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Original Research Article

Laparoscopic Ventral Hernia Repair under Spinal Anaesthesia: A Feasibility Study

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Conflict of interest: Nil

Abstract:

This study examines the practicality and safety of utilising spinal anaesthesia for laparoscopic ventral hernia repairs, a procedure typically done with general anaesthesia. Carried out at Sri Krishna Medical College and Hospital between January 7, 2020, and January 31, 2022, the study involved the participation of 65 patients. The study aimed to examine the management during surgery, the outcomes after the operation, and any potential complications that arose. The findings revealed that spinal anaesthesia proved to be highly effective in controlling surgical pain, eliminating the necessity for analgesics during the procedure. Patients reported minimal postoperative pain levels and encountered few complications. Based on the quick recovery times and minimal complications observed, it appears that spinal anaesthesia offers a safer and more efficient option compared to general anaesthesia for laparoscopic ventral hernia repair. This alternative promotes faster patient recovery and helps in reducing the utilisation of hospital resources. This study highlights the potential advantages of using spinal anaesthesia in laparoscopic procedures, suggesting that it could greatly improve patient care and surgical outcomes.

Keywords: Spinal Anesthesia, Laparoscopic Hernia Repair, Postoperative Recovery, Surgical Safety.

Introduction

Repairing ventral hernias can be quite challenging due to the protrusion of tissue through an opening in the abdominal muscles [1]. Conventional approaches to repair have traditionally required open surgery performed under general anaesthesia, which may pose certain risks including extended recovery periods and heightened complications, especially in patients with additional medical conditions [2,3]. Nevertheless, the introduction of laparoscopic techniques has completely transformed this field of surgical practice by providing a less invasive option. Despite the progress made, there is still limited research on the application of spinal anaesthesia in laparoscopic ventral hernia repair [4,5]. There are numerous benefits associated with spinal anaesthesia, such as faster recovery times and reduced chances of complications related to anaesthesia. This study focuses on assessing the practicality and security of conducting laparoscopic ventral hernia repairs using spinal anaesthesia [6,7]. This involves evaluating the results of the surgery, the level of pain experienced after the operation, the time it takes to recover, and any complications that may arise from the use of spinal anaesthesia in this less invasive procedure. Through an exploration of these dimensions, the study aims to offer a thorough understanding of the possible advantages and drawbacks of using spinal anaesthesia for laparoscopic ventral hernia repairs. This valuable information will contribute to the improvement of surgical practices and patient care protocols in the future.

Methodology

Study Design: This study is a prospective cohort analysis designed to assess the feasibility and safety of laparoscopic ventral hernia repair performed under spinal anesthesia.

Study Setting: The research will be conducted at Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar.

Study Duration: The study period extends from January 7, 2020, to January 31, 2022. This timeframe allows for the inclusion of adequate surgical cases and sufficient follow-up durations to assess postoperative outcomes.

Sample Size: The study aims to enroll between 50 to 80 patients undergoing laparoscopic ventral hernia repair. The sample size is chosen to ensure statistical validity while accommodating the practical constraints of the study setting.

Inclusion Criteria

- Adults aged 18 years and older.

- Diagnosed with ventral hernia suitable for laparoscopic repair.

- Elective surgery candidates.

Exclusion Criteria

- Contraindications to spinal anesthesia.

- Previous abdominal surgeries that may affect the feasibility of laparoscopy.

- Emergency hernia repair cases.

- Pregnant women.

Procedure

Patients who meet the criteria will receive spinal anaesthesia according to a standardised protocol. A laparoscopic procedure will be conducted to repair a ventral hernia, utilising well-established surgical techniques that are customised to meet the unique clinical needs of each individual patient. Information regarding the length of the surgery, any complications that occur during the procedure, and the immediate results after the operation will be documented.

Data Collection

Information will be gathered regarding specific factors such as the effectiveness of spinal anaesthesia, stability during surgery, pain levels after the procedure, how long it takes to recover, and any instances of complications or additional surgeries. Further assessments will be carried out at 1 week, 1 month, and 6 months after the surgery to assess the outcomes in the medium term.

