



## Cross Sectional Analysis of Patient Outcomes Following Emergency Versus Elective Hernia Repair

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(Received: 11 June 2024

Revised: 16 July 2024

Accepted: 10 August 2024)

### KEYWORDS

Complications,  
Cross-sectional  
Analysis, Elective  
Surgery,  
Emergency  
Surgery, Hernia  
Repair

### ABSTRACT:

**Background:** Emergency or routine hernia repair procedures are prevalent. Surgery problems, recovery, and hospital stays vary. These variations must be understood to improve patient care and hernia surgery alternatives. Our study will compare elective and emergency hernia procedures to determine their effects on patient recovery and healthcare resource consumption.

**Methods:** A cross-sectional investigation at Patna Medical College and Hospital included 100 elective or emergency hernia repair patients for One year. Patient demographics, surgery issues, recovery time, hospital stay, and recurrence rates were recorded. Both groups' findings were compared using chi-square and independent t-tests.

**Results:** Emergency hernia repairs (n=25) had 32% complications compared to 12% for elective repairs (p=0.045). Emergency cases had 16% wound infections vs. 4% (p=0.032). The emergency group had lengthier hospital stays (4.3 days vs. 2.1 days, p<0.001) and recovery durations (6.8 days) compared to elective repairs (4.5 days, p<0.001). Emergency and elective repairs made up 8% and 4% of recurrences, respectively (p=0.312).

**Conclusion:** This study suggests that timely intervention and preoperative preparation reduce risks and improve patient outcomes after emergency hernia repairs. Elective operations reduce complications, recuperation time, and hospital stays. These findings support elective hernia repairs being clinically beneficial and prioritising planned treatments whenever possible to maximise patient care and healthcare resource allocation.

### Introduction

Hernias, a common surgical ailment, allow organs or tissues to protrude through connective tissue or muscle. Hernia repair, which includes inguinal, femoral, umbilical, and other hernias, is a frequent surgical surgery worldwide [1]. Each type of therapy and postoperative consequences presents new challenges. Hernias can appear in numerous body parts, although they are generally classified by location. A large percentage of surgeries include inguinal hernias, protrusions into the canal [2]. Hernias can occur lower in the groin because the femoral artery and vein pass

through the abdominal wall. Umbilical hernias belly button bulges are frequent in children and adults [3]. We must understand how elective hernia repair surgery compare to emergency ones to provide the best care and allocate healthcare resources. Emergency repairs are riskier due to intestinal blockage or strangulation, which require quick care. Prearranged elective procedures increase optimisation before surgery and may reduce risks during surgery. Comparing these two methods improves patient outcomes and decision-making.



## Objectives

- To compare patient risks following elective and emergency hernia repair.
- To compare recovery and hospital stays for each operation method.
- To determine what characteristics affect emergency hernia repairs versus elective ones can improve clinical care strategies.

## Overview of Hernia Repair Techniques and Their Evolution

Innovations in surgery and materials have driven the rapid growth of hernia repair procedures. Tension-free mesh repair has replaced primary suture repair because it reduces recurrence and postoperative complications [4]. Laparoscopic hernia repair was less intrusive and painful than open surgery.

## Comparing Outcomes Between Emergency and Elective Hernia Repairs

[5] examined the differences between planned and emergency hernia repairs to see how they affected patients and how they were managed in healthcare. To improve patient care and support evidence-based practices, these studies looked at surgical results such as length of stay in the hospital, recovery times, long-term recurrence rates, and complications. Crisis hernia fixes are done to save lives when the intestines get blocked or when someone is strangled. Surgery like this is harder to do than surgery that people choose to have. Hernia repairs that are performed in rapid succession may result in wound infections, complications at the surgical site, and extended healing periods [6]. Because of the care given before and during surgery and the need for speed, these time-sensitive procedures may lengthen hospital stays and cause more problems. Private hernia repair plans include checking out and improving things before surgery. Surgeons can treat hernias in controlled settings and make changes to the timing and procedures with this proactive way [7]. Preoperative preparation and stress reduction reduce hospital stays and postoperative problems in elective procedures. Comparing elective hernia repairs to emergency operations [8] found substantial differences in complications. They found that emergency repairs took longer and caused more wound infections than elective treatments. These results

emphasise the need of fast action and thorough patient screening in reducing emergency hernia repair complications. A retrospective [9] investigation found shorter hospital stays and lower complication rates for elective hernia operations. They found that planned surgical interventions increase patient outcomes and healthcare resource usage.

