Section: Obstetrics and Gynaecology

Original Research Article

A COMPREHENSIVE REVIEW OF FEMALE STERILISATION FAILURE IN A TERTIARY CARE HOSPITAL-10 YEARS STUDY

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ABSTRACT

Background: The most commonly accepted method of contraception in India is Female sterilisation or tubal ligation. The most common method used for female sterilisation is Modified Pomeroy's technique. Sterilisation failures occur rarely. The aim of the study is to find the prevalence of female sterilisation failure in the tertiary care centre.

Materials and Methods: This Retrospective study was conducted among women who had reported or referred as tubal sterilisation failure to the family welfare department at Institute of Obstetrics and Gynaecology and Government Hospital for women and children, Egmore and Institute of Social Obstetrics and Government Kasturba Gandhi Hospital for Women and Children, Triplicane for a period of 10 years from (2011-2020).The study participants fulfilling the inclusion and the exclusion criteria were included in the study throughout the study period. The final attained sample is 528. The demographic data like age of the patient, parity, method of sterilisation, time of sterilisation, concurrent or interval ,mode of presentation ,gestational age at time of sterilisation and time interval from post tubal ligation to conception were analysed. The data collected will be entered in the MS Excel and statistical analysis done through SPSS 23.P value <0.05 is considered as statistically significant.

Results: The total number of sterilizations performed in last 10 years was 29752..The failure rate was 2.5% in the last year whereas 0.9% in the year 2018.The overall prevalence rate was 1.8%. Majority sterilisation failure were presented as Intrauterine (57%) followed by Ectopic (43%). Majority of the failure cases were from Medical College hospital (40.9%). In our study majority of the study participants were in 26-30 years of age group 347(65.7%).Most of the study participants presented at 5-6 weeks of gestation. Majority of the sterilisation failure were reported between 1-5 years 340(64.4%).The most common comorbidity reported was Diabetes Mellitus.Age category and comorbidity were found to be statistically stignificant with mode of presentation. Most of the sterilisations surgeries were done by Junior residents 186(35.2%) and majority of them had 2-5 years of experience 186(35.2%).Majority of the study participants underwent sterilization during their postpartum period 260(49.2%).

Conclusion: The study concludes that Female sterilisation method is a permanent method but still failure is possible with minimal chances which is due to recanalization. Proper counselling given to the patients regarding risk of failure and by improving the standards of procedures can prevent the failures and complications due to it.

Keywords: Sterilisation failure, Pomeroy's technique, recanalization, tubal ligation.

INTRODUCTION

The first country to launch the National Family Planning Programme in 1952 is India.The aim of the programme was to regulate the fertility by decreasing the birth rate in order to stabilize the population at a certain level so that it would upgrade the health and socioeconomic profiles.[1] The scope of postpartum sterilization has been increased due to the increase in institutional deliveries numbers and emergence of National health mission.[2] Female sterilization or Tubal ligation is the most popular method of permanent contraception globally. It is highly effective, relatively safe i.e free from side effects and accepted mostly among the eligible Indian Couples. Either by resection or occluding the fallopian tube sterilization is done to prevent pregnancy Annually 5-6 million sterilization is done in India. The two common surgical techniques used in female sterilisation are laparoscopic tubal occlusion and minilaparotomy.

Conception after sterilisation is known as Sterilisation failure. The sterilisation failure rate after the permanent sterilisation ranges from 0.1-0.8% all over the country .85% of sterilisation is done in the government institution in our country . Laparoscopic sterilisation is found in increasing trend where the tubal occlusion is done using ring or clip.[3] Even after 20 years pregnancy after sterilisation have been reported. Using pearl index i.e failure rates per 100 women and by cumulative probabilities of pregnancy per operation sterilisation failure rates are calculated. The risk of failure at 10 years is 2-3 per 1000 procedures where filshe clip or ring is used .This was reported by RCOG.[4] Sterilisation failures may be due to many factors like operating center, operator's skill, characteristics of women, sterilisation method, tubal abnormalities, surgical errors like occlusion or ligature of round ligament and only one side of the tube and spontaneous recanalization which leads to partial or complete tubal patency. There can be any reason for sterilisation failures but it leads to drastic physical, psychological and socioeconomic burden on women and her family. Added to it, causes economic and technical burden on the institution. Audits should be done frequently. The aim of the study is to find the find the prevalence of female sterilisation failure in the tertiary care centre.

MATERIALS AND METHODS

Study Setting

This study was conducted among women who had reported or referred as tubal sterilisation failure to the family welfare department at Institute of Obstetrics and Gynaecology and Government Hospital for women and children, Egmore and Institute of Social Obstetrics and Government Kasturba Gandhi Hospital for Women and Children, Triplicane.

