

Article

# Prospective study of the single puncture laparoscopic tubal ligation

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**Abstract: Objective:** To evaluate the demographic data such as age, parity, living male child, educational status, intraoperative, and postoperative complications of laparoscopic tubal ligation by single puncture method.

**Methods:** A prospective study of Laparoscopic Tubal Ligation was conducted at a medical college during 2016-2022. A total of 1060 cases were enrolled based on criteria, and Laparoscopic Tubal Ligation was performed under sedation plus local anesthesia. The procedure was done after 1st trimester MTP, during the interval, and the puerperal period.

**Result:** Most of the patients (79.67%) were in the age group of 22-30 years. 53.38% were para 2. Out of the total, 97.24% of women had 2 or more living children, while only 2.76% had only one living child. Similarly, 97.24% had 1 or more male child, and only 2.76% had no male child. During the procedure, 3 (0.28%) patients had uterine perforation, and one (0.9%) had Mesosalpinx hematoma that required laparotomy. Additionally, 3 (0.28%) patients had serous and blood discharge from the wound, 4 (0.37%) had wound gaping, and 1 (0.9%) had omental prolapse. None of the patients developed peritonitis, bowel injury, or required laparotomy at a later stage. Further study and follow-up are required to comment on the failure rates.

**Conclusion:** The associated factors with single puncture laparoscopic tubal ligation include age, parity, number of living children, male child, complications, and timing of surgery.

**Keywords:** Laproscopic tubal ligation; Prospective study; Hematoma.

## 1. Introduction

**T**he most serious problem India is facing today is the rapid growth of its population. The current population of India in 2012 is estimated to be 1.22 billion. Over populated countries like India depend mainly on sterilization to control population explosion. Female sterilization is a relatively simple procedure that involves permanently blocking the fallopian tubes to prevent fertilization. The procedure was first used in the early 19th century by James Blundell, and the first published report of this procedure was in 1881 [1].

Female sterilization is the permanent surgical method of the contraception, or women's incapability to conceive after operation. Normally ovum & fertilization occur in fallopian tube, here we ligate, cut or coagulate the fallopian tube by various methods. National Family Planning Programme started in India since 1956 in which sterilization is done by open tubectomy method [2].

After implementation of family planning program it was found that there was declining crude birth rate from 44 per thousand populations in 1951 to 30 in 1991. The crude birth rate is 19.89%, death rate is 7.35%, and population growth rate was 1.25%. The population policy of Indian Government is focusing on implementing family planning and contraceptive services delivery [3].

Laparoscopic tubal ligation is a surgical procedure done on women as a permanent method of sterilization and it is the most prevalent form of contraception worldwide. Many gynaecologists have an apprehension

to perform laparoscopic ligation in women who have undergone previous laparotomy (pelvic or abdominal surgery) due to the threat of post surgical adhesions [4].

According to the United Nations data in 2011, India alone is responsible for 36% of female sterilization worldwide [5]. Laparoscopic tubal ligation is a commonly used method for female sterilisation. In the population, acceptance of sterilisation is influenced by sociodemographic factors. Better appreciation of socio-demographic factors influences the acceptance rate of laparoscopic tubal ligation and therefore it is important to be assessed [6]. A prospective study of the single puncture Laparoscopic tubal ligation was performed at tertiary care hospital in rural area of Maharashtra.

## 2. Material and methods

The permission from head of the institution and clearance from institutional ethics committee was obtained. A prospective observational hospital based study was performed in a women desiring Laparoscopic tubal ligation during 2016 to 2022. All preoperative examination & investigations were done. All patients live children were primary screened by Paediatrician for any major illnesses / diseases & counseled. Then informed consent was taken & total of 1060 patients were operated under sedation with local Anesthesia. Laparoscopic sterilization was done with single puncture Laparacator & Fallopes ring. All patients were observed for post op 4-6 hours, then given oral antibiotics and analgesics. The patient was discharged with advice for any abnormal sign, otherwise routine follow up at 7th day, after period or if misses a period. The data was collected on predesigned questionnaire and data was entered in Microsoft Excel. The appropriate statistical tests were applied.

