SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Surgery

Post-Tubectomy Recanalization: Experiences at a District Hospital-A Study of 40 Cases

Dr. Md. Shofiur Rahman[1*], Dr. Jafrin Akhter[2], Dr. Ahsan Habib[3], Dr. Akteruuzzaman[4]

[1]Associate Professor, Department of Surgery, Sheikh Sayera Khatun Medical College, Gopalgonj, Bangladesh
[2]Junior Consultant, Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
[3]Associate Professor, Department of Surgery, Sher-e-Bangla Medical College, Barishal, Bangladesh
[4]Associate Professor, Department of Surgery, Magura Medical College, Magura, Bangladesh

DOI: https://doi.org/10.36347/sasjs.2024.v10i09.015 | **Received:** 12.08.2024 | **Accepted:** 17.09.2024 | **Published:** 21.09.2024

***Corresponding author:** Dr. Md. Shofiur Rahman
Associate Professor, Department of Surgery, Sheikh Sayera Khatun Medical College, Gopalgonj, Bangladesh

Abstract | **Original Research Article**

***Introduction*:** The demand for post-tubectomy recanalization is increasing due to evolving family planning goals, loss of a child, or changes in marital status. The purpose of the study was to assess the outcomes and experiences of post-tubectomy recanalization procedures. ***Aim of the study*:** The aim of the study was to evaluate the outcomes and experiences of post-tubectomy recanalization procedures performed at a district hospital in a study of 40 cases. ***Methods*:** This prospective observational study included 40 female patients aged 20 to 39 years who underwent post-tubectomy recanalization conducted at the Department of Surgery in collaboration with the Department of Obstetrics and Gynecology at Magura District Hospital and private clinics of Magura district, Magura, Bangladesh, from January 1, 2014, to December 31, 2020. Patients with no history of pelvic inflammatory disease, endometriosis, fibroids, or other contraindications were included. Data on demographics, surgical details, and pregnancy outcomes were collected and analyzed using SPSS version 22. ***Result*:** The majority of patients (50.00%) were aged 30-34 years, with 90.00% having a parity of 2 or less. Isthmo-isthmic anastomosis was the most common type, performed in 47.50% of cases, with 77.50% of tubes achieving a final length of more than 6 cm. Following recanalization, 62.50% of patients achieved a live birth. ***Conclusion*:** This study on 40 cases of post-tubectomy recanalization demonstrates its effectiveness in restoring fertility, with a 62.50% live birth rate. The findings emphasize the crucial role of anastomosis type and final tube length in achieving successful outcomes.

Keywords: Post-Tubectomy Recanalization, District Hospital, Tubal Sterilization, Fertility Restoration, Microsurgical Techniques.

INTRODUCTION

In Bangladesh, family planning is often associated with tubal sterilization due to various socioeconomic factors, with many young women in their twenties opting for this permanent method of contraception [1, 2]. Mini laparotomy, an innovative procedure for abdominal tubectomy, involves a small incision and is typically performed under local anesthesia [3]. Although effective, about 10% of women eventually regret their decision, and approximately 1% seek to regain fertility due to reasons such as the loss of a child or remarriage [4]. These women may choose between artificial reproductive techniques or tubal recanalization, a procedure designed to reverse sterilization. Tubal recanalization, performed with simple instrumentation, offers a feasible solution that can be implemented in hospitals across the country.

The demand for post-tubectomy recanalization is increasing due to evolving family planning goals, loss of a child, or changes in marital status. Efforts have been made to simplify this procedure, as demonstrated by recent studies that present methods for post-tubectomy fallopian tube recanalization using minimal technical resources [5]. While laparoscopic recanalization has gained popularity in Western countries, its high cost and technical demands restrict its availability in developing nations [6-8]. To address these challenges, the use of basic general surgical instruments and suture materials is advocated, ensuring that practitioners can easily acquire the necessary tools [9]. In cases of proximal tubal blockage, selective recanalization has proven effective in reopening the fallopian tubes, offering a viable option for women seeking to reverse their tubal sterilization.

Tubal recanalization, a microsurgical option to address proximal obstructions, is complex and requires considerable expertise. Additionally, conditions like tubal spasm or pseudo obstruction can complicate diagnosis and treatment, making effective management crucial [10, 11]. Proximal tubal obstructions, which can significantly affect fertility, are often addressed through techniques like transcervical fallopian tube recanalization (T-FTR). Since the late 1980s, T-FTR has utilized selective catheterization with fluoroscopic guidance to enhance visualization and treatment of tubal blockages [12]. This procedure is considered low-risk with a high technical success rate, ranging from 85% to 95% [13]. The success of restoring fertility through T-FTR depends on several factors, including the woman's age, the number of recanalized tubes, the type and duration of infertility, and any prior medical treatments. Recent advancements in imaging and catheterization techniques have improved the ability to diagnose and manage tubal obstructions, making T-FTR a promising option for women with proximal fallopian tube issues. While T-FTR effectively addresses blockages caused by debris, inflammation, or infection, challenges remain in differentiating between various causes of tubal obstruction and managing cases where the tubes may have been inaccurately diagnosed as obstructed.