Study Design

Retrospective study ,10 years (2011-2020)

Sample Size

The study participants fulfilling the inclusion and the exclusion criteria were included in the study throughout the study period. The final attained sample is 150.

Inclusion Criteria

Patients who had undergone the following methods of sterilisation

- Emergency repeat caesarean section with sterilization
- Repeat caesarean section with sterilization
- Elective puerperal sterilization
- Medical Termination of Pregnancy with Trans-abdominal tubal ligation
- Interval Trans-abdominal tubal ligation
- Interval laparoscopic sterilisation-Falope ring
- Interval laparoscopic sterilisation-cautry(monopolar/bipolar)
- Medical Termination of Pregnancy with laparoscopic sterilisation

Exclusion Criteria

- Missed pregnancy at the time of sterilization
- Patients with history of one-sided tubal ligation surgeries or failures due to temporary family planning contraceptive measures

Data Collection Method

After obtaining the Institutional Ethical Committee clearance, the study was done from the hospital records .The demographic data like age of the patient, parity, method of sterilisation, time of sterilisation, or interval, mode of presentation ,gestational age at time of sterilisation and time interval from post tubal ligation to conception were analysed.

Statistical Analysis

The obtained data was entered in the MS Excel Windows 10.Statistical analysis was done with the help of SPSS 23.Continuous data was expressed in terms of Mean and Standard deviation .Categorical data was expressed in terms of Numbers and percentages. Test of association for Categorical data was Chi square test and for Continuous data was t test and Anova test. p value <0.05 is considered as statistically significant.

RESULTS

The total number of sterilizations performed in last 10 years was 29752.The sterilization number increased from 2011 till 2014 after which there is a fall in the year 2015.Then again there is a slight increase. There is a decline in the sterilisations in the year 2020 which may be due to the outbreak of Covid. The failure rate was 2.5% in the last year whereas 0.9% in the year 2018.The overall prevalence rate was 1.8%. [Table 1]

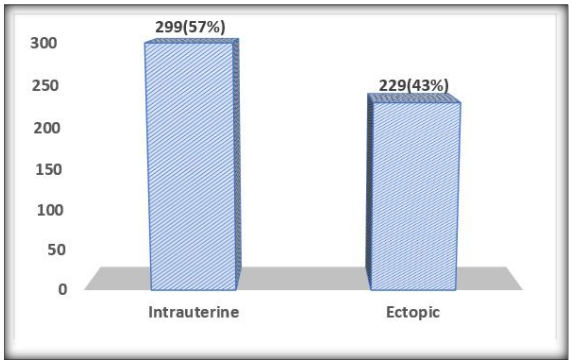

Figure 1: Mode of presentation of Sterilisation failure

Majority sterilisation failure were presented as Intrauterine (57%) followed by Ectopic (43%).

Majority of the failure cases were from Medical College hospital (40.9%) followed by District Government hospital (32.7%). [Table 2]

In our study majority of the study participants were in 26-30 years of age group 347(65.7%) which is followed by 20-25 years 139(26.4%).Most of the study participants presented at 5-6 weeks of gestation.Majority of the sterilisation failure were reported between 1-5 years 340(64.4%) followed by 5-10 years.The most common comorbidity reported was Diabetes Mellitus followed by Hypertension.Age category and comorbidity were found to be statistically stignificant with mode of presentation. [Table 3]

Most of the sterilisations surgeries were done by Junior residents 186(35.2%) and majority of them had 2-5 years of experience 186(35.2%).Majority of the study participants underwent sterilization during their postpartum period 260(49.2%).71.2% of the study participants underwent Minilaparotomy or Laparotomy .Spontaneous Recanalisation is the most common reason for failure 459(86.9%) followed by defect in the surgical technique 65(12.3%). [Table 4]

Table 1: Distribution of prevalence of female sterilization failure cases (2011-2020)

S. No	Year	No of sterilization failure cases	Total number of sterilisations	Prevalence (%)
1	2011	35	2524	1.3
2	2012	69	2922	2.3
3	2013	52	3102	1.7
4	2014	66	3006	2.2
5	2015	73	2827	2.6
6	2016	73	3226	2.3
7	2017	36	3544	1.01
8	2018	32	3392	0.9
9	2019	43	3285	1.3
10	2020	49	1924	2.5
	Overall 10 year prevalence	528	29752	1.8

Table 2: Distribution of place of sterilization

S. No	Place of Sterilisation	No of sterilization failure cases (N=528)
1	Medical College Hospital	216(40.9%)
2	District Government Hospital	173(32.7%)
3	Primary Health Center	88(16.7%)
4	Private	51(9.7%)

