

Assessment of Efficacy of Ropivacaine in Patients Undergoing Laparoscopic Cholecystectomy as Post Analgesic Agent: An Institutional Based Study

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ABSTRACT

Introduction: Laparoscopic cholecystectomy (LC) has been the favoured treatment for gallbladder lesions. Postoperative pain after LC is generally less than that after open cholecystectomy, however, the postoperative pain experienced by patients still causes preventable distress. Hence; the present study was undertaken for assessment of efficacy of ropivacaine as post analgesic agent in patients undergoing laparoscopic cholecystectomy.

Materials & Methods: A total of 30 patients scheduled to undergo laparoscopic cholecystectomy were enrolled in the present study. Complete demographic details of all the patients were obtained. All the patients underwent laparoscopic cholecystectomy under the hands of skilled surgeon under the effect of Ropivacaine. Postoperative VAS score was recorded and rescue analgesia was given in patients in which VAS score was more than 3.

Results: Mean VAS at the end of laparoscopic cholecystectomy, 1 hour postoperatively, 2 hours postoperatively, 4 hours postoperatively, and 8 hours postoperatively was 1.96, 2.13, 2.83, 4.37 and 2.87 respectively. Number of patients requiring postoperative rescue analgesia at

1 hour postoperatively, 2 hours postoperatively, 4 hours postoperatively and 8 hours postoperatively was 2, 3, 13 and 6 respectively.

Conclusion: Instillation of Ropivacaine before surgery reduces postoperative pain after laparoscopic cholecystectomy.

Key words: Ropivacaine, Laparoscopic Cholecystectomy.

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INTRODUCTION

Laparoscopic cholecystectomy (LC) has been the favoured treatment for gallbladder lesions. Historically, contraindications to LC have included obesity, pregnancy, acute cholecystitis, and cardiovascular disease. With experience gained from laparoscopic surgery, LC has been attempted successfully and has become the procedure of choice in each subgroup of patients. A major benefit of laparoscopy in upper gastrointestinal surgery results from avoidance of an upper abdominal incision. LC has proven benefits of less pain and improved pulmonary function tests compared with small-incision cholecystectomy.¹⁻³ Postoperative pain after LC is generally less than that after open cholecystectomy, however, the postoperative pain experienced by patients still causes preventable distress. Treating postoperative pain is an important and primary objective, because it affects patients' comfort, postoperative morbidity, and, inevitably, social costs due to prolonged hospitalization and work inactivity.⁴⁻⁶ Hence; the present study was undertaken for assessment of efficacy of ropivacaine as post analgesic agent in patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was conducted in the Department of Anaesthesiology, Hind Institute of Medical Sciences, Mau, Ataria, Sitapur, Uttar Pradesh (India).

Present study included assessment of ropivacaine as post analgesic agent in patients undergoing laparoscopic cholecystectomy.

Ethical approval was obtained from the institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 30 patients scheduled to undergo laparoscopic cholecystectomy were enrolled in the present study. Complete demographic details of all the patients were obtained. All the patients underwent laparoscopic cholecystectomy under the hands of skilled surgeon under the effect of Ropivacaine. Postoperative VAS score was recorded and rescue analgesia was given in patients in which VAS score was more than 3.

All the results were summarized in Microsoft excel sheet and were analysed by SPSS software.

RESULTS

A total of 30 patients were analysed. Majority of the patients belonged to the age group of 41 to 50 years. Mean age of the patients of the present study was 45.8 years. There were 12 males and 18 females in the present study. Mean duration of surgery in the present study was 68.4 minutes. Mean VAS at the end of laparoscopic cholecystectomy, 1 hour postoperatively, 2 hours postoperatively, 4 hours postoperatively, and 8 hours postoperatively was 1.96, 2.13, 2.83, 4.37 and 2.87 respectively.

In the present study, number of patients requiring postoperative rescue analgesia at 1 hour postoperatively, 2 hours postoperatively, 4 hours postoperatively and 8 hours postoperatively was 2, 3, 13 and 6 respectively.

