

Tubal Recanalization - A Vanishing Art in the World of Art (Assisted Reproductive Technologies)

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Abstract: *Introduction:* Female sterilization remains the most popular contraceptive method among young Indian women. Tubal sterilization is the mainstay of NFWP in India, secondary infertility due to tubal sterilization accounts 3 - 11% out of these 1 - 3 % couple request for another child. The treatment option of secondary infertility due to tubal sterilization is the choice between tubal recanalization and in - vitro fertilization embryo transfer. In this era of ART and ET tubal recanalization is still the method of choice in these types of cases. *Objective:* To evaluate role of tubal recanalization in secondary infertility. *Material & Method:* A retrospective study was carried out in Mahatma Gandhi Medical college and research institute Puducherry, 51 patients under went for Tubal Recanalization. Study duration was July 2005 to July 2009. *RESULTS -* During the study period 30 subjects underwent tubal recanalization. 14 subjects (47%) conceived. Among the women conceived, laparoscopically sterilized had better chance of conception (78.5%) as compared to Pomeroy's (21.5%) technique. Fifty - one women, who underwent tubal recanalization and came for follow up during the study period were included in the study. 34.78% of women conceived among 51 who underwent recanalization. Most of our women marry at young age and complete their family by 25 years, and due to benefit given by government, they opted permanent sterilization, unfortunately, few of them demand recanalization. 51 patients underwent for recanalization in this study and 28.43% had successful pregnancy, 13.6% had spontaneous 1st trimester abortion, 6.52% had ectopic pregnancy. *Conclusion:* There is definite role of tubal recanalization in following sterilization even in present era of IVF in our country. Tubal reversal is more cost - effective option. Pregnancy outcome of tubal reversal is better than from IVF technique. Nulliparous and primiparous women should be motivated to use temporary method of contraception. Tubal recanalization by microsurgical technique is one of the methods to solve infertility after sterilization.

Keywords: Tubal Ligation, Recanalization, IVF, Conception Rate

1. Introduction

Female sterilization remains the most popular contraceptive method among young Indian women. Among the age group of 15 - 49, 36% use female sterilization as contraception method and approximately 4.74 million undergo sterilization. Early marriage, sterilization at young age, high infant and child mortality has led to increase in the need of recanalization in about 1 - 3% of women¹. Currently two treatment options are available for women who wish to become pregnant after having had tubal sterilization: tubal recanalization or IVF. The age of the female is the most important factor that affects the outcome with both treatment options. The average live birth rate per cycle of treatment with IVF is around 28%. Of the pregnancies that result, only 65.8% are singletons; 31.0% are twins and 3.2% triplets or more². The evidential rise in the multiple pregnancy rate is a side effect of IVF. Microsurgical tubal repair produces a birth rate that surpass 55%, without enhancing the risk of multiple pregnancies. It provides the couple multiple cycles in which they can conceive naturally, and the possibility to have more than one pregnancy from a single operation.

Choice of the methods demands the treating center to have equal expertise in both. The perplexity lies with the inclination that makes IVF readily available through an ever

- rising number of centers, while there is an abrupt decline in the teaching and practice of reconstructive tubal microsurgery, eliminating a credible surgical option in nearly all the centers.

The method of tubal sterilization varies according to the expertise available from fimbriectomy to classical Pomeroy's to laparoscopic sterilization³.

There is good evidence to support HSG as the standard first line test to assess tubal patency, but is limited by false - positive diagnosis of proximal tubal blockage. A hysterosalpingogram (HSG) is commonly used for initial screening for tubal patency and the presence of any tubal abnormality, as it is a noninvasive and inexpensive work - up⁴. An HSG is radiographic examination involving dye, wherein contrast is instilled via the cervix and into the uterus⁵. Patent tubes allow contrast to easily flow through and spill out into the peritoneum. HSGs are associated with a false positive rate for diagnosis of tubal blockage of 50%, along with specificity and sensitivity rates of 83% and 65%, respectively, for tubal patency^{6,7}.

