

A COMPARATIVE ANALYSIS OF LAPAROSCOPY V/S LAPAROTOMY FOR TUBAL RECANALISATION

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ABSTRACT

BACKGROUND

Tubal sterilisation is a contraception method widely used throughout the world. The most important reason for the selection of this method is that it is permanent. However, several studies have shown that for various reasons, 1% - 3% of couples make the decision for recanalisation. However, the pregnancy rate after surgery is determined by multiple other factors.

MATERIALS AND METHODS

This retrospective study included 20 patients who underwent tubal recanalisation surgery in our clinic from January 2012 to July 2017. The patients were separated into 2 groups as Group 1 who underwent laparoscopic recanalisation and Group 2 who underwent laparotomy. A record was made for each patient of the age at sterilisation, the age at recanalisation, previous pelvic surgery, additional diseases (diabetes mellitus [DM], hypertension, thyroid disease, etc.), results of hysterosalpingography (HSG), the sterilisation method applied and the recanalisation method. According to the fertility outcomes after recanalisation, the patients were evaluated in 4 categories as 1= unsuccessful result, 2= abortus, 3= ectopic pregnancy and 4= live birth.

RESULTS

Of the 20 patients evaluated, no statistically significant difference was determined between the patient's characteristics in both groups. At the end of the 2-year follow-up of the patients who underwent laparoscopic recanalisation no pregnancy had been achieved in 4 (40%), abortus in 1 (10%), ectopic pregnancy in 1 (10%) and a live birth in 4 (40%) cases. In the laparotomic group the 2-year follow-up outcomes were no pregnancy in 4 (40%), abortus in 2 (20%), ectopic pregnancy in 1 (10%) and live birth in 3 (30%) cases. In our study patients of age \leq 35 years, 80% (4/5) had a live birth in laparoscopy group and 60% (3/5) had live birth in laparotomy group. While patients $>$ 35 years laparoscopy group one (10%) patients conceived, but landed with ectopic pregnancy and in laparotomy group one (10%) patient conceived and landed with abortion.

CONCLUSION

Tubal recanalisation gives hope to patients to conceive again after sterilisation. However, the success rate is determined by multiple factors. There is no concrete evidence available to support one form of surgery over other. However, laparoscopy has an advantage of being minimally invasive surgery with lesser complications. Hence, laparoscopy is to be preferred over laparotomy.

KEYWORDS

Tubal Recanalisation, Laparoscopy, Laparotomy, Pregnancy Outcome.

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BACKGROUND

Tubal sterilisation is a contraception method widely used throughout the world.^[1] The most important reason for the selection of this method is that it is permanent. However, several studies have shown that for various reasons, 1% - 3% of couples make the decision for recanalisation.^[2] Rather than recanalisation, some couples prefer in vitro fertilisation (IVF). The American Productive Health and Infertility Association presented recanalisation as a choice for fertility after tubal sterilisation and reported the most important prognostic factor to be age.^[3] In literature, the demand for recanalisation has been reported as 14.3% with operations carried out at the rate of 1.1%.^[4] Tubal recanalisation procedures were first reported with laparotomy by Gomel V in 1974 and with

laparoscopy^[5] by Sedbon E et al in 1989.^[6] In a study comparing tubal recanalisation applied with laparotomy and laparoscopy, pregnancy rates of 55% - 90% in the laparotomy group and 25% - 73% in the laparoscopy group were reported.^[1,7] Laparoscopic tubal recanalisation is applied successfully with the advantages of minimally invasive surgery. The aim of this study was to evaluate the postoperative fertility outcomes in patients who underwent laparoscopic or laparotomic tubal recanalisation surgery in our clinic from January 2012 to July 2017 in the light of current literature.

MATERIALS AND METHODS

This retrospective study included 20 patients who underwent tubal recanalisation surgery in our clinic from January 2012 to July 2017. The data of 20 patients were analysed, comprising 10 who underwent laparoscopic tubal recanalisation and 10 who underwent tubal recanalisation with laparotomy. No patient had known infertility. A record was made for each patient of the age at sterilisation, the age at recanalisation, previous pelvic surgery, additional diseases (Diabetes Mellitus [DM], Hypertension, Thyroid Disease, etc.), results of hysterosalpingography (HSG), the sterilisation method applied and the recanalisation method. Patients who

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underwent unilateral surgery for reasons such as adhesions, etc. were excluded from the study. In each group, all the operations were performed by a single specialist. The patients were separated into 2 groups as Group 1 who underwent laparoscopic recanalisation and Group 2 who underwent laparotomy. According to the fertility outcomes after recanalisation, the patients were evaluated in 4 categories as 1= unsuccessful result, 2= abortus, 3= ectopic pregnancy and 4= live birth. Patients who could not become pregnant were included in category 1 as an unsuccessful result, those whose pregnancy was terminated before 20 weeks as category 2 abortus, those with a confirmed diagnosis of ectopic pregnancy as category 3 ectopic pregnancy and those who gave birth above the viability limit as category 4 live birth.

