



A study on Intraperitoneal Instillation of Bupivacaine for Postoperative Pain Relief after Laparoscopic Cholecystectomy in JLNMCH, Bhagalpur

KEYWORDS

Intraperitoneal; Bupivacaine; Cholecystectomy; Anaesthesia

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ABSTRACT

Background: Laparoscopic cholecystectomy has become a standard technique for gall bladder surgeries. These surgeries have less post operative pain and smoother recovery than conventional open cholecystectomies. Incisional, intra abdominal and shoulder pain are known to occur after laparoscopic cholecystectomy. These can occur for a number of reasons:- stretching of parietal peritoneum from insufflations of gas intraperitoneally, release of inflammatory mediators of pain and irritation produced by blood. Aim is to study on the post operative pain relief in laparoscopic cholecystectomy patients using intraperitoneal instillation of Bupivacaine. **Materials and Methods:** In this study, 50 cases of laparoscopic cholecystectomy were taken. Patients received intraperitoneal instillation of bupivacaine diluted in 100 ml saline. Patients were assessed for pain. Study was done in Anaesthesia department of JLNMCH, Bhagalpur, Bihar from October 2015 to September 2016. The group included both males and females. **Results:** Intraperitoneal bupivacaine instillation provided significantly longer duration of analgesia, significantly lower pain VAS score and significantly less consumption of post operative rescue analgesia.

Introduction-

Laparoscopic strategies for managing intra abdominal pathologies offer significant benefits compared with conventional approaches. Of interest are reports of decreased postoperative pain, resulting in shorter hospitalization and earlier return to normal activity. Compared with open procedures, laparoscopic surgery, a minimally invasive technique, is associated with reduced surgical trauma and accordingly, is often performed as day-case surgery. The reason for marked variation of pain between individuals remains unclear but could be due to multiple factors including duration of surgery, the degree of invasiveness of the procedure, the experience of surgeon and the amount of preoperative bleeding. It could also be influenced by the size of the trocars, the use of suction to remove any blood and insufflated gas at the end of surgery.

Various methods have been tried for post operative analgesia after laparoscopy like epidural analgesia, NSAID'S, instillation of local anaesthetic solutions intraperitoneally.

Earlier studies have shown that intraperitoneal instillation of local anaesthetics decreases incidence of post operative shoulder pain in gynecological surgeries. This present study proposes to assess the efficacy of the same after laparoscopic cholecystectomy. Bupivacaine been utilized successfully for providing effective post operative analgesia but its main draw back is its cardiotoxicity. Ropivacaine is less cardiotoxic, longer acting and can be administered in larger doses if required. Narchi et al observed reduction in postoperative shoulder pain in minor gynaecological surgery after intraperitoneal instillation of local anaesthetics.

Materials and methods

In this study, 50 cases were taken. Study was done in anaesthesia department of JLNMCH, Bhagalpur, Bihar from October 2015 to September 2016. Patients of either sex, between the age group of 20-40 yr, undergoing laparoscopic cholecystectomy under general anaesthesia. Informed consent was taken before the study.

Exclusion criteria- Age >65years, poor general condition, Weight > 80kg, Anticipated difficult airway and emergency surgery, Recent MI (<3months prior to surgery), ASA III or IV Physical status, Acute cholecystitis.

All patients were pre-medicated with glycopyrrolate 0.2 mg, ondansetron 4 mg and ranitidine 150 mg intravenously half an hour prior to induction of anesthesia. All patients were given standard general anaesthesia with propofol (2 - 2.5 mg/kg), fentanyl 2 µg/kg, and succinylcholine (2 mg/kg) to facilitate tracheal intubation.

Anesthesia was maintained with 60% N₂O in oxygen with 0.5% to 1% Halothane. Muscle relaxation was achieved with intermittent vecuronium bromide. Ventilation (tidal volume 8 - 10 ml/kg) was adjusted to maintain end-tidal carbon dioxide between 34 and 40 mm Hg. Patients were placed in 15° - 20° reverse Trendelenburg's position with left-side down tilting position. During laparoscopy, intra-abdominal pressure was limited to 10 - 12 mmHg. The CO₂ was carefully evacuated at the end of surgery by manual compression of the abdomen with open trocars. The drug was injected intraperitoneally before the removal of trocar at the end of the surgery, in Trendelenburg's position to facilitate dispersion of drug solution in sub hepatic region.

Results

The study comprised 50 patients; 15 males and 35 females. There was a non-significant difference between studied groups as regards age, sex, ASA class or body mass index. All patients passed smooth intraoperative course without complications related to surgical procedure or anesthetic modalities. Throughout postoperative observation period, there was non-significant difference between studied groups as regards hemodynamic or respiratory parameters. Intraperitoneal local anesthetic instillation provided significantly longer duration of analgesia (duration till first request of rescue analgesia) as the patients who didn't received the drug. Intraperitoneal local anesthetic instillation provided significantly lower pain VAS score irrespective of timing of instillation.

The pain scores are lower in patients with intraperitoneal instillation as compared to local instillation or oral analgesia. Additional rescue analgesic treatment was significantly lower in patients with intraperitoneal instillation (35%) as compared with those with local/ no instillation (84%). The combination of pre-incisional local infiltration and intra-peritoneal instillation of L-B 0.25% shows an advantage for postoperative analgesia after laparoscopic cholecystectomy.

Discussion-

Narchi et al in 1991 evaluated the effect of intraperitoneal local anaesthetics in day case laparoscopy. They studied in 80 cases the effect of intraperitoneal lignocaine (0.5%) , bupivacaine (0.125%) and intraperitoneal normal saline as control. They found out that the need for post op analgesics were more in the control group than either of the groups in which local anaesthetics were instilled. They concluded that intraperitoneal instillation of local anaesthetic will be beneficial for post operative analgesia and reduction of shoulder pain.

Goldstein et al in 2000, showed in a placebo- controlled study that in

gynecologic laparoscopic procedures, local anaesthetic (0.5% bupivacaine or 0.75% ropivacaine) instillation can effectively reduce the postoperative 24 hours morphine requirements and ropivacaine was more effective than bupivacaine.

Thierry Labaille et al in 2002 studied in 37 cases the clinical efficacy and pharmacokinetics of two different doses of ropivacaine – 0.25% and 0.75% and compared it with normal saline instillation. All the three groups were assessed for shoulder pain, parietal pain and incidence of side effects. It was found that there were no incidence of serious side effect in any of the groups and that the analgesic efficacy of both the doses were comparable. They concluded that the 0.25% dose will be better for post operative analgesia in laparoscopic cholecystectomy cases.

Anil Gupta et al in 2002 studied 40 cases of elective laparoscopic cholecystectomy and found out that intermittent instillation of 0.5% Ropivacaine into the gall bladder bed can produce efficient post op analgesia. They concluded it to be an efficient method of post operative analgesia in such cases.

Joris et al studied the characteristics of pain after laparoscopic cholecystectomy and the effect of intraperitoneal instillation of 80 ml of 0.125% bupivacaine with adrenaline. They found that visceral pain accounts for the major discomfort experienced in early postoperative period whereas shoulder tip pain becomes the main complaint on the second day. The intensity of shoulder pain in their study was less than the study of Narchi et al probably because of careful emptying of carbon dioxide pneumoperitoneum.

Conclusion-

In conclusion, intraperitoneal bupivacaine for laparoscopic cholecystectomy reduces pain in the initial postoperative period, it is easy to administer with no adverse effects and may become a routine practice for this procedure. It could be concluded that bupivacaine instillation provided profound postoperative analgesia with rescue analgesia, reduced postoperative hospital stay.

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