Microsurgical reversal of tubal sterilization and IVF are two very different approaches in offering the opportunity to achieve a pregnancy to women who have had a prior

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sterilization. The first approach is designed to restore the function of the Fallopian tube (s). In tubal reversal, the aim is to “untie”, unblock or reconnect your fallopian tubes so that eggs may pass through them again, and travel to the uterus after fertilization by a sperm. This is a surgical procedure and the method used to “fix” the fallopian tubes will depend on the method used to ligate them. Whereas the IVF replaces the tubal function. For first, to be successful, requires other factors of fertility to be normal or to be readily treatable. So present study is to establish the role of tubal recanalization in secondary infertility in relation to achievement of pregnancy.

2. Material

A prospective study was carried out in Mahatama Gandhi Medical college and research institute, Puducherry from July 2005 to July 2009. Data was recruited from 51 women who had undergone recanalization during the study period. Statistical analysis was done using SPSS version 22. .

Inclusion criteria:

Women who had undergone recanalization during study period and had come for follow up.

Exclusion criteria:

Women who had undergone recanalization during study period and had lost follow up.

3. Method

The informed written consent was taken from all the subjects after explaining the risks and benefits of the surgery to the couple.

Tubal recanalization procedure -

- Hysterosalpingography was done to assess the proximal stump length of fallopian tube.
- To rule out male factor infertility semen analysis was done.
- Operation was done on post menstrual day 7 to day 10 by mini laparotomy using microscopic instruments and prolene no - 6 along with continuous irrigation with solution.
- Patient was discharged on 4th day of surgery.
- Patients were asked to resume their coital activity 6 week after surgery.
- Follow up visits after six weeks, on 3 month, on six months or 1 year or early if patient conceives.

Outcome measure studied

Following outcome measures were studied, type of sterilization, the technique of sterilization performed previously, reason for request of recanalization was noted. Outcome of pregnancy studied in the form of ectopic pregnancy, successful pregnancy, conception rate, failed to recanalization, abortion and lost to follow up.

4. Results

Fifty - one women, who underwent tubal recanalization and came for follow up during the study period were included in

the study.34.78% of women conceived among 51 who underwent recanalization.

1) Age

Study subjects belonged to age group 22 - 30 yrs. Maximum women who conceived were between the age group of 25 - 27 years as shown in Figure1. Still in India most of the women marry at a young age and try to complete their family by 25 years. In spite of counseling for temporary methods of contraception, they opt for sterilization due to the additional benefits given by the government for sterilization. Unfortunately, later in life due to some or the other reason, few of them demand recanalization.

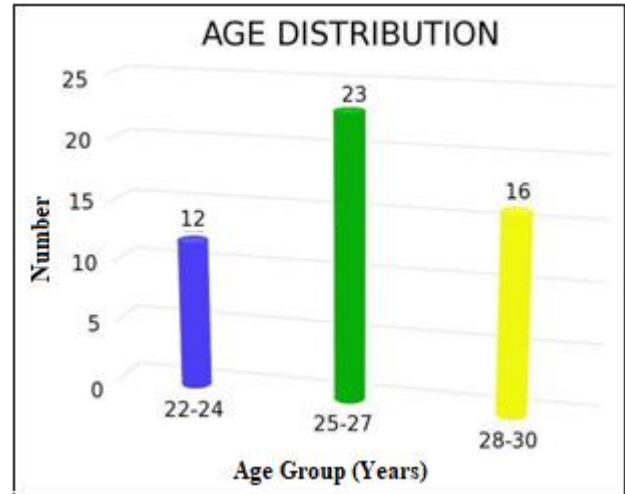


Figure 1: Showing age distribution of the women undergoing recanalization

2) Method of sterilization

In the current study 23.53% women had undergone sterilization via modified pomey’s technique and 76.47% women had undergone sterilization via Falope ring method.

3) Type of Sterilization:

Most of the females (49.01%) in the study were sterilized in puerperal period i. e via interval tubectomy. As the tubal damage is less with the laparoscopic procedure conception rate is better. Residual tubal length would be better following recanalization.

Table 1: Showing the type of sterilization done

Type of sterilization	Percentage
Laparoscopy	23.5%
Minilaparotomy	15.69%
LSCS	11.9%
Puerperal	49.01%

4) Reason for recanalization

In the present study 52.94% subjects underwent recanalization due to death of male child. In 11.68 percent remarriage was an indication, 19.69% for death of both child and 15.69% for no male child as shown in Figure 2.

