

## A STUDY TO ASSESS THE PAIN AMONG THE POST LAPAROSCOPIC CHOLECYSTECTOMY USING NONOPIOD ANALGESICS

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### ABSTRACT

**Back ground:** An Audit to study pain after laparoscopic cholecystectomy with the use of non-opioid analgesics.

**Patient and Methods:** Hundred and nine patients were enrolled in this study that underwent elective laparoscopic cholecystectomy. Aged between 20 – 55 years, patients of either gender were enrolled in this prospective observational study. Seven patients were excluded from the study because of the conversion of laparoscopic procedure to open cholecystectomy and two patients were lost to follow-up. These patients were instructed and taught how to use the Numerical Pain Rating Scale (NPRS) for assessment of pain at rest, during deep breath and on movement. Pain score at rest, deep breath and movement including (Mild, Moderate and Severe pain), dynamic pain, breakthrough episodes of pain and time to discharge post surgery were recorded

All patients were interrogated for acute pain for the postoperative pain score at rest, deep breathing, and movement at 2, 6, and 12h on the first day of surgery according to the NPRS. The pain was also classified into mild, moderate, and severe at rest, deep breath, and movement, respectively, at 2, 6, and 12h on the first day of surgery (no pain, NPRS = 0; mild pain, NPRS = 1–3; moderate pain, NPRS = 4–6; and severe pain, NPRS = 7–10).

Dynamic pain was defined as the difference in the NPRS scores between rest and deep breathing, which is >2 points. The timing of first episode of breakthrough pain and number of episodes of breakthrough pain on postoperative day 1 and time to discharge from the day of surgery were recorded

**Results:** In this study, 50 patients were enrolled, who underwent elective laparoscopic cholecystectomy. We found that 35 of the patients had mild pain at rest at any time interval. Only 1 patient had severe pain with deep breath at 1h hours after surgery. 9 patients had moderate pain with movement at 3 hours and 5 patients had severe pain with movement at 8 hours after surgery.

**Conclusion:** Maximum pain scores were found at 8 hours. Episodes so an optimal analgesic control is warranted in such subset of patients. The time to discharge of patient's was positively correlated to the pain scores of postoperative day 1.

**Keywords:** Postoperative pain, laparoscopic cholecystectomy,

## INTRODUCTION

Laparoscopic cholecystectomy is the most common procedure for the treatment of cholelithiasis. Pain due to laparoscopic cholecystectomy can be incisional, local visceral, peritoneal, and referred. Rapid distension of the peritoneum with gas releases inflammatory mediators causing pain. The residual carbon dioxide in the abdomen following insufflations can produce shoulder tip pain, suggesting phrenic nerve irritation. The trocar insertion site also causes postoperative pain after cholecystectomy.

Studies have shown that pre-emptive analgesia has better efficacy in controlling pain after surgical stimulus. In this context, various pain-relieving strategies have been described for the management of postoperative pain. Adequate postoperative pain control allows early mobilization in laparoscopic cholecystectomy and contributes to early discharge. It can be achieved by having adequate information about the postoperative pain pattern in laparoscopic cholecystectomy. Use of opioids in the postoperative period may also contribute to the delay in discharge. In this study the postoperative pain patterns in patients for laparoscopic cholecystectomy under balanced anaesthesia techniques will be studied. The postoperative pain following laparoscopic cholecystectomy in these patients will be treated with nonopioid techniques.

## MATERIALS AND METHODS

Fifty patients were enrolled in this study that underwent elective laparoscopic cholecystectomy.

Aged between 20 – 60years, patients of either gender were enrolled in this prospective observational study. Were instructed and taught how to use the using Visual Analog Scale (VAS) for assessment of pain at rest, during deep breath and on movement.

Pain score at rest, deep breath and movement including (Mild, Moderate and Severe pain), dynamic pain, breakthrough episodes of pain and time to discharge post surgery were recorded. The study was conducted in December-2021.

A total of 50 patients posted for laparoscopic cholecystectomy physical status II, aged between 20 and 60 years, were enrolled in this prospective observational study. Patients using steroids within 1 month of surgery, having opioid-dependent chronic pain, with history of allergy to any of the study medications, immune suppressed, diabetes mellitus, renal disease (serum creatinine >1.6mg/dL), liver disease (liver enzymes more than two times of normal values), and psychiatric disorder were excluded from the study. If the surgery was converted from laparoscopic cholecystectomy to open procedure, the patient was excluded from the study. Patients were instructed and taught how to use the Visual Analog Scale (VAS) for assessment of pain at rest, during deep breath, and on movement (an 11-point ordinal scale, with 0 indicating no pain and 10 indicating worst pain imaginable). All patients were premedicated with tab pan 40mg. Five-lead electrocardiography, pulse oximetry, noninvasive blood pressure, temperature, were monitored. Intravenous paracetamol 1 g was administered slowly 20min before the end of surgery. All patients received postoperative analgesia by intravenous paracetamol 1 g, which was given 6 hourly on the day of surgery. In case of breakthrough pain, all patients were interrogated for acute pain for the postoperative pain score at rest, deep breathing, and movement on the first day of surgery according to the VAS. The pain was also classified into mild, moderate, and severe at rest, deep breath, and movement, respectively on the first day of surgery (no pain, vas = 0; mild pain, vas= 1–3; moderate pain, vas = 4–6; and severe pain, vas = 7–10). Patients with breakthrough pain were given Inj Diclofenac sodium