## 3. Results

**Table 1.** Age group wise distribution of the patients

Age of patient	No of patients (n=1060)	Percentage
22-25yrs	354	33.36
26-30 yrs	491	46.31
31-35 yrs	164	15.43
>35 yrs	38	3.62

**Table 2.** Parity of the patients

Parity	No of patients (n=1060)	Percentage
1	11	1.05
2	568	53.58
3	365	34.4
4	63	5.9
5 & above	53	5.0

Tables 1 & 2 show that the most of the patients 79.67% were of the 21-30 yrs. 53.58% were 2nd para while 34.4% were 3rd Para.& only 1.05% were Primipara.

**Table 3.** No of living children & living male child

No. of living child	Number	Percentage	No. of living male child	Number	Percentage
1	16	1.56	0	29	2.76
2	554	52.24	1	536	50.52
3	364	34.31	2	437	41.21
4	82	7.75	3	50	4.73
5 & above	44	4.14	4 & above	08	0.78

Table 3 shows 98.44% women had a 2 or more living children & only 1.56% had only one living child. 97.24% had 1 or more male child & only 2.76% had no male child.

**Table 4.** Postoperative complications

Complications	Patients (n=1160)	Percentage
Perforations of uterus	03	0.28
Serous & Blood discharge	03	0.28
Mesosalphinx Hematoma	01	0.09
Wound Gaping	01	0.09
Omental Prolapse	01	0.09

Postoperative complications were mentioned in Table 4. Total eight patients (0.75%) had postoperative complication. Peroration of uterus was found in three patients (0.28%) and serous and blood discharge from wound was found in three patients (0.28%). Mesosalphinx hematoma and wound gaping was found in one patient (0.09%) each. There were three perforation of uterus and one Mesosalphinx hematoma were found as intraoperative complications.

**Table 5.** Time of the operation

Time	Patients (n=1160)	Percentage
After 1st trimester MTP	112	10.56
Interval Lap TL	807	76.13
Pueperal lap TL (after 5 wks)	241	22.73

Table 5 shows majority of tubal ligation took place in interval laparoscopic tubal ligation 807 (76.13%) followed by in after 1st trimester medical termination of pregnancy 230 (21.69%) and during puerperal laparoscopic tubal ligation in 23 (2.16%).

#### 4. Discussion

In our study most of the patients 79.67% were of the 22-30 yrs. With average 27 years & More than 85% were 3rd Para, which corresponds with Nagapurkar SN et al. [7], where average age is  $26.37 \pm 3.82$  year and parity 02. There were three perforation of uterus and one Mesosalphinx hematoma were found as intraoperative complications. Postoperative complications were mentioned in Table 4. Total eight patients (0.75%) had postoperative complication. Peroration of uterus was found in three patients (0.28%) and serous and blood discharge from wound was found in three patients (0.28%). I yoon [8] reported the most significant complication as tubal transection; this occurred in 76 (3.3%) of cases during the study period. Hwang Shin Park et al. [9] reported One intra- and five post-operative complications occurred. The complication rate was 3.2% (6/187). It requires further study & follow up to comment on the failure rates & any long term sequel. YS Choi [10] found 10 patients with a pelvic haematoma (five in each group), all of whom recovered following conservative management. H Samiei [11] observed early complications including mesosalpinx tearing and hematoma formation were happened in 4 cases of ring (4.2%).

Still in our set up people had a affinity for male child, so 97.24% had 1 or more male child & only 2.76% had no male child. Similar findings were reported by Nagapurkar SN [7,12]. Other studies who reported similar findings as that of our are 2.7% had more than four children comparable to 52.5% and 3.5% in Prayag et al. [13] study and 52.2% and 4.14% in Vaishnav G et al. [2] study respectively. That requires awareness and educations of the patients. Study by Nagapurkar SN [7] reveals that 50% subjects had two living children.

Majority of tubal ligation took place in interval laparoscopic tubal ligation 807 (76.13%) followed by in after 1st trimester medical termination of pregnancy 230 (21.69%) and during puerperal laparoscopic tubal ligation in 23 (2.16%). Kwak, Hyun Mo [14] had two hundred fourteen women were sterilized immediately at the time of abortion; 359 were sterilized between 1 and 42 days later; and the remaining 1031 women were sterilized 43 or more days after abortion. Jacob R. Rozier [15] performed 392 cases of immediate postpartum laparoscopic tubal ligations. Therefore patients choose different timing of tubal ligations depending on their needs, prevailing obstetric conditions and demand.

## 5. Conclusion

The associated factors with single puncture laparoscopic tubal ligation are age, parity, number of living children, male child, complications and timing of surgery.

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**Conflicts of Interest:** Authors declare no conflict of interests.

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