Despite these advancements, challenges remain in accurately diagnosing and treating tubal obstructions. Effective management requires ongoing evaluation of procedural outcomes and patient characteristics. By analyzing these factors, healthcare providers can improve the success rates of recanalization procedures and better address the needs of individuals facing tubal infertility. The purpose of the study was to assess the outcomes and experiences of post-tubectomy recanalization procedures performed at a district hospital in a study of 40 cases.

Objectives

- The aim of the study was to evaluate the outcomes and experiences of post-tubectomy recanalization procedures performed at a district hospital in a study of 40 cases.

METHODOLOGY & MATERIALS

The study was conducted at the Department of Surgery in collaboration with the Department of Obstetrics and Gynecology at Magura District Hospital and private clinics of Magura district, Magura, Bangladesh, from January 1, 2014, to December 31, 2020. The study involved 40 female patients who underwent post-tubectomy recanalization during this period.

Inclusion Criteria:

- Women aged 20-39 years who had previously undergone sterilization.
- Patients with no history of pelvic inflammatory disease, endometriosis, fibroids, or other conditions that could affect tubal recanalization success.
- Patients who were eligible and provided informed consent for surgical recanalization.

Exclusion Criteria:

- Women above 39 years of age.
- Patients with ovulatory disturbances or other contraindications to pregnancy or surgery.

Informed consent was obtained from all participants, ensuring confidentiality and voluntary participation. Preoperative evaluations included basic investigations, ultrasonography (USG), and hysterosalpingography (HSG) to assess tubal patency. Under spinal or epidural anesthesia, laparotomy was performed to access the fallopian tubes. Microsurgical post-tubectomy recanalization involved resecting the blocked segment, freshening the edges, and performing an end-to-end anastomosis using fine sutures under 4x magnification. Tubal patency was confirmed intraoperatively by introducing a probe through the fimbrial end across the anastomosis site. Postoperative care included administering hydrocortisone and advising abstinence from sexual activity for two months. Three months after surgery, patients underwent HSG to confirm tubal patency. Follow-up continued for up to six years to monitor the success of recanalization, including pregnancy outcomes and any complications related to post-tubectomy procedures. Data were collected prospectively, including demographic characteristics, surgical details, and pregnancy outcomes, with statistical analysis performed using SPSS version 22.

RESULT

Table 1: Age Distribution of the Study Patients (n=40)

Age Group (Years)	Number of Patients	Percentage (%)
20-24	2	5.00
25-29	6	15.00
30-34	20	50.00
35-39	12	30.00
Total	40	100.00

The age distribution of patients undergoing post-tubectomy recanalization is detailed in this table. The largest group consisted of 20 (50.00%) patients aged 30-34 years. This was followed by 12 (30.00%) patients

aged 35-39 years, 6 (15.00%) patients aged 25-29 years, and 2 (5.00%) patients aged 20-24 years.

Table 2: Parity of the Study Patients (n=40)

Parity	No. of patients	Percentage (%)
2 or less	36	90.00
3 or more	4	10.00
Total	40	100.00

This table presents the parity of patients who underwent post-tubectomy recanalization. The majority, 36 (90.00%) patients, had a parity of 2 or less. In contrast, 4 (10.00%) patients had a parity of 3 or more.

Table 3: Type of Anastomosis and Final Length of the Tube Post-Recanalization (n=40)

Variables		No. of Patients	Percentage (%)
Type of Anastomosis	Isthmo-isthmic	19	47.50
	Isthmo-ampullary	11	27.50
	Ampulla-ampullary	5	12.50
	Infundibulum-ampullary	2	5.00
	Cuff Salpingostomy	3	7.50
Final Length of the Tube	> 6 cm	31	77.50
	4–6 cm	6	15.00
	< 4 cm	3	7.50

Type of anastomosis included Isthmo-isthmic in 19 (47.50%) patients, Isthmo-ampullary in 11 (27.50%), Ampulla-ampullary in 5 (12.50%), Infundibulum-ampullary in 2 (5.00%), and Cuff Salpingostomy in 3 (7.50%). For final tube length, 31 (77.50%) tubes were longer than 6 cm, 6 (15.00%) were between 4–6 cm, and 3 (7.50%) were shorter than 4 cm.

