

A Study of Microsurgical Reanastomosis of the Fallopian Tubes for Reversal of Sterilization

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Summary

Microsurgical reanastomosis of the fallopian tubes was done in 25 women using an operating microscope from January, 1994 to December, 1996. Follow up was done for a period of 18 months. Incidence of intrauterine pregnancy observed was 68%, ectopic pregnancy nil, abortion 4%, term viable births 56% and ongoing pregnancies 8%. The pregnancy rate was superior in women of less than 30 years (82.35%), in cases of falope ring (70.59%) when interval between sterilization and reversal was less than 12 months, tubal length 4-5 cm (81.82%) and with isthmic —isthmic- anastomosis (83.33%). The aim of this study was to determine the pregnancy and factors affecting pregnancy rate following microsurgical reanastomosis.

Introduction

Tubal ligation is the most common method of permanent female contraception used world over. Recent years have witnessed a spurt in number of female sterilizations particularly amongst the young. Young females with low parity are accepting tubal ligation thinking that their family is complete. Most of them are content and happy. However, due to unforeseen circumstances 1-3% of these women subsequently demand sterilization reversal (Grunert et al, 1981). In our country the most common reasons for seeking sterilization reversal are, death of all children or of any male child seen in 80% of the cases (Allahabadia et al, 1991, Biswas et al, 1993); whereas in Western countries divorce and remarriage are the common indications seen in 80%-90%.

It has now been universally accepted that microsurgical techniques offer a pregnancy rate superior to that achieved with traditional macrosurgical techniques (Winston, 1980 and Grunert et al, 1981).

This study of microsurgical reanastomosis of the fallopian tubes for reversal of sterilization was undertaken to know the pregnancy rate and the factors influencing it.

Material and Methods

In this study, sterilization reversal was performed on 25 women using a microscope from January, 1994 to December, 1996 in the Department of Obstetrics and Gynaecology, SGTB Hospital/ Medical College, Amritsar. Before performing surgery,

these women were clinically evaluated. Complete medical, obstetrical, menstrual and personal history was taken and a complete general, physical, systemic and pelvic examination was performed. Besides routine investigations for major surgery, specific test performed was a semen analysis. Pre-operative HSG and diagnostic laparoscopy were performed only in cases of adenexal pathology. Surgery was performed in the proliferative phase of menstrual cycle.

Technique

Prior to starting surgery, a working distance that guarantees a comfortable working posture in order to avoid unnecessary fatigue was chosen. Foley's catheter no.8 was put in the uterus and bulb inflated with 3 cc normal saline to see the patency of tubes by injecting methylene blue dye through it. After opening the abdomen by midline infraumbilical incision occluded ends of proximal and distal portion of tubes were resected till healthy portion of endosalpinx was exposed as forceful spillage of dye seen through the proximal portion of the tube. Patency of distal portion was checked by injecting dye through the fimbrial end with a syringe. End to end anastomosis was done with 8-0 Vicryl placing four sutures at 6,12,3 and 9 O'Clock in the muscularis layer and serosa. Mucosa was avoided. Sutures were taken in such a way that knots faced the serosa. The sutures were then tied securely keeping the lumen of both ends kissing each other. Rent in the mesosalpinx was closed. Patency of the tubes was checked by seeing free spil of dye at the fimbrial end. Procedure was repeated on the other tube. Length of the reconstructed tubes was assessed and recorded.

Handling of the tubes was gentle, atraumatic and continuous irrigation of operation field was done with 540 ml of Ringer's solution containing 5000 units of heparin and instead of mopping, suction was done. No abdominal pack was put in. Haemostasis was achieved by electrocauterisation. Abdomen was closed in layers securing complete haemostasis. Post-operatively patients were put on prophylactic antibiotics and on serratiopeptidase and were discharged after removal of stitches with an advice to observe abstinence for one month. If pelvic examination was normal at 1st post-operative check-up, one month after surgery, patient was advised to try for an early conception and report immediately when she misses her period or has pain in abdomen with or without missing a period. Cases were followed up for a period of 18 months.

The pregnancy rate was correlated to the method of previous tubal ligation, age of the patient at the time of sterilization reversal, parity at the time of tubal ligation, interval between sterilization and reversal operation, length of the reconstructed tubes, anatomical site of anastomosis and interval between reversal operation and occurrence of conception.

