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Original Research

Comparison of spinal anesthesia and general anesthesia in relieving postoperative pain in patients undergoing laparoscopic cholecystectomy

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ABSTRACT:

Background: A minimally invasive surgical technique called laparoscopic cholecystectomy is done to remove the gallbladder. The present study was conducted to compare postoperative pain of spinal anesthesia and general anesthesia for patients undergoing laparoscopic cholecystectomy. **Materials & Methods:** 56 patients scheduled for laparoscopic cholecystectomy were divided into 2 groups of 28 each. Patients in group I underwent LC under general anesthesia, and in group II,LC under spinal anesthesia. Postoperative pain was recorded at the end of the surgery and at 12 hours post-surgery was done with a visual analogue scale (VAS). **Results:** Group I had 14 males and 14 females and group II had 13 males and 15 females. At end of the surgery there was no pain in 7 in group I and 5 in group II, mild pain in 7 and8, severe pain in 14 and 15 patients in group I and II. At 12 hours post-surgery, there was no pain in 14 and 16, mild pain in 8 and 7 and severe pain in 6 and 5 in group I and II respectively. The difference was significant (P<0.05). **Conclusion:** For individuals having a laparoscopic cholecystectomy, spinal anesthesia is more useful than general anesthesia in minimizing post-operative pain. **Keywords:** Laparoscopic cholecystectomy, gallbladder, post-surgery

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INTRODUCTION

A minimally invasive surgical technique called laparoscopic cholecystectomy is done to remove the gallbladder. A tiny abdominal incision is used to introduce the laparoscope, a narrow tube with a camera and light at the end, to complete the surgery.¹ The gallbladder is subsequently removed by the surgeon using further instruments that are placed through additional tiny incisions. The process takes approximately an hour and is often performed under general anesthesia. Gallbladder inflammation (cholecystitis), gallbladder polyps, gallbladder cancer, and symptomatic gallstones are among the disorders for which laparoscopic cholecystectomy is frequently performed. But people with specific medical disorders, significant inflammation, or considerable abdominal scarring might find it inappropriate.²

Peripheral vasodilatation is induced by spinal anesthesia alone.³ Therefore, there is concern that hypotension could arise from a laparoscopic procedure performed under spinal anesthesia. Indeed, there hasn't been much research done on how CO2

pneumoperitoneum affects intraoperative hemodynamics under SA. This was done to avoid aspiration, discomfort in the abdomen, and hypercarbia, which were anticipated as a result of the induction of CO2 pneumoperitoneum.⁴The present study was conducted to assess postoperative pain of spinal anesthesia and general anesthesia for patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study consisted of 56 patients scheduled for laparoscopic cholecystectomyof both genders. All gave their written consent to participate in the study. Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 28 each. Patients in group I underwent LC under general anesthesia, and in group II LC under spinal anesthesia. Postoperative pain was recorded at the end of the surgery and at 12 hours post-surgery was done with a visual analogue scale (VAS). The severity of VAS was defined as no pain-less than 2 score, mildless than 3 to 6 score, and severe- 7 and >7 score.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS Table I Distribution of patients

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Groups	Group I	Group II
Method	General anesthesia	Spinal anesthesia
M:F	14:14	13:15

Table I shows that group I had 14 males and 14 females and group II had 13 males and 15 females.

Table II Comparison of pain score in both groups

Parameters	Variables	Group I	Group II	P value
End of the surgery	No pain	7	5	0.04
	Mild pain	7	8	
	Severe pain	14	15	
12 hours post-	No pain	14	16	0.05
surgery	Mild pain	8	7	
	Severe pain	6	5	

Table II, graph I shows that at end of the surgery there was no pain in 7 in group I and 5 in group II, mild pain in 7 and 8, severe pain in 14 and 15 patients in group I and II. At 12 hours post-surgery, there was no pain in 14 and 16, mild pain in 8 and 7 and severe pain in 6 and 5 in group I and II respectively. The difference was significant (P < 0.05).





DISCUSSION

Laparoscopic cholecystectomy can be performed under spinal anesthesia, which is a regional anesthesia technique that numbs the lower half of the body. Instead of general anesthesia, where the patient is completely unconscious, spinal anesthesia allows the patient to remain awake during the procedure while providing effective pain relief.⁵Laparoscopic cholecystectomy performed under spinal anesthesia offers several potential advantages, such as reduced risks associated with general anesthesia, shorter recovery time, and fewer postoperative side effects.⁶ However, the choice of anesthesia technique depends on various factors, including the patient's medical history, preferences, and the surgeon's recommendation.7 Laparoscopic cholecystectomy carries various hazards, like any surgical procedure:

bleeding, infection, damage to adjacent tissues, harm to the bile duct, and anesthesia-related complications. The preferred anesthetic method for laparoscopic cholecystectomy (LC) is general anesthesia (GA).^{8,9} As an alternative to GA for LC, regional anesthesia (spinal, epidural, or combination spinal epidural) has also been reported to be the only method for doing LC. More recently, it has been documented as a standard method for otherwise healthy patients as well. Originally, it was only recorded for cases where the patients were otherwise high-risk candidates for general anesthesia. Laparoscopic cholecystectomy was believed to require endotracheal intubation.^{10,11} The present study was conducted to assess postoperative pain of spinal anesthesia and general anesthesia for patients undergoing laparoscopic cholecystectomy.

We found that group I had 14 males and 14 females and group II had 13 males and 15 females. The viability, effectiveness, and adverse effects of combined spinal epidural anesthesia (CSEA) in Los Angeles were evaluated by UzmanS et al¹² 33 patients underwent LA under CSEA. At the L3-L4 interspace, CSEA was carried out using the needle-throughneedle approach. Adverse events that affected CSEA, patient satisfaction, and postoperative pain levels were noted both before and after surgery. 33 patients (84.6%) had successful LA procedures under CSEA. Eight patients (24.1%) had right shoulder pain before surgery, followed by abdominal discomfort in six (18.2%), anxiety in five (15.2%), hypotension in 2 (6.1%), and nausea/vomiting in one (3%). Headache, urine retention, right shoulder pain, and postoperative nausea/vomiting (PONV) occurred in 18.1%, 12.1%, 9.1%, and 0% of cases in the first 24 hours following LA.

In contrast to general anesthesia (GA), Tiwari et al¹³ assessed the effectiveness, safety, and cost-benefit of performing a laparoscopic cholecystectomy under spinal anesthesia (SA). Standardized procedures were used to administer spinal and general anesthesia to Groups A and B. A typical 4- port laparoscopic cholecystectomy was performed on both groups. The major outcome measures that were defined were mean anesthesia time, pneumoperitoneum time, and surgery time. The secondary outcome measures were intraoperative events and post-operative pain score. 110 instances in Group B and 114 cases in Group A of the 235 cases that were included in the study were analyzed. In the GA group, the mean duration of anesthesia looked to be higher, although the SA group's pneumoperitoneum time and consequent overall operation time were marginally longer. In 27 out of 117 instances, SA was administered, and intraoperativeevents, four significant enough to convert to GA. No postoperative complications noted in either group. Pain relief significantly more in SA group in immediate post operative period but same as GA group at time of discharge (24 hours). No late postoperative complication or readmission noted in either group A.

The limitation of the study is a small sample size.

CONCLUSION

Authors found that for individuals having a laparoscopic cholecystectomy, spinal anesthesia is more useful than general anesthesia in minimizing post-operative pain.

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