

## Evaluation of Laparoscopic Tubal Ligation in Patients Under Various Aspects

Dr Vivek Karale, Dr. Surabhi Y Nasre

1- Assistant Professor, Department of Obstetric & Gynecology, Government Medical College Akola ; 2- Postgraduate student , Obstetrics and Gynecology, Government Medical College Akola

### Abstract:

**Aim:** To evaluate technique of laparoscopic tubal sterilization in patients with previous caesarean section with respect to age, parity, time required , technical difficulty, operative time, intra-postoperative complications , conversion rates to conventional laparotomy and its reasons to be identified .

**Methods:** A prospective study of laparoscopic tubal ligation done at teaching Medical College and in camp from January 2018 to June 2109.Total 53 cases were operated under spinal anesthesia. Laparoscopic tubal sterilization were performed in interval and postabortal cases. Data were analyzed with respect to age, parity, operative time, technical difficulty , intra/postoperative complication .

**Result:** Most of the patients were in age group of 20-29 years .The average age for laparoscopic tubal sterilization was  $29.67 \pm 4.74$ . Most of the patients were having two children. Time required of laparoscopic tubal sterilization was  $21.25 \pm 10.18$  minutes . Maximum patients were form previous 2 LSCS group are 25( 47.17%). Adhesions were seen 3.7% and it was difficult to find tube in previous lscs cases accounting for 3.77%. All the patients were successfully performed with spinal anesthesia.Major complication was 1 ( 1.92%) which was bladder perforation(manipulator handling ) .48( 78.85%) were discharged on day 2. All the patients were successfully performed with spinal anesthesia.

**Conclusion:** Laparoscopic tubal ligation is feasible in previous caesarean section with least risks involved and devoid of complication. It can be performed easily with successful outcome and least complications but further study and follow up to comment on the failure rates.

**Key words:** Lap TL, Caesarean Section, Adhesion, Pfannenstiel Scar

Date of Submission: 10-02-2020

Date of Acceptance: 25-02-2020

### I. Introduction

Tubal sterilization is currently the most popular form of birth control. It is an important constituent of National Family Planning Program in India. Tubal sterilization is being done from primary health center to the tertiary care centers in the government sector and also at private institutions and nursing homes <sup>(1)</sup>. More than 45.5% women undergoing sterilization are between 20 and 25 years of age. Although it is done as a permanent method of sterilization, due to unforeseen circumstances, 1%–3% of these women subsequently demand reversal of sterilization. There are no studies from the country trying to look at the rate of successful recanalization procedures based on the type of sterilization performed <sup>(2)</sup>. Amongst the major health problems in India ranks first due to population explosion. In developing countries over 70% of all sterilization is done in women <sup>(3)</sup>. The most common surgery of reproductive age group is caesarean section and the patients included in study are multigravida; so patients with previous one or more caesarean sections are included in this study. The major advantage is short postoperative stay duration with minimal tissue handling, less postoperative adhesions and less complication rate .

### II. Material And Methods

This prospective comparative study was carried out on patients of Department of obstetrics and gynecology at Government Medical College, Akola from January 2018 to June 2019. A total 53 adult subjects according to inclusion criteria were for in this study.

**Study Design:** Prospective observational study.

**Study Location:** This was a tertiary care teaching hospital based study done in Department of obstetrics and gynecology at Government Medical College, Akola

**Study Duration:** January 2018 to June 2019.

**Sample size:** 53 patients.

**Sample size calculation:** Universal sampling was done which included all patients who were fit for undergoing laparoscopic tubal sterilization.

**Subjects & selection method:** The study population was drawn from eligible patients who presented to OBGY OPD of Government medical college, Akola. Patients who were willing and fit to undergo for interval tubal sterilization and post- abortal tubal sterilization after pre –anesthetic fitness were selected.

**INCLUSION CRITERIA-**

- 1) Laparoscopic tubal ligation was performed with patients who wanted to complete their families.
- 2) Patients with parity  $\geq 2$ .
- 3) Patients willing for laparoscopic tubal sterilization

**EXCLUSION CRITERIA-**

- 1) Patient not giving consent .
- 2) Patient with a single child/issue.

