**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 disorders 1. 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:

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| **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 1st 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.

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| **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.analgesic.1st 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 groups5,6.

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

**REFERENCES**

1. Roy N. Assessment of Effect of Port Site and Intraperitoneal Instillation of Bupivacaine in Reduction of Post-Op pain after LC. J Anaesth Surg Res. 2019;1(1):1-10.
2. Gupta R, Rai A, Vasuniya V et al. Subcutaneous infiltration (port site) vs intraperitoneal infiltration of bupivacaine on post laparoscopic cholecystectomy pain. International Surgery Journal. 2018;5(2):500-6.
3. Rahimzadeh P, Faiz SHR, Hoseini M et al. Intraperitoneal bupivacaine, acetazolamide, and placebo on pain relief after laparoscopic cholecystectomy surgery: Medical journal of the Islamic Republic of Iran. 2018;32(1):112.
4. Ghorbani AA, Jafari M, Molavi B et al. Postoperative Pain Relief Following Bupivacaine Injection in Sites & Intraperitoneal Spray of Laparoscopic Cholecystectomy. Journal of Pharmaceutical Research International. 2017:1-7.
5. Hanna RS, Nashed GA, Ashraf AH et al. The Effectiveness of Combined Wound and Intraperitoneal Local Anesthesia as Pain Relief in LC. Kasr El Aini Journal of Surgery. 2018;19(2):59.
6. Meena RK, Meena K, Loha S et al. A comparative study of intraperitoneal ropivacaine and bupivacaine for postoperative analgesia in laparoscopic cholecystectomy: Anaesthesia, Pain & Intensive Care. 2016;20(3):295-30
7. Hilvering B, Draaisma WA, Bilt JD et al. Combined preincisional infiltration and intraperitoneal instillation of levobupivacaine for postoperative pain after LC. The British journal of surgery. 2011;98(6):784-9.
8. Hundt M, Wu CY, Young M. Stat Pearls Publishing; Treasure Island (FL): 2021. Anatomy, Abdomen and Pelvis, Biliary Ducts.

Salazar MC, Brownson KE, Nadzam GS et al. Gallbladder Agenesis: A Case Report. Yale J Biol Med. 2018 ;91(3):237-241.