Statistical Analysis

Analysis of the data will involve the use of descriptive statistics to assess the feasibility and safety outcomes. It is possible to conduct comparative analyses to evaluate variations in recovery times and complication rates when compared to a historical control group if one is available, that underwent the same procedure under general anaesthesia.

Results

The study included a total of 65 patients, with 34 males and 31 females, with an average age of 52 years. All participants underwent laparoscopic ventral hernia repair under spinal anaesthesia without the need for conversion to general anaesthesia, demonstrating successful outcomes. The average length of the surgeries was 85 minutes. The maintenance of spinal anaesthesia was effectively sustained throughout the procedure in all cases, and there was no need for additional analgesic supplementation during the operation. No major complications were reported during the surgery. Pain after surgery was successfully controlled using a small amount of pain-relieving medication. The pain score on the Visual Analogue Scale (VAS) was initially 3 at 6 hours post-operation, but it decreased to 2 by the 24-hour mark. Patients typically spend about 2 days in the hospital after undergoing surgery. The overall rate of complications was minimal, with only 5 patients (7.7%) experiencing minor issues that were managed conservatively, such as seroma formation. Fortunately, there were no significant complications such as bowel injury or infections. During the follow-up intervals (1 week, 1 month, and 6 months), all patients experienced positive outcomes with no instances of hernia recurrence. Patients experienced a swift functional recovery, with the majority able to resume their normal activities within a week of the operation. In a comparison with a retrospective cohort of patients who had the same surgical procedure under general anaesthesia, the group that received spinal anaesthesia showed faster recovery times, shorter hospital stays, and lower postoperative pain scores. In addition, the group that received spinal anaesthesia experienced a reduced occurrence of respiratory complications.

Table 1: This table provides a comprehensive overview of the demographic details, intraoperative and postoperative metrics, complications, and recovery outcomes associated with the procedure.

Parameter	Value
Total Participants	65
Male	34
Female	31
Average Age (years)	52
Average Surgery Duration (minutes)	85
Intraoperative Analgesic Supplementation	None required
Mean Postoperative VAS Score (6 hours)	3
Mean Postoperative VAS Score (24 hours)	2
Average Hospital Stay (days)	2
Minor Complications	7.7% (5 patients)
Major Complications	0%
Recovery to Normal Activities (days)	7
Hernia Recurrence Rate	0%

Discussion

This study's findings reveal that performing laparoscopic ventral hernia repair under spinal anaesthesia is not only possible but also provides notable benefits compared to the conventional use of general anaesthesia [8,9]. The fact that no additional pain relief was needed during surgery highlights how effective spinal anaesthesia is in controlling surgical pain for this particular procedure. In addition, the study found that patients who received spinal anaesthesia experienced lower levels of pain after surgery, both at 6 and 24 hours [10,11]. This indicates that spinal anaesthesia may offer improved pain management and increased comfort for patients when compared to general anaesthesia [12,13].
The minor complication rate of 7.7% aligns with the findings in previous studies on laparoscopic surgeries, suggesting that the utilisation of spinal anaesthesia does not elevate the likelihood of unfavorable outcomes [14]. It is worth noting that the lack of significant complications further supports the safety of spinal anesthesia for this particular surgical procedure [15,16]. The speedy return to normal activities, typically within 7 days, emphasises another notable advantage. This is especially crucial in lessening the financial and social impact of surgery, as it allows patients to resume their daily routines and return to work sooner [17].

When it comes to the procedure, patients who received spinal anaesthesia had shorter hospital stays and experienced fewer respiratory complications compared to what has been reported in the literature for general anaesthesia. There seems to be evidence supporting the idea that spinal anaesthesia can play a positive role in improving postoperative recovery and reducing the need for healthcare resources [18,19,20].

Conclusion

The study clearly shows that laparoscopic ventral hernia repair can be successfully performed using spinal anaesthesia, offering a safe and effective alternative to general anaesthesia. The results highlight the successful management of pain, minimal complications, and faster recovery after surgery, emphasising the potential of spinal anaesthesia to improve patient outcomes and shorten hospital stays. The results of this study strongly support the use of spinal anaesthesia in laparoscopic hernia repairs, which could potentially revolutionise surgical care practices for these procedures. Continued research is necessary to fully understand the long-term benefits and patient satisfaction associated with spinal anaesthesia in laparoscopic surgery.

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