



The reproductive results after the reversal of tubal sterilization: Tubal reanastomosis: Improved strain technique

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Abstract

The aim of the study is to present the personal improvement of tubal reanastomosis technique over the years for the women who, for several reasons, change their mind and are willing to get pregnant following the administration of tubal ligation. 21 women on whom tubal reanastomosis had previously been administered after having been deemed eligible for surgery and who changed their mind and applied to the clinic I work for to get pregnant again were included in the study. The postoperative pregnancy rates and pregnancy results pertaining to 14 of these women were analyzed. The rate of pregnancy following tubal reanastomosis is 72%, and 46% of those who got pregnant achieved term. Tubal recanalization is a method in which complications such as multiple pregnancy and ovarian hyperstimulation syndrome (OHSS) do not develop in addition to having a higher patient compatibility and success rate when compared to IVF (In Vitro Fertilization). Besides these benefits, tubal recanalization offers the opportunity of concurrent intervention if pathologies such as endometrial polyps, ovary cyst, myoma and adhesion exist in the patient. Tubal reanastomosis is an alternative treatment to IVF in the selected patient group by taking into consideration various factors including the age of the women, the length of the tube following ligation, hormonal panel and the spermogram of the spouse.

Keywords: sterilization reversal, sterilization, sterilization tubal

1. Introduction

Tubal ligation is a contraceptive method administered extensively in the world. One quarter of women in the USA opt for this method for contraceptive purposes. The method which is the most preferred one among all the other relevant methods for the 35-45 age range is the sterilization of women (1). Approximately 10-20% of the patients ask for tubal reanastomosis (2). Among the causes of regret are psychological reasons, religious beliefs, wish for having a new child, death of a child or a wish for having a child from the newly-wed spouse. Upon such instances, tubal reanastomosis procedure can be administered through surgical methods (laparotomic, laparoscopic or robotic) (3). Pregnancy rates may range from 31% to 74% following the tubal reanastomosis procedure (4). In this study, my tuboplasty technique as an alternative to IVF has been presented.

2. Materials and Methods

In the present study of mine, women who had tubal recanalization administered between January 2008 and May 2023 but who wished for pregnancy again following tubal ligation in the province of Sivans and at University of Health Sciences Kanuni Training and Research Hospital, Gynecology and Obstetrics Clinic in Trabzon were retrospectively scanned. The minimum one-year pregnancy results of the women following reanastomosis were recorded. At our clinic, smear test, hormone panel, transvaginal ultrasound and examination of the spouse's spermogram are administered to the patients

who would like to get reanastomosis prior to the operation. Those who have problems with hormon panel and spermogram were referred to IVF. 21 women deemed to be eligible for tubal reanastomosis and operated were scanned retrospectively. The approval of all the women participating in the study along with the informed consent forms were obtained. These patients were administered undergone recurring surgical operations and tuboplasty through minilaparotomy.

2.1. Surgical Technique

The first feature of my technique is that the pediatric catheter with a guide covered by 6F silicon placed from the softened cervix via vaginal 200 mcg misoprostol at follicular phase at lithotomy position is inserted into the uterus and inflated with 1,5 cc. By attaching a pine-tipped syringe at its edge, it is held in a sterile way while the patient is being taken to the supine position (Fig. 1).

The second feature is the ensuring of the appropriate plan for anastomosis by forwarding the soft tip of the epidural catheter from the external of the fimbria into the uterus through the right tube and holding the free tubal edges for anastomosis at the same plane during the operation.

The third and most important feature is that while the suture is being made from a total of 4 quadrants with 5-0 absorbable multifilament suture from outside-in and vice versa, the knot is

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not tied unless all the four sutures are tied. About 5-10 mm anastomosis is held open and strain so that the mucosa are entirely visible while each suture is made (strain technique) (Fig. 2). After the sutures are made from the 4 quadrants, the sutures are knotted by starting from the bottom, respectively. Afterwards, the upper peritoneum of the uterine tube is drawn closer through 3 or 4 absorbable multifilament sutures of 4-0 to prevent leakages and reinforce anastomosis.

