

Comparative Analysis of Patient Outcomes Following Elective and Emergency Hernia Repair

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Abstract

Background: Hernia repair is a common surgical procedure performed either electively or as an emergency intervention. Differences in postoperative complications, hospital stay duration, and recovery times between these approaches remain a critical area of study. Understanding these differences can guide optimal surgical planning and patient management.

Methods: This cross-sectional study, conducted at Patna Medical College and Hospital, analysed 100 patients who underwent hernia repair, either elective or emergency, over one year. Data on patient demographics, surgical complications, length of hospital stay, recovery duration, and recurrence rates were collected and analysed using chi-square tests and independent t-tests.

Results: Among the 25 patients undergoing emergency repair, 32% experienced complications, compared to 12% in the elective group ($p=0.045$). Wound infections were more frequent in emergency cases (16% vs. 4%, $p=0.032$). Hospital stays were significantly longer in emergency cases (4.3 days vs. 2.1 days, $p<0.001$), and recovery took more time (6.8 days vs. 4.5 days, $p<0.001$). Recurrence rates were slightly higher in emergency repairs (8%) compared to elective procedures (4%), though this was not statistically significant ($p=0.312$).

Conclusion: Findings suggest that elective hernia repair reduces complication rates, shortens hospital stays, and improves recovery times. The study underscores the importance of timely surgical intervention and preoperative optimization to enhance patient outcomes and resource utilization in healthcare facilities.

Keywords: Complications, Cross-Sectional Analysis, Elective Surgery, Emergency Surgery, Hernia Repair

Introduction

Hernias occur when an organ or fatty tissue pushes through a weak spot in the surrounding muscle or connective tissue [1,2]. They are a common medical condition affecting people of all ages and can occur in different anatomical locations, including the groin (inguinal and femoral hernias), the abdomen (ventral and umbilical hernias), and at sites of previous surgical incisions (incisional hernias) [3,4]. The condition may present with minimal symptoms or may cause significant discomfort and complications, necessitating surgical intervention [5,6]. Hernia repair surgery is performed either electively or as an emergency procedure. Elective surgeries allow for better preoperative preparation, optimizing patient conditions before intervention [7,8]. Conversely, emergency hernia repairs are typically performed due to complications such as incarceration or strangulation, leading to increased morbidity and mortality. The urgency associated with emergency repairs often results in a higher risk of postoperative complications, longer hospital stays, and more extensive recovery periods [9-11]. With advancements in surgical

techniques, hernia repairs can now be performed using open or minimally invasive laparoscopic approaches. The choice of technique depends on multiple factors, including patient health status, hernia type, and surgeon expertise. This study aims to compare the clinical outcomes of elective and emergency hernia repair procedures, providing insights into optimizing treatment strategies and patient care [12-15].

Objectives

- To assess the risks associated with elective versus emergency hernia repair.
- To compare patient recovery times and hospital stays for both surgical approaches.
- To determine the factors influencing the choice of surgical approach and subsequent patient outcomes.

Methodology

Study Design

A cross-sectional analysis was conducted, collecting data from patients undergoing elective or emergency hernia repair over one year.

Setting and Duration: This study was conducted at Patna Medical College and Hospital, Bihar, India, over one year.

Inclusion Criteria

- Patients undergoing elective or emergency hernia repair.
- Patients of all age groups and genders.
- Availability of complete medical records.

Exclusion Criteria

- Incomplete patient records.
- Patients lost to follow-up.
- Patients undergoing hernia repair at multiple institutions.

Data Collection and Analysis

Patient demographics, surgical complications, length of hospital stay, and recurrence rates were collected. Data were analyzed using descriptive statistics, chi-square tests, and independent t-tests, with statistical significance set at $p < 0.05$.

Results

Table 1: Demographic Characteristics

Characteristic	Emergency Repair (n=50)	Elective Repair (n=50)	Total (n=100)
Age (years, mean ± SD)	52.3 ± 7.1	48.9 ± 6.5	50.6 ± 6.8
Gender (Male/Female)	36/14	40/10	76/24
Comorbidities (%)			
Hypertension	40%	32%	36%
Diabetes	28%	24%	26%
Type of Hernia (%)			
Inguinal	60%	68%	64%

The table compares patient characteristics between emergency and elective hernia repairs. The mean age was slightly higher in the emergency group (52.3 ± 7.1 years) than in the elective group (48.9 ± 6.5

years). Males predominated in both groups, with a higher proportion in elective repairs (40 males vs. 36 in emergencies). Comorbidities were more prevalent in the emergency group, with hypertension affecting 40% and diabetes 28%, compared to 32% and 24% in the elective group, respectively. Inguinal hernias were the most common type, with a higher percentage in elective repairs (68%) than emergency cases (60%).

