PRESENT STATUS OF REVERSAL OF TUBAL STERILIZATION

(A Review)

by

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Number of women accepting sterilization as a method of family planning is on the increase. Not only this but there is a trend to complete the family by 28-30 years and then undergo tube ligation. It is expected that decision to have female sterilization is made after careful consideration of all factors. The couple as well as the doctor consider female sterilization as a permenant method. In India, most women accept sterilization only if they have a son. It is sad to note that significant headway towards improving health of children is not made in India and many other developing countries. United Nations demographic book (1967) states that every third child in India is not alive to see his sixth birthday. Not infrequently, the only son dies due to illness or accident. Loss of the only son is the most common cause to seek reversal of tube ligation in India. In other countries the women may seek reversal of tube ligation due to other reasons such as remarriage after divorce or death of the husband. Sometimes the woman may change her mind after tubal ligation and seek reversal. Pomroy's technique was the one most frequently employed for tubal ligation till recently. Now for last 5 years many other methods are used for tubal sterilization. These methods are electrocautery or application of Falope ring or some clips.

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Most of the operations for tubal recanalization till a decade ago were for cases of primary sterility. The demand for reversal of tube ligation has increased for last 5-10 years. In our hospital, we used to perform 1 or 2 operations a year for reversal of tubal ligation. Since 1972, we are performing 8-10 such cases in a year. The results of tubal surgery in general are very disappointing. Ozaras (1966) reported that 600 plastic tubal operations were performed at Karolinska sjukhuset, Stockholm from 1940 to 1964. Out of these only 10.3 percent of the women conceived and 5.7 percent went to fullterm. Siegler (1975) reviewed 178 cases of tubal surgery and found that 22.4 percent of these women conceived. Shirodkar is considered as a pioneer in plastic tubal surgery and highly respected for his efforts in devising different techniques for tubal recanalization. Shirodkar (1960) claimed 35-40 percent pregnancy rate. Though in his later series there was improved pregnancy rate. Shirodkar had more cases of cornual block and his technique was largely implantation of the tube in the uterus. He did not perform many end to end anastomosis. Jones and Rock (1977) reviewing the world literature on tubal recanalization comment, "It appears from the data available that regardless of the technique utilized, a 30 to 40 percent success can be expected." It is logical to expect better results in cases of reversal of tube ligation as compared to cases of primary

sterility. Women with previous tube ligation are coming from high fertility stock. They are women with proved fertility and except for tubal blockage (because of tube ligation) the other factors are likely to be normal. In cases of primary sterility with tubal blockage, we are not sure whether tubal blockage is the only cause of sterility. Review of literature shows that pregnancy rate after reversal of tube ligation is higher than after tubal surgery in cases of primary sterility. However, overall success rate is not more than 40-50 percent. Therefore, there is no doubt that there is need for improving the technique for reversal of tubal ligation. The advent of microsurgical methods for tubal anastomosis has opened a new and promising field in surgical technology and created a new ray of hope for the couples with tubal blockage.

Material and Methods

We performed 65 operations on the fallopion tube for recanalization. Out of these 16 cases were operated for primary sterility. We present our experience with 49 cases who had undergone tube ligation operation earlier. The operation of tube ligation was performed at different centres and modified Pomroy's was the technique most commonly employed. These patients presented for reversal 4 months to 9 years after tubal ligation. All these women had tube ligation for socio-economic reasons and were apparently healthy. The technique of tubal anastomosis has undergone modifications at our centre and could be divided into 4 distinct phases. Therefore we have divided these patients into 4 groups for analysis.

In the group I, we had 20 cases. The operation was performed by the technique described by Shirodkar. After opening the abdomen the tubes, ovaries and uterus were inspected. If the case was found operable, the fundus of the uterus was opened transversely. The ligated stumps of the tube were opened with fine scissors. The intramural portion of the tube was dilated with fine lachrimal duct dilators. The plastic polythelene tube was passed through the fimbrial end to the site of anastomosis and finally through the intramural portion of the tube into the uterine cavity. The triangular prosthesis was passed through the polythelene tubing in the uterine cavity and then similar procedure was repeated on the other side. The polythelene tubing was fixed to the triangular splint with 3-0 silk suture. (Fig. I). The tubal ends were anastomosed with interrupted 3-0 chromic catgut sutures. The mesosalpinx was closed in two layers with the same catgut. The fundus of the uterus was closed in two layers with 3-0 chromic catgut. The prosthesis was removed between 4 to 10 weeks followed by hydrotubation with hydrocortisone every third day for 5 sittings. The solution was made by adding 25 mg. of hydrocortisone in 10-15 ml. of normal saline.

