancy rate had been the total length (4-6 cm) site of anastomosis (Isthmo-ampullary) and sterilization-tuboplasty interval (5 years) in cases of reversal of sterilization whereas the success depended on the length of the tube—6 cm site of anastomosis-isthmocornual and age of the patient—26-30 years in cases of infertility.

Material and Methods

Out of 100 cases of micro-surgical tuboplasty, 74 were done for reversal of sterilization and 26 for infertility. The patients ranged in age from 20-35 years with a mean of 27.5 years. The average parity in reversal was 2. In 95% the indication for reversal was death of one or both the children and only in 5% it was due to remarriage.

Of the 74 cases of reversal of sterilization, 52 (70.2%) were following puerperal sterilization and 12 (16.2%) after interval sterilization and 10 (13.5%) following laparoscopic sterilization. Both in puerperal and interval sterilization; the Pomeroy method of sterilization was carried out and during Laparoscopy the fallope ring was used. 35 cases (47.3) reported for reversal in less than 2 years and 39 (52.7%) between 3 to 5 years.

The following pre-operative specific

investigations were carried out in all cases:

(1) Semen analysis, (2) H.S.G., (3) Laparoscopy, (4) Hysteroscopy, (5) Endometrial biopsy, (6) P.C.T.

In the majority of the cases the laparoscopy was combined with hysteroscopy and endometrial biopsy. The H.S.G. is done even in reversals to find out the patency of the intramural and proximal part of the tube.

During laparoscopy an evaluation is carried out and only then cases fit for surgery were chosen. The condition of uterus, tubes and ovaries and adhesions were looked into and a direct chromopertubation done. During hysteroscopy the patency of the ostium was looked for and intrauterine adhesions, polyps submucous fibroids and any congenital anomaly like septum was ruled out.

The surgery was performed in the early proliferative phase. Either general endotracheal anaesthesia or a continuous epidural block was used. The first 10

cases were done using a lens of 10 x magnification and the rest with an operating microscope of Indian make with a 10 x to 22 x magnification. Suture material of either prolene or vicryl, 6-0 to 8-0, was used. A two layer technique of muscularis and seromuscularis with interrupted sutures was carried out. A splint was used during surgery and removed immediately after surgery.

Gomel's (1983) fluid was used for irrigation during surgery and for instillation in the peritoneal cavity before closure Ampicillin. 1 gm x 6 hourly Efcorlin 100 mg 6 hourly and promethazine. 50 mgm 4 hourly all I.V. were given till 48 hours after surgery and then the efcorlin was tapered in 3 days, but Ampicillin 500 mgm I.M. b.d. was continued for a total of 10 days.

Results

Table I shows the details of follow up in both reversal and infertility cases.

TABLE I
Follow up of After Recanalization

No. of months of follow up after recanalization	Reversal		Infertility	
	No. of cases	% of cases	No. of cases	% of cases
<12 months	22	29.72	3	11.5
12-23 months	22	29.72	6	23.04
24-35 months	20	27.05	13	50
36-59 months	10	13.51	4	15.38

Table II gives the timing of sterilization and outcome. Out of the 22 interval sterilization, there were 9 (41%) intra uterine pregnancies and of the 52 cases of puerperal sterilization, there were 18 (34.6%) intrauterine pregnancies and 2 (3.9%) ectopics and 2 abortion (3.9%). There were 12 (23%) term pregnancies in puerperal sterilization and 7 (31.8%)

term pregnancies in interval sterilization. There were no ectopics in interval sterilization.

Table III Analysing the type of anastomosis and outcome in reversal out of 29 pregnancies, 19 (25.7%) were term pregnancies, 4 (5.4%) abortions, 4 (5.4%) pregnancy continuing and 2 (2.7%) ectopics. The maximum term pregnancy of 11 (35.5%) was following an isthmo ampullary anastomosis. 7 cases (31.8%) were following isthmo-isthmial anastomosis and one (16.7%) after a cuff salpingostomy. Out of the 4 abortions 2 (6.5%) were after an isthmo-ampullary and one (4.5%) following an isthmo-isthmial and one following isthmo-fimbrial anastomosis. Out of the 27 intrauterine pregnancies, 14 (45.2%) were following isthmo-ampullary anastomosis.

There were 2 ectopics—1 (33.3%) following ampullocornual anastomosis, and 1 (3.2%) following isthmo-ampullary anastomosis.

Table IV indicates the tubal length and outcome. Out of the 74 cases in reversal, 19 (25.7%) term pregnancies 4 abortions (5.4%), 4 (5.4%) pregnancies continuing and 2 (2.7%) ectopics. Maximum intrauterine pregnancy of 14 (40%) was found when the tubal length after surgery was between 4-6 cm length, 11 cases (35.5%) of intrauterine pregnancy.