Table 2: Comparative Outcomes

Outcome Measure	Emergency Repair (%)	Elective Repair (%)	p-value
Surgical Complications	32%	12%	0.045
Wound Infections	16%	4%	0.032
Recovery Time (days)	6.8 ± 1.2	4.5 ± 0.8	<0.001
Hospital Stay (days)	4.3 ± 0.9	2.1 ± 0.5	<0.001

The outcomes indicate that emergency hernia repairs are associated with higher complications and longer recovery. Surgical complications were significantly more common in emergency repairs (32%) compared to elective procedures (12%, $p=0.045$). Wound infections were also higher in emergency cases (16% vs. 4%, $p=0.032$). Patients undergoing emergency repairs had longer recovery times (6.8 ± 1.2 vs. 4.5 ± 0.8 days, $p<0.001$) and hospital stays (4.3 ± 0.9 vs. 2.1 ± 0.5 days, $p<0.001$). However, the recurrence rate was not significantly different between the two groups (8% vs. 4%, $p=0.312$).

Discussion

The findings of this study are consistent with previous literature evaluating outcomes of elective and emergency hernia repair. Patient-centered outcome analyses by Kinnear et al. [1] have shown that emergency surgical settings are often associated with reduced patient satisfaction and increased perioperative stress, highlighting the importance of planned surgical care.

Large population-based studies conducted by Habbous et al. [2] demonstrated that emergency inguinal hernia repairs are associated with significantly higher postoperative complication rates compared to elective procedures. Similar findings were reported by Seppey et al. [3], who observed that emergency hernia repairs frequently deviate from established clinical guidelines due to time constraints and patient instability.

Emergency hernia repair has also been linked to prolonged hospital stay, as reported by Elhage et al. [4]. Our study supports this observation, with emergency repair patients exhibiting a longer mean hospital stay compared to elective repair patients. Prioritization strategies for elective hernia surgery, as discussed by López-Cano et al. [5], emphasize the role of structured waiting lists in reducing emergency presentations and improving outcomes.

Centralization of hernia care and planned surgical pathways have been shown to improve outcomes, particularly in complex cases, as noted by Helgstrand et al. [6]. Planned surgical interventions allow better optimization of modifiable risk factors, thereby reducing postoperative complications, a finding supported by Howard et al. [7].

Outcomes in elderly patients undergoing emergency hernia repair remain a concern. Baxter et al. [8] reported increased morbidity and mortality in older adults undergoing emergency parastomal hernia repair, reinforcing the importance of early elective intervention in high-risk populations. Cost-related analyses by Aydin et al. [9] further demonstrated that emergency hernia repairs are associated with increased healthcare expenditure compared to elective procedures.

The impact of delayed elective surgery on emergency presentations has been highlighted by Gomez et al. [10], particularly during periods of healthcare disruption. Long-term outcome studies by Fry et al. [11] suggest that surgical approach and perioperative planning play a significant role in recurrence rates following hernia repair.

Patient-related factors such as polypharmacy have also been shown to influence postoperative outcomes. Holden et al. [12] identified polypharmacy as a predictor of postoperative complications, which may disproportionately affect emergency surgery patients. Adherence to international hernia management guidelines, as evaluated by Bragais et al. [13], is more consistently achieved in elective surgical settings.

Socioeconomic factors may also influence outcomes, with Solano et al. [14] demonstrating that payer status impacts access to elective hernia repair and subsequent outcomes. Finally, registry-based analyses by Köckerling et al. [15] suggest higher recurrence rates following emergency repairs, although our study did not observe a significant difference, indicating that surgical technique and follow-up care may play a more critical role than surgical urgency alone.

Overall, this study reinforces the importance of early diagnosis, elective surgical planning, and guideline-based management to improve clinical outcomes and optimize healthcare resource utilization in hernia repair.

Conclusion

This study highlights the advantages of elective hernia repair in reducing postoperative complications, hospital stay, and recovery time compared to emergency procedures. The findings support prioritizing elective repairs whenever feasible to optimize patient outcomes and healthcare efficiency.

Conflict of interest: Nil

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