Pregnancy Outcomes after Tubal Reanastomosis, 10-Year Experience at a Tertiary Center

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ABSTRACT

Objective: Tubal reanastomosis is not a frequently performed surgical procedure and much of the the national and international literature is retrospective. We thus aimed to investigate pregnancy outcomes after 10 years of experience in tubal reanastomosis to contribute to the literature.

Methods: We evaluated 68 patients with pregnancy who underwent tubal sterilization in the preliminary stage and who underwent surgery for tubal reanastomosis between January 2007 and January 2017 at our clinic. We excluded 16 cases from the study and included 52 cases in the study. Post-operative pregnancy outcomes of the cases were analyzed.

Results: The rate of pregnancy after tubal reanastomosis was 53.8% at our clinic. Live birth rates were 32.6%, ectopic pregnancy rate was 9.6%, and abortus rate was 11.5%.

Conclusion: Pregnancy outcomes after tubal reanastomosis are particularly good in patients under 40 years of age. Compared with in vitro fertilization, there are additional advantages of low cost, high singleton pregnancy rates, low risk of ovarian hyperstimulation, simultaneous intervention with intraoperative coexisting uterine and tubaovarian pathology, and pelvic adhesions.

Keywords: Tubal sterilization, tubal reanastomosis, pregnancy

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INTRODUCTION

Globally, tubal sterilization represents a common method of contraception, with 1 out of 3 women undergoing surgical sterilization in the US (1). The reported post-sterilization regret rates are between 2% and 13% for tubal sterilization, which is the most common sterilization technique in women between 35 and 45 years old (2-4). Reasons for regret include the desire to have a new baby, death of a child, death of a spouse, divorce, re-marriage, religious pressure, and attribution of newly occurring health problems to tubal sterilization. In developed countries, the desire to have a child with the new spouse after divorce is the most common cause of regret (5). Approximately 14.3% of the patients request reanastomosis after tubal sterilization, whereas only 1.1% actually undergo reanastomosis surgery (6). Tubal restenosis with laparotomy was first reported by Gomel in 1977 (7), while the first procedure with laparoscopy was performed by Sedbon et al. in 1989 (8). The objective of the present study was to examine the outcome of tubal reanastomoses performed in our unit, which is a referral center, in the context of a comparative assessment with national and international published data.

METHODS

A total of 68 patients undergoing tubal reanastomosis between January 2007 and January 2017 at the Gynecology and Obstetrics Unit, Atatürk University School of Medicine were included in the study. The study protocol was approved by the Ethics Committee for Clinical Research of Atatürk University, followed by patient data retrieval from patient files and the digital hospital database. Data on age at sterilization, time between sterilization and reanastomosis, demographic characteristics, reasons for tubal reanastomosis request, certain hormone levels, semen analysis of the spouse, and operative data were recorded. Files of patients attending follow-up visits after reanastomosis were separately examined. Finally, patients were contacted via telephone calls, and after oral consent was obtained, information on potential pregnancy and its outcome was collected. Furthermore, the reasons of the request for reanastomosis were acquired and recorded. Hormone profile was obtained on day 2 or 3 of menstruation in all patients requesting tubal reanastomosis. Spouse semen analyses were assessed. Of the patients, 6 were excluded on the basis of contraceptive use after surgery, and 10 were due to missing data

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Table 1. Demographic characteristics and pregnancy outcomes

Age at tubal sterilization	29.6 (25-41)
Age at reanastomosis	34.6 (26-45)
Time from sterilization to reanastomosis (months)	28.4 (11-134)
No. of pregnancies prior to reanastomosis	3.6 (2-9)
No. of live births prior to reanastomosis	2.8 (1-6)
Total no. of pregnancies after reanastomosis	28 (53.8%)
Live birth	17 (32.6%)
Ectopic pregnancy	4 (7.7%)
Abortus	7 (13.5%)

Table 2. Outcome of pregnancy according to age

Age (years)	Pregnancy (yes) n (%)	Pregnancy (no) n (%)	Total no. of cases n (%)	p
<35	22 (57.9)	16 (42.1)	38 (100)	0.617
>35	6 (42.9)	8 (57.1)	14 (100)	
Chi-square test				

Table 3. Pregnancy results according to the interval between tubal sterilization and reanastomosis

Time (months)	Pregnancy (yes) n (%)	Pregnancy (no) n (%)	Total no. of cases n (%)	p
<36	20 (58.8)	14 (41.2)	34 (100)	0.764
>36	8 (44)	10 (56)	18 (100)	
Chi-square test				

Table 4. Indications for tubal restenosis

Indication	n (%)
Change of opinion, desire for new children	30 (57.7)
Desire to become pregnant for concomitant disorders	11 (21.1)
Religious beliefs (relief, conscience)	6 (11.5)
Divorce, re-marriage	3 (5.8)
Loss of a child	2 (3.9)
Total	52 (100)

and/or failure to contact via phone calls. Of the 68 patients, 52 were included in the final analyses. All patients underwent tubal reanastomosis surgery with minilaparotomy. After releasing the tubal ends, anastomosis was performed by apposing the four quadrants with 6-0 absorbable sutures. The patency and leakage of the tubes were tested using postoperative administration of methylene blue in patients with no catheter guidance. For those undergoing the procedure with catheter guidance, no methylene blue was used, and the catheter was removed 5 to 7 days after the procedure. If no pregnancy occurred between postoperative 3 and 6 months, tubal passage was ascertained with hysterosalpingography in those who attended regular follow-up visits. Information on the outcome of the procedure with regard to the occurrence of pregnancy was collected via telephone calls among the 52 participants.