**Procedure methodology-**Total 53 patients were enrolled which included patients who had pregnancy with normal deliveries and also pregnancy with caesarean section . Laparoscopic tubal ligation in our study was done by using sailastic band and band applicator. All cases were performed under spinal anesthesia, need for conversion to general anesthesia seen and reason was evaluated, any anesthetic complication in intraoperative and also postoperative period were seen . Various parameters like the frequency of patients with previous normal deliveries and previous operative procedure (LSCS) as most patients are reffered with previous LSCS to our tertiary care centre , operative time , mean blood loss intraoperatively , intraoperative complication , need of conversion to open tubal ligation and its reason . These patients’ names were checked against the antenatal booking register, the operating theatre register in case of ectopic pregnancies and a termination of pregnancy register to recognize failed sterilization.

**Procedure-**

- All laparoscopic sterilization techniques avoid the proximal 2 cm of the fallopian tube near the uterus.
- The technique uses a 3.6-mm sialastic band, with an inner diameter of 1 mm, to cause ischemia and necrosis of approximately 2 cm of the isthmic portion of the fallopian tube. The applicator device used to apply the sialastic band can be used through the 10-mm operating laparoscope or an accessory 7-mm trocar.
- Immediately prior to placing the instrument in the port, stretch the band over the ends of the applicator barrel around the smaller sheath, ensuring the band is not defective. Next, introduce the applicator device into the abdomen and open up the grasping prongs so they are outside of the sheath. Place one of the prongs on either side beneath the isthmic portion of the fallopian tube so it is in the mesosalpinx, about 3 cm away from the uterine cornu. Gently pull the prongs into the applicator and ensure that they close around the tube as they are being pulled into the sheath; approximately 1.5–2.5 cm of the tube will be pulled in.
- It is useful to push the applicator toward the tube at the same time to ensure that there is not too muc-tension on the fallopian tube. The larger sheath will push the sialastic band over the loop of the tube grasped by the prongs; the ring will then constrict back to its original size.<sup>(4)</sup>

All patients were given discharge on the day 2. Stitch removal was done on the seventh day.

**Statistical analysis -**

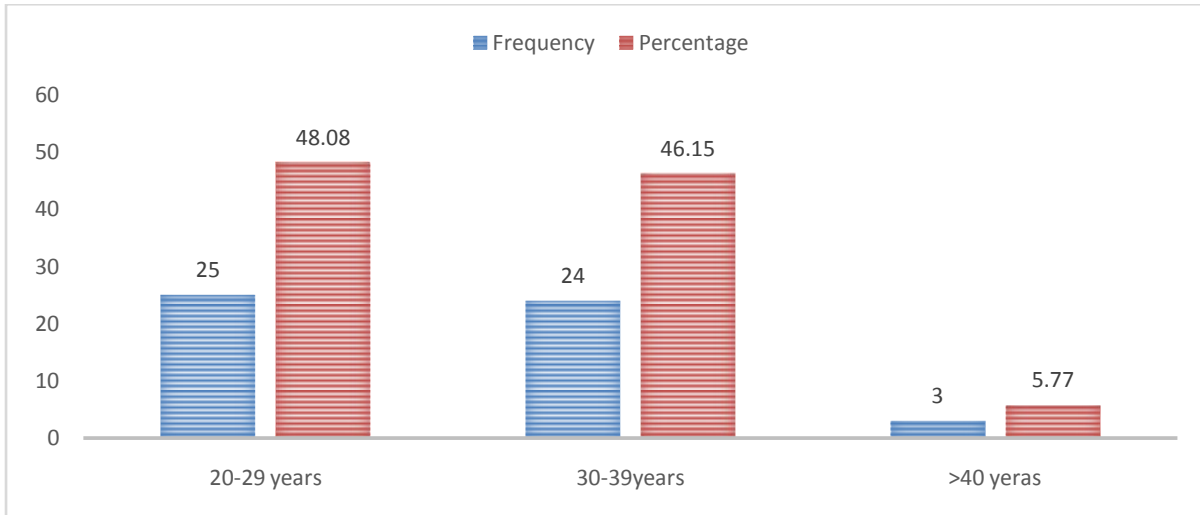
Data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL).

**III. Results**

Factors of age, parity,operative time,number of previous cesarean section, intra and postoperative complications, stay in hospital were analyzed. Age ranged from 20 to 35 years and maximum patients (80%) were in 25-29 years age group.