Observation

Out of 25 cases, the commonest reason for seeking sterilization reversal was death of all children (60%), followed by the death of only son (28%) and remarriage (12%) as shown in Table I. In no case reversal was due to regret. As shown in Table II, tubal ligation has performed with Pomeroy's technique in 8 (32%) cases, out of which 5 (62.50%) conceived and with falope rings in 17 (68%) cases out of which 12 (70.59%) became pregnant.

TABLE I
Reason For Seeking Sterilization Reversal Operation (N= 25)

Reason for reversal operation	No. of cases	Percentage
Death of all children	15	60
Death of only son	07	28
Remarriage	03	12
Regret after operation	-	-
Total	25	100

Table II
Method of Tubal Ligation and Pregnancy Outcome after SR

Method of tubal Ligation	No. of cases	Pregnancy outcome Intrauterine Tubal
Falope ring	17 (68%)	12 (70.59%) -
Pomeroy's	08 (32%)	05 (62.50%) -

As shown in Table III, pregnancy rate was higher (82.35%) when the age of the patient was 30 years or less and pregnancy rate showed a decline when age was more than 30 years. The pregnancy rate was not influenced by parity. When the interval between sterilization and reversal was less than two years, a superior pregnancy rate of 100% was observed. Subsequently pregnancy rate was not influenced when interval exceeded 2 years. Pregnancy rate was maximum (88.24%) in first 12 months following surgery and reduced markedly to 11.76% later on as shown in Table IV.

Table III
Patients Profile and Pregnancy rate

	No. of patients	Pregnant	
		No.	% age
Age (years)			
20-25	01	01	100.0
26-30	16	13	81.00
31-35	04	02	50.00
36-40	04	01	25.00
Parity			
1	00	00	00.00
2	12	09	75.00
>3	13	08	62.30
Interval between sterilization and recanalization (years)			
<2	01	01	100.00
2-5	14	10	71.43
>5	10	06	60.00

Table IV
Correlation of pregnancy rate with interval between Reversal and Conception (N=17)

Interval (months)	Pregnant	
	No.	% age
0-6	08	47.06
6-12	07	41.18
12-18	02	11.76

As shown in Table V, maximum (81.82%)

conceptions occurred when the length of reconstructed tube was 4-5 cms. Success rate was maximum (83.33%) with isthmic-isthmic anastomosis followed by isthmic-ampullary (60%) and (57.14%) with ampullary-ampullary anastomosis.

Table V
Correlation of Pregnancy Rate to tubal length and Site of Anastomosis

Tubal length (cm)	No. of cases	Pregnant	
		No.	%
<4	06	03	50.00
4-5	11	09	81.82
>5	08	05	62.50
Site of anastomosis			
Isthmic — Isthmic	12	10	83.33
Ampullary — Ampullary	07	04	57.14
Isthmic — Ampullary	05	03	60.00
Cornual — Isthmic	00	00	00.00
Cuff salpingostomy	01	00	00.00

Out of 25 cases, in whom microsurgical reversal was performed, 17 (68%) had intrauterine pregnancy, with 14 (56%) term viable births, one (4%) abortion and two (8%) on going pregnancies (Table VI). No ectopic pregnancy was reported.

Table VI
Pregnancy Outcome following Microsurgical Sterilization Reversal (N=25)

	No. of Cases	%age
Pregnant		
a) Intrauterine pregnancy	17	68.00
b) Term viable births	14	56.00
c) On going pregnancy	02	08.00
d) Ectopic pregnancy	00	00.00

Discussion

Request for reversal is increasing since tubal sterilizations are now being performed on young women of low parity. Sterilization reversal if easily available with promising results will definitely enhance the acceptability of sterilization. Majority (68%) of the women in our study were in the age group 20-30 years and 48% of them had only 2 living

children at the time of sterilization. In India, women marry early and thus complete their family at a young age.

Most common reason for sterilization reversal seen in 88% of the cases in this study and reported in earlier Indian studies is death of all children or death of only male child (Allahabadia et al, 1991 and Biswas et al, 1993). This observation is in contrast to Western countries where the most common indication is remarriage or divorce seen in 80%-90% of the cases. (Grunert et al, 1981 and Hunt and Diaz 1992).

It is universally noted that pregnancy rate following microsurgical sterilization reversal is superior (55% to 80%) to a pregnancy rate of 30% to 65% achieved with macrosurgical approach (Mckay Khoo, 1972; Siegler and Perez, 1975). Pregnancy rate of 68% is comparable to 64-68% reported by others (McCormick, 1976, Diamond, 1977 and Raock et al, 1987). Abortion rate of 4% in our study is comparable to that reported by Allahabadia et al (1991).

