

Effect of Bupivacaine at Gallbladder Fossa and Port Site Vs Port Site Alone on Postoperative Analgesia in patients Undergoing Laparoscopic Cholecystectomy

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ABSTRACT

Aim: To evaluate the effect of bupivacaine at gallbladder fossa and port site vs port site alone on postoperative pain in patients undergoing laparoscopic cholecystectomy.

Methodology: After approval from ethical committee, 82 patients fulfilling the inclusion criteria were selected from department of General Surgery (West Surgical Ward), Mayo hospital Lahore. Demographic profile i.e. name, age, gender was recorded. All the patients were randomly divided into 2 groups.

Results: The group statistics revealed that the visual analogue scale (VAS) was analyzed within the durations of 3, 6, 12 and 24 hours along with postoperative analgesia request. VAS at 3 hours showed that mean±SD of group 1 was 6.66±1.575 whereas group 2 showed relatively less values in mean±SD i.e. 4.0±1.162. VAS at 6 hours showed that mean±SD of group 1 was 6.2±1.04 whereas group 2 showed relatively less values in mean±SD i.e. 3.8±0.97. VAS at 12 hours showed that mean±SD of group 1 was 5.8±1.01 whereas group 2 showed relatively less values in mean±SD i.e. 3.7±0.89. VAS at 24 hours showed that mean±SD of group 1 was 5.3±0.89 whereas group 2 showed less values in mean±SD i.e. 3.3±0.69. Post-operative analgesia duration in group 1 was also recorded, the mean±SD hours of group 1 was 3.49±1.26, whereas for group 2, the mean±SD hours were 6.4±1.70. Independent sample t test is applied between VAS pain score at 3, 6, 12 and 24 hours between the group 1 and 2, and 1st request for the post-operative analgesia is recorded. The p value is <0.05 which is significant statistically.

Conclusion: Adequate post-operative pain control provides early post-surgical mobilization, shortened hospital stay and increased patient satisfaction. This also reduces requirement of postoperative opioid analgesics.

Keywords: Laparoscopic cholecystectomy, postoperative pain, bupivacaine

INTRODUCTION

Laparoscopic cholecystectomy has become the treatment of choice for benign gall bladder disorders¹. Pain may originate from incision, the resection, peritoneal irritants such as bile and blood, CO₂ insufflations and residual gas. The post-laparoscopic surgery pain is multifactorial including superficial incisional pain (somatic), visceral pain due to stretched intra-abdominal cavity and shoulder pain is mainly due to residual CO₂ that stimulates the diaphragm².

One study demonstrates that local bupivacaine at the end of laparoscopy prevents postoperative pain and dramatically decreases the need for morphine³.

The objective of the study was to evaluate the effect of bupivacaine at gallbladder fossa and port site vs port site alone on postoperative pain in patients undergoing laparoscopic cholecystectomy.

METHODOLOGY

Inclusion criteria: Adults of age 18 years and more with either gender, patients undergoing elective laparoscopic cholecystectomy and with chronic cholecystitis were included.

Exclusion criteria: Laparoscopic procedure converted to open surgery, choledocholithiasis having documented deranged LFT's, USG evidence and evidence of CBD stone and H/o upper abdominal surgery, IV drug abusers and chronic narcotic use were excluded. After approval from ethical committee, 82 patients fulfilling the inclusion criteria were selected from department of general surgery (West Surgical Ward), Mayo hospital Lahore. Informed consent was taken from patients and divided into 2 groups i.e. Group A receiving injection bupivacaine at port site and group B receiving instillation of bupivacaine at gallbladder fossa

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as well as at port site. Group A is assigned to receive local infiltration (port site) of 20ml solution of 0.25% bupivacaine at the commencement of operation before applying incision, using 5ml to each port. Group B received combined local infiltration and intraperitoneal instillation of 20ml solution of 0.25% bupivacaine in the gallbladder fossa following removal of the gallbladder. This was done using a catheter inserted through the right subcostal port. Postoperative pain was assessed using the VAS at 3, 6, 12 and 24 hours after surgery. Patients with a VAS score of 4 or more received 0.05mg/kg IV Nalbuphine. Data was analyzed in SPSS version 26.