75mg and maximum of upto 3doses.The timing of first episode of breakthrough pain and number of episodes of breakthrough pain on postoperative day 1 and time to discharge from the day of surgery were recorded.

**Research approach**

Quantitative research approach

**Research design**

PROSPECTIVE OBSERVATIONAL STUDY

**Settings of the study**

**OT- POST OPERATIVE WARD**

Apollo hospitals, Secunderabad

**DATA COLLECTION METHOD**

Observational method, Visual Analogy Scale (VAS)

**Target population**

Patients undergoing lap cholecystectomy- age between 20-60years

**Sample technique**

Patient assess the using Visual Analog Scale (VAS)

**Inclusion criteria**

Age between 20 and 60 years, were enrolled in this prospective observational study

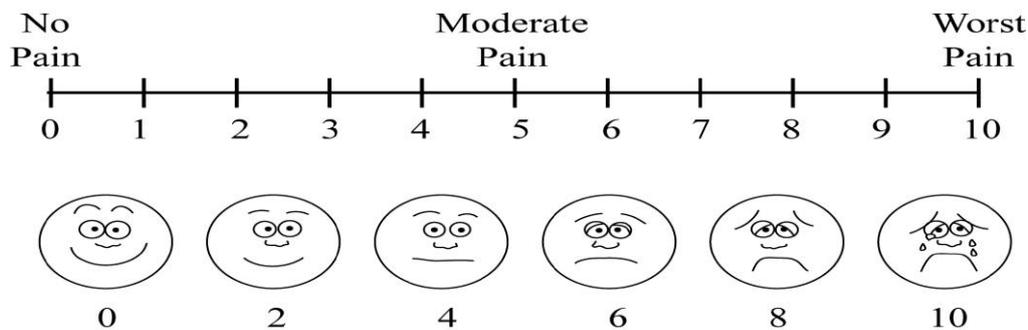
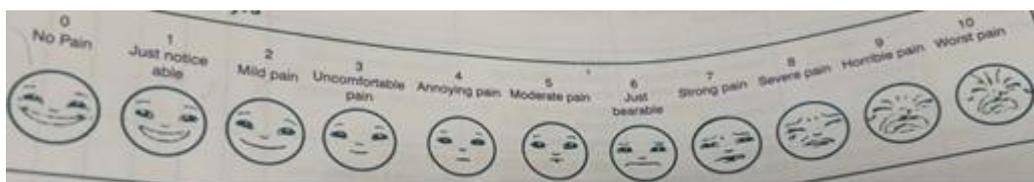
**Exclusion criteria**

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**TOOL USED FOR DATA COLLECTION**

Visual Analog Scale (VAS)

- 0-no pain
- 1-just noticeable
- 2-mild pain
- 3-uncomfortable pain
- 4-annoying pain
- 5-moderative pain
- 6-just bearable pain
- 7-strong pain
- 8-severe pain
- 9-horrible pain
- 10-worstpain



**Visual analoge scale**

1-3 = mild pain

4-6 = moderate pain

7-10 = severe pain

**Statistical Analysis**

The statistical analysis was performed using SPSS software, version 20. Quantitative data (age, height, weight, body mass index [BMI], duration of surgery, pain at rest, with deep breath and movement, total dose of rescue analgesic used, time to discharge postsurgery) were presented as mean $\pm$  SD. Number of breakthrough episodes, total dose of rescue analgesic used, and time to discharge postsurgery are presented as frequency and percentage. The statistical analysis of quantitative data (mean  $\pm$  SD) between the groups was performed. Qualitative data regarding the

number of patients with no, mild, moderate and severe pain at different time periods were presented as frequency and percentage. The correlation between various parameters was determined using Pearson correlation coefficient. A *P* value of  $<0.05$  was considered to be statistically significant.

