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Effects of Instillation of Intraperitoneal Bupivacaine Injection on Post Operative Pain in Laparoscopic Appendectomy: A Randomized Control Trial

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ABSTRACT
This study was designed to study the effect of intraperitoneal instillation of bupivacaine in laparoscopic appendectomy patients. From January 2024 to July 2024, 50 patients with uncomplicated, symptomatic appendicitis who were posted for laparoscopic appendectomy in our hospital were included in the study. Patients in group I received intraperitoneal instillation of bupivacaine and those in group 2 received normal saline instillation. Patients were assessed for pain at 5 time intervals after surgery; 2 hr, 6 hr, 12 hr, 24 hr, and 48 hr. The mean total pain score was lower in group 1 than in group 2. Visual analogue scale (VAS) measured pain scores were significantly lower in group 1 than in group 2 at 2hr, 6hr and 12 hr interval. Intraperitoneal instillation of Injection Bupivacaine results in significant reduction in post operative pain in first 12 hours post operative time period without any major increase in complications.

INTRODUCTION

Inflammation of appendix is called as appendicitis. Laparoscopic and open appendectomy are two options for surgical management of acute appendicitis.
Laparoscopic appendectomy (LA) is considered as safe and effective alternative for open appendectomy (OA). Laparoscopic appendectomy was introduced to reduce postoperative pain as compared to OA.
Many methods are used to further reduce post operative pain after LA. Recently few studies observed effects of instillation of local anaesthetics at post operative site in laparoscopy[1-3].
In this study we have examined the effect of instillation of inj. Bupivacaine on intra peritoneal post operative site in LA.

MATERIALS AND METHODS

All patients undergoing LA for acute appendicitis without appendicular abscess from January 2024 till July 2024 in our hospital were included in the study.
Patients with allergy to bupivacaine were excluded from study. Patients with odd registration number were placed in group I and patients with even registration number were placed in group II.
Group I cases were intra operatively instilled 10 ml bupivacaine each at operative site and at subdiaphragmatic area.
Written informed consent was obtained from each participant before including in the study.

Study Design: This was a prospective randomised control study and cases were followed up till 2 week of post operative period.

Surgical Technique: All operation were carried out by same unit of surgeons. All patients were anesthetized by giving general anaesthesia. Pneumoperitoneum was created with veress needle and pressure maintained at 12-14 mm. The LA was performed using 3 trocar technique, 10 mm umbilical, 10 mm right lumbar and 5 mm supra pubic.
Appendix was identified. Mesoappendix was separated by bipolar. Appendix was doubly ligated with 2 -0 vicryl loop at base and was divided. Appendix was removed in specimen bag. In both group appendectomy site was washed with 100 ml saline and suctioning was done.

Surgical Drug Instillation:
In Group I Patients: After completion of LA inj. Bupivacaine (0.25 %) is instilled at operated site and in right subdiaphragmatic region according to weight (0.25 cc/kg) of patient.

In Group II Patients: After completion of LA normal saline 10 cc each is instilled at operated site and right subdiaphragmatic region.

Post operative course: Patient were questioned on 2nd,6th,12th,24th hr and 48th hr. To measure pain intensity by visual analogue scale from 0-100 mm.
Patients with more than 50 score were given Inj. Paracetamol.(10mg/kg).

Variables Studied: For each patient age, gender, duration of operation was recorded.
After surgery post operative pain scale, post op nausea, incidence of shoulder pain, time to bowel movement and length of hospital stay was measured.

Statistical Method: Spssprogramme (IBM spss statistics 22, Chicago) was used for statistics .
Continuous data was studied by unpaired t test. Categorical data was summarised as frequency and percentages. Mann whiteny test was used for quantitative and chi square test was used for qualitative data for statistical analysis. In all tests, results were considered statistically.

RESULTS AND DISCUSSIONS

Total 50 patients undergoing LA were evaluated in the period of study. Around 25 patients were grouped in group I and 25 patients were group II according to their registration number.
There were no significant differences in groups with respect to sex, age, operation time. No laparoscopic to open conversion was needed for any patient.
There was no significant difference in post operative complications between both groups.
There was significant decrease in VAS score in 2nd, 6th and 12th hr post operative time as per p Value. Although there was no significant difference in post op pain at 24th and 48th hour.
In our prospective study both the groups were having similar demographic population. Post operative complications like nausea, shoulder pain were similar in both groups. Both the group had similar operative time and length of hospital stay. Patients with instillation of bupivacaine at post operative site had significantly less pain at 2nd hr, 6th hr

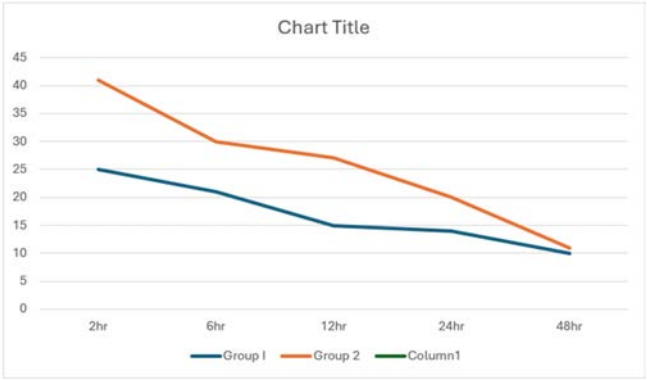

Fig.1: Results of VAS pain score

Table 1: Patient characteristics

	Group I	Group II
Number of patients	25	25
M/F	13/12	14/11
Age	35.7	33.2
Operative time	42.2 min	39.7 min

Table 2: Post operative complications

	Group I	Group 2
Nausea	8	7
Vomiting	0	0
Shoulder pain	7	11
Duration of hospital stay in days	1.2	1.4
Other complication	0	0

Table 3: Average VAS pain score

At	Group I	Group II
2hr	25	41
6hr	21	30
12hr	15	26
24hr	14	20
48hr	10	11

and 12th hr post operative time as compared to group who had only normal saline instilled at the site. Although at 24hrs and 48hrs post op time period both the groups had similar pain scores.

Many previous studies used bupivacaine as intra peritoneal anaesthetic, which shows similar results to our study[4-2-5-7].

In 2010, Kang *et al.* used ropivacaine instead of bupivacaine in multiple laparoscopic surgeries due to it's low toxicity and vasoconstriction property. It showed significant decrease in pain and need of analgesia[8]. Hence Ropivacaine can also be used in similar study.

In our study the sample size was small, for standardization of procedure, larger sample size study with different surgical procedure needs to be undertaken.

Another limitation of study was that local anaesthetic was used only intraperitoneal site and not at trocar site. Several other studies used Trocar site infiltration of local anaesthetics which resulted in better results[9-11].

Pain pattern of LA can differ from other laparoscopic procedures such as Laparoscopic cholecystectomy and total laparoscopic hysterectomy.

CONCLUSION

In conclusion, Intraperitoneal instillation of Injection Bupivacaine results in significant reduction in post operative pain in first 12 hours post operative time period without any major increase in complications.

However more meaningful results can be obtained with larger number of patients.

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