Statistical Analysis

The data obtained in the study were evaluated with SPSS 21 computer software (Statistical Package for the Social Sciences, Chicago, USA). Using this software frequencies and percentages were calculated for qualitative variables. Means and standard deviations were calculated for quantitative variables. Student’s unpaired ‘t’ test and ANOVA were used to test the significance of difference between quantitative variables and Fisher’s chi square tests for qualitative variables. A ‘p’ value less than 0.05 denotes significant relationship.

RESULTS

Of the 20 patients evaluated, laparoscopic recanalisation was applied to 10 (Group 1) and laparotomic recanalisation to 10 (Group 2). The mean age of sterilisation was 28.2 ± 2.7 years in Group 1 and 30 ± 3.3 years in Group 2. Mean interval between sterilisation and recanalisation was 7.2 ± 1.4 years in laparoscopy group and 6.8 ± 1.5 years in laparotomy

group. There was no known male infertility in any case. The patient’s characteristics are shown in Table 1. No statistically significant difference was determined between the groups. From the total patient group, Type 2 DM was determined in 2 patients, thyroid disorder in 2 and hypertension in 2 patients. No complications developed in any patient of the laparoscopy group and wound site infection developed in 1 patient of the laparotomy group. In the Laparoscopy group, follow-up HSG was done for all patients, open bilateral tubes were observed in 7 (70%) and a single tube was observed to be open in 3 (30%). While in the laparotomy group, open bilateral tubes were observed in 5 (50%), closed bilateral tubes were observed in 1 (10%) and a single tube was observed to be open in 4 (40%). At the end of the 2-year follow-up of the patients who underwent laparoscopic recanalisation, no pregnancy had been achieved in 4 (40%), abortus in 1 (10%), ectopic pregnancy in 1 (10%) and a live birth in 4 (40%) cases. In the laparotomic group the 2-year follow-up outcomes were no pregnancy in 4 (40%), abortus in 2 (20%), ectopic pregnancy in 1 (10%) and live birth in 3 (30%) cases (Table 2).

In our study, patients of age ≤ 35 years, 80% (4/5) had a live birth in laparoscopy group and 60% (3/5) had live birth in laparotomy group. While patients > 35 years, laparoscopy group one (10%) patient conceived but landed with ectopic pregnancy and in laparotomy group one (10%) patient conceived and landed with abortion.

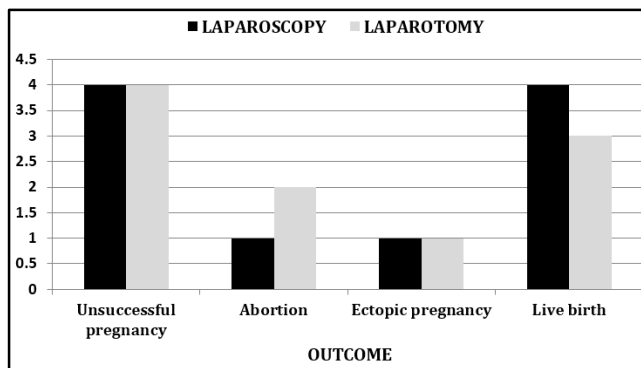
Patients who underwent Pomeroy’s method of sterilisation, 20% (1/5) conceived in group 1 and 40% (2/5) conceived in group 2, none of them ended in a live birth. Patients who underwent laparoscopic sterilisation 100% (5/5) conceived in group 1, out of which 1 had an abortion and 4 ended in live births. Patients with previous laparoscopic sterilisation in group 2, 80% (4/5) conceived with 1 abortion and 3 live births.

Variable	Laparoscopy (n=10)	Laparotomy (n=10)	‘p’ value
Age at Sterilisation	28.2 + 2.7 years	30 + 3.3 years	0.199 Not significant
Age at Recanalisation	35.4 + 3.1 years	36.8 + 3.9 years	0.389 Not significant
Interval between Sterilisation and Recanalisation	7.2 + 1.4 years	6.8 + 1.5 years	0.542 Not significant
Parity	2 + 0.67	2.4 + 1.08	0.331 Not significant
Sterilisation Technique			
Pomeroy (Open Surgery)	5 (50%)	5 (50%)	1.0 Not significant
Bipolar (Laparoscopy)	5 (50%)	5 (50%)	
Medical Disorder			
Diabetes	1 (10%)	1 (10%)	0.628 Not significant
Hypertension	Nil	2 (20%)	
Thyroid	1 (10%)	1 (10%)	
Total Cases with Disorder	2 (20%)	2 (20%)	

