International Surgery Journal
Rajendran MK. Int Surg J. 2018 Dec;5(12):3873-3876
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20185010

Original Research Article

Tubal recanalisation-microsurgical tubal reversal anastomosis

M. K. Rajendran*

Department of Plastic Surgery, Government Mohan Kumaramangalam Medical College Hospital, Salem, Tamil Nadu, India

Received: 08 October 2018
Accepted: 01 November 2018

***Correspondence:**
Dr. M. K. Rajendran,
E-mail: drmkrajendran@yahoo.co.in

ABSTRACT

Background: Nowadays, in India, to control population, we are strictly following permanent methods of sterilization after one or two children. Because of some unfortunate things like RTA or some natural calamities, some parents have lost one or both the children in that situation. To study the outcome of the procedure patency of the tube, complications, pregnancy if happens during the study period.
Methods: Totally 65 female patients were included in the study. Authors have the patients for past 18 years including post tubectomy patients with is variable age and duration after sterilization and all methods of sterilization except fimbriectomy. For all cases, we have done all basic investigation, USG, and HSG.
Results: Totally 65 patients are followed regularly from 2008. The success rate (pregnancy rate) is >90%. In these patients, pregnancy outcome was in form of intrauterine pregnancy (90%) ectopic pregnancy (2%), term viable pregnancy (3%) and spontaneous abortion (less than 1%).
Conclusions: In the past, in most of the studies, the success rate (pregnancy rate) is more in the age group of <30 years. But in present study even in >30 years age and any long duration of the post-sterilization period, the success rate is more, because the two-layer technique 8-0 prolene under loupe magnification is the leading factor for the success rate (pregnancy rate).

Keywords: Ectopic pregnancy, Intrauterine pregnancy, Spontaneous abortion, Tubal recanalization

INTRODUCTION

Tubal recanalization is a microsurgical technique which needs significant training and expectation in handling the tissues meticulously. The success depends on patience, perseverance, and perspiration on the part of the surgeon.[1] In recent years, an increasing number of couples of lower age and lower parity have begun to request for sterilization. When these couples experience the death of a child or if they divorce or remarry following the death of the husband, they may wish to be able to have another child. The availability of microsurgical recanalization procedures would bring hope to those in need of these services and would improve the confidence of clients who are acceptors of voluntary sterilization. Following a tubal ligation, there are usually two remaining fallopian tube segments.[2] The proximal tubal segment that emerges from the uterus and the distal tubal segment that ends with the fimbria next to the ovary. After opening the blocked ends of the remaining tubal segments, a variety of microsurgical techniques are utilized to recreate a functional tube. The newly created tubal openings are drawn next to each other by placing sutures in the connective tissue that lies beneath the fallopian tubes.[3] The retention suture prevents the tubal segments from pulling apart while the tube heals. Microsurgical sutures are used to precisely align the tubal lumens (inside the canal of the tube), the

muscular portion (muscular external), and the outer layer of the tube.[4] Most surgeons try to avoid the use of stents which can damage the delicate cilia that line the tube and create the flow of fluid that is needed to push the egg and embryo into the uterus. Other surgeons use a narrow flexible stent to gently thread through the tubal segments or into the uterine cavity in order to line up the tubes in order to reconnect them. In either case, once the microsurgical repair is completed dye is injected through the cervix into the uterus and out through the tubes to ensure that the fallopian tube is open from the uterine cavity to its fimbrial end.[5] The surgeons who use stents then gently withdraw them from the fimbrial end of the tube after the repair is completed. Laparoscopic Tubal Reversal is a minimally-invasive surgical procedure using small, specially-designed instruments to repair and reconnect the fallopian tubes.[6]

METHODS

Totally 65 female patients were included in the study. The study was conducted in the department of plastic surgery, Government Mohan Kumaramangalam medical college hospital, from 2016-2018. Authors have the patients for past 18 years including post tubectomy patients with is variable age and duration after sterilization and all methods of sterilization except fimbriectomy. For all cases, we have done all basic investigation, USG, and HSG.

Exclusion criteria

- Women aged above 39 years,
- Women with the obvious pelvic inflammatory disease, endometriosis or fibroid as a cause of infertility,
- Women with ovulatory disturbances,
- Women with any contraindications to pregnancy or surgery.

Technique/ procedure

Under spinal or epidural anesthesia through abdominal incision abdomen opened, uterus delivered, tubes with ovaries are delivered, ligation site identified and fresh the edges. Haemostasis obtained with 100%, under loop 4X magnification. Tubal anastomosis was done with 8-0 prolone in layers. Two layers first layer by intermittent sub mucosal layer and serosal layer, at the same time patency identified and confirmed before taking a bite. I will not use any stent for the patency of the lumen. At the ends of the anastomosis patency confirmed by introducing probes from fimbrial end across the anastomosis site another side also done the same procedure. During procedure inj. Hydrocortisone 100 mg IV given. sexual intercourse was allowed after two months of surgery. Three months postoperatively HSG levels were performed to ascertain the status of tubal patency. Subsequently, these patients were followed up three months for the evidence of pregnancy up to five years. Pregnancy rate was correlated with the method used for previous tubal ligation, the age of the patient at the time of sterilization reversal, the time interval between sterilization and reversal, length of the reconstructed tubes, anatomical site of the anastomosis.