RESULTS

The total number of patients was 82. The age range was 33—69 years. The mean±SD of age was 47.1±9.31 years. 30(36.6%) were male and 52(63.4%) were females.

Table 1:

	Group Statistics				
	Groups	n	Mean	SD	Std. Error Mean
VAS at 3hrs	1	41	6.66	1.57	.246
	2	41	4.0	1.16	.181
VAS at 6hrs	1	41	6.22	1.04	.162
	2	41	3.83	.97	.152
VAS at 12hrs	1	41	5.81	1.01	.157
	2	41	3.73	.89	.139
VAS at 24hrs	1	41	5.27	.89	.139
	2	41	3.34	.69	.108
Post op analgesic 1 st request (hours)	1	41	3.49	1.27	.198
	2	41	6.44	1.70	.266

Table 2: Independent sample t test is applied between VAS pain score at 3, 6, 12 and 24 hours between the group 1 and 2, and 1st request for the post-operative analgesia.

	Independent Samples Test								
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
VAS.3hrs	5.62	.020	8.698	80	.000	2.6585	.3056	2.050	3.266
			8.698	73.59	.000	2.6585	.3056	2.049	3.267
VAS.6hrs	.26	.610	10.767	80	.000	2.3902	.2220	1.948	2.832
			10.767	79.66	.000	2.3902	.2220	1.948	2.832
VAS.12hrs	.37	.544	9.861	80	.000	2.0731	.2102	1.654	2.491
			9.861	78.94	.000	2.0731	.2102	1.654	2.491
VAS.24hrs	1.57	.213	10.898	80	.000	1.9268	.1768	1.574	2.278
			10.898	75.28	.000	1.9268	.1768	1.574	2.279
postop.analgesi c.1 st request	6.22	.015	-8.900	80	.000	-2.951	.3316	-3.61	-2.291
			-8.900	73.89	.000	-2.951	.3316	-3.61	-2.290

DISCUSSION

In our study, VAS pain score at 3, 6, 12 and 24 hours between the group 1 and 2, and 1st request for the postoperative analgesia is recorded. The $p < 0.05$ is significant statistically and It can be concluded that combined use of bupivacaine at port site and gall bladder fossa is more effective than at port site only in reducing pain, duration of hospital stay and demand of first analgesia post operatively. According to this study, patients who underwent laparoscopic cholecystectomy, experienced much reduced postoperative discomfort after getting a 0.5% bupivacaine injection at the surgical site compared to another study by Ghorbani et al⁴. The ages were of 18 and 54 years with 95% females and 65% of males. There was a statistically significant age difference between the two research groups. In another study, six hours after the procedure, it was revealed that there was a significant difference in average pain levels between the experimental and the control groups^{5,6}.

We believe that peritoneum and diaphragm irritation were to blame for the early post-surgical discomfort, and that bupivacaine treatment may have been beneficial in alleviating the discomfort. Patients who got bupivacaine reported nausea as the most common postoperative symptom, while those who received a placebo reported nausea as the most prevalent postoperative symptom in 18% of patients. In another study, 48 participants were assigned to the bupivacaine group, whereas 76 participants were assigned to the control group. There was a statistically significant difference between the two groups ($p < 0.05$)⁷.

In another study⁸, there were 32 people who took part in the bupivacaine research, and none of them required immediate analgesia. Four patients in the control group did not require analgesics; on the other hand, four patients in the experimental group did require analgesics on three occasions. Both groups experienced mild to severe discomfort, with the bulk of their complaints emanating from the right upper quadrant, followed by the trocar sites, which were the most common. Individuals who received bupivacaine irrigating with it after surgery reported significantly less pain than those in the control group by the sixth postoperative hour⁸. After surgery, postoperative analgesia is

improved when both bupivacaine and lidocaine are administered in conjunction. Other symptoms such as nausea are not alleviated as a result of this⁹.

CONCLUSION

Adequate post-operative pain control provides early post-surgical mobilization, shortened hospital stay and increased patient satisfaction. This also reduces requirement of postoperative opioid analgesics.

Conflict of interest: Nil

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