Statistical Analysis

Statistical analysis was performed using Statistical Package for Social Sciences 21.0 for Windows 7 (IBM SPSS Corp., Armonk, NY, USA) with Student's t-test and chi-square tests. Descriptive values were expressed as mean±standard deviation.

RESULTS

The mean age of the patients was 34.6 (range: 26-45) years. The average time from sterilization to reanastomosis was 28.4 (range: 11-134) months. Of all participants, 38 (73%) were <35 years old, whereas 14 (27%) were >35 years old. The rates of pregnancy, live birth, ectopic pregnancy, and abortus in these 52 participants were 53.8% (n=28), 32.6% (n=17), 7.7% (n=4), and 13.5% (n=7). Table 1 shows the demographic characteristics and the outcomes with regard to pregnancy. Although patients younger or older than 35 years old were not statistically significantly different in terms of the rates of pregnancy, the corresponding rates were 57.8% versus 42.8% in these two groups, respectively (Table 2). A comparison of those patients with a time of less or more than 36 months between tubal sterilization and reanastomosis showed pregnancy rates of 58.8% versus 44%, respectively (p>0.05) (Table 3). The reasons for requesting a reanastomosis were a change of decision in 30 (57.7%), desire to have a new baby in 11 (21.1%), belief that a new pregnancy would have a positive effect on a number of health issues, mainly pelvic pain, in 6 (11.5%), feeling of remorse due to religious beliefs in 6 (11.5%), desire to have children in a new marriage after divorce in 3 (5.8%), and desire to have a new baby after the loss of child in 2 (3.9%) (Table 4).

DISCUSSION

Although tubal sterilization is probably one of the most efficient contraceptive methods available, its main disadvantage is the possible regret that may be experienced after the procedure and that may lead to a request for reoperation. The likelihood of requesting reanastomosis is higher in women undergoing tubal sterilization at a younger age (9). In addition, the patient decision for reanastomosis has been reported to increase over time after the procedure, reaching 4% at 3 years, 8% at 7 years, and up to 13% at 13 years (10). In a previous study, despite the desire to undergo in 14.3% of the participants, only a small proportion, that is, 1.1%, actually had the procedure (6). In the study by Şentürk et al. (11), similar to our observations, 40 patients had reanastomosis within 6 years, whereas 19 patients had the procedure after 6 years following tubal sterilization. These observations show the fact that several factors including patient age, number of children and their gender, and opinion of the spouse should be carefully considered prior to the decision for tubal sterilization. Additionally, the single most important determinant of the rates of pregnancy after tubal reanastomosis is the patient age (12, 13). Increasing age is associated with a decline in the ovarian reserve, with an additional negative contribution of environmental factors. Although there is no upper age limit for tubal reanasto-

Table 5. Previous studies from Turkey

Study	No. of cases	Rate of pregnancy	Rate of live birth	Rate of ectopic pregnancy
This study	52 (100%)	28 (53.8%)	17 (32.6%)	4 (7.7%)
Seyfettinoğlu et al. (23)	36 (100%)	11 (30.5%)	5 (13.8%)	2 (5.5%)
Şentürk et al. (11)	59 (100%)	28 (47.4%)	Not reported	2 (3.4%)
Yavuz et al. (14)	30 (100%)	18 (60%)	Not reported	1 (0.3%)
Çetin et al. (24)	58 (100%)	32 (55.2%)	Not reported	1 (1.7%)

mosis, a significant decrease in success rates has been reported after 40 years old, suggesting that the age between 35 and 40 years may be considered as an upper threshold for such procedures (14-17). Consistent with such views, in our study, the rate of pregnancy was high in patients <35 years old. The two other important factors for successful pregnancy after reanastomosis include the tubal length after reanastomosis and the site of anastomosis. A minimum tubal length of 4 cm and an isthmus-isthmus anastomosis have been reported to be associated with higher pregnancy rates (18, 19). In our unit, all reanastomosis procedures involve an isthmus-isthmus reanastomosis, unless required otherwise. Despite a wide variability in the reported pregnancy rates following reanastomosis, they generally range from 55% to 80% (20-22). In a large series involving 6,690 tubal reanastomosis patients, the rates of pregnancy, live birth, and ectopic pregnancy were 69%, 35%, and 13.1%, respectively (22). In previous four studies from Turkey, the pregnancy rates were 30.5%, 47.4%, 60%, and 55.2%; and ectopic pregnancy occurred in 5.5%, 3.4%, 0.3%, and 1.7% of the cases in respective studies (11, 14, 23, 24). Table 5 summarizes the previous Turkish studies on this subject. Except for the study by Seyfettinoğlu et al. (23), the results are consistent with international studies. The rates of ectopic pregnancy generally range between 2.9% and 13.1% (19, 22, 25, 26). The likelihood of pregnancy is inversely proportional to the time elapsed between sterilization and reanastomosis (19, 27). In this regard, the pregnancy rates in patients with a time of less than or more than 3 years were 58.8% versus 44%, respectively.

CONCLUSION

Tubal reanastomosis should be the first-line surgical procedure for tubal reanastomosis after tubal sterilization, particularly in patients <40 years old who have a desire to become pregnant again. The additional advantages of this procedure include low cost, high rate of single pregnancy, low risk of ovarian hyperstimulation, and opportunity to perform surgical intervention for concomitant uterine or tubo-ovarian pathology or pelvic adhesions in the same session.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of Atatürk University School of Medicine.

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

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