Table 3: Association of baseline profile with mode of presentation

	Mode of Presentation		Total	P value
	Ectopic (N=229)	Intrauterine (N=299)		
Age				
20-25 years	62	77	139(26.4%)	
26-30 years	148	199	347(65.7%)	
31-35 years	19	17	36(6.8%)	**<0.05***
36-40 years	0 (0%)	6 (1.1%)	6(1.1%)	
Gestational age at presentation				
4 weeks	0	1	1(0.2%)	
5-6 weeks	116	164	280(53%)	
7-8 weeks	75	42	117(22.2%)	
8-12 weeks	36	81	117(22.2%)	
12-16 weeks	2	6	8(1.5%)	**>0.05**
16-20 weeks	0	4	4(0.7%)	
32 weeks	0	1	1(0.2%)	
Timing interval between sterilization and failure				
<1 year	20	10	30(5.7%)	

1-5 year 5-10 years >10 years	143 59 7	197 82 10	340(64.4%) 141(26.7%) 17(3.2%)	**>0.05**
Comorbidity Cardiovascular disorder Diabetes Mellitus Hypertension Anemia Haematological disorders Nil	 6 20 15 18 0 225	 14 18 20 26 2 164	 20 38 35 44 2 289	**<0.05***

Table 4: Details regarding sterilisation

Variables		Number (Percentages)
Seniority grade of person doing first Sterilisation	Junior residents Senior residents Assistant professors Professors	186(35.2%) 163(30.9%) 124(23.5%) 55(10.4%)
Years of experience of operating surgeons	<2 years 2 years to 5 years 5 years to 10 years >10 years	163(30.9%) 186(35.2%) 124(23.5%) 55(10.4%)
Timing of sterilization	Postpartum During LSCS Interval	260(49.2%) 186(35.2%) 82(15.6%)
Method of first sterilisation	Minilaparotomy/Laparotomy Laparoscopy	376(71.2%) 152(28.8%)
Reason for failure	Spontaneous Recanalisation Defect in the surgical technique Tuboperitoneal fistula	459(86.9%) 65(12.3%) 4(0.8%)

DISCUSSIONS

Sterilisation failure chances are more in the younger groups which is due to high fecundity. In our study majority of the study participants were in 26-30 years of age group 347 (65.7%) which is more than the study done by Vanitha V et al.[5] where 50% of the women were in 26-30 years. The same results were also seen in Peterson et al,[6] an Trussel et al,[7] tudy. In our study parity 3 was found to be more 59.1%. This is in line with the results of Vanitha V et al,[5] and Rathod S et al.[8] In our study 71.2% underwent Modified Pomeroys technique had sterilisation failure. Whereas in Vanitha V et al study 87% who underwent Modified Pomeroy's technique had sterilisation failure which is more than our results. In Contrast Rathod S et al,[8] had showed 66% of the study participants who underwent Modified Pomeroy's technique had sterilisation failure which is lesser than ours.Kulier et al,[9] in his metaanalysis stated that no significant difference is observed in the failure rate with the method of sterilisation.

In our study 40.9% of women had their surgery in the tertiary care center. This is similar to Vanitha V et al study where 56% had their surgery which is more than ours. This is contrast to the results of Huges Roj et al,[10] study.[9] In our study 35.2% of the surgery were done by junior residents which leads to failure. These results were simlar to results of Hughes et at.[10] where 39% of junior residents performed sterilisation procedures. The experience of the operating surgeons was found to be 2-5 years in 35.2% of the study participants which also similar to the results of Hughes et al,[10] 49.2% of the study participants underwent sterilisation procedure in their postpartum period which is similar to Agarwal et al,[12] study. In Meena et al,[13] study the results were slightly more than ours 56%.

43% of the study participants sterilisation failure presented as Ectopic preganncy. Whereas in Vanitha V et al,[5] study the failure rate was 35% which is lesser than ours. This was in contrast to the results of shah et al,[11] where ectopic presented as 12% and Rathod et al,[8] where it was 90%.In our study majority of the study participants reported in First trimester 97% which is more than Vanitha V et al,[5] study where 78% of the study participants presented in First trimester. Whereas in SV et al study 60% of the study participants presented in second trimester.[14]

CONCLUSION

The study concludes that female sterilisation failure can occur at any age or by any method or at any interval. But it causes psychological and socioeconomic burden to the women and the family. By strictly adhering to the standard guidelines we can minimize the failures. Proper and adequate training should be given to doctors who perform this procedure. Proper counselling should be done to the sterilised women regarding chances of failure and to report within 2 weeks of the missed periods.

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