Table 1: Age-wise distribution of patients

Age group (years)	Group Ropivacaine	
	n	%
18-30	6	20
31-40	6	20
41-50	12	40
51-65	6	20

Table 2: Mean VAS Score

Time (Hours)	Group Ropivacaine		p- value
	Mean	SD	
0	1.96	0.74	0.02
1.0	2.13	0.38	
2.0	2.83	0.42	
4.0	4.37	0.95	
8.0	2.87	0.71	

Table 3: Number of Patients Requiring Rescue Analgesia

Time (Hours)	Group Ropivacaine	
	No.	%
0	0	0
1.0	2	6.67
2.0	3	10
4.0	13	43.33
8.0	6	20

DISCUSSION

Pain after laparoscopic surgery has been associated with surgical manipulations, including intraperitoneal insufflation of carbon dioxide (CO₂), resulting in peritoneal stretching, diaphragmatic irritation, changes in intra-abdominal pH, and retention of the insufflated gas in the abdominal cavity after surgery.⁷⁻⁹

A total of 30 patients were analysed. Majority of the patients belonged to the age group of 41 to 50 years. Mean age of the patients of the present study was 45.8 years. There were 12

males and 18 females in the present study. Mean duration of surgery in the present study was 68.4 minutes. Mean VAS at the end of laparoscopic cholecystectomy, 1 hour postoperatively, 2 hours postoperatively, 4 hours postoperatively, and 8 hours postoperatively was 1.96, 2.13, 2.83, 4.37 and 2.87 respectively. Ingelmo PM et al evaluated the effects of intraperitoneal ropivacaine nebulization on pain control after laparoscopic cholecystectomy. Patients undergoing laparoscopic cholecystectomy were randomized to receive intraperitoneal nebulization of ropivacaine 1% (3 ml) before surgical dissection and normal saline 3 ml at the end of surgery (preoperative nebulization group); intraperitoneal nebulization of normal saline 3 ml before surgical dissection and ropivacaine 1% (3 ml) at the end of surgery (postoperative nebulization group); or intraperitoneal nebulization of normal saline 3 ml before surgical dissection and at the end of surgery (placebo group). Intraperitoneal nebulization of ropivacaine or saline was performed using the Aeroneb Pro® device. Anaesthetic and surgical techniques were standardized. The degree of pain on deep breath or movement, incidence of shoulder pain, morphine consumption, and postoperative nausea and vomiting were collected in the post-anaesthesia care unit and at 6, 24, and 48 h after surgery. Compared with placebo, ropivacaine nebulization significantly reduced postoperative pain (-33%; Cohen's d 0.64), referred shoulder pain (absolute reduction -98%), morphine requirements (-41% to -56% Cohen's d 1.16), and time to unassisted walking (up to -44% Cohen's d 0.9) (P<0.01). There were no differences in pain scores between ropivacaine nebulization groups.¹⁰

In the present study, number of patients requiring postoperative rescue analgesia at 1 hour postoperatively, 2 hours postoperatively, 4 hours postoperatively and 8 hours postoperatively was 2, 3, 13 and 6 respectively. Liu YY et al investigated the effect of pain relief after infusion of ropivacaine at port sites at the end of surgery. 72 patients undergoing laparoscopic cholecystectomy (LC) were randomized into two groups of 36 patients. One group received ropivacaine infusion at the port sites at the end of LC and the other received normal saline. A visual analog scale was used to assess postoperative pain when the patient awakened in the operating room, 6 and 24 h after surgery, and before discharge. The amount of analgesics use was also recorded. The demographics, laboratory data, hospital stay, and perioperative complications were compared between the two groups. There was no difference between the two groups preoperatively in terms of demographic and laboratory data. After surgery, similar operation time, blood loss, and no postoperative morbidity and mortality were observed in the two groups. However, a significantly lower pain score was observed in the patients undergoing LC with local anesthesia infusion at 1 h after LC and at discharge. Regarding analgesic use, the amount of meperidine used 1 h after LC and the total used during admission were lower in patients undergoing LC with local anesthesia infusion. This group also had a shorter hospital stay. Local anesthesia with ropivacaine at the port site in LC patients significantly decreased postoperative pain immediately.¹¹

CONCLUSION

Under the light of above obtained data, it can be concluded that instillation of Ropivacaine before surgery reduces postoperative pain after laparoscopic cholecystectomy.

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