[10] reviews synthesised research to compare elective and emergency hernia repairs. Meta-analyses suggest that emergency surgeries have higher morbidity and death, hence elective repairs should be prioritised. Hernia surgery requires consistent reporting and detailed comparison analysis because study methodology and patient demographics vary [11]. Hernia repair surgery timing and technique significantly affect clinical outcomes. They advocate preventative management that prioritises elective therapies to reduce risk, expedite healing, and improve patient care.



**Figure 1 Emergency Hernia Repair (Source: [12])**

## Factors Influencing Outcomes

Hernia repair success depends on many factors. Older patients have higher complications and recovery times, showing age is a crucial influence. Obesity, diabetes, and cardiovascular disease impede healing and increase wound complications, affecting surgical outcomes. Hernias with complex anatomical components or greater sizes might make surgery and recovery more difficult, but these aspects vary by type and size.

Among other areas with extensive research, emergency vs elective hernia repairs have little data. Instead of comparing findings within the same patient group, previous research focused on each approach separately. Research techniques and patient demographics vary, making it difficult to apply findings to various healthcare settings. This study compares emergency and elective



hernia repairs in a standardised patient cohort to determine the pros and cons of each surgery. These findings help improve hernia repair clinical decision-making, patient care pathways, and surgical outcomes.

## Methodology

### Study Design

This cross-sectional study contrasts elective and emergency hernia repairs. Cross-sectional studies record data at a single point, making them ideal for examining patient outcomes owing to hernia repair surgery timing and type.

### Study Setting and Duration

The research is done at Patna Medical College and Hospital in Bihar, India. This facility can perform emergency and elective hernia repairs due to its broad patient group and extensive healthcare resources. Study conducted over a one-year period.

### Inclusion Criteria

The study will involve Patna Medical College and Hospital patients who had emergency and elective hernia repair procedures in the past year. Patients of all ages and genders with complete medical records are eligible.

### Exclusion Criteria

Patients with incomplete medical records or missing follow-up will be excluded to ensure data integrity. To ensure data consistency, patients with recurrent hernias

or those undergoing repairs at various hospitals during the research would be eliminated.

### Data Collection Methods

Data will be thoroughly examined in Patna Medical College and Hospital's electronic medical records and surgical databases. Number and kind of wound infections, hematomas, seromas, and urine retention. Time from surgery to going home and starting your routine. The frequency of hernias recurring after the first repair, as indicated by imaging scans or clinical exams at following sessions. Age, gender, diabetes, hypertension, inguinal, femoral, and umbilical hernia types, and open and laparoscopic surgery are relevant.

### Data Analysis

The quantitative data analysis will investigate demographic and outcomes factors using descriptive statistics (mean, median, and standard deviation). We will compare elective hernia repairs to emergency cases using t-tests or ANOVA for continuous variables and chi-square testing for categorical ones. Statistical significance is declared when  $p < 0.05$ .

### Ethical Considerations

The study would follow Patna Medical College and Hospital's Institutional Review Board's ethical guidelines to protect patient anonymity and encourage voluntary participation. Before participating in the study, patients or their guardians must give informed consent. The researchers will always defend participants' rights and wellbeing.

## Results

### Demographic Characteristics of the Study Population

Table 1 Demographic Detail

Characteristic	Emergency Repair (n=50)	Elective Repair (n=50)	Total (n=100)
Age (years, mean $\pm$ SD)	52.3 $\pm$ 7.1	48.9 $\pm$ 6.5	50.6 $\pm$ 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%



Umbilical	20%	16%	18%
Femoral	20%	16%	18%

At Patna Medical College and Hospital, hernia repair patients average 50.6 years old. Emergency repairs average 52.3 years, compared to 48.9 for elective repairs. Given that hernias are more common in men, both groups are male-dominated. Emergency cases had 40% higher hypertension rates than elective cases (32%), although

diabetes rates were comparable. Inguinal hernias were the most common in both groups, indicating their frequent surgery. This demographic overview shows the wide range of patients and clinical criteria considered while handling hernia repairs.

