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A COMPARISON OF POSTOPERATIVE PAIN, NAUSEA AND VOMITING IN PATIENTS UNDERGOING SPINAL AND GENERAL ANESTHESIA

Mrs. Gnana Nisha Juliet. A[1]*, Mr. Earnest Febin [2]

[1] Lecturer, Faculty of Allied Health Science, DR MGR Educational and Research Institute, ACS Medical College, Chennai, Tamil Nadu. Email id-gnananishajuliet.otat@drmgrdu.ac.in,

[2] Anaesthesia Technologist, Sri Ramachandra medical college and hospital, Chennai, Tamil Nadu.

***Corresponding author:**

Mrs. Gnana Nisha Juliet
Lecturer,
Faculty of Allied Health Science, Dr. M.G.R Educational and Research Institute, Chennai, Tamil Nadu, India.

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ABSTRACT

Background: Postoperative pain, nausea, and vomiting (PONV) are usual effects after surgery that may affect patient recovery and satisfaction. Anesthetic approach has a significant impact on the frequency and severity of these results.

Aim: The purpose of this study is to compare postoperative pain, nausea, and vomiting in individuals undergoing spinal anesthetic with general anesthesia.

Methods: A prospective, comparative study was carried out on 60 patients (30 general anaesthesia and 30 spinal anaesthesia) adult patients receiving elective surgery. Patients were separated into two groups: those receiving spinal anaesthesia (Group A) 30 general anaesthesia and those receiving general anaesthesia (Group B) 30 spinal anaesthesia. The Visual Analog Scale (VAS) was used to quantify post-operative pain at (1-3 hrs, 4 hrs, 8 hrs, 12hrs, 18hrs &24hrs) after the surgery. The incidence and intensity of nausea and vomiting were assessed for 24 hours (1-3 hrs, 4 hrs, 8 hrs, 12hrs, 18hrs &24hrs) after the surgery. The pain has been determined with visual analogue scale, nausea and vomiting is determined by PONV impact scale..

Results: Postoperative pain was higher in the spinal anaesthesia group compared to the general anaesthesia group, particularly at 24 hours ($p = 0.04$*). The incidence of vomiting was similar in both groups, while nausea occurred more frequently in the spinal anaesthesia group. Patients under spinal anaesthesia required more analgesics and antiemetic support compared to those under general anaesthesia.

Conclusion: The main findings demonstrate that postoperative pain is more in spinal anaesthesia than in general anaesthesia. The PONV findings demonstrate that vomiting in both groups is equivalent, although nausea is caused more in spinal anaesthesia than in general anaesthesia. These data indicate that spinal anaesthetic may be preferred in certain surgical circumstances to improve patient comfort and prevent postoperative problems

Keywords: Spinal anesthesia, general anesthesia, postoperative pain, postoperative nausea and vomiting.

INTRODUCTION

Postoperative pain, nausea, and vomiting (PONV) are some of the most prevalent and painful consequences of surgical treatments. Effective management of these symptoms is critical for promoting faster recovery, reducing hospital stays, and improving overall patient satisfaction [1,9]. The type of anaesthesia used significantly influences the severity and frequency of these postoperative complications. Spinal anaesthesia and general anaesthesia are two frequently used methods with distinct pharmacological and physiological consequences. Spinal anaesthesia is a type of regional anaesthesia that involves injecting local anaesthetic drugs into the subarachnoid space, causing temporary sensory and motor blockage of the lower body. It is commonly used for lower abdominal, pelvic, and lower limb surgeries due to its quick onset, technical simplicity, and cost-effectiveness [1]. In contrast, general anaesthesia uses intravenous or inhalational drugs to induce a reversible state of unconsciousness and is typically used for treatments requiring full immobilization and muscular relaxation [4,5,10].

Several studies have investigated the relationship between anaesthesia type and the prevalence of postoperative pain and PONV. While spinal anaesthetic has several advantages, including less intraoperative blood loss and a lower chance of airway problems, it can also cause hypotension and urine retention. Despite its adaptability, general anaesthesia has been related to an increased risk of PONV and postoperative discomfort during the early recovery period. The current study compares the incidence and intensity of postoperative pain, nausea, and vomiting in individuals who have surgery under spinal anaesthetic versus general anaesthesia [2,6,8,11]. The findings are expected to help anesthesiologists and surgeons choose the best anaesthetic technique to maximize postoperative comfort and improve patient recovery outcomes [7].

