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A study of female sterilization failure in tertiary care hospital

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Abstract
Objective: The study is to analyse the demographic pattern of women presenting with Sterilization failure and its etiology and management.
Materials and Methods: This is a retrospective study conducted in the department of obstetrics and gynecology at tertiary care hospital over 3years from January 2015 to 2017.
Results: In our study 55 cases of sterilization failure have been reported. 50% were in age group of 26 to 30 years. Women with parity 3 were about 54%. Ectopic pregnancy in 35%. 87% presented with failure following modified pomeroy technique. 76.5% of the failure were observed in women who had sterilization with pregnancy termination. About 66% of failure were noticed between 1 to 5 years and 13% noticed in less than 1 year after sterilization.
Conclusion: Though female sterilization is a permanent method, failure is possible due to recanalization. Proper counseling and improving the standards of procedure can prevent complication and failure.

Keywords: sterilization failure, recanalization, tubal sterilization, pomeroy technique

Introduction
Sterilisation is most important in developing countries like India to control the population rate. Permanent method of sterilisation is the most advisable and acceptable method of contraception since it is a one-time procedure associated with less complication and increased patient compliance. Sterilisation is to prevent pregnancy by resection or occluding the fallopian tube. Female sterilization or tubal ligation is the most common and most accepted method of contraception worldwide. Conception after sterilisation is called sterilization failure. Though it's the permanent method sterilization failure rate is around 0.1-0.8% all over country. Around 85% tubal sterilization is done in government institutions in India. Both minilap and laparoscopic procedures are done in our country. Laparoscopic tubal occlusion by clip or ring is on increasing trend [1]. Pregnancy after sterilization have been documented even after 20years. Sterilization failure rates are calculated using pearl index (failure rates per 100 women) and rarely by cumulative probabilities of pregnancy per operation. RCOG has updated risk of failure at 10yrs is 2-3 per 1000 procedure by using filshe clip or ring [2]. The variations in sterilization failure rate is due to differences in patient selection, time of procedure, methods of sterilization. In this study we have evaluated various etiological factors for Sterilisation failure and its management.

Materials and Methods
This is a retrospective study conducted in the department of obstetrics and gynecology at tertiary care hospital over 3years from January 2015 to January 2017. The data collected include name, age, obstetric score, mode of delivery, methods of sterilization, place of sterilization, diagnosis of present pregnancy- (intrauterine gestation or ectopic gestation), gestational age at diagnosis, time interval between sterilization and its failure, gestational age at diagnosis, the management of present pregnancy and the reasons for sterilization failure.

Results
About 54% of women had puerperial sterilization. 13% had sterilization with caesarian 5% had interval TAT and 7% had Laparoscopic sterilization using Fallope ring (Figure: 1). 28 women (50%) who had sterilization failure were in age group of 26 to 30 years. Women with parity 3 were about 54%. Ectopic pregnancy contributed to 35% of all sterilization failure. 87% of the

women presented with failure following modified pomeroy technique. 76.5% of the sterilization failure were observed in women who had sterilization with pregnancy termination. About 66% of failure were noticed between 1 to 5 years after the procedure. 13% of sterilization failure noticed in less than 1 year after sterilization procedure. Early failure cases are mainly due to improper technique. Causes of failure were improper technique in 7%, failure to ligate the tube in 14.5%, spontaneous recanalization in 55% and tuboperitoneal fistula in 23.5% of women.

2 women had uterine anomaly, 56% of women with failure had their surgery done at tertiary health center. All the women with Ectopic pregnancy reported in early gestational age (<7-8 weeks). 66% of women with intrauterine pregnancy reported in first trimester, 34% of women presented in 2nd trimester. 3 women continued pregnancy till term. In all women presented with sterilization failure Resterilization done by bi-lateral partial salphingectomy (Table: 1). About 56% of sterilization failure cases were done in tertiary care hospital (Table: 2).

