Original Article

TUBAL STERILIZATION REVERSAL: IS THERE ANY ROLE IN THIS MODERN ERA OF ART?

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Abstract

Objectives: To determine the clinical pregnancy rate and to evaluate the factors affecting pregnancy rate following tubal recanalization.

Study Design: Descriptive case series.

Sampling Technique: Consecutive sampling.

Setting / Duration of Study: The study was conducted at Lady Willingdon Hospital Lahore, from January 2010 to March 2014.

Methodology: Fifty nine women were included who underwent tubal re-anastomosis at Lady Willingdon Hospital Lahore.

Inclusion Criteria: Patients undergone tubal ligation, no other female cause of infertility, normal semen analysis.

Surgical Procedure: Patients underwent tubal re-anastomosis through laparotomy. 4-quadrant suture technique was used.

Data Analysis: Data was collected and entered into SPSS version 20. Descriptive statistics were computed and differences between groups were assessed through Chi square test where it was required. P-value < 0.05 was taken as statistically significant.

Results: Out of 59 patients we could follow only 55 patients for clinical pregnancy as rest of 4 were lost for follow-up. Pregnancy rate, intrauterine ongoing pregnancy, miscarriage and ectopic pregnancy were the main outcome measures. Over all pregnancy rate was 34.5% (19/55), intrauterine pregnancy rate was 84.2% (16/19), term viable pregnancy was 68.8% (11/16). Spontaneous abortions were 31.3% (5/16) and ectopic pregnancy rate was 15.8% (3/19).

Conclusions: The important prognostic factors for the success of tubal recanalization are age of the patient, sterilization/reversal interval, site of sterilization, method used for sterilization and length of the tube after reanastomosis. The technique is feasible, simple and less time consuming with good intrauterine pregnancy rate.

Key Words: Tubal reanastomosis, Tubal recanalization, Pregnancy rate, Tubal sterilization.

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Introduction

Tubal sterilization at present remains the most common method of birth control despite the availability of a wide variety of contraception methods.[1] Every year 60 million females undergo tubal sterilization worldwide.[2] In developing nations like Pakistan, tubal ligation for sterilization is one of the commonest methods of contraception practiced by females.[3]

Around 15% of females who undergo tubal ligation regret their sterilization, however only 1% of such females undergo reversal.[2] A large number of reasons compel females, who had undergone tubal sterilization earlier, to ask for subsequent reversal of the procedure in order to restore their fertility.[4]

The most frequent reason for the request of reversal is a change in marital status. Further reasons encompass longing for more children, death of a child, spiritual concerns and psychological factors.[5] Tubal re-anastomosis is a surgical procedure that re-establishes a connection between the residual segments of the fallopian tube after sterilization.[6]

The dilemma these patients face is that they have to choose between surgical re-anastomosis and IVF. In view of this problem, assessment for success of either treatment is significant, so a clinician ought to assist the patient in making the right choice.

Factors affecting the success rates in attempted reversal of prior sterilization procedures comprise of the surgeon's experience, age of the patient, technique employed, site of occlusion, manner of occlusion, pathologic condition of the residual tissues of the tube, length of the left behind tubal parts and the existence of comparable or dissimilar calibers of portions of oviduct.[5]

Prior to 1978, reversal of sterilization could only be achieved by merely one option, i.e. surgical re-anastomosis of the fallopian tube.

Increase in rates of conception due to in vitro fertilization (IVF) made it prominent in previous decades. Nevertheless only a small segment of females undergo IVF owing to non affordability, few IVF centers in Punjab and complications related to assisted reproductive technique (ART). Recently, the importance of specialized training for tubal anastomosis has been re-emphasized. Typically, surgical tubal recanalization via laparotomy has been the gold standard,[6] however with development of surgical procedures, mini laparotomy, laparoscopy and robotic surgery are also being carried out. Various reversal techniques exercised include 4-quadrant suture technique,[3] one – stitch technique[4] and fixation/biological glue technique.[7]

In the literature, no data is available regarding tubal recanalization in Pakistan. Therefore this study was conducted to evaluate the pregnancy rate and the factors affecting it following tubal recanalization.

Moreover the study was aimed at determining whether tubal re-anastomosis can replace IVF in public sector hospitals.

Material and Methods

The study was conducted at Lady Willingdon Hospital Lahore, from January 2010 to March 2014. It was a descriptive case series. Fifty nine women were included who underwent tubal re-anastomosis. Ethical approval was taken from LWH before starting the study. The inclusion criteria was patients requesting for tubal ligation with no other female cause of infertility and normal semen analysis. The patients were excluded on the basis of age > 40 years, no more than 2 previous laparotomies, severe endometriosis and chronic PID.

Counseling of both husband and wife was done and informed consent was taken.

Patients were interrogated, examined and investigated for evaluation. There hysterosalpingogram (HSG) / diagnostic laparoscopy and semen analysis were carried out.