**RESULTS**

In this study, 50 patients were enrolled, who underwent elective laparoscopic cholecystectomy. We found that 35 of the patients had mild pain at rest at any time interval. Only 1 patient had severe pain with deep breath at 1h hours after surgery. 9 patients had moderate pain with movement at 3 hours and 5 patients had severe pain with movement at 8 hours after surgery.

**TABLE 1: PAIN SCORE AT REST DEEP BREATH AND MOVEMENT**

<b>TIME INTERVAL</b>	<b>POSTOPERATIVE PAIN SCORES AT REST</b>	<b>POSTOPERATIVE PAIN SCORES AT REST WITH DEEP BREATH</b>	<b>POSTOPERATIVE PAIN SCORES AT REST WITH MOVEMENT</b>
<b>Pain with movement at 1h</b>	0.84 $\pm$ 0.650	1.72 $\pm$ 0.882	2.56 $\pm$ 0.705
<b>Pain with movement 3h</b>	2.10 $\pm$ 0.416	2.48 $\pm$ 0.544	3.00 $\pm$ 0.833
<b>Pain with movement 8</b>	1.58 $\pm$ 0.538	1.94 $\pm$ 0.314	2.32 $\pm$ 0.587
<b>Pain with movement 12</b>	1.44 $\pm$ 0.541	1.96 $\pm$ 0.283	2.10 $\pm$ 0.416
<b>Average score with movement on pod 1</b>	1.70 $\pm$ 0.463	2.18 $\pm$ 0.388	2.94 $\pm$ 0.818

**POD 1 POST OPERATIVE DAY 1.**

**TABLE 2: MILD, MODERATE, AND SEVERE PAIN AT REST, DEEP BREATH, AND MOVEMENT**

<b>TIME</b>	<b>CLASSIFICATION OF PAIN</b>	<b>PAIN AT REST % (N)</b>	<b>PAIN WITH DEEP BREATH % (N)</b>	<b>PAIN WITH MOVEMENT % (N)</b>
<b>1H</b>	NIL MILD, MODERATE, SEVER	<b>30%(15)</b> <b>70%(35)</b> - -	<b>12%(6)</b> <b>87%(43)</b> - <b>1%(1)</b>	- <b>100%(50)</b> - -
<b>3H</b>	NIL MILD, MODERATE, SEVER	- <b>100%(50)</b> - -	- <b>100%(50)</b> - -	- <b>82%(41)</b> <b>18%(9)</b> -
<b>8H</b>	NIL MILD ,MODERATE SEVER	- <b>100%(50)</b> - -	- <b>100%(50)</b> - -	- <b>89%(41)</b> <b>11%(5)</b> -
<b>12H</b>	NIL MILD, MODERATE, SEVER	- <b>100%(50)</b> - -	- <b>100%(50)</b> - -	- <b>100%(50)</b> - -

**DISCUSSION**

Laparoscopic cholecystectomy is one of the most common elective surgical procedures. despite of clear benefits of this approach, pain is still considered as the most common complaint and the reason of prolonged hospital stay Pain and fatigue are most intense on the day of operation and the following day .Nausea and vomiting occur mainly on the day of operation and only rarely contribute After laparoscopic cholecystectomy, patients usually complain of pain from the skin incision, visceral pain, and shoulder pain, which is usually caused by diaphragmatic irritation. Because pain is caused by various reasons, arrange of treatment methods has been introduced for the reduction of pain. Local anaesthetic infiltration at the incision area is an established pain management method in laparoscopic in our study, we have used the vas for the assessment of pain after surgery. We recorded pain scores associated with deep breath and with movement

**CONCLUSION**

Laparoscopic cholecystectomy is one of the most common elective surgical procedures. After laparoscopic cholecystectomy, patients usually complain of pain from the skin incision, visceral pain, and shoulder pain, which is usually caused by diaphragmatic irritation. Because pain is caused by various reasons, a range of treatment methods has been introduced for the reduction of pain. Local anesthetic infiltration at the incision area is an established pain management method in laparoscopic. In our study, we have used the vas for the assessment of pain after surgery. We recorded pain scores associated with deep breath and with movement.

In our study, the average pain score at rest was highest at8h which gradually decreased to postoperative day 1. An important finding was that none of the patients had severe pain at rest.

Maximum pain scores at rest, with movement, and with deep breath were found at 6h after surgery, so adequate pain control must be given at this time period, and patients have high dynamic pain scores and have higher breakthrough episodes, which can impede early discharge.

The timing of the first breakthrough episode and the total number of breakthrough episodes were compared in patients by grouping them according to the presence of dynamic pain. We found that the total number of breakthrough episodes was higher in patients having dynamic pain and it was significant.

The time to discharge was positively correlated to the pain scores on postoperative day 1, so lowering the average pain scores at day 1 will facilitate early discharge.

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