METHODS

The study is conducted to examine psychosocial parameters in surgical patients. Pain will be measured with a visual analogue scale, while nausea and vomiting will be measured with a PONV impact scale. A prospective, comparative observational study research design was used in the study at A.C.S Medical College & Hospital. A sample of 60 patients (30 general anaesthesia and 30 spinal anaesthesia) was chosen for data collection and analysis using questionnaires. The study excluded patients like paediatric patients, ASA > III, Mallampatti > III, and so on. During the data collecting phase, participants were requested to sign an informed consent form. Responses were maintained confidential and anonymous. Data were obtained utilizing the observation study and questions approach in Performa with g-form.

The study is divided into two sections. The first part contains the data collection form/proforma, which includes information about the patient's demographics (name, age, gender, hospital ID number), clinical characteristics (BMI, smoking, history of PONV), surgical procedure, diagnosis, duration of surgery, and type of anaesthesia. The second part offers scales for interpreting the PONV scale, as well as the Visual Analog Scale (VAS).

STATISTICAL ANALYSIS:

Statistical analysis was carried out using SPSS. Among the nominal variables, the number and percentage were presented. Chi-square test and descriptive statistics method used to analyse the collected data and the probability of belonging to the aware or unaware groups. A significance level of $p<0.05$ was used.

RESULTS

Among 60 patients, females (51.67%) outweighed males (48.33%). The majority were between the ages of 35 and 44 (33.33%). The majority of procedures were elective (90%), and both groups had similar demographic and operative features. Pain assessment revealed that spinal anaesthesia patients had higher pain scores 24 hours after surgery, whereas general anaesthesia provided more long-term pain relief. Vomiting rates were equal between groups, although nausea was more frequent and lasted longer in the spinal anaesthetic group.

DISCUSSION

- This study found that patients receiving spinal anaesthesia experienced much more postoperative pain than those getting general anaesthesia after 24 hours. The analgesics benefits of spinal anaesthetic are expected to wane over time, resulting in greater discomfort. In contrast, systemic analgesics given in general anaesthesia gave longer-lasting pain relief. At 24 hours postoperatively, patients in the general anaesthesia group demonstrated significantly lower pain scores compared to those in the spinal anaesthesia group ($p = 0.04$). Although spinal anaesthesia is typically associated with effective early postoperative analgesia, this benefit appears to diminish more rapidly, likely contributing to the higher pain intensity observed after 24 hours.
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- In contrast, the administration of systemic analgesics during general anaesthesia may have provided a more prolonged analgesic effect, resulting in sustained pain relief during the postoperative period. While pain scores recorded at 4 and 8 hours were marginally higher in the spinal anaesthesia group, these differences were not statistically significant, suggesting that the analgesic advantage of spinal anaesthesia is transient and variable.

- A slight difference in postoperative vomiting and dry retching was observed between the two groups at 8 hours ($p = 0.05$), with the spinal anaesthesia group exhibiting a greater frequency of symptoms. This finding contrasts with the traditional assumption that general anaesthesia—particularly when involving inhalational agents and opioids—is more frequently associated with postoperative nausea and vomiting (PONV).

- The results of this investigation are partially compatible with earlier research. A meta-analysis of spinal versus general anaesthesia in lumbar spine surgery found that spinal anaesthesia gave better early postoperative analgesia, whereas general anaesthesia provided more stable pain control later in the recovery period. Similarly, Bakshi et al. (2021) and Kumari et al. (2020) found that general anaesthesia resulted in reduced pain scores after 24 hours compared to spinal anaesthesia, which supports our findings.

- However, our findings differ from those of Piergaspare Palumbo et al. (2018) and Hulgeri et al. (2021), who discovered that spinal anaesthesia was associated with a lower incidence of PONV than general anaesthesia. The disparities could be due to changes in surgical procedures, anesthetic drugs, patient characteristics, and the use of prophylactic antiemetics. It is possible that in our study, the spinal group experienced more frequent hypotension, resulting in higher rates of nausea and vomiting. Despite these differences, both anaesthetic approaches were determined to be safe and effective for typical surgical procedures. General anaesthesia may be chosen for longer postoperative pain treatment, although spinal anaesthesia is still useful for short procedures that require minimum systemic medication exposure.

CONCLUSION

- This study found that both spinal and general anaesthesia are useful and safe treatments for patients undergoing elective surgical operations. However, their postoperative results varied in several significant ways. Patients who received general anaesthesia had considerably reduced pain intensity 24 hours after surgery, indicating that general anaesthesia provided more long-term analgesic benefit than spinal anaesthesia. In contrast, spinal anaesthesia produced greater initial analgesia but was linked with a faster fall in pain control and a slightly higher incidence of postoperative nausea and vomiting (PONV).

