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Original Research Article

Complications of female sterilization procedure: review over a decade at district tertiary care hospital

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ABSTRACT

Background: Female sterilization is the most requested permanent contraceptive method worldwide and one of the most frequently performed elective, intra-abdominal surgical procedure in reproductive-age women. Even though considered as simple and safe procedure, complications do occur including death.

Methods: The primary objective of the following study is to determine the demographic patterns of women presenting as sterilization complications and secondary is to evaluate possible etiological factors leading to complications and lay standard guidelines to reduce complication rate.

Results: Over a decade, 103 cases of female sterilization related complications were documented, out of 14 cases (13.6%) were of laparoscopic tubal ligation and rest 89 were minilaparotomy (86.4%). In 3 cases tubal ligation was not performed as surgeon was not able to either open peritoneal cavity or find fallopian tubes due to adhesions (2.91%). In 70 cases (67.96%) sterilization were performed in primary health centre (PHC). Four patients (3.88%) required hospital stay of more than a month with longest stay being 43 days. Exploratory laparotomy with surgical intervention was done in 34 cases (33%). Two patients (1.94%) died due to tubectomy complications due to septicemia and encephalitis.

Conclusions: Female sterilization is very popular and commonly performed permanent method of sterilization but complications can happen and many of them are preventable with proper screening and selection of cases with proper evaluation before surgery. There is a need to have proper training in sterilization and to stick to standards of sterilization procedure to minimize chances of complications.

Keywords: Complications, Female sterilization, Tubal ligation, Tubectomy

INTRODUCTION

Female sterilization or tubal ligation (TL) or tubectomy is the most accepted method of contraception in India. Female sterilization is one of the best and effective methods of contraception for women who have completed their family. Tubectomy during caesarean operation and minilaparotomy are popular methods in developing countries whereas laparoscopic sterilization and hysteroscopic tubal occlusion are the preferred methods in developed countries. Almost 5-6 million

sterilization procedures are performed annually contributing to 98% of all sterilization. According to National Family Health Survey (2005-06), 37% of currently married women in the age group 15-49 years were sterilized which accounted for 66% of all the contraception use, making it a leading method of contraception.¹ Although considered as minor and safe procedure of permanent fertility control, complications leading to even death have been reported. In our study, we have included only immediate complications. We have tried to evaluate etiological factors and also

preventive measures to reduce morbidity and mortality due to female sterilization procedures specially in developing country like India where tubectomy complication is a genuine medical issue.

METHODS

This study is a retrospective study which includes all cases that have reported or referred as female sterilization complication to Department of Obstetrics and Gynecology, Government Medical College and hospital at our institute during the period of 10 years from January 2007 to December 2016. Long term complications like tubectomy failure, ectopic pregnancies or post ligation syndrome are not included in our study. Only puerperal and interval sterilizations (sterilizations with Medical termination of pregnancy and caesarean sections are excluded) with perioperative (during and immediate after surgery) complications are included. Information has been collected from case records maintained in our institution after approval of ethical committee. Informed consent was not needed as identity of patient has not been revealed anywhere. Important aspects of case history include time and type of sterilization, place of surgery and type of complication. Case was further managed depending on type of complication. Morbidity, was assessed depending on length of stay and further treatment needed either medical or surgical.

RESULTS

During the selected period of 10 years (January 2007 to December 2016), 103 cases have reported to the institute as female sterilization complication making an average of around 10 cases / year. Year-wise distribution is projected in Figure 1.

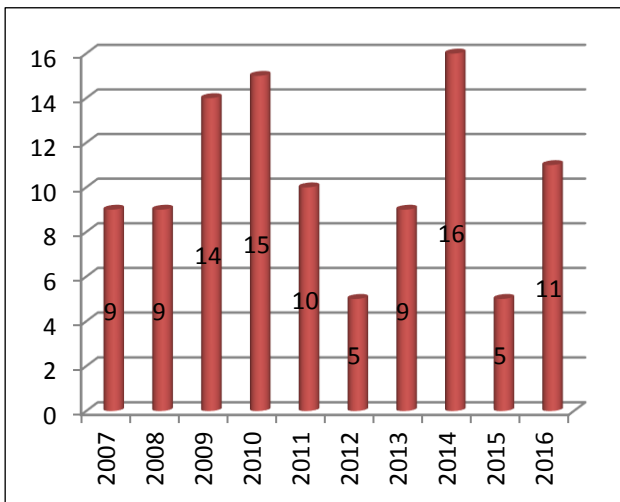


Figure 1: Year - wise distribution of cases.