The method of tubal ligation used is an important determining factor for success following sterilization reversal. Pregnancy rate of 70.59% with falope ring and 62.50% with Pomeroy's technique in this study is comparable to that of more than 70% with falope ring and less than 60% with Pomeroy's technique achieved by McCormick et al (1976) and Biswas et al (1993). In cases with mechanical occlusion of the uterine tubes with falope ring, less amount of tubal segment is excised. Hence tubal ligation with falope ring is recommended so that if subsequently desired, a more successful sterilization reversal is possible.

A higher pregnancy rate has been reported when the interval between sterilization and reversal operation is less than 5 years (Vasquez et al, 1980 and Seiler (1983). In our study, pregnancy rate was 100% when interval was less than two years. But no significant correlation was observed when interval exceeded 2 years. Vasquez et al (1980) proposed that epithelial changes after 5 years of occlusion would minimize tubal function and affect success of subsequent reversal.

Incidence of conception was highest (88.24%)

in the first 12 months following surgery and was reduced to 11.76% when interval was more than 12 months. An inverse relationship of pregnancy rate with time interval following surgery has been reported in earlier studies (Winston, 1980 and Boeckx et al, 1986).

Pregnancy rate was higher (82.35%) in women of 30 years or less. Age has a definite on pregnancy rate (Seiler, 1983; Rock et al, 1987 and Hunt and Diaz, 1992). A higher conception rate in younger women may be attributed to their greater fertility potential and more sexual activity. Parity has no influence on the conception rate (Seiler, 1983 and Boeckx et al, 1986). In this study too no correlation was observed between pregnancy rate and previous parity of the patient.

The most important factor to enhance the effectiveness of recanalization is the length of the reconstructed tubes (Silber and Cohen, 1980 and Henderson, 1981). Pregnancy rate was 81-82% in the present study in cases with tubal length 4-5 cm and a pregnancy rate of 75% to 100% has been reported by others when tubal length was more than 4cms (Silber et al, 1980 and Rock et al, 1987). From these results it can be inferred that the optimal tubal length required for conception to occur is more than 4 cms. Hence while performing tubal ligation, care should be taken to sacrifice only a minimal amount of tubal segment.

Diamond (1977), Winston (1980) and Henderson (1981), in their studies indicated that the site of anastomosis makes a difference to pregnancy rate with the isthmus proving to be far superior. Silber and Cohen (1980), Boeckx et al (1986) and Hunt and Diaz (1992) reported a pregnancy rate of 75% to 100%, with isthmic- isthmic anastomosis. Isthmic-isthmic anastomosis gives best success rate because there is less luminal disparity and muscular layer is well developed.

Conclusion

In conclusion, microsurgical reversal of sterilization stands a reasonable chance of success compared to the traditional macrosurgical techniques. But in order to offer optimal conditions for refertilization i.e. tubo-tubal anastomosis, all sterilization procedures should ideally damage or

remove as little as possible of the tubes. Sterilization reversal should be done by a person trained in microsurgery.

References

1. Allahabadia, F; Ambiya, VR; Shanbhag, AM; Vaidya, PR: J. Obstet. And gynaec. Ind; 41: 105, 1991.
2. Biswas, A; Bhowmick , R; Seal, S; Ganguly, G: J.Obstet. and gynaec. Ind, 43: 980, 1993.
3. Boeckx, W;Gordts, K;Buysee, K; Brosens, l: Br.J. Obstet. Gynaec 93:839, 1986.
4. Diamond, E: Fertil-Steril; 28: 1203,1977.
5. Grunert, M;drake, TS; Takaki,K: Obster. Gynaecol; 58:148,1981.
6. Henderson, SR: Am. J. Obstet. Gynaec 139:79, 1981.
7. Hunt, RB and Diaz, DG: Atlas of female infertility surgery, 1992.
8. Mackay, EV; Khoo, SK: Fertil. Steril; 23: 207, 1972.
9. McCormick, WG; Torres, J: Obstet. Gynae; 47: 623, 1976.
10. Rock , JA; Guzick, DS; Katz, F: Fertil. Steril; 48: 13, 1987.
11. Seiler, JC: Am. J. Obstet. Gynae; 146: 292, 1983.
12. Siegler, AM; Perez, RJ: Fertil. Steril; 26:383, 1975.
13. Silber, SJ; Cohen, R: Feril. 33: 598, 1980.
14. Vasquez, G; Winston, RML; Boeckx, W; Brosens, l: Am. J. Obstet. Gynaeco; 138: 86, 1980.
15. Winston, RML: Fertil. Steri; 34: 521, 1980.