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ASSESSMENT OF BUPIVACAINE AND XYLOCAINE 2% EFFECTIVITY OF PAIN INTENSITY IN POST LAPAROSCOPIC CHOLECYSTECTOMY PATIENTS

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Abstract

Background: *It is becoming very routine to treat non-malignant gallbladder diseases with laparoscopic cholecystectomy (LC). The benefits of laparoscopic surgery over open cholecystectomy include less pain following surgery and a shorter hospital stay. Even with advancements in laparoscopic cholecystectomy techniques, the majority of patients require analgesics after surgery since post-laparoscopic procedure pain is still a big problem. About 17–41% of Laparoscopic Cholecystectomy participants have to remain at the hospital for a minimum of 24 hours due to postoperative pain, and their recuperation is extremely time-consuming.*

Objective: *The aims and objectives of this study was in terms of postoperative pain relief, examine the effectiveness of bupivacaine+Xylocaine as local infiltration at port sites and intraperitoneal irrigation in comparison to a control group that received no bupivacaine injections.*

Methods: *The general surgery department at Farooq Hospital in Lahore was the study's site. Patients over the age of 18 who were receiving laparoscopic surgery and had simple gallstone disease were admitted from the casualty and outpatient departments. Cholecystectomies were also performed.The patients were split into two groups at random. The study group was discharged from surgery at the received bupivacaine+xylocaine 2% block as local infiltration bupivacaine in the port sites and intraperitoneal irrigation, whereas the control group was admitted to the surgery department without receiving bupivacaine. Prior to surgery, their gallstone condition was determined to be simple. Up to 24 hours after surgery, patients' pain and postoperative discomfort were evaluated. by analog and visual scale. The study proforma was used to collect all of the data. The data analysis was conducted using SPSS version 26.*

Results:*Demographic and laboratory data did not differ between the two groups*

prior to surgery. The two groups were seen to have comparable operating times, blood loss rates, and no postoperative deaths. According to visual analogue rating scales, the group receiving bupivacaine+Xylocaine 2% experienced noticeably less pain than the control group. At various time intervals, it was shown that patients receiving LC under local anaesthesia had noticeably lower pain scores than the control group ($p<0.02$). In terms of analgesia, individuals having LC with local anaesthesia infiltration and irrigation required fewer analgesics than the control group ($p<0.020$). Compared to controls, patients in the test group spent less time in the hospital.

***Conclusion**:It has been determined that bupivacaine and Xylocaine 2% application in the peritoneal cavity and infiltration surrounding the ports (surgical ports) considerably lessens the intensity of post-operative pain and the need for analgesics. In suitable individuals having laparoscopic cholecystectomy, this method is simple to use, safe, and effective for managing pain. It enhances patients' early mobilisation, which reduces hospital stays.*

INTRODUCTION

It is becoming very routine to treat non-malignant gallbladder diseases with laparoscopic cholecystectomy (LC). The benefits of laparoscopic surgery over open cholecystectomy include less pain following surgery and a shorter hospital stay. Even with advancements in laparoscopic cholecystectomy techniques, the majority of patients require analgesics after surgery since post-laparoscopic procedure pain is still a big problem.Due to postoperative discomfort, between 17 and 41 percent of patients who undergo laparoscopic cholecystectomy must remain in the hospital for at least 24 hours, and their recovery takes a very long period. Pain following laparoscopic cholecystectomy is multifaceted, with upper abdominal and, more specifically, shoulder tip pain being its defining features. The development of this pain was caused by surgical damage to the abdominal wall at the port sites,bile leaking from an inadvertent gallbladder hole, stone, or chemical irritation from carbon dioxide , ruptured blood vessels-to lessen post-operative pain, low-pressure laparoscopic cholecystectomy [LPLC] has been tried [2]. Lap cholecystectomy was found to relieve discomfort in a recent analysis, however the overall level of evidence was insufficient, and there was a significant risk of bias in several of the randomised control trials. Ineffective pain and anxiety management techniques impede the healing process and increase the possibility of negative outcomes.

Various approaches appear to exist for managing pain following surgery, contingent on the patient's inclinations and assessment of risk from rapid peritoneal stretching, traumatic nerve grips, and distension of the abdominal wall.which comprise opioid and non-opioid painkillers that are regional, neuroaxial, and systemically administered.

Local anaesthetic use is being pushed as a means of reducing postoperative pain and drug consumption because it has fewer medication-related adverse effects, enhances patient recovery, and shortens hospital stays.Though post-LC analgesia has been more and more common in recent years, peritoneal cavity irrigation with various local anaesthetic drugs has gained popularity.Recent observations indicate that Bupivacaine is an effective means of reducing postoperative pain and delaying the need for rescue analgesia.

Furthermore, it decreases the possibility of shoulder pain, although it has no impact on post-operative nausea and vomiting.However, it was found that Bupivacaine irrigation at the gallbladder bed post Laparoscopic Cholecystectomy had no effect on pain control.