Table 4: Pregnancy Outcomes Post-Recanalization

Pregnancy Outcome	No. of Patients	Percentage (%)
Live Birth	25	62.50
Abortion	1	2.50
Ongoing Pregnancy	1	2.50
Ectopic Pregnancy	1	2.50
Total	28	70.00

Out of the patients, 25 (62.50%) achieved a live birth, 1 (2.50%) experienced an abortion, and 1 (2.50%) had an ongoing pregnancy. Ectopic pregnancies were reported in 1 (2.50%) patient.

DISCUSSION

Historically, reconstructive tubal surgery was the primary option for women with damaged fallopian tubes. While the procedure carries minimal risks, primarily related to anesthesia and the surgical process itself, its success can offer significant benefits. Successful surgeries provide multiple chances for conception and potentially allow for more than one pregnancy [14]. The incidence of abortion following this surgery mirrors that of the general population, but the chances of live birth and the risk of ectopic pregnancy can vary based on the severity of tubal damage and the underlying condition. Therefore, it is vital for high-risk patients to receive comprehensive counseling and ample time to consider their options before proceeding with sterilization.

In our study, the age distribution of patients undergoing post-tubectomy recanalization showed that the largest group consisted of 20 (50.00%) patients aged 30-34 years, followed by 12 (30.00%) patients aged 35-39 years. This distribution aligns closely with the findings of Joshi *et al*., [15], who reported an average age at recanalization of 32.8 years. This suggests that post-tubectomy recanalization procedures are most commonly performed in women in their early to mid-thirties. Similar patterns have been observed in other studies [16, 17], reinforcing that this age group is particularly prevalent among those seeking treatment for tubal infertility. This age-related distribution highlights the importance of targeting interventions and resources to the demographic most affected by proximal tubal obstruction.

In our study, 90.00% of patients undergoing post-tubectomy recanalization had a parity of 2 or less. This closely aligns with the findings of Rajendran *et al*., [18], who reported that 97.5% of their study population had a parity of 2 or less. The high percentage similarity indicates a consistent trend where women with lower

parity are more commonly seeking post-tubectomy recanalization. This similarity may reflect a broader trend in fertility treatments where low parity is a common characteristic among patients seeking such interventions.

In our study, the types of anastomosis were distributed as follows: Isthmo-isthmic in 47.50%, Isthmo-ampullary in 27.50%, Ampulla-ampullary in 12.50%, Infundibulum-ampullary in 5.00%, and Cuff Salpingostomy in 7.50%. These results show a notable similarity to those reported by Rajendran *et al*., [18], where 37.5% of patients had isthmo-isthmic anastomosis and a significant proportion had isthmo-ampullary anastomosis. The alignment in the prevalence of isthmo-isthmic anastomosis and similar findings in other types of anastomosis highlight the importance of the site of recanalization in the outcomes of tubal procedures. This suggests a consistent preference for isthmo-isthmic anastomosis, reflecting its potential as an ideal site for tubal surgery.

Regarding the final length of the tube, 77.50% of our study's tubes were longer than 6 cm, which correlates with findings from a previous study where 97.5% of patients had a final tubal length of more than 4 cm [18]. Additionally, this study highlighted that pregnancy rates were significantly higher (61.5%) when the tubal length exceeded 6 cm compared to those with lengths between 4–6 cm (40.9%) [19]. This similarity emphasizes the importance of achieving an optimal tubal length to enhance the success rates of pregnancy following recanalization, reinforcing the critical role of anastomosis site and tubal length in the outcome of the procedure [20].

In our study, 62.50% of patients achieved a live birth, 2.50% experienced an abortion, 2.50% had an ongoing pregnancy, and 2.50% had an ectopic pregnancy. These results are similar to those reported in another study [18], which found that 66.3% of patients had a live birth, 9.5% experienced an abortion, 9.5% had an ongoing pregnancy, and 4.7% had an ectopic pregnancy. The comparable percentages in live birth rates and the presence of ectopic pregnancies between the studies highlight the consistency in outcomes for post-tubectomy recanalization procedures across different populations.

Overall, our study underscores the effectiveness of post-tubectomy recanalization in improving fertility outcomes, with results closely aligning with existing literature on procedural success and patient demographics. These findings contribute valuable insights into the management of tubal infertility, reinforcing the importance of tailored interventions and thorough preoperative counseling in optimizing patient outcomes.

Limitations of the study

This study had several limitations:

- Small sample size may limit the generalizability of the findings.
- Single-center study might introduce bias in the results.
- Follow-up duration variability among patients may affect the consistency of long-term outcome assessments.

CONCLUSION

This study on 40 cases of post-tubectomy recanalization underscores the procedure's effectiveness in restoring fertility, with a 62.50% live birth rate. Key factors, including the type of anastomosis and the final tube length, significantly influence successful outcomes. Despite inherent challenges, post-tubectomy recanalization emerges as a promising option for women seeking to reverse sterilization and restore fertility.