The patients suitable for study were put on elective list for surgery. 4-quadrant suture technique was used through laparotomy. Sutures used in surgery were Prolene no. 1 (for stenting), Prolene no. 4/0 (round – bodied atraumatic needle for tubal anastomosis) and Vicryl no. 2/0(for mesosalpinx repare).

We do not have the facility of microscope so we did laparotomy by pfannensteil incision. The occluded segments were resected and healthy lumen exposed. Prolene no. 1 was used as stent and four extramucosal sutures were applied at 12', 3', 6' and 9-O clock position with prolene 4/0. Extramucosal sutures include muscularis and serosa while mucosa was spared. Knots were facing the serosa and mesosalpinx was approximated with vicryl no. 2/0. Hemostasis was secured. Constant irrigation of tubes with normal saline was done and peritoneal levage carried out. Stents were removed after 21 days and patients were followed up for conception for 24 months.

Data was collected and entered into SPSS version 20. Descriptive statistics were analysed, percentage was calculated for qualitative, mean and standard deviation for quantitative variables and differences between groups were assessed through Chi square test where it was required. P- value < 0.05 was taken as statistically significant.

Results

Out of 59 patients we could follow only 55 patients for clinical pregnancy as rest of 4 were lost for follow up. Main outcome measures were pregnancy rate, intrauterine ongoing pregnancy, miscarriage and ectopic preg-

nancy.

Over all pregnancy rate was 34.5% (19/55), out of which intrauterine pregnancy rate was 84.2% (16/19) and ectopic pregnancy was 15.8% (3/19). Term viable pregnancy was 68.8% (11/16) and spontaneous abortion was 31.3% (5/16).

Certain observations were made like age ranged between 25 – 40 years with an average of 33.3 years. 98 % were less than 39 years and only 1 patient was 40 years old.

Average duration of surgery noted was 45 min. Commonest reason for reversal was second marriage.

Factors affecting pregnancy rates observed in the study were, age of the patient, length of the tubes after surgery, time interval between ligation and reversal, site of anastomosis and method used for ligation.

Table 1: Patient's Age and Pregnancy Rate.

Patients No.	Age (Years)	Pregnant (N = 19)	Percentage
4	< 30	3	75
22	30 – 34	10	45.5
28	35 – 38	6	21.4
1	40	0	0

Table 2: Tubal Length and Pregnancy Rate.

Tubal Length (cm)	Cases (n = 55)	Pregnant (N = 19)	Percentage	Statistical Analysis
< 4	21	1	4.8	P-value
5 – 6	35	15	42.9	0.00 sig
> 6	4	3	50	

Table 3: Sterilization Method and Pregnancy Rate.

Method	No	Percentage	Got Preg.	Abortion	Ectopic Preg.
Pomeroy	57	(96.6)	18	5	3
Fallope ring	2	(3.38)	1	-	-
P-value = 0.000 sig					

Table 4: Sterilization/Reversal Interval and Pregnancy Rate.

Years of Sterilization	Got Operated	Got Pregnant	Percentage	Analysis
< 2	22	8	39.1	P-value = 0.001 sig
2 – 5	6	1	16.7	
> 5	6	1	16.7	

Table 5: Repair Site and Pregnancy Rate.

Site	Cases (n = 55)	Pregnant (n = 19)	Percentage
Isthmus-isthmus	24	11	57.9
Isthmus-Ampulla	28	8	42.1
Ampulla-ampulla	6	-	-
Cornu-isthmus	1	-	-

Ectopic Pregnancy: In isthmus ampullary anastomosis

Table 6: Time for Clinical Pregnancy.

Time After Procedure (Months)	No. of Patients (n = 19)	Percentage
6	4	21.0
12	8	42.2
18	5	26.3
24	2	10.5

Discussion

There are considerable ethnic and geographical variations in the frequency of female tubal sterilization.[1-3] The major issue worldwide is regret after having the procedure and the reported incidence of reversal request is around 15%.[2] Survey of literature shows the commonest reason for request is second marriage.[4] In our study 93.8% of the patients were falling into this group which was comparable with other studies.

Females, with previous history of fallopian tubes ligation, seeking pregnancy face the dilemma of having the treatment options of surgical tubal re-anastomosis or assisted reproductive (ART) techniques[8] but due to high cost of IVF, patients usually go for surgical reconstruction.

Literature shows a general consensus regarding women's age. Multiple studies emphasize that age is a major prognostic factor.[1,9,10] They believe that conception rate is reciprocal to the patient's age. The results are comparable as in our study 75% of the patients who got pregnant were less than 30 years of age.

The remaining length of the fallopian tube is another parameter to assess the pregnancy rate. Deffieux and coworkers, have shown that more than 7 cm tubal length after surgery is an indicator for improved conception rate.[11] In our data 50% of the women conceived where the post surgery tube was more than 6 cm and it was statistically significant.

