



Original Research Article

A comparative study on effect of 1% xylocaine spray on fallopian tubes before tubal ligation either by minilap or lap sterilization

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ARTICLE INFO

Article history:

Received 21-10-2019

Accepted 16-11-2019

Available online 06-12-2019

Keywords:

Women sterilization

Minilap tubectomy

Double Puncture Laparoscopic

Sterilization

1% xylocaine spray

ABSTRACT

Introduction: In India, the most adopted way of family planning is women sterilization. Minilaparotomy and Laparoscopic methods are regular ways of female sterilization. Tubal ligation in tubectomy is done either by Minilaparotomy (Minilap) or by laparoscopy (DPL) sterilization in the women are regularly practiced for permanent sterilization. Though routine I/V sedation i.e., injection Pentazocin 30mg plus Promethazine Hydrochloride 25mg diluted with 8cc distilled water were administered slowly 5 minutes before surgery and local infiltration anesthesia (1% xylocaine 10cc) is used as a regular practice, the present study used 8cc of 1% xylocaine along the line of incision and 1cc of 1% xylocaine spray on either side of fallopian tubes while performing tubectomy to further reduce pain and discomfort not only during procedure but also post operative pain.

Aim: The study aims to evaluate the effectiveness of topical 1% xylocaine spray for pain control during tubal ligation.

Materials and Methods: To know the effect of 1% Xylocaine spray, 200 women desiring sterilization by Minilap tubectomy and Double Puncture Laparoscopic Sterilization (DPLS) or lap techniques were recruited. Age, parity, pain and acceptor satisfaction during procedure were recorded and compared with values for 100 similar women undergoing same procedure without Xylocaine 1% Spray. The scores were analysed statistically.

Results: The 'Z' score during the procedure was 4.9244 in the 1% xylocaine spray group and 6.6324 in the group without spray ($p < 0.05$). 1% xylocaine spray treatment significantly lowered the overall procedural pain score compared with controls.

Conclusions: Significant pain reduction during the procedure can be achieved by using 1% xylocaine spray along with routine I/V sedation and infiltration anesthesia while performing tubectomy (either minilap or lap) and can be easily adopted and practiced.

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1. Introduction

India is ranked as second most populated in the world with a population of approximately 1.23 billion and estimated to become most populous country by 2025 and surpasses China by 2050.¹ Population increase will lead to depletion of available resources and then ultimately to poverty, environmental degradation etc.² Thus government

encouraged the scientists to develop various contraceptive methods to control reproduction which in turn helps to get better quality of life.²

Though a wide range of contraceptive options are available, mostly females opt tubal sterilization for family planning. In 1980-1984, women sterilization in Asia were increased from 34% to 42-43% in 1985-2005,³ whereas in India 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

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contraception.⁴ In U.S., 10.3 million women preferred various methods for sterilization making it as second leading method of contraception. Thus, among women with an average of 35 years and older, female sterilization is the leading method of contraception.⁴

The common methods adopted for female sterilization are Minilaparotomy, laparoscopic sterilization and hysteroscopy. In India, postpartum sterilization is usually done by minilaparotomy, whereas laparoscopy (DPLS) is performed for interval and post abortal cases. Minilaparotomy is done for tubal ligation. Though it is a simple procedure, needs large incision and is coupled with more wound infections, longer hospitalization but laparoscopic sterilization needs smaller incisions, shorter hospital stays, but needs well trained gynaecologists with expensive, high maintenance equipment.⁵ Both minilaparotomy and laparoscopic sterilization procedures were proved to have acceptably low rate of major complications, technical failure and death.⁶

In spite of low major complications, death, and technical failure, the procedure is associated with pain and discomfort in several ways. Many women experience mild to moderate pain during tubectomy and sometimes the pain is severe. Keeping the procedural pain in view, majority of health care providers selectively use or recommend less effective contraceptive methods to encourage family planning among rural women.⁷ Considering tubectomy as a major opted procedure by the women, public health departments focused on various methods to reduce procedural pain. Therefore, it is important to identify an effective, safe and easy-to-apply method of analgesia during tubectomy. In this context, the present study was aimed to study the effect of 1% Xylocaine spray in reducing the procedural pain during tubectomy at our institute.

Xylocaine 1% Spray is categorized as a local anesthetic medicine and works in blocking the nerve signals of a specific body part. Many surgical procedures consider it as an effective numbing medicine as it is a convenient local anaesthetic with less adverse effects. Its form in the spray also provides easy application and better patient acceptance. However, there is no study supporting the effectiveness of its use in pain control during tubectomy. To the best of our knowledge, the present study, in which 1% Xylocaine spray was used as a pain control method during tubectomy, is the first such research reported in the literature.

2. Materials and Methods

A prospective study carried out at Victoria Government Hospital for Women and Children, Visakhapatnam, Andhra Pradesh which includes 100 cases of lap acceptors, 100 cases of minilap acceptors with 100 cases as controls between July 2017 and January 2018. Acceptors were selected randomly with comparative age and parity matched and with good general condition. The criteria noted are age,

parity, pre-operative condition, acceptor satisfaction and pain during surgery. No nulliparous women were included in the study. All acceptors were tested preoperatively for Xylocaine sensitivity. Informed consent was obtained from all individual participants included in the study.

2.1. Inclusion criteria

Women eligible for sterilization and willing to participate.

2.2. Exclusion criteria

Women not eligible for sterilization and eligible but not willing to participate.