REFERENCES

1. Kundu, S., Kundu, S., Rahman, M. A., Kabir, H., Al Banna, M. H., Basu, S., ... & Hossain, A. (2022). Prevalence and determinants of contraceptive method use among Bangladeshi women of reproductive age: a multilevel multinomial analysis. *BMC public health*, *22*(1), 2357.
2. Pachauri, S., & Santhya, K. G. (2002). Reproductive choices for Asian adolescents: A focus on contraceptive behavior. *International Family Planning Perspectives*, 186-195.
3. Park, K. (2011). Demography and Family Planning. In: Park, K., editor. Preventive and social medicine. 21st ed. Jabalpur, India: Banarasidas Bhanot; p. 443-481.
4. Hanafi, M. M. (2003). Factors affecting the pregnancy rate after microsurgical reversal of tubal ligation. *Fertility and sterility*, *80*(2), 434-440.
5. Nsonwu-Anyanwu, A. C., Charles-Davies, M. A., Bello, F. A., Taiwo, V. O., Bin, L., & Oni, A. A. (2016). Cytokine profile in Nigerians with tubal infertility. *Central European Journal of Immunology*, *41*(1), 101-106.
6. Ribeiro, S. C., Tormena, R. A., Giribela, C. G., Izzo, C. R., Santos, N. C., & Pinotti, J. A. (2004). Laparoscopic tubal anastomosis. *International Journal of Gynecology & Obstetrics*, *84*(2), 142-146.
7. Papaioannou, S. (2004). A hypothesis for the pathogenesis and natural history of proximal tubal blockage. *Human Reproduction*, *19*(3), 481-485.
8. Peterson, H. B., Jeng, G., Folger, S. G., Hillis, S. A., Marchbanks, P. A., & Wilcox, L. S. (2000). The risk of menstrual abnormalities after tubal sterilization. *New England Journal of Medicine*, *343*(23), 1681-1687.
9. Eddy, C. A., & Pauerstein, C. J. (1980). Anatomy and physiology of the fallopian tube. *Clinical obstetrics and gynecology*, *23*(4), 1177-1194.

10. Thurmond, A. S., Novy, M., & RÖSCH, J. (1988). Terbutaline in diagnosis of interstitial fallopian tube obstruction. *Investigative Radiology*, *23*(3), 209-210.
11. Thurmond, A. S., & Rösch, J. (1990). Nonsurgical fallopian tube recanalization for treatment of infertility. *Radiology*, *174*(2), 371-374.
12. Thurmond, A. S., Machan, L. S., Maubon, A. J., Rouanet, J. P., Hovsepian, D. M., Van Moore, A., ... & Bass, J. C. (2000). A review of selective salpingography and fallopian tube catheterization. *Radiographics*, *20*(6), 1759-1768.
13. Lyons, R. A., Saridogan, E., & Djahanbakhch, O. (2006). The reproductive significance of human Fallopian tube cilia. *Human reproduction update*, *12*(4), 363-372.
14. Gomel, V., & Rowe, T. C. (1995). Microsurgical tubal reconstruction and reversal of sterilization. In: Wallach, E. E., Zacur, H. A., editors. Reproductive Medicine and Surgery. St. Louis, CV Mosby; p. 890–899.
15. Joshi, K. N., & Anshumala, J. (2022). Post Tubectomy, Fallopian Tube Recanalization. *International Journal of Medical Science and Clinical Research Studies*, *2*(12), 1504-1507.
16. Fataftah, J., Tayyem, R., Al Rshoud, F., & Al-Omari, M. (2022). Spontaneous pregnancy rate after fallopian tube recanalization for unilateral obstruction with a patent contralateral tube. *Egyptian Journal of Radiology and Nuclear Medicine*, *53*(1), 227.
17. Al-Omari, M. H., Obeidat, N., Elheis, M., Khasawneh, R. A., & Gharaibeh, M. M. (2018). Factors affecting pregnancy rate following fallopian tube recanalization in women with proximal fallopian tube obstruction. *Journal of Clinical Medicine*, *7*(5), 110.
18. Rajendran, M. K. (2018). Tubal recanalisation-microsurgical tubal reversal anastomosis. *International Surgery Journal*, *5*(12), 3873-3876.
19. Kerin, J. F., Williams, D. B., San Roman, G. A., Pearlstone, A. C., Grundfest, W. S., & Surrey, E. S. (1992). Falloposcopic classification and treatment of fallopian tube lumen disease. *Fertility and sterility*, *57*(4), 731-741.
20. Nezhat, C. R., Siegler, A. M., Nezhat, F., Nezhat, C., Seidman, D. S., & Luciano, A. A. (1995). Operative Gynecologic Laparoscopy: Principles and Techniques. *McGrawHill Professional*, 188–196.