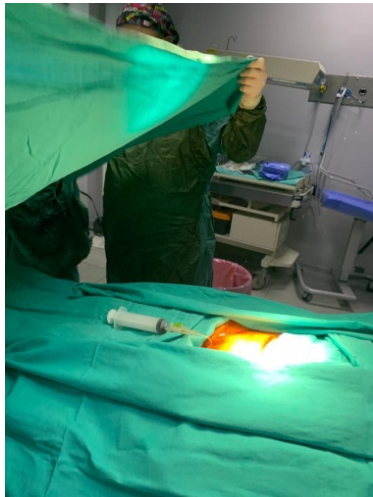


Fig. 1. The pine-tipped syringe to check the patency (openness) of the tubes

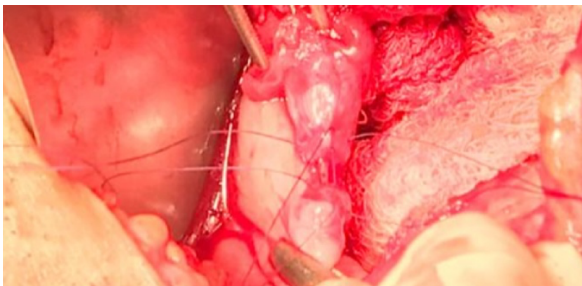


Fig. 2. The strained position of 5-0 threads at 4 quadrants without being tied

It is checked whether leakage exists or not by administering methylene blue in an inoperative manner during reanastomosis. The transition of methylene blue from the tubes is also checked.

The telephone numbers of these women were obtained. It was learned if they got pregnant or not. If they got pregnant, the information on how pregnancy resulted was obtained as well. SPSS-25 was employed to obtain all the related statistical data. Student test and chi square tests were used for the statistical analyses in the study. Furthermore, the descriptive values were indicated as mean ± standard deviation.

3. Results

The results of pregnancy are to be evaluated based on 14 patients since 4 individuals could not end up with marriage and 3 of them did not complete one-year of their marriage.

10 in 14 patients of ours got pregnant (72%). Abortus was the case in 2 of our patients. 5 of our patients delivered live birth, and 2 of our patients were operated due to ectopic pregnancy. We had 3 patients, one of whom recovered with

methotrexate. On all the three of these patients, it was possible to do unilateral tuboplasty and they had advanced level of adhesion stimulated by ectopic pregnancy.

The pregnancy of 2 of our patients who had laparoscopic tubal ligation in their previous operation resulted in abortus. For 12 patients of ours, tubal ligations were carried out by Pomeroy method during the cesarean operations.

Concerning the women included in our study, the average age of tuboplasty was 36,57+/-3,1, the minimum age was 31 and the maximum age was 40. The average period from tubal ligation to reanastomosis was 5.7 years among these women (Table 1.).

Table 1. Descriptive characteristics of our 21 patients operated

	N	Minimum	Maximum	Mean	Std. Deviation
age	21	31,00	40,00	36,5714	3,13961
g	21	2,00	5,00	2,8095	,74960
p	21	2,00	3,00	2,5238	,51177
y	21	2,00	3,00	2,5238	,51177
a	21	,00	1,00	,1905	,40237
dc	21	,00	1,00	,0952	,30079
bmi	21	24,00	36,00	29,2381	2,98169
fsh	21	3,00	15,00	7,6667	3,21455
lh	21	2,00	13,00	6,2857	3,11677
e2	21	12,00	132,00	61,7619	36,43749
Sterility period	21	1,00	12,00	5,7143	2,55231

Table 2. The pregnancy results of 14 patients included in the statistics related to pregnancy

Pregnancy rate after reanastomosis	72%
Rate of live birth after reanastomosis	36%
Rate of ectopic pregnancy in women who got pregnant	21%
Rate of abortus in women who got pregnant	14%
Rate of live birth in pregnancies	46%

While tubal reanastomosis was administered to 11 of 14 women, unilateral tubal reanastomosis was administered to 3 of them. In all of our patients to whom unilateral tubal anastomosis could be done, ectopic pregnancy developed, while among those who were administered bilateral tuboplasty ectopic pregnancy was not observed. 7 patients in 11 who were administered tuboplasty got pregnant, 3 of them had abortus and 4 had live birth. Our follow-up and treatment processes for our patients tracked through our study are ongoing in terms of fertility. I am of the opinion that the pregnancy rates will increase through reevaluation by obtaining HSG for those who are not able to get pregnant at the end of one year when our hysterosalpingography (HSG) unit is opened.

