

Fertility Following Reversal of Female Sterilization

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Summary

This retrospective study presents data from 26 women who underwent a reversal of female sterilization. The intrauterine pregnancy rate and ectopic pregnancy rate were 38.5% and 7.7% respectively. The most successful site of tubal anastomosis was isthmic-isthmic anastomosis. The importance of proper patient selection and factors that affect the success rate in attempted reversals are emphasised. The importance of microsurgical approach is highlighted.

Key words: Reversal female sterilization.

Introduction

Approximately 1% of patients who have undergone tubal sterilization will request a reversal¹. The most common reason for requesting reversal is a change in marital status². Other reasons include desire for additional children, loss of a child, religious concerns and psychological factors^{2,3}. Factors that affect the success rate in attempted reversal of previous sterilization procedures include experience of the surgeon, utilisation of microsurgical techniques, site of occlusion, method of occlusion, pathologic states of the remaining tubal tissues, length of the remaining tubal segments and the presence of similar or different calibres of oviductal segments. Thus, this study on reversal of female sterilization was undertaken to examine the above mentioned factors.

Materials and Methods

The case notes of 26 patients who underwent reversal of sterilization at the University Hospital, Kuala Lumpur, Malaysia, were reviewed. All patients prior to surgery had a hysterosalpingogram and laparoscopic examination as part of their pre-operative assessment. None of the patients had ovulatory disorders. The seminal analysis of all the patients' husbands was within the normal range⁴.

The follow-up periods after the surgical procedure ranged from 2 to 15 years. The age and parity of the patients at the time of sterilization and reversal procedure, along with the reasons for requesting a reversal of sterilization, were noted. The operative notes were also reviewed for the method and site of reversal and the length of the fallopian tubes remaining at the end of the operation. Any concomitant pathology was also noted.

Results

The average age of patients undergoing the sterilization procedure was 27.4 years. The age distribution according to race is shown in Table I. Ten out of the 26 patients had sterilization between 20 to 25 years of age and of these 7 were Indians. By the age of 30 years, 69.4% of the patients had a sterilization performed.

The age of the patients requesting a reversal of sterilization ranged from 25 to 45 sterilization years, the average being 33.3 years. This is shown in Table II. Approximately 73% of patients requesting the reversal procedure were below 35 years of age. Only 1 patient above 40 years of age requested a reversal procedure. Table III lists the reasons as to why patients requested tubal reanastomosis. Majority of the patients gave remarriage and wanting more children as their reasons for requesting the reversal procedure. In 4 cases (15.4%), the reason was due to loss of a child.

This study revealed that 15 of the 26 patients had a post-partum sterilization while the remaining 11 had interval sterilization. The various techniques used for the sterilization procedure are shown in Table IV. In all patients, no operating microscope was used as it was not available. However, in most cases the reversal procedure was done using operating loupes for magnification with adherence to microsurgical principles.

There were a total of 6 live pregnancies, 4 abortions and 2 ectopic pregnancies. Table IV also compares the mode of sterilization with the outcome of the reversal procedure. Six intrauterine pregnancies occurred in patients who had a modified Pomeroy's method of sterilization. Three intrauterine pregnancies (1 live birth and 2 abortions) were noted in a patient who had previous electrocoagulation procedure and 1 pregnancy occurred in a patient with a previous Hulka clip procedure.

Isthmic-isthmic anastomosis resulted in 9 intrauterine pregnancies (both live pregnancies and abortions). The 2 ectopic pregnancies occurred in patients who had an isthmic-ampullary anastomosis. Eight pregnancies occurred in patients where the interval between sterilization and reversal was 1 to 5 years. Due to non-availability of data, the importance of the length of the fallopian tube at the end of the reanastomosis procedure was not assessed.

Discussion

In the United States, approximately 5,000 women request reversal of a previous sterilization procedure². The figure for Malaysia is not known or documented. However, it is expected that, as sterilization procedures are done more frequently, the requests for a reversal of the procedure will increase.

Table I
Age at sterilization

Age group (yrs)	Indian	Malay	Chinese	Total	(%)
20 - 25	7	2	1	10	(38.5)
26 - 30	4	3	-	7	(26.9)
31 - 35	2	1	1	4	(15.4)
36 - 40	-	1	4	5	(19.2)

Table II
Age at reversal of sterilization

Age group (yrs)	Indian	Malay	Chinese	Total	(%)
26 - 30	6	2	1	9	(34.6)
31 - 35	7	1	2	10	(38.5)
36 - 40	-	4	2	6	(23.1)
41 - 45	-	-	1	1	(3.8)

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This study reveals that 38.5% of patients requesting the sterilization procedure were very young and below 25 years of age. Thus, it is important for the attending physician to properly counsel patients before agreeing to the sterilization procedure. Women in the 'high risk' group of requesting an anastomosis, i.e., less than 25 years of age, of low parity and involved in a poor or marginal social or marital situation, as shown in this study, should be counselled to consider some other form of contraception. Counselling should never portray tubal sterilization as a reversal procedure, despite the high success rates reported in the literature.