When place of sterilization was compared (Figure 2), maximum number of cases that is 70 cases (67.96%) were from Primary Health Centre (PHC) followed by

Rural Hospital (RH) 25 (24.27%), Tertiary centre (TC) and private hospital 1 (PH) 4 (3.88%) each.

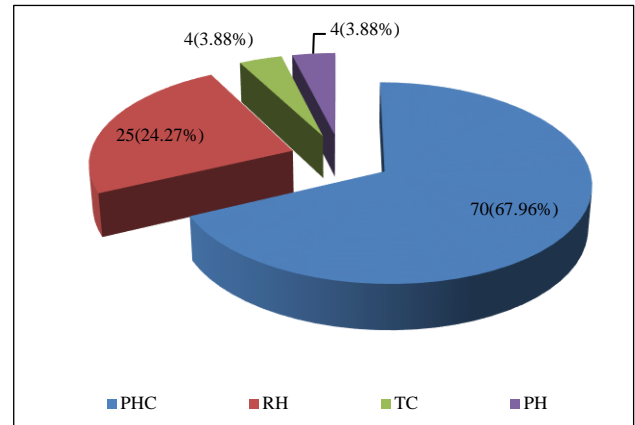


Figure 2: Place of sterilization.

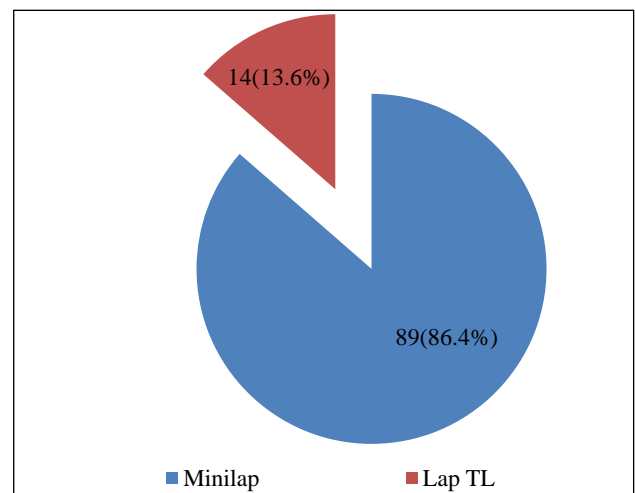


Figure 3: Type of sterilization.

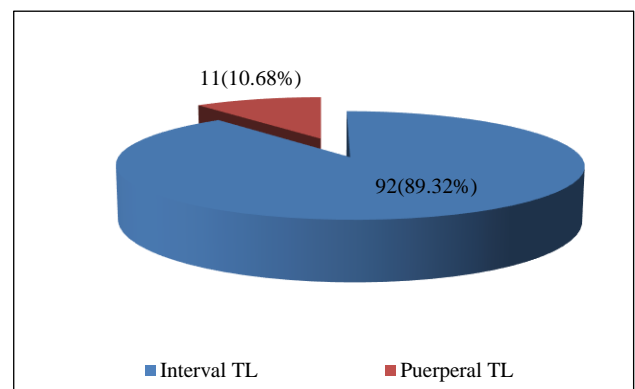


Figure 4: Time of surgery.

Based on type of sterilization, with 89 (86.4%) cases minilaparotomy (minilap) topped the list and rest 14 (13.6%) of laparoscopic tubal ligation (Lap TL) projected in Figure 3. Based on timing of sterilization, 92 (89.32%) cases were of interval tubal ligation and 11 (10.68%) of puerperal tubectomy (Figure 4).

To assess morbidities patients were classified depending on duration of stay and what further management they needed. 68 patients (66%) required up to 10 days of hospital stay, 31 patients (30.1%) needed up to 20 days of stay, where 4 patients (3.88%) were in doored for more than a month (Figure 5) with two deaths, one due to septicemia and other due to encephalitis.