Stastical analysis

Chi-square/ fisher exact test has been used to find the significance of study parameters on a categorical scale between two or more groups.

RESULTS

Table 1: Age group.

Age (year)	No. of patients	Percentage (%)
20-24	19	22.5
25-29	30	57.5
30-34	16	20
Total	65	100

Totally 65 patients were in regular follow up. 19 patients were between 20-24 years. 30 were between 25-29. 16 were between 30-34. Age group 25-29 were more in the study. Age has a definite effect on pregnancy rate because after the age of 35 while the incidence of genetic abnormalities and maternal complications tends to increase, this age is considered a cutoff point for any tubal reconstruction procedure.

Table 2: Parity.

Parity	No. of patients	Percentage (%)
2 or less	59	97.5
3 or more	7	2.5
Total	65	100

59 patients had less than 2 parity, 7 had less than 3. In present study most reversal seekers (97.5 %), were para two or less this is not surprising considering in our hospital population, the parity is low.

Table 3: Sterilization.

Type of sterilization	No. of patients	Percentage (%)
Puerperal	20	35
Laparoscopic	the 30	50
Concurrent with LSCS	15	15
Total	65	100

Total 20 patients had puerperal sterilization. 30 with laparoscopic, 15 with concurrent LSCS. the present study showed a success rate of 50% in women who had undergone laparoscopic sterilization as compared to 35% in women following reversal of Pomeroy technique. the success in case of mechanical occlusion of uterine tubes

with is higher as smaller amounts of tubal segments are excised

Out Of 65 Patients 30 with isthmo-isthmic, 18 with isthmo ampullary, ampulla-ampullary, 8 with infundibula-ampullary, cuff salpingostomy. The site of tubectomy and hence the site of recanalization is an important factor in determining the results of tubectomy reversal. It is suggested that the isthmus of the fallopian tube is an ideal site for sterilization considering the possible need for reversal.

Table 4: Type of anastomosis.

Type of anastomosis	No. of tubes	Percentage (%)
Isthmo-isthmic	30	37.5
Isthmo-ampullary	18	35
Ampulla-ampullary	8	12.5
Infundibulum-ampullary	4	8
Cuff salpingostomy	5	9
Total	65	100

Table 5: Final length of the tube.

Final length of the tube	No. of tubes	Percentage (%)
> 6cm	50	62.5
4–6cm	10	35
<4 cm	5	2.5
Total	65	100

In the study above 6cm were in 50 patients, 4-6cm length in 28 cases, less than 4cm were 5 cases. the These the results highlight the significance of the type of sterilizer action procedure on the prospects for pregnancy following reversal surgery. Mechanical procedures (laparoscopic ring occlusion) that produce minimal damage to the isthmus of the tube are the most favorable. Though the patient with the tubal length of <4cm conceived, the number is too small to comment.

Table 6: Pregnancy outcomes.

Pregnancy outcomes	No. of patients	Percentage (%)
Live birth	40	66.3
Abortion	2	9.5
Ongoing pregnancy	2	9.5
Ectopic pregnancy	1	4.7
Total	45	90

The live birth rate was 76.3% and the abortion rate was 9.5%. The rate of ectopic pregnancy being 4.7% and ongoing pregnancy rate of 9.5% in this study. Live birth in 20 patients, abortion 2 patients. Ongoing pregnancy is two. Ectopic pregnancy is one and overall success rate in 45 patients.

DISCUSSION

Reconstructive tubal surgery was at one time the only treatment option for infertile women with damaged fallopian tubes. The overall risk of reconstructive surgery is small and includes the recognized complication of anesthesia and surgery. Surgery, if successful, offers multiple cycles in which to achieve conception and the opportunity to have more than one pregnancy.[7] The abortion rate subsequent to reconstructive tubal surgery is not increased over that of the normal population. The live birth and ectopic pregnancy rate depend on the specific nature of the disease and the extent of the tubal damage. The request for reversal of sterilization usually come from couples who have remarried, tend to be younger, have fewer live children, have had more abortions, less schooling, and are poor users of contraception.[8] In these high-risk patients, counseling and time to make the decision for sterilization are essential. These women should be sterilized by a method that destroys the least tube. Haj N et al, retrospectively evaluated major reasons for the request for reversal which were a loss of children 50%, remarriage 27%, 10%.[9]