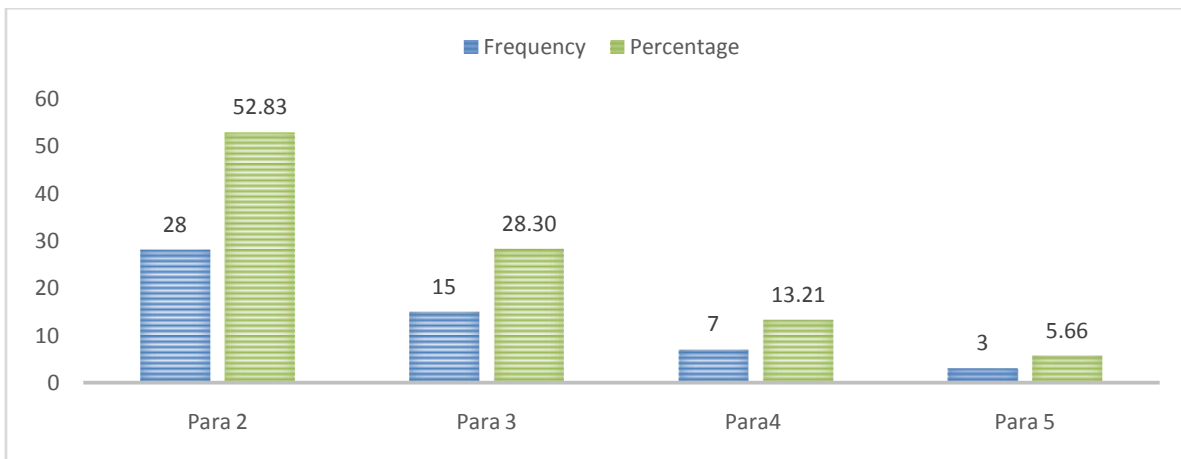
**Table no.1- Distribution of age in laparoscopic tubal sterilization** - 20-29 years age group accounted for 25 (48.08% ) followed by 30-39 age group 24( 46.15) ; > 40 years included 3 (5.7% ). The average age for laparoscopic tubal sterilization was 29.67±4.74

Age groups	Frequency (n=52)	Percentage (%)
20-29 years	25	48.08%
30-39years	24	46.15%
>40 years	3	5.7%
Average	29.67	
SD	4.74	



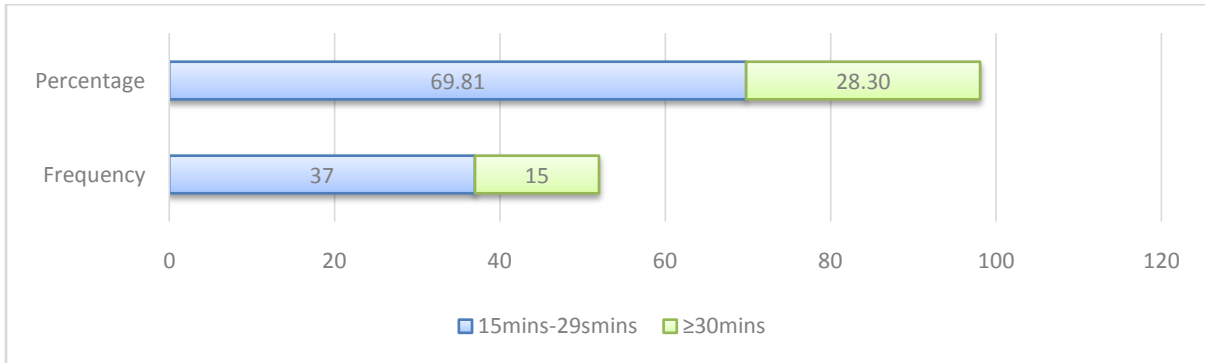
**Table no.2-Distribution of parity in laparoscopic tubal sterilization** – Second para were 28( 52.83%) , third para were 15(28.30%) , fourth para were 7 ( 13.21 %) , fifth para were 3 ( 5.65%) . Maximum patients were from second para group.

Parity	Frequency (n=52)	Percentage (%)
Para 2	28	52.83%
Para 3	15	28.30%
Para4	7	13.21%
Para 5	3	5.66%



