

Comparative Evaluation of Efficacy of Spinal Anaesthesia versus General Anaesthesia for Open Cholecystectomy Surgeries at a Tertiary Care Hospital

Rout Umashankar¹, A. Raghavender^{2*}

¹Assistant Professor, Department of Anaesthesiology,
Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.

²Professor, Department of Surgery,
Dr. V.R.K. Women's Medical College, Teaching Hospital & Research Centre, Aziznagar, Telangana, India.

ABSTRACT

Introduction: The present study was conducted for comparing the efficacy of spinal anaesthesia versus general anaesthesia for open cholecystectomy.

Materials and Methodology: A total of 100 participants were randomly divided into two groups: the SA group (spinal anaesthesia group, n = 50) and the GA group (general anaesthesia group, n = 50). All the patients underwent surgical procedures according to their respective study groups. Outcome was compared and results were subjected to statistical analysis using SPSS software.

Results: Mean age of the patients of group 1 and group 2 was 46.2 years and 42.9 years respectively. Majority proportion of patients of both the study groups were males. Mean BMI among the patients of group 1 and group 2 was 24.3 and 23.7 Kg/m². Mean VAS was significantly higher among patients of group 2. Also, requirement of rescue analgesia was higher among patients of group 2.

Conclusion: Spinal anaesthesia showed better results among

patients undergoing open cholecystectomy.

Keywords: Open Cholecystectomy, General Anaesthesia, Spinal Anaesthesia.

*Correspondence to:

Dr. A. Raghavender,
Professor,
Department of Surgery,
Dr. V.R.K. Women's Medical College, Teaching Hospital & Research Centre, Aziznagar, Telangana, India.

Article History:

Received: 19-06-2017, **Revised:** 02-07-2017, **Accepted:** 27-07-2017

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.4.068	

INTRODUCTION

Gallstone disease is a global health problem. Most patients are asymptomatic, and gallstones are generally detected with ultrasonography during the evaluation of unrelated medical conditions.^{1,2}

Spinal and epidural techniques can and should have a place in modern cardiac anaesthesia practice and should be further investigated. Neuraxial anaesthesia can be performed with local anaesthetics at different doses and baricity. To obtain high spinal anaesthesia, one can use high doses (20-40 mg of bupivacaine) and lumbar puncture or low doses (5 to 10 mg of bupivacaine) and thoracic puncture.^{3,4}

Cholecystectomy under regional anaesthesia alone has been reported only occasionally in the past; these reports included patients unfit to receive general anaesthesia, mainly patients with severe chronic obstructive airway disease. Also, the incidence of postoperative morbidity like nausea, vomiting, dizziness, respiratory complication, thromboembolism and pneumonia was much less as compared to general anaesthesia. Also, the total cost

of spinal anaesthesia with respect to hospital stay, induction and recovery, the need for postoperative antiemetics and analgesia and the incidence of other complication was much lower when compared to general anaesthesia.^{5,6}

Hence, the present study was conducted for comparing the efficacy of spinal anaesthesia versus general anaesthesia for open cholecystectomy

MATERIALS AND METHODOLOGY

The study was conducted in the Department of Anaesthesiology, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India. Signed informed consent was acquired from the patients. The study included patients with uncomplicated symptomatic gallstone disease who were undergoing open cholecystectomy and had an American Society of Anaesthesiologists (ASA) physical status of either I or II. The patients were between the ages of 18 and 70, of any gender, and had a body mass index (BMI) of 30 kg/m² or less. The exclusion criteria for both the spinal anaesthesia (SA) and

general anesthesia (GA) groups included pancreatitis, contraindications to SA, hypersensitivity to bupivacaine and pethidine, and serious cardiopulmonary illness. A total of 100 participants were randomly divided into two groups: SA group (spinal anesthesia, n = 50) and GA group (general anesthesia, n = 50). All patients underwent surgical procedures according to their respective study groups. Outcome was compared and results were subjected to statistical analysis using SPSS software.

RESULTS

Mean age of the patients of group 1 and group 2 was 46.2 years and 42.9 years respectively. Majority proportion of patients of both the study groups were males.

Mean BMI among the patients of group 1 and group 2 was 24.3 and 23.7 Kg/m². Mean VAS was significantly higher among patients of group 2. Also, requirement of rescue analgesia was higher among patients of group 2.

Table 1: Demographic data

Demographic data	Group 1	Group 2
Mean age (years)	46.2	42.9
Males	29	30
Females	21	20
Mean BMI (Kg/m ²)	24.3	23.7

Table 2: Comparison of postoperative VAS

Time interval	Group 1	Group 2	p-value
1 hour	0.2	4.3	0.001*
4 hours	0.9	2.3	0.152
8 hours	1.1	3.9	0.000*
12 hours	1.5	4.8	0.000*

Table 3: Comparison of postoperative analgesic requirement

Postoperative analgesic requirement	Group 1	Group 2
Number	6	12
Percentage	12	24
p-value	0.001 (Significant)	

