

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20173084>

Original Research Article

## Clinical analysis of post sterilization failure cases in a tertiary hospital

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**Received:** 20 June 2017

**Accepted:** 23 June 2017

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### ABSTRACT

**Background:** The most common permanent method of family planning accepted in India is female tubal sterilization as it has a very low failure rate of 0.1-0.8% in the first year and overall pregnancy chances of 1 in 200. It can be done by open method but laparoscopic method has now gained wide popularity.

**Methods:** Ours was a retrospective study of post sterilization failure cases admitted to Department of Obstetrics and Gynecology, Mahatma Gandhi medical College and Research Institute, Pondicherry within a 3 year time period between May 2014 to May 2017.

**Results:** Within a 3 year period, 3 patients presented with intrauterine pregnancy whereas 28 presented as ectopic pregnancy following sterilization. Majority of patients belonged to 26-30 year age group and had 2 children. 35.7% of ectopics presented at 7-8 weeks gestational age. Over 70% of sterilization failures were done by open method and around 43% were done during caesarean section. Around 71.4% sterilization failures were seen within 5 years of sterilization but 1 patient presented as late as 17 years post sterilization.

**Conclusions:** Female sterilization may result in failure even after years of sterilization. In present study, open sterilization had a higher failure rate than laparoscopic sterilization. The most common mode of sterilization failure was ectopic pregnancy. Therefore, patients undergoing sterilization must be counseled about chances of failure; even though it is a permanent method, and to consult immediately if missed period else at a later stage they may go in for rupture ectopic leading to high maternal morbidity and mortality.

**Keywords:** Female sterilization, Laparotomy, Post sterilization failure

### INTRODUCTION

The most accepted family planning in India is tubal ligation of female which accounts for 65% of contraceptive use which is the highest all over the world. More than half of the women are sterilized before 26 years which means that it provides protection for major part of their reproductive life.<sup>1</sup> However unfortunately in some women; sterilization failure may occur though rates are as low as around 0.1-0.3%.<sup>2</sup> Post sterilization failure commonly presents as ectopic pregnancy and it accounts for around 12% of all ectopic cases.<sup>3</sup> Intrauterine

pregnancy may also present in a few cases. Ours being a tertiary care hospital, we have many referrals cases of sterilization failures. Patients with rupture ectopic due to failed sterilization are of concern as it can lead to high maternal morbidity and mortality due to delayed diagnosis.

### METHODS

This retrospective study was conducted in the Department of Obstetrics and Gynecology, Mahatma Gandhi Medical College and Research Institute,

Pondicherry for a 3 year period between May 2014 to May 2017. Study of cases of post sterilization failure was done from hospital records. Demographic data regarding age of patient and various parameters like parity, method of sterilization, time interval between sterilization and failure, mode of presentation and gestational age, time of sterilization whether concurrent or interval were analysed with SPSS software and results tabulated.

## RESULTS

During the entire 3 year study period 31 cases of post sterilization failure were reported out of which 3(9.7%) patients presented as intrauterine pregnancy whereas 28(90.32%) presented as ectopic pregnancy. Out of 267 ectopics presenting during the study period to our hospital, sterilization failure ectopics accounted for 10.5% of cases.

**Table 1: Parameters studied.**

Patient age (in years)	Ectopic pregnancy (No. of patients)	Intrauterine pregnancy (No. of patients)
20-25	3 (10.7%)	-
26-30	14 (50%)	2
31-35	6 (21.4%)	1
36-40	4 (14.3%)	-
41-45	1 (3.6%)	-
<b>Gravida</b>		
2	2 (7.1%)	-
3	15 (53.6%)	2
4	7 (25%)	1
5	3 (10.7%)	-
6	1 (3.6%)	-
<b>Gestational age</b>		
3-4	3 (10.7%)	-
5-6	9 (32.1%)	1
7-8	10 (35.7%)	1
>8	6 (21.4%)	1
<b>Method of sterilization</b>		
Minilap/Laparotomy (Modified Pomeroy's technique)	20 (71.4%)	1
Laparoscopic sterilization	8 (28.6%)	2
<b>Timing of sterilisation</b>		
Postpartum	7 (25%)	-
During LSCS	12 (42.9%)	1
Interval	9 (32.1%)	2
<b>Interval between sterilization and failure</b>		
<2 years	2 (7.1%)	1
2-5 years	20 (71.4%)	2
5-10 years	5 (17.9%)	-
>10 years	1 (3.6%)	-