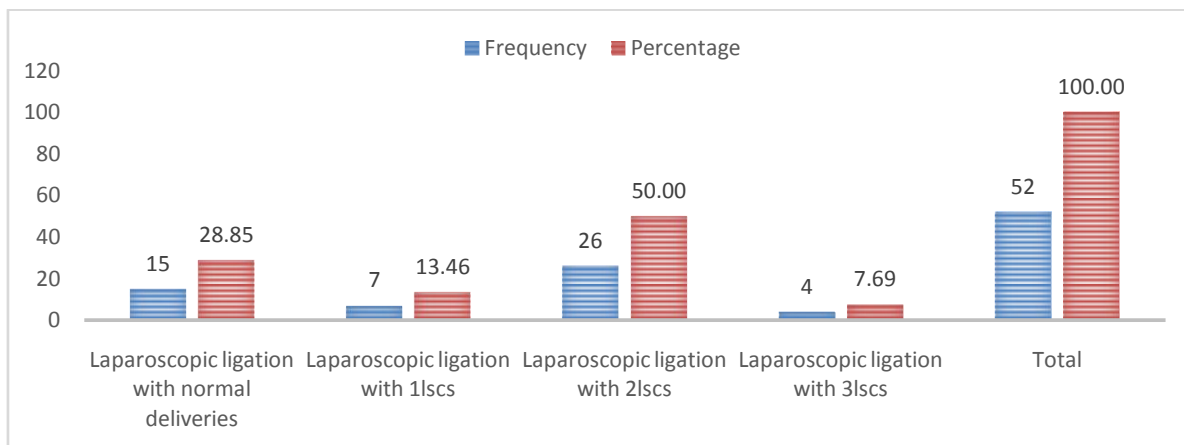
**Table no.3- Distribution of time interval in laparoscopic tubal sterilization –**

Time required for laparoscopic tubal sterilization	Frequency(n=52)	Percentage(%)
15-29(minutes)	37	69.81%
≥30 (minutes)	15	28.30%
Average	21.25minutes	
SD	±10.18	



**Table no.4-Numbers of tubal sterilization observed in previous normal deliveries and previous caesarean sections –**

Normal deliveries	Frequency (n=52)	Percentage(%)
Laparoscopic sterilization with normal deliveries	15	28.85%
Laparoscopic sterilization with 1lscs	7	13.46%
Laparoscopic sterilization with 2lscs	26	50%
Laparoscopic sterilization with 3lscs	4	7.69%
Total	52	100%



**Table no.5- Distribution of complications seen in tubal sterilization-** Major complication was 1 (1.92%) due to bladder perforation while uterine manipulation done intraoperatively. No relaparotomy done.

Complications	Major	Minor
Uncomplicated	51 ( 98.08%)	47 ( 86.7%)
Complicated	1 ( 1.92%)	5 ( 13.3%)
Total	52( 100%)	52(100%)

NOTE- complications include surgical and postoperative both.

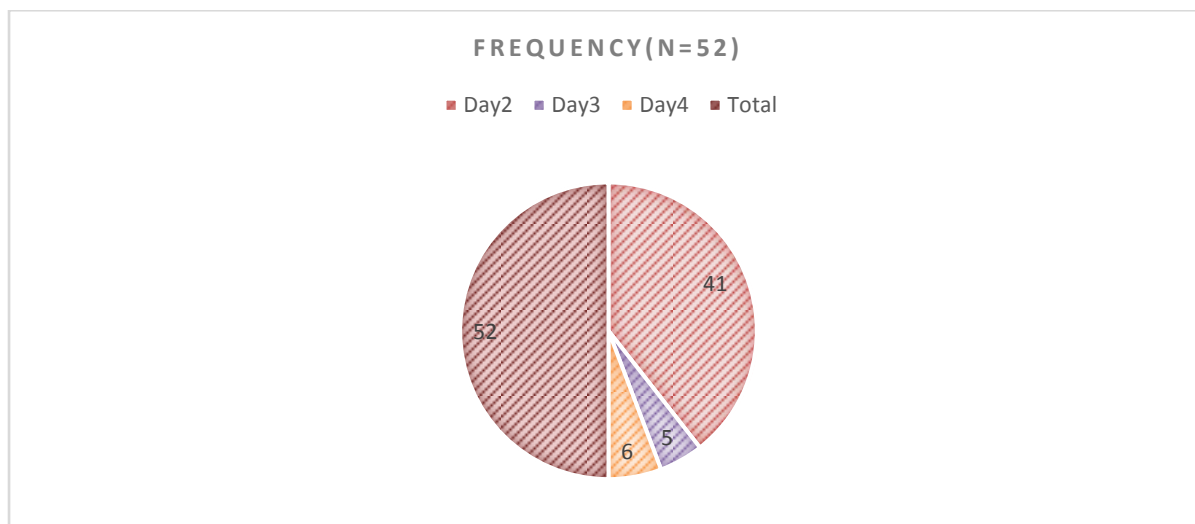
**Table no .6 -Distribution of type of minor complications seen in in tubal sterilization-**

Type of minor complication	Frequency ( n=66)	Percentage (%)
Fever	3	5.7%
Spinal headache	2	3.8%
Wound discharge	2	3.8%

NOTE- All minor complication listed above were postoperative in nature.