4. Discussion

Tubal reanastomosis is a good alternative for women who would like to get pregnant again following tubal sterilization. One aspect I would like to note about my patients is that they have high levels of adhesion, yet they are very willing for tuboplasty. Besides the use of intrauterine catheter and epidural catheter, the most important feature is the keeping the anastomosis sutures of 4 taut with strain technique until the

plane is passed while performing the tubal anastomosis around the epidural catheter as can be seen in Fig.2.

Upon the insisting of our patients at their reproductive period on whom tubal ligation were administered, which is a compulsory requirement of IVF, this service has been offered to them. The thought of even being fertile made them contended. Thus, for 4 of our patients, the pregnancy statistics have not been able to be obtained since they had no stable relationships. The rate of getting pregnant is 72% and that of live birth is 36%. The important point is that 3 in 3 patients on whom it was possible to perform unilateral tuboplasty experienced ectopic pregnancy.

In a similar study, Gomel found the rate of live birth as 28% in the UVF group. Yet, it is stated that 28% of those pregnancies ended up with twins and 3% with triplets. The rate of live births in the tubal reanastomosis group was found to be as 55% (4).

The study of Çetin et al. includes 134 participants. Unilateral laparoscopic reanastomosis was administered on 58 women and IVF was applied to 76 patients. The pregnancy rate was observed to be 55% in the tubal reanastomosis group, while it was 15% in the IVF group (5).

As for the data concerning the subgroup analyses, Jain et al. reported a 40% of success rate in the reanastomosis following the anastomosis performed by Pomeroy method, whereas the success rate was 68% in reanastomosis following the anastomosis conducted with tubal ring technique (6). This rate is compatible with the rate of ours.

In the patients' outcomes of Adnan Yener and Burak Giray presented as a new technique, the soft tip of the epidural catheter was used and one tip was taken out from the abdomen.

They used the soft end of the epidural catheter and took one end out of the abdomen. However, the technique I present is different in that the anostomosis sutures were held taut and strained as can depicted in Figure 2. After all the sutures are passed, the tubal mucosa were drawn close, anostomosis was carried on accordingly, and the catheter was not kept in its place (7).

It can be concluded that tubal reanastomosis is not applicable for each woman; and yet, it can be employed as an

alternative to IVF. Reanastomosis is an appropriate method particularly for women aged below 40, with a normal hormone profile and spouse spermogram, not wanting multiple pregnancy and who wish to get pregnant naturally.

Ethical Statement

Ethical committee permission was obtained from Trabzon Medical Faculty Clinical Research Ethics Committee (2024/46 decision dated 16.01.2024).

Conflict of interest

The authors declared no conflict of interest.

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None to declare.

Authors' contributions

Concept: Ö.E., K.B., Y.K., D.G., Design: Ö.E., K.B., Y.K., D.G., Data Collection or Processing: Ö.E., K.B., Y.K., D.G., Analysis or Interpretation: Ö.E., K.B., Y.K., D.G., Literature Search: Ö.E., K.B., Y.K., D.G., Writing: Ö.E., K.B., Y.K., D.G.

Ethical Statement

This study is not required ethics committee approval.

References

1. Mosher WD, Jones J. Use of contraception in the United States: 1982-2008. *Vital Health Stat.* 2010;23(29):1-44.
2. Yapça ÖE, Gümüşburun N, Al RA, et al. Pregnancy outcomes after tubal reanastomosis, 10-year experience at a tertiary center. *JAREM.* 2018;8(2):79-82.
3. Kavoussi SK, Kavoussi KM, Lebovic DI. Robotic-assisted tubal anastomosis with one-stitch technique. *J Robot Surg.* 2014;8(2):133-6.
4. Gomel V. Reversal of tubal sterilization versus IVF in the era of assisted reproductive technology: a clinical dilemma. *Reprod Biomed Online.* 2007;15(4):403-7.
5. Çetin C, Cetin MT, Ürünsak İF. Unilateral laparoscopic tubal reversal versus IVF. *J Laparoendosc Adv Surg Tech A.* 2013;23(9):771-4.
6. Jain M, Jain P, Garg R, et al. Microsurgical tubal recanalization: a hope for the hopeless. *Indian J Plast Surg.* 2003;36(2):66-70.
7. Yener A, Giray B. Tubal reanastomoz sonrası gebelik sonuçları: yeni bir teknik. *Dicle Med.* 2021;48(4):839-843.