Women who have had their sterilizations performed post-partum or after an abortion are more likely to regret their decision at a later date and seek a reversal⁵. Thus, interval sterilization should be recommended, especially in younger women and women of low parity.

The single most important factor of prognostic value in sterilization reversal is the tubal destruction caused by the initial sterilization technique⁶. The study by Siegler *et al*⁷ demonstrated the highest rate of post-reversal intrauterine pregnancies with the clip technique (84%), followed by band technique (72%), the Pomeroy procedure (50%) and electrocoagulation (41%). In this study, most pregnancies occurred in patients who had a previous Pomeroy procedure, as shown in Table IV. Although rates of success vary in individual reports, most that address the issue describe lower pregnancy rates after electrocoagulation⁸. Fortunately, 1 patient who had previous electrocoagulation, and subsequent reversal, conceived in this series. The amount of tubal damage caused by the unipolar cautery was confined to the isthmic portion of the tube. The few number of cases in this study did not allow for any statistical analysis. However, it is important to bear in mind that several reports mentioned in the literature demonstrate lower possibilities of even attempting reversal after electrocoagulation^{7,9,10,11}.

The length and status of the remaining tubal segment are related to the type of sterilization and the length of the fallopian tube that was excised or damaged. These factors also determine the site of anastomosis. Results

Table III
Reason for reversal

Reason	Indian	Malay	Chinese	Total	(%)
Remarried	5	5	4	14	(53.8)
Wanted more children	6	1	-	7	(26.9)
Loss of child	2	-	2	4	(15.4)
Psychologically disturbed	-	1	-	1	(3.8)

Table IV
Method of sterilization and outcome after reversal

Method	No	(%)	No of live pregnancies	Abortion	Ectopic pregnancies
Pomeroy	15	(57.7)	4	2	1
Yoon ring	2	(7.7)	-	-	-
Fallope ring	2	(7.7)	-	-	1
Hulka clip	4	(15.4)	1	-	-
Filshie clip	2	(7.7)	-	-	-
Electrocautery	1	(3.8)	1	2	-

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of this study revealed that isthmic-isthmic anastomosis was most successful in achieving an intrauterine pregnancy. Nine out of 10 intrauterine pregnancies occurred after isthmic-isthmic anastomosis. Hulka *et al*¹² reported that all ectopic pregnancies in their series were in tubes in which the distal segment stump was ampullary. We had 2 such cases in our study. Siegler *et al*⁷ concluded that the presence of the ampullary segment of the fallopian tube is crucial. Many studies^{6,7,13} also conclude that a specific length of the tube, usually 4 to 6 cm, is required for better intrauterine pregnancy rates. In this study, however, this factor was not evaluated due to lack of documentation.

The interval between sterilization and reversal is also an important factor, as it is proposed that epithelial changes after 5 years of occlusion would diminish tubal function⁹. In our study, 8 out of 10 intrauterine pregnancies occurred where the interval between the surgical procedures was less than 5 years.

In this study using mainly operating loupes, there was a total of 12 pregnancies (46.2%). Of these, 10 (38.5%) were intrauterine pregnancies, while 2 (7.7%) were ectopics. However, the end-point on which to judge the success of tubal reanastomosis is the intrauterine pregnancy rates. A review on reported series containing more than 25 or more reversals of sterilization described an intrauterine pregnancy rate of 61% and an ectopic rate of 5%⁷. Most of these studies made use of the operating microscope. Thus, improvement in the rate of success of tubal reanastomosis procedure is associated with the use of operating microscope and utilisation of microsurgical techniques, which involve gentle tissue handling, meticulous haemostasis and precise approximation of tissue planes.

In conclusion, although this study involves a small number of patients, it illustrates the importance of proper counselling in patients going in for sterilization procedures. Detailed documentation of operative notes during the sterilization and reversal procedure are important. The presence of tubal damage and other pelvic pathology at the time of screening laparoscopy for the reanastomosis procedure will give the surgeon an indication to abandon the procedure, as this has been correlated with a reduction in success rates⁷. Furthermore, specific training in these gynaecological techniques is essential to optimise the success rate of these procedures.

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