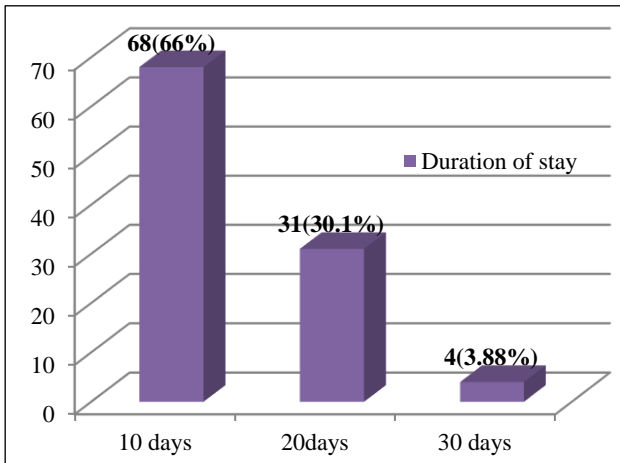


Figure 5: Duration of hospital stay.

Depending on type of complication and further management needed patients were further classified as either managed conservatively with some medicines and modalities without surgical intervention or if surgery is required then on type of surgery as minor or major. 62 cases (60.19%) were managed with conservative management and rest cases needed surgical management. 34 cases (33%) were managed with exploration and further surgical intervention upon intra-operative findings and 7 cases (6.8%) needed minor procedures like resuturing (Figure 6).

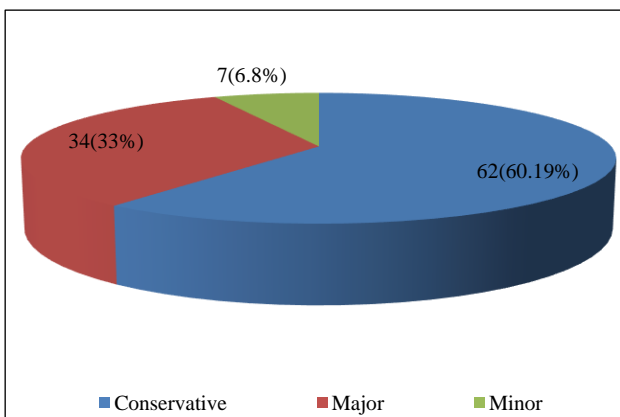


Figure 6: Type of management.

The complications are classified in two major categories as either medical or surgical depending on type of complications. The medical complications are listed in Table 1. Few cases required intensive care unit admission (pulmonary embolism, encephalitis); few had medical

disorders like epilepsy, tuberculosis, uncontrolled diabetes or hypertension that was managed with the help of department of medicine. Two cases were projected for CTscan and or MRI for evaluation of convulsions. Surgical complications are listed in Table 2. Majority of them had bowel or bladder injury, wound related infection or surgical site trauma which needed surgical correction.

Table 1: Medical complications.

Type of complication	Number of cases
Gastritis	12
Fever	5
Convulsions	4
Chest pain	5
Puerperal psychosis	2
Septicemia	5
Skin rash	5
Hypertension	1
Pelvic inflammatory disease	5
Endometritis	1
Encephalitis	1
Hypoglycemia	1
Carpopedal spasm	1
Abdominal Koch's	1
Pulmonary embolism	1
Transverse sinus thrombosis	1
Jaundice	1
Gastroenteritis	1

Type 2: Surgical complications.

Type of complication	Number of cases
Bowel injury	11
Bladder injury	5
Wound infection	9
Bleeding in muscle	3
Uterine perforation (Lap TL)	3
Peritonitis	3
Paralytic ileus	3
Mesosalpingeal tear	2
Adhesions (could not perform tubectomy)	3
Urinary retention	2
Burst abdomen	2
Pyosalpinx	1
Omental prolapse	1
Tubal stump bleeding	2

Details regarding conservative management are projected in Table 3. They needed intravenous fluids, antipyretics, antiemetics and antibiotics. Major surgical interventions were managed with the help of department of surgery, details of which are in table 4. 11 cases required bowel suturing or resection anastomosis, 5 cases had bladder injury and managed with bladder suturing, 7 had resuturing of surgical wound.