TABLE II
Timing of Sterilization and Outcome

Timing of Sterilization	Total patients	Total Pregnancies		Term Pregnancies		Abortions		Pregnancy continuing		Total Intrauterine pregnancies		Ectopic Pregnancies	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Interval	22	9	41	7	31.8	1	4.5	1	4.5	9	41	—	—
Puerperal	52	20	38.5	12	23.1	2	3.9	4	7.7	18	34.6	2	3.9
Total	74	29	39.2	19	25.7	3	4.1	5	6.8	27	36.5	2	2.7

TABLE III
Type of Anastomosis and Outcome in Reversal

Type of anastomosis	Total patients	OUTCOME									
		Term pregnancies		Abortion		Pregnancies continuing		Total Intrauterine pregnancies		Ectopic pregnancies	
		No.	%	No.	%	No.	%	No.	%	No.	%
Isthmus-isthmus	22	7	31.8	1	4.5	1	4.5	9	40.9	Nil	—
Isthmus-cornual	4	—	—	—	—	1	25	1	25	Nil	—
Ampullary-isthmus	31	11	35.5	2	6.5	1	3.8	14	45.2	1	3.2
Ampullary-cornual	3	—	—	—	—	—	—	—	—	1	33.3
Ampullary-ampullary	—	—	—	—	—	—	—	—	—	—	—
Cuff-salpingostomy	6	1	16.7	—	—	1	16.7	2	33.4	—	—
Isthmo-Fimbrial	5	—	—	1	20	—	—	1	20	—	—
Adhesiolysis	1	—	—	—	—	—	—	—	—	—	—
Ampullo Fimbrial	2	—	—	—	—	—	—	—	—	—	—
Total	74	19	25.7	4	5.4	4	5.4	27	36.5	2	2.7

TABLE IV
Length and Outcome in Reversal

Total length	Total patients		Term Pregnancies		Abortion		Pregnancy continuing		Total Intrauterine pregnancies		Ectopic	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<4 cm	8		1	12.5	1	12.5	—	—	2	25	—	—
R 4-6 cm	35		10	28.6	2	5.7	2	5.7	14	40	2	5.7
>6	31		8	25.8	1	3.2	2	6.5	11	35.5	—	—
Total	74		19	25.7	4	5.4	4	5.4	27	36.5	2	2.7

when the length was above 6 cm and 2 cases (25%) when the length was below 4 cm. Out of the 19 term pregnancies 10 (28.6%) occurred, when the length was 4-6 cm, 8 (25.8%) when it was above 6 cm and 1 (12.5%) below 4 cm. There were 2 ectopics both in the 4-6 cm length group.

Table V presents the type of anastomosis and interval from surgery to conception in Reversal. Out of the 14 intrauterine pregnancies in the isthmo-ampullary anastomosis, 5 (16.1%) conceived in 6-11 months and 9 (29%) in 12-23 months. Out of the 9 intrauterine pregnancies in isthmo-isthmal anastomosis 4 (18.2%) conceived in 6-11 months, 3 (13.7%) in 12-23 months and 2 (9.1%) in 24-36 months. Of the 2 pregnancies in cuff salpingostomy, 1 (16.7%) had conceived in 12-23 months and 1 (16.7%) in 24-36 months. There was one abortion (20%) in isthmio-fimbrial anastomosis.

Analysis of Infertility Cases

Table VI Depicts the type of anastomosis and outcome in infertility. Out of the 26 cases, there were 4 (15.4%) term pregnancies, 1 (3.8%) abortion, 1 (3.8%) continuing pregnancy. The maximum incidence of pregnancy of 5 (31.25%) was in isthmocornual anastomosis, 4 (25%) term pregnancies and 1 (6.25%) abortion. There was 1 (33.3%) continuing pregnancy in the isthmio-ampullary anastomosis and there were no ectopics in infertility group.

In the infertility group intrauterine pregnancies were 6 (23%). There were 3 (25%) term pregnancies when the length was above 6 cm and 1 (10%) in 4-6 cm length. There were no pregnancies when

TABLE V
Type of Anastomosis and Interval From Surgery to Conception in Reversal

Type of Anastomosis	Total patients	Intra uterine pregnancies	Month from surgery to conception		
			6 - 11	12 - 23	24 - 35
Isthmo-isthmial	22	9 (41%)	4 (18.2%)	3 (13.7%)	2 (9.1%)
Isthmo-cornual	4	1 (25%)	—	1 (25%)	—
Isthmo-Ampullary	31	14 (45.2%)	5 (16.1%)	9 (29%)	—
Ampullo-cornual	3	—	—	—	—
Ampullo-ampullary	—	—	—	—	—
Cuff salpingotomy	6	2 (33.3%)	—	1 (16.7%)	1 (16.7%)
Isthmo fimbrial	5	1 (20%)	—	1 (20%)	—
Ampullo fimbrial	2	—	—	—	—
Adhesiolysis	1	—	—	—	—

74

the length was less than 4 cm (Table VII).

Table VIII Depicts the type of anastomosis and interval from surgery to conception in fertility. Out of the 4 pregnancies in isthmo-cornual 3 (18.75%) occurred between 12-23 months and 1 (6.25%) occurred between 6-11 months. One (33.3%) in ampullo-cornual anastomosis conceived in 24-36 months and 1 (100%) in cuff salpingostomy in 12-23 months' time.