According to Table 1, majority of patients belonged to age group 26-30 years and were gravida 3. Most of the

ectopic pregnancies presented between 5-8 weeks of gestation. Minilaparotomy method was most commonly used in post sterilization failure ectopic whereas in those with intrauterine pregnancy 2 of them had undergone sterilization by laparoscopy with falope rings. Only 1 patient presented as unruptured ectopic whereas rest presented with hemoperitoneum due to rupture or tubal abortion. On laparotomy, evidence of sterilisation was seen only in 46.4% (13) of ectopics. Majority of sterilization failure ectopics occurred when concurrent sterilization was done during caesarean section but of those who presented with intrauterine pregnancy 2 had undergone interval laparoscopic sterilization whereas 1 had undergone sterilization during caesarean section. 71.4% presented as failure within 5 years of sterilization though 1 patient aged 45 years presented almost 17 years after sterilization with rupture ectopic.

## DISCUSSION

Elective sterilization rates have increased in the past few years but failures are rare with an incidence 0.13-1.3%.<sup>4</sup> Over 90% of sterilization failures presented as ectopic in this study. The ectopic pregnancy rates in the US Collaborative Review of Female Sterilisation Failure Working Group (CREST) study were 33%.<sup>5</sup> Case fatalities are increased in post sterilization failure ectopics mainly because of delay in considering it as a differential diagnosis. The incidence being more in open cases like minilap or during caesarean could be due to changes in anatomy during pregnancy which make the tube edematous, friable and congested leading to incomplete tubal occlusion or due to the fact that these procedures are mainly done by trainees. Sterilisation failures mainly presented in first 5 years in this study. Vessey et al also had a sterilization failure interval between 1- 10 years as 85.7%.<sup>6</sup>

Defect in the surgical procedure or spontaneous recanalization may lead to sterilization failure. Tubal lumen regeneration occurs by tuboperitoneal fistula formation. This may be associated with features of PID, endosalpingitis, necrosis or tubal atrophy. It may also be associated with focal endometriosis when ligation site is within 4 cm of cornua.<sup>7</sup> Spontaneous tubal reapproximation, common in the postpartum period due to dilated tubes is associated with tubal reanastomosis and recanalisation. As a result of this blind pouches and slit like spaces are formed which causes ectopic implantation.<sup>8</sup> Probable fluid movements within the remaining tubal segments would also favour implantation in tube.<sup>9</sup>

Mechanical failure of occlusion device is a theoretical possibility for failure of sterilisation following breakage of ring/ clip, due to poor quality. To avoid failure of band, fallopian tube is milked several times by drawing it in and out of the applicator sheath before application. At the end of laparoscopic sterilization, one must carefully look for a vertical crease between the two limbs of the

loop and blanching to ensure complete occlusion of the fallopian tube.<sup>10</sup> Bilateral salpingectomy should be performed for an ectopic pregnancy resulting from sterilization failure.<sup>3</sup>

## CONCLUSION

Proper counselling of patient prior to sterilization procedure should be done and patient should be explained about failure rates in terms of both intra and extrauterine pregnancy. Surgical procedure should document presence of adhesions, endometriosis, difficulty in identifying tubes, slipped ring or band. In spite of few failures, tubal ligation still remains the most chosen method to control population.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Rathod S, Samal SK. Clinical analysis of post sterilization failure cases in a tertiary hospital. Int J Reprod Contracept Obstet Gynecol 2017;6:3294-6.