Table 3: Conservative management.

Treatment	Number of cases
Antibiotics	31
Intravenous fluids, nil by mouth, antiemetics	12
Antipyretic	5
Anticonvulsants	4
Oral hypoglycemics	2
antipsychotics	3
Antihypertensives	1
Antihistaminics	1
Antikoch's	1
Self-retaining catheter	2

Table 4: Surgical interventions.

Treatment	Number of cases
Bowel suturing or resection anastomosis	11
Bladder suturing	5
Resuturing	7
Suturing of muscle bleeder	3
Suturing of mesosalpingeal tear	2
Peritoneal lavage	3
Adhesiolysis with completion of tubectomy	3
Repairing of burst abdomen	2
Omental part excision	1
Excision of pyosalpinx	1
Salpingectomy	2
Suturing of uterine perforation	1

DISCUSSION

In this study 68% cases of tubectomy complication were from PHC this could be explained with Patil E et al, Hughes GJ and Stovall et al studies mentioning tubal sterilization is safe and highly effective in experienced trained hands regardless of approach and method of occlusion.²⁻⁴

When type of sterilization was compared 84.6% of complication cases were of minilap, where Lap TL only 13.4% which is contrast to previous studies of Kavita M et al and Mumford SD et al where surgical complication rate is found to be higher with Lap TL and Patil E et al, Chick PH et al, Pati S et al with no much of difference in complication rates in two.^{2,5-8}

Time of surgery when discussed we had 89.32% of complication cases of interval TL with only 10.68% of puerperal TL which is contrast to Patil E et al with postpartum and interval TL both found to be equally safe.²

66% of complication cases were discharged within 10 days and almost 60% cases were managed

conservatively. Around 4% cases required more than a month hospital stay with 33% cases needed major surgical intervention with Exploratory Laparotomy which is contrast with previous studies of Lawrie TA et al where they reviewed 15 RCT with no death and major or minor complications were rare.⁹

Most of cases of surgical complications had history of previous surgery or tuberculosis and many of medical complications were present before surgery and were not assessed properly before procedure. Important risk factors for complications included obesity greater than 12% of ideal body weight, diabetes, cigarette smoking, previous abdominal or pelvic surgery, and a history of pelvic inflammatory disease.^{10,11}

Two cases of death were reported in our study over a decade, reason being infection (septicaemia, encephalitis) which is comparable to Pulla P study of 13 cases of death in sterilization camps in Chhattisgarh India, all were because of septicaemia due to poor hygiene during surgery and Strauss LT et al with 55 sterilization deaths from 80 countries causes being infection, anesthesia or haemorrhage and contrast with Lawrie TA et al study of 19 RCT where no death or major morbidity reported.^{9,12,13}

Guidelines are given in Reference manual for female Sterilization. November 2014. Family planning division, Ministry of Health and Family Welfare, Government of India regarding Eligibility criteria for case selection, clinical assessment, anesthesia, Prevention of infection, surgical procedure, post-operative care to reduce sterilization related morbidity and mortality with special emphasis on Training in female sterilization and management of complications.¹⁴

Male sterilization procedures were found to have zero attributable deaths and significantly less major complications when compared to female sterilization procedure with equal efficacy. The short-term costs of female sterilization are 3.0 to 4.1 times that of vasectomy.¹⁵ Vasectomy is 30 times less likely to fail and 20 times less likely to have post-operative complications than its gynecologic counterpart. Complications from vasectomy are rare and minor in nature.¹⁶ Vasectomy acceptance and prevalence has been declining in India from 74.2% (proportion of all sterilizations) in 1970 to 4.2% in 1992 and 1% in 2016. Barriers in the organizational structure and poor access to services may contribute to the decrease in vasectomies.¹⁷

CONCLUSION

Female sterilization is most popular method of contraception in India. It is safe procedure in trained hands but complications can happen and many of them are preventable with proper screening and selection of cases with proper evaluation before surgery. There is a need to have proper training in sterilization and to stick to standards of sterilization procedure to minimize chances

of complications. Vasectomy being safer, cheaper and equally effective permanent method of contraception should be promoted on large scale and should be easily accessible.

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

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