- These findings highlight the importance of personalized anaesthetic planning based on patient characteristics, surgery type, and duration. A careful choice of anaesthetic approach, along with multimodal analgesia and preventive antiemetic measures, can improve patient comfort and recovery. Furthermore, proper postoperative surveillance and early management in the event of nausea or pain can significantly enhance clinical results and patient satisfaction.

- Future research with bigger sample numbers and multi-institutional collaboration is needed to validate these findings and investigate the use of combination or modified anaesthetic procedures to balance analgesia effectiveness while minimizing side effects.

Table 1. Comparison of Postoperative Pain Scores between General and Spinal Anaesthesia Group

Time Interval (hours)	Pain Intensity (VAS Range)	General Anaesthesia (%)	Spinal Anaesthesia (%)
1–3hr	0–2 (No pain)	40.0	**50.0**
	<3 (Mild pain)	40.0	**33.3**
	3–7 (Moderate pain)	16.7	**6.7**
	>7 (Severe pain)	3.3	**10.0**
4hr	0–2 (No pain)	20.0	**20.0**
	<3 (Mild pain)	40.0	**43.3**
	3–7 (Moderate pain)	30.0	**20.0**
	>7 (Severe pain)	10.0	**16.7**
8hr	0–2 (No pain)	3.3	**0.0**
	<3 (Mild pain)	53.3	**50.0**
	3–7 (Moderate pain)	30.0	**6.7**
	>7 (Severe pain)	13.3	**43.3**
12hr	0–2 (No pain)	6.7	**10.0**
	<3 (Mild pain)	53.3	**63.3**
	3–7 (Moderate pain)	30.0	**26.7**
	>7 (Severe pain)	10.0	**0.0**
18hr	0–2 (No pain)	46.7	**10.0**
	<3 (Mild pain)	26.7	**63.3**
	3–7 (Moderate pain)	16.7	**26.7**
	>7 (Severe pain)	10.0	**0.0**
24hr	0–2 (No pain)	53.3	**40.0**
	<3 (Mild pain)	33.3	**56.7**
	3–7 (Moderate pain)	13.3	**3.3**
	>7 (Severe pain)	**0.0**	**0.0**

Table 2 Below summarizes the incidence of vomiting among patients who underwent general and spinal anaesthesia at various postoperative intervals.

Time Interval (Hours)	Vomiting Episodes	General Anaesthesia (%)	Spinal Anaesthesia (%)
0–3hrs	None / Once / Twice	70 / 26.7 / 3.3	**70 / 23.3 / 6.7**
4hrs	None / Once / Twice	70 / 13.3 / 16.7	**43.3 / 43.3 / 13.3**
8hrs	None / Once / Twice	66.7 / 30 / 3.3	**40 / 53.3 / 6.7**
12hrs	None / Once / Twice	60 / 36.7 / 3.3	**53.3 / 46.7 / 0**
18hrs	None / Once / Twice	66.7 / 20 / 13.3	**76.7 / 13.3 / 10**
24hrs	**None / Once / Twice**	**100 / 0 / 0**	**96.7 / 0 / 3.3**

Table 3. Comparison of Postoperative Nausea Scores between General and Spinal Anaesthesia Groups

Time Interval (hours)	Nausea Frequency	General Anaesthesia (%)	Spinal Anaesthesia (%)
0–3hrs	Not at all	0.0	**0.0**
	Sometimes	66.7	**60.0**
	Often or most of the time	33.3	**40.0**
	All of the time	0.0	**0.0**
4hrs	Not at all	0.0	**0.0**
	Sometimes	56.7	**50.0**
	Often or most of the time	43.3	**46.7**
	All of the time	0.0	**3.3**
8hrs	Not at all	0.0	**0.0**
	Sometimes	60.0	**40.0**
	Often or most of the time	40.0	**56.7**
	All of the time	0.0	**3.3**
12hrs	Not at all	0.0	**0.0**
	Sometimes	70.0	**53.3**
	Often or most of the time	30.0	**46.7**
	All of the time	0.0	**0.0**
18hrs	Not at all	0.0	**0.0**
	Sometimes	60.0	**60.0**
	Often or most of the time	36.7	**40.0**
	All of the time	3.3	**0.0**
24hrs	Not at all	0.0	**0.0**
	Sometimes	70.0	**70.0**
	Often or most of the time	30.0	**26.7**
	All of the time	**0.0**	**3.3**

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest

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