This study was conducted to assess the effectiveness of Bupivacaine as intraperitoneal irrigation and local infiltration at the port sites in terms of decreases in post-operative pain at tertiary care hospitals, taking into consideration the above recent contentious findings and recommendations for more research.Local anaesthetic (LA) have been used

extensively to manage pain using a variety of delivery methods, such as intraperitoneal instillation and port-site infiltration.

METHODOLOGY:

From August 2024 to January 2025, a prospective randomised trial was conducted in the general surgery department of Farooq Hospital in Lahore. Group A and Group B were the two equal groups into which the patients were split. From 100 Patients, 50 patients were remaining in Group A while 50 were in Group B. Bupivacaine and Xylocaine 2% was given to Group A patients while Group B was not given any Treatment. Pre-Operative checklist was same in both groups. Patients with uncomplicated gallstone disease who were admitted through the outpatient and casual departments underwent laparoscopic cholecystectomies. Patients who were allergic to local anesthetic and those who developed complications during LC that required conversion, as well as those who have chronic pain diseases other Than a thorough physical examination was performed, and all patients with conditions other than gallstone disease were eliminated from the trial. A thorough medical history was taken, with special emphasis paid to any stomach or right hypochondrial pain, a mass in the right hypochondrium, vomiting, dyspepsia, or fever particularly, the right hypochondrium was inspected in order to evaluate visceromegaly, palpable mass, and Murphy's sign.

In particular, abdominal ultrasonography was used as a diagnostic tool and to evaluate uncomplicated gallstone disease. All patients had baseline and specific tests.In contrast to the control group, which did not receive bupivacaine, Following surgery, the study group received local infiltration in the port sites and intraperitoneal irrigation with bupivacaine + 2% Xylocaine. Patients were divided into two groups at random. For 48 hours following surgery, postoperative pain was assessed using a visual analogue scale, and the data was analysed using SPSS version 26.

The site of right hypochondrium was especially examined for the assessment of murphy's sign, palpable mass and visceromegaly be checked .All patients were underwent for base line and specific investigations especially ultrasound of abdomen as diagnostic modality and for the assessment of uncomplicated gallstone disease. Patients were randomly divided into two groups. At the end of surgery, the study group received bupivacaine+Xylocaine 2% as intraperitoneal irrigation and local infiltration in the port sites while the control group didn't receive bupivacaine. Patients were assessed for postoperative pain up to 48 hours after surgery and pain was evaluated by visual analogue scale. All the information was collected via study proforma. SPSS version 26 was used for the data analysis.

RESULTS:

The 100 cholelithiasis cases had surgery. This study included 100 patients, 18 of whom were male and 82 of whom were female. The age range was quite broad, from at least 18 to 70 years of age. The most prevalent age group was 31–45 years old, with a mean age of 32.68+5.42. Table 4.13 displays the severity of the postoperative pain score (VAS) for both groups. Compared to the test patients who received bupivacaine, the majority of the control group patients had excruciating pain (VAS 9–10) within 24 hours. After 12 hours, 13 controls had extreme pain, compared to 3 test patients, which demonstrated bupivacaine's considerable analgesic impact ($p<0.01$).

There is no discernible difference between the control and test patients' VAS because it was found that the analgesic effects subsided after 12 hours. It was evident that, in comparison to control patients, bupivacaine-treated patients experienced lower pain scores throughout the first twelve hours. Frequency/Percentage of Post-Surgical Complications: 13 patients (13%) had a fever, 19 patients (19%) had nausea, and 68 patients (68%) had no complications.

Chi-square test frequency/percentage for post-operative analgesia and block Analgesia given time is 4 hours in Bupivacaine block given patient is 3 (3%), and Bupivacaine block not given is 20 (20%); analgesia given time is 6 hours in Bupivacaine block given patient is 7 (7%), and Bupivacaine block not given is 21 (21%); analgesia given time is 8 hours in Bupivacaine block given patient is 16 (16%), and Bupivacaine block not given is 8 (8%); analgesia given time is 12 hours in Bupivacaine block given

patient is 24 (24%), and Bupivacaine block not given is 1 (1%).The frequency and percentage results of the Chi-square test for Block and Post-operative VAS Score indicate that among patients receiving Bupivacaine block, 7 (7%) reported no pain, while none (0%) in the group not receiving the block reported no pain. Mild pain was reported by 29 (29%) of patients with the block compared to 10 (10%) without it. Moderate pain was experienced by 14 (14%) of those receiving the block, whereas 20 (20%) of those not receiving it reported moderate pain. No patients receiving the block reported severe pain (0%), in contrast to 18 (18%) of those not receiving the block. Additionally, 2 (2%) of patients not receiving the block reported severe pain.

postoperativeVASScore

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no pain	7	7.0	7.0	7.0
	1-3 mild pain	39	39.0	39.0	46.0
	4 moderate pain	34	34.0	34.0	80.0
	6 severe pain	18	18.0	18.0	98.0
	7-9 very severe pain	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