Holst et al, studied comparison between microsurgical and micro laser techniques and concluded that the carbon dioxide laser's advantages (precision, homeostasis and the ability to preserve more normal reproductive tissue), although technically beneficial in performing microsurgical tubal reanastomosis, may not prove to be superior to conventional microsurgical technique as pregnancy rates are compared. Additional long-term studies are needed as more experience is gained to further delineate the role of the carbon dioxide laser for microsurgical tubal reanastomosis.[10] Kao et al, observed that the results of microscopic sterilization reversal were comparable to the reported results of microsurgical methods. They support the contention that traumatic technique rather the microscope is important for good results. In the present study, the death of one or all children was the commonest reason for a couple to seek reversal of sterilization (80%).[11] In the study by Katz et al, death of a male child (64.2%) was the major reason for sterilization reversal. The most important factor to enhance the effectiveness of recanalization is the length of the reconstructed tubes Silber and Cohen, 1980 and Henderson, 1981.[12] In the present study, 97.5% had a final tubal length of more than 4 cm. The pregnancy was achieved in 61.5% of the women when the tubal length was more than 6 cm in comparison to 40.9% when the length was 4-6 cm.[13] These results highlight the significance of the type of sterilization procedure on the prospects for pregnancy following reversal surgery. Mechanical procedures (laparoscopic ring occlusion) that produce minimal damage to the isthmus of the tube are the most favorable.[14,15]

CONCLUSION

Although microsurgical reversal achieved 100% patency rate in studied patients, certain factors, like duration of sterilization, the technique of sterilization, and the length of the tube remaining after reversal, played a crucial role in deciding the pregnancy rate. Besides the magnification and atraumatic technique, tubal length >4cm and the time interval between sterilization and reversal of <5years resulted in better pregnancy rate. Although the microsurgical technique has its own limitations, its proper application has brought a ray of hope to women seeking sterilization reversal.

ACKNOWLEDGEMENTS

The author would like to thank the professors, Associate professors and Assistant professors, Department of Plastic Surgery, Government Mohan Kumaramangalam Medical College. Salem, Tamil Nadu, India for their valuable support in research work.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Azziz R. Microsurgery alone or with Interceed absorbable adhesion barrier for pelvic sidewall adhesion reformation. Surg Gynecol Obstet. 1993;177:135.
2. Caballero-Gomez JM, Ortega-Moreno J. Study of two simplified microsurgical techniques for uterine horn anastomosis in rat. Arch Gynecol Obstet. 1993;252:191-5.
3. Canis M, Mage G, Pouly JL, Manhes H, Wattiez A, Bruhat MA. Laparoscopic distal tuboplasty: report of 87 cases and a 4-year experience. Fertility and sterility. 1991 Oct 1;56(4):616-21.
4. Dubuisson JB, Chapron C, Morice P, Aubriot FX, Foulot H, Bouquet de Jolinière J. Laparoscopic salpingostomy: Fertility results according to the tubal mucosal appearance. Human Reprod. 1994;9:334-6.
5. Dunphy B, Pattinson HA. Office falloposcopy: A tertiary level assessment for planning the management of the infertile women. Aust NZ J Obstet Gynecol. 1994;34:189-92.
6. Gauwerky JF, Klose RP, Vierneisel P, Bastery G. Fibrin glue for reanastomosis of the fallopian tube in the rabbit: Adhesions and fertility. Human Reprod. 1992;7:1274.
7. Gomel V, Rowe TC. Microsurgical tubal reconstruction and reversal of sterilization. In Wallach EE, Zacur HA (eds): Reproductive Medicine and Surgery. St. Louis, CV Mosby; 1995: 890-899
8. Grow DR, Coddington CC, Flood JT. Proximal tubal occlusion by hysterosalpingogram: a role for falloposcopy. Fertility Sterility. 1993 Jul;60(1):170-4.
9. Haj N, Haj M, Shasha SM, Oettinger M. Tubal Anastomosis in the Rat Using the Tissue Adhesive Cyanoacrylate (Histoacryl®). Gynecologic Obstetric Investigation. 1994;38(1):54-6.
10. Holst N, Maltau JM, Forsdahl F, Hansen LJ. Handling of tubal infertility after the introduction of in vitro fertilization changes and consequences. Fertil Steril. 1991;55:140-3.
11. Kao LW, Giles HR. Comparison of the laser-assisted anastomosis, laser welding, and microsurgical anastomosis of the rabbit uterine tubes. Obstet Gynecol. 1993;81(1):122-6.
12. Katz E, Donesky BW. Laparoscopic tubal anastomosis: a pilot study. J Reprod Med. 1994;39:497-9.
13. Kerin JF, Williams DB, San Roman GA, Pearlstone AC, Grundfest WS, Surrey ES. Falloposcopic classification and treatment of fallopian tube disease. Fertil Steril. 1992;57:731.
14. Marana R, Rizzi M, Muzii L, Catalano GF, Caruana P, Mancuso S. Correlation between the American Fertility Society classifications of adnexal adhesions and distal tubal occlusion, salpingoscopy, and reproductive outcome in tubal surgery. Fertil Steril. 1995;64(5):924-9.
15. Nezhat CR, Siegler AM, Nezhat F, Nezhat C, Seidman DS, Luciano AA. Operative Gynecologic Laparoscopy: Principles and Techniques, McGraw-Hill Professional; 1995:188-196.

Cite this article as: Rajendran MK. Tubal recanalization-microsurgical tubal reversal anastomosis. Int Surg J 2018;5:3873-6.