**Table no. 7 - Distribution of day of discharge for laparoscopic tubal sterilization -**

Day for discharge	Frequency(n=52)	Percentage(%)
Day2	41	78.85%
Day3	5	9.625
Day4	6	11.54%
Total	52	100%



#### IV. Discussion

In present study ,20-29 years age group accounted for 25 (48.08% ) followed by 30-39 age group 24( 46.15) ; > 40 years included 3 ( 5.7% ). The average age for laparoscopic tubal sterilization was 29.67±4.74.

In Kanupriya singh et al<sup>(3)</sup> age ranged from 20 to 35 years and maximum patients (80%) were-in 25-29 years age group ,similar results are seen .

In N Gupta et al<sup>(5)</sup> study of laparoscopic tubal sterilization mean age of patients was 29 years. Hence similar findings seen in our studies with mentioned studies.

In present study, second para were 28( 52.83% ) , third para were 15(28.30%) , fourth para were 7 ( 13.21 % ) , fifth para were 3 ( 5.65%) . Maximum patients were from second para group .In kanupriya et al<sup>(3)</sup> 32% patients were second para , ,similar findings seen in our studies.In N Gupta et al<sup>(5)</sup> study mean parity was 3.2 ,similar findings seen in our studies with mentioned studies.In present study ,time required of laparoscopic tubal sterilization was 21.25 ± 10.18 minutes. In 15-29minutes- 37 cases (69.81%) ≥30 minutes -15 (28.30%). Average time required of laparoscopic tubal sterilization was 21.25± 10.18 minutes .Operative time decreases as skills and instrument handling , hand eye coordination is improved .

**Association of previous surgeries** –It is seen that in this centre most of the females ask for immediate postabortal tubal sterilization hence this study includes cases of interval tubal sterilization and first trimester and second trimester postabortal tubal sterilization .In this patients with previous 2 LSCS are 25( 47.17%) followed by previous normal deliveries for 14 ( 26.92%) ; previous 1 lscs for 7 (13.21%) , previous 3 lscs for 4 ( 7.55%) , previous 4 lscs for 1 ( 1.89% ).Similar findings are seen in K singh et al<sup>(3)</sup> 60 patients (86%) underwent TL after having two delivery while 10 patients (14%) underwent TL after three delivery. Out of 70 patients 14 (20%) patients had one lscs 54 (77%) had two LSCS and 2 (3%) had three LSCS . In N gupta et al<sup>(5)</sup> twenty six women (52%) had had one previous surgery, twenty (40%) had had two, and four (8%) had had three surgeries which are similar to our study.

**Surgical Complications** -Major complication was 1 ( 1.92%) - bladder perforation which occurred by uterine manipulator and it was identified by laparoscopy , hematuria suggested perforation . It was identified intraoperatively and patient underwent laparotomy , bladder injury was around 3 cm which was repaired by absorbable suture ( vicryl 3-0) . It was not done by laparoscopy as bladder is important organ and suturing is difficult by beginner surgeons. Minor complications -There were 5 (13.3%) cases which includes febrile morbidity 3 ( 5.7%) , spinal headache 2 ( 3.8%) , wound discharge 2 ( 3.8%). Total minor complication rate was 13.3%. K singh et al<sup>(3)</sup> has no ,major intraoperative , postoperative complications which contradicts .

**Intraoperative findings** -In one case of previous 2 LSCS- dense adhesions obscuring fallopian tube anatomy .In one case of previous 3 LSCS- omental adhesions seen covering anterior aspect of uterus to anterior abdominal wall . It was difficult to find tube in 2 cases which was also in previous lscs cases accounting for 3.77% . Similar findings seen in Kanupriya et al suggestive of difficulty to ring fallopian tube in 5.7 %.