Analysing the age in relation to outcome the maximum pregnancy rate was in the age group of 26-30 years in both reversal (51.4%) and in infertility (26.7%) groups.

Comments

In 1975, Seigler and Perez reporting on a world literature of reversal of sterilization give a 21% pregnancy rate. The pregnancy rate in recent reports ranges from 60-80%. Spivak *et al* (1986) give a 50% pregnancy rate in reversal. In 74 patients of reversal in our series with

more than 6 months' follow up, there were 29 pregnancies giving an incidence of 37.5%.

Of the 26 cases of infertility, there were 6 pregnancies with an incidence of 25%. There was no mortality or morbidity in any of the cases.

Silver and Cohen (1980) and Spivak *et al* (1986) found that the tubal length was the important factor in the success rate of reversal of sterilization. Our observation was also that the tubal length is an important factor in the outcome. We had our maximum pregnancy rate in 4-6 cm length in reversal, and more than 6 cm length in infertility.

Winston (1980) reports a maximum pregnancy rate in isthmo-isthmial anastomosis. In our series the maximum pregnancy rate (35.5%) in reversal cases was in isthmo-ampullary anastomosis and in infertility cases (25%) it was in isthmo-cornual anastomosis. Vasquez *et al* (1980) report that the results are much better if the interval from

TABLE VI
Type of Anastomosis and Outcome in Infertility

Type of Anastomosis	Total patients	Term Pregnancies		Abortion		Pregnancy continuing		Total Intrauterine pregnancies		Ectopic	
		No.	%	No.	%	No.	%	No.	%	No.	%
Isthmus-isthmus	1	—	—	—	—	—	—	—	—	—	—
Isthmus-cornual	16	4	25	1	6.25	—	—	5	31.35	—	—
Ampullary-isthmus	2	—	—	—	—	—	—	—	—	—	—
Ampullary-cornual	3	—	—	—	—	1	33.3	1	33.3	—	—
Ampullary-ampullary	—	—	—	—	—	—	—	—	—	—	—
Cuff-salpingostomy	1	—	—	—	—	—	—	—	—	—	—
Isthmo-Fimbrial	2	—	—	—	—	—	—	—	—	—	—
Adhesiolysis	1	—	—	—	—	—	—	—	—	—	—
Ampullo-Fimbrial	—	—	—	—	—	—	—	—	—	—	—
Total	26	4	15.4	1	3.8	1	3.8	6	23.1	—	—

TABLE VII
Length and Outcome in Infertility Group

Total length	Total patients	Term pregnancies		Abortion		Pregnancy continuing		Total Intrauterine pregnancies		Ectopic	
		No.	%	No.	%	No.	%	No.	%	No.	%
< 4 cm	4	—	—	—	—	—	—	—	—	—	—
4-6 cm	10	1	10	1	—	—	10	2	20	—	—
> 6 cm	12	3	25	—	—	1	8.3	4	33.3	—	—
Total	26	4	15.4	1	3.9	1	3.9	6	23.1	—	—

TABLE VIII
Type of Anastomosis and Interval From Surgery to Conception in Infertility

Type of anastomosis	Total patients	Intra uterine pregnancies	Months from surgery to conception		
			6 - 11	12 - 23	24 - 35
Isthmio-isthmial	1	—	—	—	—
Isthmo-cornual	16	4	1 (6.25%)	3 (18.75%)	—
Isthmo-ampullary	2	—	—	—	—
Ampullo-cornual	3	1	—	—	1 (34%)
Ampullo-ampullary	—	—	—	—	—
Cuff-salpingostomy	1	1	—	1 (100%)	—
Isthmo-fimbrial	2	—	—	—	—
Ampullo-Fimbrial	1	—	—	—	—
Adhesiolysis	—	—	—	—	—
	26	6 (25%)			

sterilization to recanalization is less than 5 years. We too had observed that when the sterilization-surgery interval was less than 5 years there was maximum pregnancy rate.

We had more number of isthmo-ampullary or ampullary region sterilization in Pomeroy technique. In the fallope ring group the ideal portion of mid-isthmial region was sterilized. So in our opinion while performing a serilization be it Pomeroy or fallope ring, one should strictly adhere to picking up the mid-isthmial portion and cut only 1½-2 cm of the tube in Pomeroy and occlude only 1 cm loop of the tube in fallope ring which

will leave adequate length for future reversal, if any.

References

1. Gomel, V.: *Microsurgery in Female infertility*, Boston Little, Brown & Co. 1983
2. Spivak, M. M., Librach, C. L. and Rosenthal, D. M.: *A. M. J. Obstet. Gynec* 154: 355, 1986.
3. Seigler, A. M. and Perez, R. J.: *Fertil Steril*. 26: 383, 1975.
4. Silber, S. and Cohen, R.: *Fertil Steril* 33: 598, 1980.
5. Vasquez, G., Winston, R., Boeckx, W. Brosens, I.: *Am. J. Obstet. Gynec.* 133: 86, 1980.
6. Winston, R.: *Clin. Obstet. Gynecol* 23: 261, 1980.