In group II, we had only 3 cases. We did not open the fundus of the uterus and no prosthesis was kept in the uterine cavity. The blocked tubal portion was excised, small polythelene tube was passed through the fimbrial end upto 1 cm. medial to the site of anastomosis. This tube was fixed to the tubal wall with 3-0 black silk. The fallopian tube was anastomosed by interrupted 3-0 chromic catgut sutures in the same way as in group I. These women were subjected to second laparotomy after 4-6 weeks. The prosthesis was removed. The tubes were tested on the operation table, adhesions were removed and haemostasis establish-

ed. The abdomen was closed. Hydrotubation was done as in group I.

In group III we did not use any prosthesis. We operated on 14 cases. The end to end anastomosis was performed after passing lachrimal duct dilater through the fimbrial end. The suture material used was 4-0 chromic catgut. Hydrotubation with hydrocortisone was started on the second postoperative day and repeated on alternate days for 5 sittings. Hydrotubation was repeated on the 8th postmenstrual day every month for 3 months.

In group IV we had 12 cases. We did not keep any prosthesis. We used 5-0 monofilament nylon sutures instead of catgut. The abdomen is opened. The tubes are visualized. The length of the tube on the medial side and lateral side is assessed. The internal os is blocked with uterus holding forceps. Normal saline is instilled through the fundus to find out if the medial end of the tube is patent. This is checked by the medial end of the tube getting distended. If the tube does not get distended or the current of water is not felt through the tubal wall, it is presumed that the medial end of the tube is blocked at the cornual end. Simple end to end anastomosis would not suffice. If the medial end of the tube is patent as is the case in most women, with previous tube ligation, the lachrimal duct dilator is passed through the fimbrial end and the blocked portion of the tube is excised with fine scissors. The dilator is passed through both the cut ends of the tube. Bleeding points are cught with fine mosquito artery forceps and haemostasis established. The adhesions if any are removed and the tubal motility is established. The base of the fallopian tube is fixed with 5-0 monofilament nylon so that the cut ends may not get separated. The end to end anastomosis is done in 2 layers using the same 5-0 monofilament nylon. The first layer consists of 4-6 interrupted sutures. We tried to avoid the tubal mucosa while taking the sutures but we must admit it was not always possible. In the second layer only serosa of the tube was taken. Nontraumatic jewellers artery forceps was used to grasp the tube and very fine delicate needle holder was used to pass the sutures. Hydrotubation was done as in group III. The mesosalpinx was closed with interrupted sutures of the same material. Anterior and posterior mesosalpinx was sutured separately.

Results

The age group of women seeking reversal of tube ligation is shown in Table I. There was no woman below the age of 25 years in this group because average age for acceptance of tube ligation operation in our area is 28.7 years. Most women for reversal belong to the age group between 25 to 35 years. The interval between tube ligation and request for reversal is shown in Table II. The short-

TABLE I
Age

Less than 25 years	Nil
25 — 29 years	26
30 — 34 years	21
35 + years	02
	49

TABLE II
Time Interval Between Tube Ligation and Anastomosis

Upto 1 year	06
1 — 2 years	26
3 — 4 years	12
5 + years	05
	49

est interval was 4 months and the longest interval was 9 years. The patient seeking reversal within 4 months of tube ligation lost her only son in car accident within a few days after tube ligation. The reasons for seeking reversal of tube ligation are shown in table III. Most important reason for demand for reversal is loss of only son, followed by loss of all children (drowning in 2 cases, car accident in 6 cases, infections like gastroenteritis, typhoid, infective hepatitis, mumps etc. in 40 cases). Type of reanastomosis performed is shown in Table IV. Ampullary to ampullary was the most common method of tubal reanastomosis. There was very inadequate lateral end in 4 cases and therefore only terminal salpingostomy was possible.