**Conversion to laparotomy** - 1 ( 1.92%) case was converted to laparotomy because of bladder perforation which occurred by uterine manipulator and it was identified by laparoscopy and hematuria suggested perforation . It was identified intraoperatively and patient underwent laparotomy, bladder injury was around 3 cm which was repaired by absorbable suture ( vicryl 3-0) . It was not done by laparoscopy as bladder is important organ and suturing is difficult by beginner surgeons. All the periphery hospitals refer patients for medical termination of pregnancy with previously operated LSCS as our tertiary care centre has laparoscopy .In

our study using sialastic bands was used till date we did not find any tubal sterilization failure till date so it should be preferred.

**Postoperative discharge** –In present study was done postoperative discharge was done on day 2 – fourty eight (78.85%) , day 3- five ( 9.65%) , day 4 – six ( 11.54%) , day 5 -. In this study In Kanupriya et al<sup>(3)</sup> study all patients were given discharge on the same day after 5 hours of procedure with oral antibiotic which contradicts our study .In this study ,postoperative discharge was done on day 2 because after the patient is mobilized from spinal anaesthesia , the patients admitted are less educated and has less resources available as they live far away , if any minor and major complication arises its diifcult for them to followup . Also , tubal sterilization comes in national program makes these patients more important .

**Anesthesia**-All the tubal sterilization surgeries are performed in spinal anesthesia. There was no conversion to general anesthesia..In SJS Bajwa etal (6) he states that regional anesthesia provides numerous advantages over general anesthesia in terms of quicker recovery , effective postoperative pain relief , no airway manipulation, short post operative stay, reduced post operative nausea and vomiting , early ambulation. Also he states it is debatable issue as it most commonly depends on experience and competency of anesthesiologist . In Mehta et al(7) he states that in his study of 60 patients also found better postoperative analgesia with spinal anesthesia in comparison to general anesthesia. Also it is superior to general anesthesia in respect to postoperative nausea and vomiting , postoperative analgesia and early recovery. In Imbelloni et al(8) also found spinal anesthesia to be safe in laparoscopy

## V. Conclusion

Meticulous training and widespread availability of laprasopy units have made TL in such subsets a preferred method in all the centres . Practical aspects must be taken into account before implementing endoscopic techniques in settings with limited resources. Therefore , with good surgeon’s hand to eye coordination and instrument handling endoscopic procedures justify lesser time , lesser complications , early postoperative recovery , less postoperative morbidity .Tubal occlusion by laparoscopy is a safe and effective method of permanent contraception.

## References

- [1]. Jayakrishnan K, Baheti SN. Laparoscopic tubal sterilization reversal and fertility outcomes. *J Hum Reprod Sci.* 2011 Sep;4(3):125–9.
- [2]. Grunert GM, Drake TS, Takaki NK. Microsurgical reanastomosis of the fallopian tubes for reversal of sterilization. *Obstet Gynecol [Internet].* 1981 Aug [cited 2020 Jan 28];58(2):148–51. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/7254725>
- [3]. Singh K, Patel V. Safety of Laprascopic Tubal Ligation in patients with Previous Casarean Section. *NMed Res.* 2016;6(2):124–6.
- [4]. Versage JL. Laparoscopic Tubal Ligation Technique: Introduction of the Laparoscope,Tubal Ligation Technique, Finishing the Procedure [Internet]. *MEDSCAPE.* 2018. Available from: <https://emedicine.medscape.com/article/1848429-technique#c3>
- [5]. Gupta N, Sharma J. Laparoscopic tubal ligation in women with previous pelvic or abdominal surgery. *Acta Medica Int [Internet].* 2016 [cited 2019 Dec 1];3(1):75. Available from: <http://www.actamedicainternational.com/text.asp?2016/3/1/75/209725>
- [6]. Bajwa SJS, Kulshrestha A. Anaesthesia for laparoscopic surgery: General vs regional anaesthesia. Vol. 12, *Journal of Minimal Access Surgery.* Medknow Publications; 2016. p. 4–9.
- [7]. Chavda H, Wadhvana A, Porecha M, Mehta P. Comparative analysis of spinal versus general anesthesia for laparoscopic cholecystectomy: A controlled, prospective, randomized trial. *Anesth Essays Res.* 2010;4(2):91.
- [8]. Imbelloni LE, Sant’Anna R, Fornasari M, Fialho JC. Laparoscopic cholecystectomy under spinal anesthesia: Comparative study between conventional-dose and low-dose hyperbaric bupivacaine. *Local Reg Anesth.* 2011;4(1):41–6.

Dr Vivek Karale,etal. “Evaluation of Laparoscopic Tubal Ligation in Patients Under Various Aspects.” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(2), 2020, pp. 20-25.