Table 1. Characteristics of Cases in Both Cases

Outcome	Laparoscopy	Laparotomy	‘p’ value
Unsuccessful	4 (40%)	4 (40%)	1.0 Not significant
Abortion	1 (10%)	2 (20%)	0.5 Not significant
Ectopic Pregnancy	1 (10%)	1 (10%)	1.0 Not significant
Live Birth	4 (40%)	3 (30%)	0.5 Not significant

Table 2. Pregnancy Outcome in Each Group



Outcome	Age at Recanalisation (Years)		Time Interval (Years)	
	Mean	S.D.	Mean	S.D.
Unsuccessful Pregnancy	38.6	2.7	7.5	1.51
Abortion	35.0	3.5	6.67	2.08
Ectopic Pregnancy	38.5	2.1	6.5	0.71
Live Birth	33.0	2.0	6.71	1.25
'P value'	0.003 Significant		0.671 Not significant	

Table 3. Association between Outcome and Other Variables

DISCUSSION

Tubal sterilisation is a highly reliable method, but one of the most important problems that may be encountered afterwards is regret. For many reasons, patients request for tubal recanalisation. In our study, we want to find out the pregnancy success rates after laparoscopic and laparotomic recanalisation. Studies have investigated the method applied, pregnancy rates and the time taken to achieve pregnancy and the pregnancy rates of laparoscopy have been found to be similar to those obtained with laparotomy.^[8]

In the current study, there was no statistically significant difference in the patient’s characteristics in both the groups as shown in Table 1. Live births were achieved in 3 (30%) of the 10 patients to whom laparotomy was applied and in 4 (40%) of the 10 patients to whom laparoscopy was applied. The pregnancy outcomes in both the groups were compared and found to be statistically insignificant as shown in Table 2. These differences can be attributed to the small sample size in our study. As these surgeries are not very common, it is difficult to have a larger sample size. Hence, sometimes the results are inconclusive. Previous studies have reported that laparoscopy was a good choice, as there was less tissue trauma and it led to fewer adhesions. Some of those studies have reported pregnancy rates of 55.2% - 77% in patients to whom laparoscopic recanalisation had been applied.^[9,10] K Jaykrishnan et al reported a pregnancy rate of 58.8% after laparoscopic recanalisation in 28 months follow-up.^[11] Soumya K et al reported a pregnancy rate of 50% and Fakhrolmolout Y et al reported a pregnancy rate of 26.6% with open recanalisation surgery.^[12,13] Pregnancy rates are greatly affected by the age of the patient at recanalisation. In our study, patients of age ≤ 35 years, 80% had a live birth in laparoscopy group and 60% had live birth in laparotomy group. While patients > 35 years laparoscopy group one (10%) patient conceived but landed with ectopic pregnancy and in laparotomy group one (10%) patient conceived and

landed with abortion. Overall, patients with age ≤ 35% had a live birth rate of 70%. This difference of success rate with patient’s age at recanalisation was found to be statistically significant (0.003) as shown in Table 3. K Jaykrishnan et al reported a pregnancy rate of 71.4% in patients of age ≤ 30 years and of 50% in patients > 30 years.^[11] However, there was no significant relation determined between the mean interval, between sterilisation and the pregnancy outcome in our study.

Another point which requires evaluation after recanalisation is the risk of ectopic pregnancy. In an extensive meta-analysis which compared tubal recanalisation with laparotomy and laparoscopy, no difference was determined between the 2 groups in respect of ectopic pregnancy rates.^[8] In the current study, ectopic pregnancy occurred in 1 patient of each group. Although, no statistically significant difference was determined as no complications were encountered in the laparoscopy group, this renders it as a first choice. Postoperative follow-up of the patient is just as important as the choice of method. To refer the patients for evaluation of tubal opening after surgery is extremely important. Hysterosalpingography, transvaginal hydrolaparoscopy or laparoscopy combined with chromopertubation are recommended for this.^[1] Open bilateral tubes were observed in 7 (70%) and a single tube was observed to be open in 3 (30%) in laparoscopy group. While open bilateral tubes were observed in 5 (50%), closed bilateral tubes were observed in (10%), and a single tube was observed to be open in 4 (40%).

In conclusion, prior to tubal recanalisation it is necessary to take a detailed anamnesis, access the data of the tubal sterilisation operation and present the laparoscopic method to the patient as a minimally invasive option. When managing the ideas of the possibility of pregnancy, it is important that age, BMI, additional diseases and other factors affecting fertility are taken into account and that laparoscopic tubal recanalisation is currently a very effective and reliable method.

CONCLUSION

Tubal recanalisation gives hope to patients to conceive again after sterilisation. However, the success rate is determined by multiple factors. There is no concrete evidence available to support one form of surgery over the other. However, laparoscopy has an advantage of being minimally invasive surgery with lesser complications. Hence, laparoscopy is to be preferred over laparotomy.

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