Regarding type of sterilization, in literature clinical pregnancies were seen in 72% after Fallope ring , and 67% after Pomeroy sterilization.[12] Our study has shown clinical pregnancy rate of 96.6% where the Pomeroy's technique was used for sterilization. Higher percentage may be a reflection of most commonly used method of sterilization in Pakistan.

In literature it is indicated that sterilization / reversal interval is indirectly proportional to over all pregnancy rate,[11] same is observed in our data.

Site of repair has a great influence on pregnancy outcome in terms of Intra or extrauterine pregnancy, which occurred respectively in 80% and 3.4% in the isthmo-isthmic, 63% and 18% in the isthmo-ampullar, 75% and 8.3% in the isthmo-cornual, 100% and 0% in the ampullo-ampullar, and 60% and 0% in the ampullo-cornual anastomosis groups as shown in literature.[12] In our patients higher intrauterine pregnancy rates were achieved in isthmus-isthmus anastomosis.

The cumulative conception rates were 30.7%, 39.8%, 49%, and 53.7% at 6, 12, 18, and 24 months after recanalization, respectively [10]. Whereas in current study it was 21%, 42.2%, 26.3% and 10.5% which is slightly lower than shown in literature.

Sreshthaputra O and his colleagues reported a conception rate of 62.5% in their study. Of these, 90.9% were intrauterine and 9.09% were ectopic pregnancies.[10] In another study intrauterine pregnancy was 96.66%, tubal pregnancy 3.33%, term viable pregnancy 96.55% and spontaneous abortion 3.45%.[13] Survey of literature shows that in a study pregnancy and live birth rates were similar between laparoscopy and open surgery.[8]

In our study population, over all pregnancy rate was 34.5%, out of which intrauterine pregnancy rate was 84.2% and ectopic pregnancy was 15.8%. Term viable pregnancy was 68.8% and spontaneous abortion was 31.3%. Although overall pregnancy rates are low in our study but the intrauterine rate is comparable with studies in literature.

Conclusions

The important prognostic factors for the success of tubal recanalization are age of the patient, sterilization/ reversal interval, site of sterilization, method used for sterilization and length of the tube after reanastomosis. Do sterilization in a way that reversal is likely to be successful. The technique is feasible, simple and less time consuming with good intrauterine pregnancy rate. Supervised training for tubal recanalization should be emphasized. The surgical technique should be available at specialized centres.

References

1. Boeckxstaens, A., et al., Getting pregnant after tubal sterilization: surgical reversal or IVF? Human reproduction, 2007; 22 (10): p. 2660-2664.
2. Bhutta, S.Z., S. Zaeem, and R. Korejo, Female surgical sterilization at a tertiary care hospital in Karachi. J

Ayub Med Coll Abbottabad, 2004; 16: p. 42-5.
3. Moon, H.S., et al., High pregnancy rate after microsurgical tubal reanastomosis by temporary loose parallel 4-quadrant sutures technique: a long long-term follow-up report on 961 cases. Human reproduction, 2012.
4. Ayoubi, J.-M., et al., Laparoscopic Tubal Anastomosis. An Assessment of the? One - Stitch Technique? Reproductive System & Sexual Disorders, 2013.
5. Jaafar, Y., Fertility following reversal of female sterilization. Med J Malaysia, 1993; 48 (2): p. 225.
6. Jayakrishnan, K. and S.N. Baheti, Laparoscopic tubal sterilization reversal and fertility outcomes. Journal of human reproductive sciences, 2011; 4 (3): p. 125.
7. Schepens, J.J., et al., Pregnancy outcomes and prognostic factors from tubal sterilization reversal by sutureless laparoscopical re-anastomosis: a retrospective cohort study. Human reproduction, 2010: p. deq326.
8. Tan, H.H. and S.F. Loh, Microsurgical Reversal of Sterilisation — Is This Still Clinically Relevant Today? Annals Academy of Medicine Singapore, 2010; 39 (1): p. 22.
9. Hanafi, M.M., Factors affecting the pregnancy rate after microsurgical reversal of tubal ligation. Fertility and sterility, 2003; 80 (2): p. 434-440.
10. Sreshthaputra, O., R. Sreshthaputra, and T. Vutyavanich, Factors affecting pregnancy rates after microsurgical reversal of tubal sterilization. Journal of reconstructive microsurgery, 2013; 29 (3): p. 189-194.
11. Deffieux, X., et al., Tubal anastomosis after tubal sterilization: a review. Archives of gynecology and obstetrics, 2011; 283 (5): p. 1149-1158.
12. Gordts, S., et al., Clinical factors determining pregnancy outcome after microsurgical tubal reanastomosis. Fertility and sterility, 2009; 92 (4): p. 1198-1202.
13. Jain, M., et al., Microsurgical tubal recanalization: A hope for the hopeless. Indian Journal of Plastic Surgery, 2003; 36 (2): p. 66.