Table 1: Sterilization failure resterilization

Parameters	Ectopic	Intrauterine	Total
Patient age			
20-25	4(8%)	8(14%)	12(22%)
25-30	10(17%)	18(35%)	28(50%)
30-35	4(8%)	8(14%)	12(22%)
35<	1(2%)	2(4%)	3(6%)
Parity			
2	4(7.5%)	4(7.5%)	8(15%)
3	10(18%)	20(35%)	30(53%)
4	4(7.5%)	8(15%)	12(22.5%)
>4	1(2%)	4(7.5%)	5(9.5%)
Methods			
MPT(modified pomeroy technique)	18(33%)	30(54%)	48(87%)
Laparoscopic	1(1.7%)	6(11.3%)	7(13%)
Timing of sterilization			
PS	10(18%)	20(36%)	30(54%)
LSCS	4(7.5%)	9(15%)	13(22.5%)
TAT	4(7.5%)	1(2%)	5(9.5%)
Laparoscopic	1(2%)	6(12%)	7(15%)
Time Interval			
<1yr	2(4%)	5(9%)	7(13%)
1-5yr	12(22%)	24(44%)	36(66%)
>5yr	5(9%)	7(12%)	12(21%)
Causes of failure			
Non ligation of tube	-	8(14.5%)	8(14.5%)
Recanalization	11(20%)	19(35%)	30(55%)
Tuboperitoneal fistula	8(14.5%)	5(9%)	13(23.5%)
Improper technique	-	4(7%)	4(7%)
Gestational age			
1st Trimester	19(35%)	24(43%)	43(78%)
2nd Trimester	-	12(22%)	12(22%)

Table 2: Places of sterilization

Procedure	PHC	Tertiary	Private
PS	18(32%)	12(21%)	-
LSCS	4(8%)	9(16%)	-
TAT	1(2%)	4(8%)	-
Laparoscopic	1(2%)	6(12%)	-

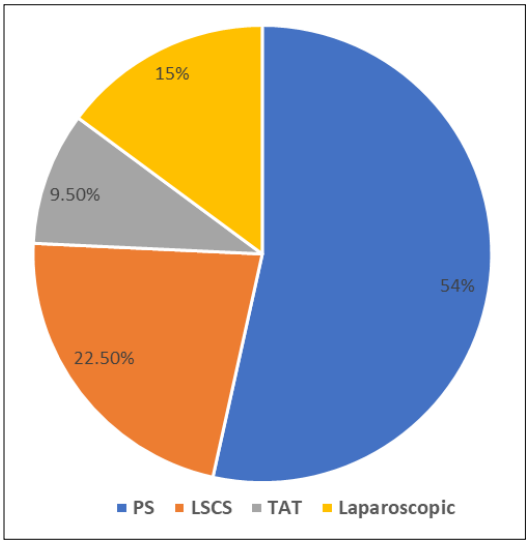

Fig 1: Sterilization methods

Discussion

About 50% of the women in the age group of 26-30yrs had sterilisation failure in our study. This is in correlation with the studies done by Trussel *et al*. and Peterson *et al* [3 & 4]. No correlation with the age was observed by Rajesh Varma *et al* [5]. 54% of the women had parity of 3. Same was reported by Rathod S *et al*. Date SV *et al* has contradicting observation of 50% of women with parity of 2. In our study 87% of the failure were seen in women who had Modified pomeroy technique. But Rathod S *et al* showed 66% of failure after Modified pomeroy technique [6]. Meta-analysis by Kulier *et al* showed no significant difference in the failure rate with the method of sterilization [7]. 87% of the failure was noted in the women who had sterilisation with the pregnancy termination. Same observation was reported by Hughes and Peterson *et al* [8 & 4]. In our study about 56% of women had their surgery in tertiary care center which was contrary to the report of Hughes Roj *et al* [8]. This may be because many junior residents were performing the sterilization procedure during the study period. 35% of failure presented as Ectopic pregnancy. This is contrary to the report of Shah *et al* (12%) and Rathod *et al* (90%) [9 & 6]. 78% women reported in 1st trimester in our study. Date SV *et al* has reported where 60% women presented in 2nd trimester [1]. Proper Counselling at the time of sterilisation regarding the chances of failure has made our women to report early. Rajesh Varma *et al* has observed that short interval to failure is due to negligence [5]. Our study has a positive correlation to this observation.

Conclusion

In general, if female sterilization is performed correctly, it is one of the most effective permanent contraceptive method available. The risk of pregnancy following female sterilization is lower than the risk associated with other contraceptive methods during the first year of use. The following methods can be used to prevent failures:

1) Proper and adequate training of doctors involved in procedure.
2) Strict adherence to standards of sterilization.
3) Proper Counselling must be given to patients and they should be explained about the risk of failure. They should be encouraged to report early if there is any missed or delayed periods.

Long term reversible contraception can be considered as the choice of contraception whenever feasible. Morbidity associated with sterilization failure is slightly high due to increased incidence of ectopic pregnancy.

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