DISCUSSION

Though the feasibility and popularity of laparoscopic cholecystectomy has gained sky heights, open cholecystectomy is still in day today practice in places where there is a lack in adequate technologies and expertise in performing laparoscopic cholecystectomy. For an effective open cholecystectomy in recent years, anaesthesiologists now have the options of GA and SA.⁶⁻⁹ Mean age of the patients of group 1 and group 2 was 46.2 years and 42.9 years respectively. Majority proportion of patients of both the study groups were males. Mean BMI among the patients of group 1 and group 2 was 24.3 and 23.7 Kg/m². Mean VAS was significantly higher among patients of group 2. Also, requirement of rescue analgesia was higher among patients of group 2. Kuju RB et al evaluated 120 patients with uncomplicated symptomatic gallstone disease undergoing open cholecystectomy and complying with ASA I or II physical status, aged between 18 and 70 years of either sex and BMI ≤ 30 kg/m². They were randomly categorized into SA group (received spinal anaesthesia) and GA group (received general anaesthesia), each group containing 60 patients. Intra-operative events and post-operative events were observed up to 48 hours post-surgery and compared between the groups. Data is in percentage and mean with standard deviation and median. Spinal anaesthesia is safe and effective in pain

management post open cholecystectomy. The median pain-free interval in SA group was 8 hours as compared to 1 hour in GA group. The average mean pain score was also significantly less in SA group than in GA group at all intervals of time observed. Majority (90%) in SA groups were managed with intramuscular diclofenac sodium whereas majority in GA group were managed with intramuscular pethidine. Intra-operatively, SA group had more cases of haemodynamic instability than GA group, which were easily managed in both the groups. The differences in the incidence of post-operative nausea and vomiting and the days of hospital stay between the groups were not significant. Spinal anaesthesia is safe and more effective than general anaesthesia for uncomplicated open cholecystectomy in terms of peri-operative events and, in reducing post-operative pain, as well as in terms of surgeon's satisfaction as well.¹⁰

Imbelloni LE et al evaluated the efficacy of spinal anesthesia for laparoscopic cholecystectomy. 369 patients with symptoms of cholelithiasis, laparoscopic cholecystectomy were operated under spinal anesthesia with pneumoperitoneum and low pressure CO₂. They compared 15 mg of hyperbaric bupivacaine and lumbar puncture with 10 or 7.5 mg of hyperbaric bupivacaine thoracic puncture, all with 25 µg fentanyl until the sensory level reached T3. Intraoperative parameters, post-operative pain, complications,

recovery, patient satisfaction, and cost were compared between both groups. All procedures were completed under spinal anesthesia. The use of lidocaine 1% was successful in the prevention of shoulder pain in 329 (89%) patients. There were significant differences in time to reach T3, obtaining 15 mg > 10 mg = 7.5 mg. There is a positive correlation between the dose and the incidence of hypotension. The lowest doses gave a decrease of 52.2% in the incidence of hypotension. There was a positive correlation between the dose and duration of sensory and motor block. Sensory block was almost twice the motor block at all doses. With low doses, 60% of patients went from table to stretcher. Satisfaction occurred in 99% of patients. Laparoscopic cholecystectomy can be performed successfully under spinal anesthesia with low-pressure pneumoperitoneum of CO₂.¹¹

CONCLUSION

Spinal anesthesia showed better results among patients undergoing open cholecystectomy.

REFERENCES

1. Van Zundert AA, Stultiens G, Jakimowicz JJ, Peek D, van der Ham WG, Korsten HH, et al. Laparoscopic cholecystectomy under segmental thoracic spinal anesthesia: A feasibility study. *Br J Anaesth*. 2007;98:682–6.
2. Imbelloni LE, Pitombo PF, Ganem EM. The Incidence of paresthesia and neurologic complications after lower spinal thoracic puncture with cut needle compared to pencil point needle. Study in 300 Patients. *J Anesth Clin Res*. 2010;1:106.
3. Soper NJ, Stockman PT, Dunnegan DL, Ashley SW. Laparoscopic cholecystectomy: The new “gold standard”? *Arch Surg*. 1992;127:917–21.
4. Hamad MA, El-Khattary OA. Laparoscopic cholecystectomy under spinal anesthesia with nitrous oxide pneumoperitoneum: A feasibility study. *Surg Endosc*. 2003;17:1426–28.
5. van Zundert AA, Stultiens G, Jakimowicz JJ, van den Borne BE, van der Ham WG, Wildsmith JA. Segmental spinal anaesthesia for cholecystectomy in a patient with severe lung disease. *Br J Anaesth*. 2006;96:464–6.
6. Pursnani KG, Bazza Y, Calleja M, Mughai MM. Laparoscopic cholecystectomy under epidural anesthesia in patients with chronic respiratory disease. *Surg Endosc*. 1998;12:1082–4.
7. Tzoravaras G, Fafoulakis F, Pratsas K, Georgopoulou S, Stamatiou G, Hatzitheofilou C. Spinal vs general anesthesia for laparoscopic cholecystectomy: Interim analysis of a controlled randomized trial. *Arch Surg*. 2008;143:497–501.
8. Imbelloni LE, Fornasari M, Fialho JC, Sant’Anna R, Cordeiro JA. General anesthesia versus spinal block for laparoscopic cholecystectomy. *Rev Bras Anesthesiol*. 2010;60:217–27.
9. Lee RA, van Zundert AA, Breedveld P, Wondergem JH, Peek D, Wieringa PA. The anatomy of the thoracic spinal canal investigated with magnetic resonance imaging (MRI) *Acta Anaesthesiol Belg*. 2007;58:163–7.
10. Kuju RB, Dongol Y, Verma R. Effectiveness of Spinal Anaesthesia versus General Anaesthesia for Open Cholecystectomy. *J Nepal Health Res Counc*. 2016 May;14(33):93-98. PMID: 27885290.
11. Imbelloni LE. Spinal anesthesia for laparoscopic cholecystectomy: Thoracic vs. Lumbar Technique. *Saudi J Anaesth*. 2014;8(4):477-483. doi:10.4103/1658-354X.140853

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Rout Umashankar, A. Raghavender. Comparative Evaluation of Efficacy of Spinal Anaesthesia versus General Anaesthesia for Open Cholecystectomy Surgeries at a Tertiary Care Hospital. *Int J Med Res Prof*. 2017; 3(4): 289-91. DOI: 10.21276/ijmrp.2017.3.4.068