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Original Research Article

Using Local Rather than General Anaesthesia for Inguinal Hernia Repair May Significantly Reduce Complications for Frail Veterans

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Conflict of interest: Nil

Abstract:

This study examines the effectiveness and safety of local anaesthesia versus general anaesthesia in inguinal hernia repairs among frail veterans through a randomised controlled trial. Carried out at Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, from January 2020 to January 2022, the study included 75 participants. The study findings revealed that the use of local anaesthesia had a significant impact on reducing postoperative complications, lowering pain levels both immediately and during the one-week follow-up, and speeding up recovery times when compared to general anaesthesia. The groups did not show any notable disparities in hernia recurrence rates. Based on these findings, it appears that utilizing local anaesthesia during inguinal hernia repairs can lead to improved surgical outcomes and increased patient satisfaction. This makes it a viable option worth considering, especially for elderly patients who are at a higher risk.

Keywords: Local Anesthesia, General Anesthesia, Inguinal Hernia Repair, Frail Veterans.

Introduction

One of the most frequently conducted surgical procedures globally is the repair of inguinal hernias, especially among elderly veterans [1]. Patients in this particular group frequently have several other health conditions, which can make surgical procedures and recovery more challenging [2]. General anaesthesia, commonly employed in these procedures, carries notable risks, such as potential complications related to the heart and lungs, especially for more vulnerable patients. Recent advancements in the field of medicine have brought attention to the potential advantages of utilizing local anaesthesia as a safer option that could help reduce these risks [4,5,6]. The main objective of this study is to assess the effectiveness and safety of using local anaesthesia versus general anesthesia for inguinal hernia repairs in frail veterans [7]. The study aims to investigate the potential benefits of using local anaesthesia to minimize postoperative complications, expedite recovery times, and enhance overall surgical outcomes for this particular group of patients. The study aims to provide evidence-based recommendations that could lead to changes in clinical practice, potentially improving the quality of life and surgical safety for frail veteran patients. The focus of this comparison is on providing valuable insights and potential improvements for the medical community.

Methodology of the Study

Study Design: This study employs a prospective, randomized controlled trial design to compare the outcomes of local anesthesia versus general anesthesia in the surgical repair of inguinal hernias among frail veterans.

Study Setting: The research is conducted at Sri Krishna Medical College and Hospital in Muzaffarpur, Bihar. This setting provides access to a significant population of veterans, ensuring a diverse sample.

Participants: The study focuses on a sample size of 50 to 80 frail veteran patients who are undergoing elective inguinal hernia repair. Participants are assigned at random to one of two groups: Local Anaesthesia Group: Patients undergoing inguinal hernia repair with the use of local anaesthesia. General Anaesthesia Group: Patients undergoing general anaesthesia for a common procedure.

Inclusion Criteria

- Veterans aged 60 years and above.

- Diagnosed with inguinal hernia suitable for elective surgery.

- Classified as frail based on the Fried Frailty Index.

Exclusion Criteria

- Patients with contraindications to local or general anesthesia.

- Those with acute hernia complications requiring emergency surgery.

- Patients who decline to participate in the study.

Intervention: Patients in the local anesthesia group receive a standardized dose of local anesthetic administered by a skilled anesthesiologist. The general anesthesia group receives a standard general anesthetic regimen, tailored to individual health status and surgical requirements.

Data Collection: Data is collected pre-, post-, and 1 week, 1 month, and 6 months after surgery. Postoperative complications, discomfort, and healing are the main outcomes. Patient satisfaction and long-term hernia recurrence are secondary outcomes.

Statistical Analysis: Comparing results between groups will require statistical analysis. A significance level of $p < 0.05$ will be used. To guarantee study robustness, intent-to-treat and per-protocol analyses will be performed.

Study Duration: The study spans from January 7, 2020, to January 31, 2022. This period includes patient recruitment, intervention, follow-up, and data analysis phases.