TABLE III
Reasons for Recanalization

Loss of all children	14
Loss of only son	34
Remarriage	01

TABLE IV
Type of Tubal Anastomosis

Ampullary to ampullary	38 cases
Isthmus to ampullary	7 cases
Terminal salpingostomy	4 cases

Table V summarizes the technique of tubal anastomosis. In group I we had 18 cases. Tubal patency was present in only 10 cases. There were 4 pregnancies in this group. One of these resulted in abortion and the other 3 went to term. We performed 4 laparoscopies and 2 laparotomies in women who failed to conceive. All the women showed marked adhesions at the site of anastomosis. In 1 case the tube was kinked and omentum was adherent at the site of anastomosis. It was also covering the ovary. We separated the adhesions, separated the omentum from the ovary and the anastomosis site and tested the patency of the tube. The tubes were now patent. This woman conceived within 5 months after this operation. (This pregnancy is included in 4 pregnancies in this group). We realized that formation of adhesions was the most common cause of failure to conceive. There were adhesions at the fundus of the uterus where the incision was placed. We therefore decided not to open the fundus and not to leave any prosthesis in uterine cavity in group II cases. In group

TABLE V
Technique of Anastomosis

Group	Technique	Suture material	No. Cases	Tubal patency	Pregnancy	Remarks
I.	End to end anastomosis with prosthesis	3-0 chromic catgut	18	10	4	3 Living 1 abortion
II.	End to end anastomosis	-do-	3	3	1	1 Living
III.	End to end anastomosis without prosthesis	-do-	13	8	5	4 LB 1 Abortion
IV.	End to end anastomosis without prosthesis	5-0 monofilament nylon	11	9	5	4 yet to deliver 1 abortion
V.	Terminal salpingostomy	3-0 chromic catgut	4	1	0	

II we had only 3 cases. Need for relaparotomy deterred us from taking more cases in this group. The tubes were patent in all the 3 cases but only one pregnancy resulted.

In group III, we performed 13 operations. In 12 cases ampullary to ampullary anastomosis was done and in 1 case isthmus to ampullary anastomosis was performed. The tubes were patent in 8 cases and 5 pregnancies resulted. There was 1 abortion. Two laparoscopies were performed in women who failed to conceive. The lateral end of the tube was separated and was lying away from the medial end of the tube, on the right side. In the other case, there were so many adhesions that the tube could not be visualized. The dye was also not seen in the pouch of Douglas.

In group IV we modified the technique and decided to take the women for operation only in the proliferative phase. Five patients have conceived but 1 has aborted at 12 weeks gestation. The other 4 are still to deliver.

There was no ectopic pregnancy in this series. The pregnancy rate has shown improvement as we go from group I to group IV. There was 20 per cent pregnancy rate with the earlier method of anastomosis using prosthesis (group I). Now with use of 5-0 monofilament nylon without prosthesis the pregnancy rate has improved to 45.4 percent. Three patients in group IV are operated in last 2-3 months and therefore the results may improve in the IV group at a later date. We could not perform tubal surgery in 5 cases after opening the abdomen. The reasons why surgery was not possible are as follows.

1. Loss of fimbrial end with bad tube.
2. Lot of adhesions.
3. Too short a tube available for anastomosis.
4. Hydrosalpinx.

All the negative laparotomies were in our earlier series when we did not have a laparoscope. Now for last 3 years we perform laparoscopy whenever necessary before taking the patient for anastomosis.

We performed 4 terminal salpingostomies but none of these patients have conceived. The 5 negative laparotomies and 4 terminal salpingostomy cases are not included in present analysis.

Discussion

The success in tubal surgery depends not only in establishing patency of the oviduct but also in maintaining the normal physiology so that the tube can conduct the sperm, capture the ovum after ovulation, provide a suitable milieu for fertilization and conduct the fertilized egg to the uterus. The presence of delicate fimbria and mobility of the tube as a whole are necessary for pregnancy. Thus goal of surgery of the oviduct is not only to establish patency but to restore physiologic function. The success of tubal surgery would depend on the following factors.

I. Condition of the fallopian tube.
II. The technique and type of tubal surgery.
III. Type of suture material used.
IV. Use of Prosthesis.
V. Postoperative antibiotics, corticosteroids and hydrotubation.

I. Condition of the Tube

There is no doubt that condition of the tube and the length of the available tube determine the success rate after surgery. If too much of the tube is sacrificed at the time of tubal ligation, it leaves very short tube inadequate for any meaning-