2.3. Analysis

Data analysed with MS Excel software and on line Mann Whitney U test and results were described using percentages and p-value.

Along with vitals per abdomen and per vaginal examination was done for all the cases after written consent. The patients were counseled about the procedure and its aftermath effects. Basic tests for the acceptors done were HB%, urine for albumin and sugar, BT/CT, Ultrasound examination, pregnancy tests, screened for HIV, HBS Ag and VDRL. Pulse rate, temperature, respiratory rate, blood pressure and heart and lungs were examined. Haemoglobin of 8 gm was taken as mandatory before procedure.

Apart from routine I/V sedation which consists of injection Pentazocin 30mg plus Promethazine Hydrochloride 25mg diluted with 8cc distilled water are given slowly 5 minutes before surgery and local infiltration anesthesia (1% xylocaine 10cc), the present study used 8cc of 1% xylocaine along the line of incision and 1cc of 1% xylocaine spray on either side of fallopian tubes while performing tubectomy to further reduce pain and discomfort not only during procedure but also post operation.

3. Results

A total of 300 were acceptors evaluated for eligibility. No severe complications or serious adverse reactions were observed during or after procedures. Both the groups of tubectomy i.e., minilap and lapare compared in age and parity. Pain score was categorized into severe, moderate, mild and no pain which were visualized and recorded to analyse statistically. Pain scores of the procedures are illustrated in Table 3. Control group experienced greater pain than those in the treatment group. A significantly lower score for overall pain during the procedure was found in the treatment group compared to controls ($p < 0.001$).

In both minilap and lap, maximum no. of surgeries were done in the age group of 23–27 years.

Maximum acceptors preferred only two children.

Table 1: Age wise distribution of minilap and lap acceptors

Age	Minilap (140)	Percentage	Lap(160)	Percentage
23 – 27	125	89.28	134	83.74
28-32	14	10.00	22	13.75
32-37	1	0.71	3	1.87
>37	0	0	1	0.62

Table 2: Parity wise distribution of minilap and lapacceptors

Parity	Minilap (140)	Percentage	Lap (160)	Percentage
P ₁	13	9.2	10	6.2
P ₂	112	80	133	83.1
P ₃	12	8.7	8	5
P ₄	3	2.1	9	5.7

Table 3: Distribution of pain scores among acceptors and controls

Pain	Minilap	Controls	Lap	Controls
Severe	15	78	3	78
Moderate	20	11	8	11
Mild	33	9	26	9
No	32	2	63	2
Mean	2.23	2.94	2.25	2.94
SD	1.10878	0.59702	0.77035	0.59702
Median	2(0-4)	2(0-4)	3(0-4)	2(0-4)
Z Score	4.92444		6.63545	
P Value	<0.00001		<0.00001	

**Values are expressed as median (minimum–maximum). The variables were compared with Mann-Whitney U-test and Chi-square (χ^2) test. A $p < 0.05$ probability value was considered statistically significant.

4. Discussion

Of all the female sterilization methods, minilap and lap are most preferred and frequently practiced procedures in the present times. Pain in minor surgical procedures has always been a problem in gynecology. Only gynecologists or surgeons with MS degree trained in laparoscopy should do it and such facility is available mostly in all government hospitals of urban areas. Duration of surgery is less and patients undergoing laparoscopic sterilization can be discharged within 12 hours, causes minimal postop pain and faster recovery and resumption to normal activity.⁸

The present study included 300 acceptors who preferred to undergo minilap & lap as family planning method which were divided into 3 groups, such as 100 minilap and 100 lap acceptors with 1% xylocaine spray and 100 acceptors as controls without 1% xylocainespray. Other factors like age and parity were evaluated and compared with the two procedures. More number of patients were between the age of 23-27 years (89.28% for minilap and 83.74% for lap) which is almost similar to the study of V. Aruna and M. Satyavathi, 2015.⁹ But in the study of G. Mahalaxmi and Sandhya Dixit, the age group falls between 22-25 years only.¹⁰ Majority of the couples approached to the procedure as a part of permanent sterilization after having 2 children (83.1%) which shows the literacy rate among

couples which in turn led to awareness regarding the family planning methods.

To the best of our knowledge, no studies from India tried 1% xylocaine spray on tubes along with I/V sedation and infiltration anesthesia in the tubectomy studies. There were a very few studies internationally which used Lidocaine spray (same combination of drugs) during other gynecological procedures with consistently positive results but not tubectomy. 1% Xylocaine spray is a simple and convenient topical anaesthetic with minimal adverse effects. However, to date there is no evidence regarding its effectiveness in pain control during minilap and lap procedures. The pain scores were compared with Z scores and Mann Whitney test and found significant results. Thus the present study shown that it is effective in reducing pain scores (p value is less than 0.05) during the procedures.

5. Conclusion

This study demonstrated that 1% xylocaine spray can be effective in control of procedure-related pain when compared with controls. More larger-scale, prospective and homogeneous studies involving topical anaesthetics needed to determine the effectiveness, safety and optimal dosage of 1% xylocaine spray.

6. Conflict of interest

The authors declare that they have no conflict of interest.

7. Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Cite this article: Chandra Prabha N, Padmavathi K, Anuradha A. A comparative study on effect of 1% xylocaine spray on fallopian tubes before tubal ligation either by minilap or lap sterilization. *Indian J Obstet Gynecol Res* 2019;6(4):532-535.