Results

A total of 75 participants were enrolled in the study, with 37 assigned to the local anaesthesia group and 38 to the general anaesthesia group. The participants' average age was 68 years, and they were all male veterans classified as frail. The group that received local anaesthesia had a significantly lower rate of postoperative complications compared to the group that received general anaesthesia (15% vs. 42%, $p=0.01$). Typical issues observed in patients who underwent general anaesthesia included difficulties with breathing and a longer than expected recovery period after surgery. Patients who received local anaesthesia experienced significantly lower pain scores both immediately after the operation and during the 1-week follow-up period ($p<0.05$). Patients who received local anaesthesia experienced significantly shorter recovery times, with a median recovery time of 2 days, compared to 4 days in the general anaesthesia group ($p<0.01$). Participants in the local anaesthesia group reported higher satisfaction scores, mainly attributed to faster recovery and decreased pain levels ($p<0.05$). The two groups did not show any notable disparity in hernia recurrence rates during the 6-month follow-up. No deaths were reported in either group during the study period.

Table 1: This table summarizes the key outcomes, highlighting the advantages of local anesthesia in reducing complications and improving recovery for frail veterans undergoing inguinal hernia repair.

Outcome	Local Anesthesia Group	General Anesthesia Group
Postoperative Complications	15%	42%
Pain Scores (Immediate)	Low	High
Pain Scores (1-week Follow-up)	Low	Moderate
Recovery Time	2 days	4 days
Patient Satisfaction	High	Moderate
Hernia Recurrence	No significant difference	No significant difference

Discussion

Based on the findings of this study, it has been observed that the use of local anaesthesia in frail veterans undergoing inguinal hernia repair is linked to a decreased occurrence of postoperative complications, lower levels of pain, and quicker recovery times when compared to general anaesthesia [8,9]. This discovery holds great importance considering the susceptibility of the elderly veteran population, who face a higher likelihood of experiencing negative outcomes due to their advanced age and multiple health conditions [10]. There was a significant decrease in postoperative complications (15% in the local anaesthesia group vs. 42% in the general anaesthesia group) [11]. This can be attributed to the reduced impact on the body from local anaesthesia, which avoids the usual respiratory and cardiovascular stresses associated with general anaesthesia [12]. The reported lower pain scores immediately after the operation and during the one-week follow-up in the

local anaesthesia group indicate a more positive outcome in pain management [13]. This is important for the recovery and satisfaction of patients. In addition, the local anaesthesia group experienced a shorter recovery time compared to the general anesthesia group. This not only improves patient comfort and satisfaction, but also leads to shorter hospital stays, potentially reducing healthcare costs and resource usage [14,15,16]. The impressive patient satisfaction scores in the local anaesthesia group highlight the significance of prioritizing patient-centered outcomes in surgical care, particularly for high-risk populations [17]. Nevertheless, the absence of notable disparities in hernia recurrence rates between the two groups indicates that the selection of anaesthesia does not undermine the long-term effectiveness of hernia repair. This highlights the effectiveness of local anaesthesia as a secure substitute for general anesthesia while maintaining surgical efficacy [18,19,20].

Conclusion

The study provides strong evidence that local anaesthesia is a preferable and more efficient option than general anaesthesia for inguinal hernia repairs in frail veterans. It has been observed that the occurrence of postoperative complications is significantly reduced, pain levels are lowered, and recovery times are accelerated, all while ensuring the long-term success of the surgery remains unaffected. These findings suggest that it may be beneficial to prioritise the use of local anaesthesia in surgeries involving high-risk populations, leading to a potential change in clinical practice. This approach not only enhances patient outcomes but also supports the goals of improving patient safety, lowering healthcare expenses, and optimising resource usage. Additional research has the potential to expand these findings to different surgical scenarios and populations, potentially revolutionizing anaesthesia techniques in a broader range of surgical procedures.

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