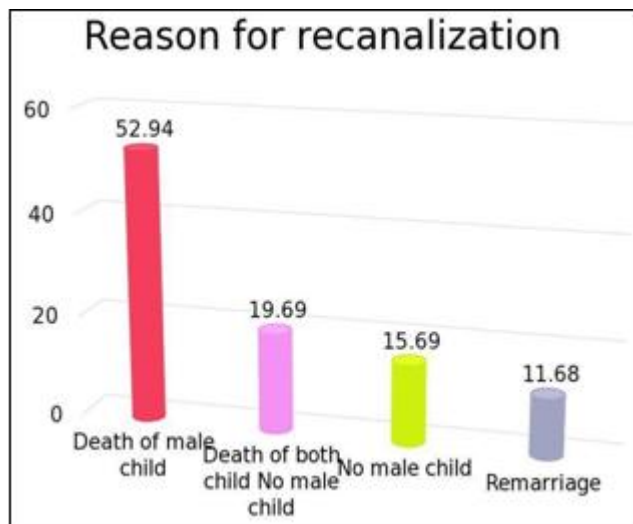


Figure 2: Showing reason for request of Recanalization

5) Outcome following recanalization

Out of 51 patients who underwent recanalization in this study 28.43% had successful pregnancy, 13.6% had spontaneous 1st trimester abortion, 6.52% had ectopic pregnancy. 28.43 % conceived within 1 year of recanalization while 1.17 % women lost to follow up shown below in Figure3.



Figure 3: Showing outcomes following recanalization

5. Discussion

In current study, the 25.53% patients were sterilized via Falope ring technique compared to those with 75.47% patient with Pomeroy's procedure and showed better outcome than Pomeroy's technique. The latter method is combination of ligation and excision which normally removes 3 to 4 cm of the isthmic or ampullary portion of the tube⁸ and can be even more at times⁹. Similarly, in a study by Jain et al¹⁰, patients with Falope ring showed comparatively better results (68.57 %) than Pomeroy's (40 %). Laparoscopic sterilization results in minimal injury to the tube and hence the chances of conception are better.

In the present study the most common indication for recanalization is death of male child. In a study by Jain et al¹⁰ and Vilvapriya et al¹¹ most common indications for recanalization was death of children followed by remarriage.

In the Jayakrishna et al¹² and other studies^{10, 13} from our country showed that the most common reason for seeking recanalization was death or disability of child (72%) followed by second marriage (28%).

On the contrary, the most common reason for regretting sterilization in the developed countries was the desire to have children from a new husband¹⁴.

The overall conception rate was 28.43% in the present study while on the contrary the conception rate was 58.8% in Jayakrishnan et al¹² study and 44 % of women conceived in the study of Ramalingappa et al¹⁵. Similarly conception rate was 77.27% in women who had sterilization to recanalization interval of less than 2 years in Jain et al¹⁰ study. The overall success in terms of intrauterine pregnancy after reversal of sterilization by microsurgery reported by other authors also varies from 60 - 80%¹⁶⁻¹⁹.

The rate of ectopic pregnancy increases after sterilization reversal procedure. In the current study rate is found to be 6.5%. It is worth remembering that sterilization itself predisposes to ectopic pregnancy in case of failure of sterilization up to 7-16 %^{20,21}.

This low rate of ectopic pregnancy is due to proper alignment of lumen, gentle handling of tissues and proper excision of all pathological tissue under magnification. In a large series from various hospitals, 0.3 to 3% of all pregnancies were reported to be ectopic²².

6. Conclusion

Due to high cost and no feasibility of IVF, there is definite role of tubal recanalization following sterilization even in present era of IVF in our country. Overall live birth rates range widely from 20 - 35% per cycle in IVF. Risk of hyperstimulation, multiple pregnancy and limited number of attempts in IVF make woman to choose reversal of sterilization over IVF in our country.

Tubal recanalization is more cost - effective choice. Pregnancy outcome of tubal reversal are also good.

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