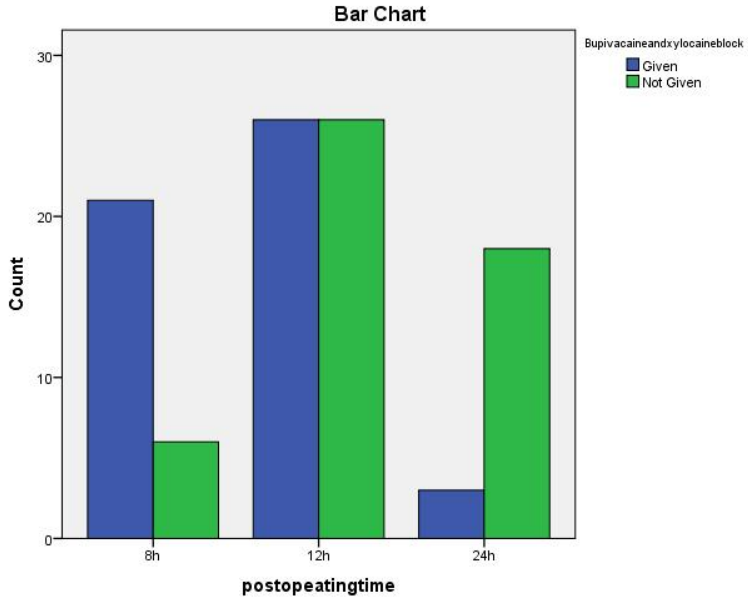
gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	18	18.0	18.0	18.0
Female	82	82.0	82.0	100.0
Total	100	100.0	100.0	

Crosstab

Count

		Bupivacaineandxylocaineblock		
		Given	Not Given	Total
postoperativeanalgesiatime	4h	3	20	23
	6h	7	21	28
	8h	16	8	24
	12h	24	1	25
Total		50	50	100



DISCUSSION:

The current study found that intraoperative peritoneal irrigation with bupivacaine+Xylocaine 2% significantly reduced postoperative pain and prolonged the duration of postoperative analgesia. A multimodal approach can be used to manage complex postoperative pain and is linked to a quicker recovery with a lower need for opioids. Bupivacaine prolongs the duration of analgesia and is a member of the amide group of local anaesthetics; short acting analgesics were found to be more effective than irrigation of the peritoneal cavity and gall bladder bed with small volumes of highly concentrated bupivacaine.1In a previous study, Jain et al. found that peritoneal irrigation with diluted bupivacaine resulted in effective postoperative analgesia. In their study, the mean duration of analgesia was 0.06 ±0.172 hours in the saline group and 19.35 ±8.64 hours in the bupivacaine group ($p<0.001$). In the current study, the mean duration of postoperative analgesia was 0.99 ±0.51 hours in the saline group and 16.53 ±2.65 hours in the bupivacaine group ($p<0.001$).A Cochrane review found that peritoneal lavage with local anaesthetics does not effectively produce post-LC analgesia due to the limited amount of local anaesthetic agents used. Boddy et al. found no significant results after peritoneal irrigation with bupivacaine, possibly due to the use of 10 to 200 ml fluid with 0.1% to 0.5% bupivacaine.In a study by Ravishankar et al., 0.5% intraperitoneal bupivacaine (20ml) was compared to 0.9% saline (20ml) for postoperative pain relief after laparoscopic surgery. 2 The bupivacaine group saw improved post-operative pain management in the first six hours, with no problems. The study found that 0.5% bupivacaine irrigation at the surgical bed effectively relieves pain after cholecystectomy. Javed et al. conducted a 2016 research with 110 participants. The study found that bupivacaine considerably reduced postoperative pain, nausea, and vomiting compared to normal saline. 16 Bupivacaine significantly reduced pain scores at 2, 4, and 8 post-operative hours.Their investigation yielded similar results to ours. Peritonea considerably alleviated sIn a study of 50 participants, Toleska et al. found that bupivacaine significantly reduced visual analogue scale (VAS) ratings compared to the saline group. 17 VAS scores differed significantly between the bupivacaine and saline groups at all time points, including 1 hour, 4 hours, 8 hours, 12 hours, and 24 hours after surgery ($p < 0.001$). These findings were similar to those from this study. Intraoperative peritoneal irrigation with bupivacaine is thought to cause postoperative nausea and vomiting, but no such effects were observed in a study conducted by Yari et al.,18 and no such adverse effects were observed in current studyhoulder discomfort caused by phrenic nerve irritation after cholecystectomy.

CONCLUSION:

It has been determined that bupivacaine and Xylocaine 2% application in the peritoneal cavity and infiltration surrounding the ports (surgical ports) considerably lessens the intensity of post-operative pain and the need for analgesics. In suitable individuals having laparoscopic cholecystectomy, this method is simple to use, safe, and effective for managing pain. It enhances patients' early mobilisation, which reduces hospital stays.

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CONFLICT OF INTEREST:

The authors declared no conflict of interest.

PATIENT CONSENT:

Informed consents were taken from the parents/guardian of the patients.

AUTHORS' CONTRIBUTION:

SM collected the data and wrote the manuscript. AF helped in writing the first draft.

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