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Original Research Article

A Clinical Comparative Study between General Anaesthesia and Spinal Anaesthesia for Laparoscopic Cholecystectomy in Elective Surgeries

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Abstract:

Background and Objectives: Laparoscopic cholecystectomy (LC) is conventionally performed under general anaesthesia (GA), but there are studies which have found spinal anaesthesia (SA) as a safe alternative. The objective of this study was to compare the ease of performing Laparoscopic Cholecystectomy under General Anaesthesia and Spinal Anaesthesia.

Material and Methods: The study was conducted in 60 patients who were candidate of elective surgeries for laparoscopic cholecystectomy (LC) with low tension pneumoperitonium with CO_2 and divided into two random groups (30 in each group) of general anaesthesia (GA) and spinal anaesthesia (SA) In General Anaesthesia (n=30), Propofol, Fentanyl, Atracurium, Sevoflurane and Tracheal intubation were done. In Spinal Anaesthesia (n=30), Hyperbaric Bupivacaine 15 mg and fentanyl 20 µg to achieve a sensorial level of T_3 were used. Intraoperative hemodynamic parameters, postoperative pain, complications, recovery, patient satisfaction, and cost were compared between the two groups.

Results and Observation: Induction of anaesthesia were done between two randomly divided patients (n=30 for GA and n=30 for SA) and there were no conversion from spinal to general anaesthesia. Pain was significantly lower at 2, 4, and 6 hours after the procedure for spinal anaesthesia group as compared to those who received general anaesthesia. The cost of the spinal anaesthesia was significantly lower than that of the general anaesthesia. All patients were discharged after 24 hours.

Conclusion: Laparoscopic cholecystectomy done under spinal anesthesia is safe and feasible and does not require any change in technique and, at the same time, has a number of advantages, as compared to general anesthesia, and should be the anesthesia of choice.

Keywords: Anaesthesia, General, Spinal, Laparoscopic.

Introduction

Laparoscopic cholecystectomy was introduce in 1988 and since then it is considered as gold standard technique for the surgical management of cholelithiasis and has gained worldwide acceptance [1,2]. Laparsocopic cholecystectomy under spinal anaesthesia alone has been reported occasionally in the past and these reports included patients unfit to receive general anaesthesia, mainly with chronic obstructive airway disease [3]. LC is conventionally done under general anaesthesia and may be associated with postoperative pain and nausea and vomiting (PONV) [2]. Spinal anaesthesia is commonly used anaesthetic technique that has good safety profile and has several advantages over general anaesthesia. These advantages include the patient being awake and oriented at the end of the procedure, less postoperative pain and the ability to ambulate earlier than patients receiving general anaesthesia [2]. Moreover, the incidences of nausea and vomitting are less with selective spinal anaesthesia than with general anaesthesia [6]

Discussion

General anaesthesia is the technique of choice for laproscopic cholecystectomies. Several studies conducted globally has indicated regional anaesthesia is safe and economical for laparoscopic cholecystectomies and has good postoperative analgesia. The present study has confirmed the feasibility of performing Laproscopic cholesystectomy safely under SA without any conversion to GA. But there are few concerns,

associated with SA like raised IAP that results in regurgitation of gastric content. There is also fear of Hypotension that can occur following SA due to peripheral vasodilatation leading to decrease venous return and also as a result of raised of IAP and reverse trendelenberg position [1,2]

In our study, we had hypotension in 10 cases(33.33%),which was corrected by IV fluids and inj ephedrine 6mg iv boluses. Kalaivani V.et al.,[3] noted can incidence of hypotension as 36%. Sinha.et al.[4] noted an incidence of hypotension as 20.5% in their series. Tzovares et al; found that intraoperative hypotension is a well-known adverse effect of spinal anaesthesia and it is easily managed and didn't affect the planned procedure [5]

The mean/median operative time for laparoscopic cholecystectomy performed under SA in various other studies ranged from 16.4 to 47.4min [6–8]. In our study there was no statistically significant difference in mean operative time between SA and GA groups suggesting optimum motor relaxation of abdominal muscles that didn't interfere with the surgical view and thus not prolonging the operative time significantly. Bessaet al., also found similar results [6]

Although several studies has shown that laparoscopic cholecystectomy is well tolerated by the patients under spinal anesthesia, however right shoulder tip pain can be very agonising during intraoperative period. Pain and discomfort over right shoulder is probably attributed to diaphragmatic irritation by the C02 pneumoperitoneum. In our study 18 patients(60%) complained of right shoulder tip pain which was subsequently managed by reassurance and keeping the intraabdominal pressure to 8-10mmHg.In severe cases inj ketamine (1mg/kg) and midazolam (0.02mg/kg) was administered IV and none of them been converted to GA. Kalavani V et al. [3] reported intraoperative right shoulder pain 24% out of which 8% required conversion to GA. Hamad et. al.[7] reported intraoperative right shoulder tip pain in 10 % of patients. Mehta et al. [9]. reported right shoulder pain in 7 (23%) cases. Tzoveres et al [5]. Encountered right shoulder tip pain in 12.3% but none of them required conversion to GA. Yuksaket al. [10] Encountered right shoulder pain in 50% of cases which is similar to our studies.3 patients(10.3%) were converted to GA and 5 Patients(17.2%) required additional spraying of diaphragm with 2% lidocaine to control pain.

There was statistically no significant difference found in MAP in both the groups but 5 patients in SA group developed bradycardia intraoperatively that was managed by inj atropine 0.6 mg iv

Although the incidence of PONV was not statistically significant in both groups but 6(20%)patient develop PONV in SA group and 7(23%) complained of PONV in GA group. Bessa et al. [6] has encountered PONV in 22.2% in the GA group as compared to only 6.9% of patients in SA group.

Postoperative urinary retention requiring catherisation was seen in 4(13.33%) patients in SA group. This is related to regional anaesthesia blocking sacral nerve fibres with rate up to 20% in some series. [11]

The pain assessed in postoperative period was significantly lower in SA group as compared to GA group which can be attributed to residual effect of local anaesthetic and the addition of long acting adjuvant, buprinorphine. [12-17] Earlier studies have reported that Laparoscopic cholecystecytomy done under SA results in significantly less postoperative pain and analgesia request compared to that performed under GA. [6,8]

Conclusion

This study confirms the feasibility, safety and better postoperative control of spinal anaesthesia for patients undergoing elective laparoscopic cholecystectomy operation in otherwise healthy patients.

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