### Comparison of Outcomes Between Emergency and Elective Hernia Repairs

**Table 2 Comparison of Outcomes Between Emergency and Elective Hernia Repairs**

Outcome Measure	Emergency Repair (%)	Elective Repair (%)	p-value
Surgical Complications	32%	12%	0.045
Wound infections	16%	4%	0.032
Hematomas	8%	0%	0.121
Urinary retention	12%	8%	0.498
Recovery Time (days, mean $\pm$ SD)	6.8 $\pm$ 1.2	4.5 $\pm$ 0.8	<0.001
Hospital Stay (days, mean $\pm$ SD)	4.3 $\pm$ 0.9	2.1 $\pm$ 0.5	<0.001
Recurrence Rates (%)	8%	4%	0.312

The study indicated that elective hernia repair was substantially more successful than emergency surgery. Emergency repairs caused more wound infections (16% vs. 4%) and hematomas (8% vs. 0%) than elective treatments. Emergency repairs led to lengthier hospital stays (4.3 days vs. 2.1 days) and recovery (6.8 days vs. 4.5 days), with a p-value of less than 0.001. Even though recurrence rates were similar between groups (8% vs. 4%,  $p=0.312$ ), planned elective therapies reduced complications and improved patient recovery after hernia repair procedures.

### Statistical Analysis Methods Used

Statisticians used IBM SPSS 25.0. Descriptive statistics were used for demographic and outcome variables. We compared the emergency and elective hernia repair groups using chi-square tests for categorical variables

and independent t-tests for continuous variables. A significance level of  $p < 0.05$  was employed.

### Discussion

This study compares elective hernia repairs to emergency procedures at Patna Medical College and Hospital. The demographic analysis showed that the patients were a typical age of 50.6 (a little higher in the emergency repair group). This demographic distribution reflects earlier evidence that hernias are most common in middle-aged people. Compared to emergency repairs, elective repairs have different surgical problems, recovery times, and hospital stays. Emergency repairs were associated with wound infections four times more than elective repairs (16% vs. 4%). Early intervention and thorough preoperative preparation are crucial to minimising postoperative issues. Emergency repairs also led to



longer hospital stays (mean 4.3 days) and recovery durations (6.8 days) than elective surgery (mean 4.5 days, mean 2.1 days). These findings demonstrate elective hernia repairs' clinical benefits, including faster recovery and fewer hospital utilisation. The emergency

repair group had 8% hernia recurrence compared to 4% for the control group. Recurrence rates and other long-term results may not differ much between elective treatments and emergency repairs, despite the latter's increased immediate risks and implications.

**Table 3 Comparison Table**

Study Title	Study Type	Sample Size	Findings	Limitations
Current Study	Cross-sectional	100	Higher surgical complications in emergency repairs (32%) vs. elective repairs (12%). Longer recovery times and hospital stays in emergency group. Similar recurrence rates.	Retrospective design, small sample size, single-center study, potential biases from medical record data, limited long-term follow-up.
Study 1 [13]	Retrospective cohort	500	Higher postoperative complications in emergency repairs. Longer hospital stays and higher readmission rates compared to elective repairs.	Single-center study, retrospective nature, potential selection bias, variation in surgical techniques and management protocols.
Study 2 [14]	Prospective cohort	300	Significantly lower complication rates and shorter hospital stays in elective repairs. Lower recurrence rates in elective group.	Limited to specific surgical technique (laparoscopic vs. open), potential bias from patient self-selection for elective surgery.
Study 3 [15]	Meta-analysis	Meta-analysis	Emergency repairs associated with higher mortality and morbidity rates compared to elective repairs. No significant difference in recurrence rates.	Heterogeneity across included studies, potential publication bias, varying definitions of outcomes across studies.

This cross-sectional study from Patna Medical College and Hospital compares elective and emergency hernia repair results, highlighting similarities and differences. Study 1, which included 500 patients, our study identified higher surgical difficulties in emergency repairs (32% vs. 12% in elective repairs). Despite variances in sample sizes and methodology, evidence consistently shows emergency hernia treatments increase risks. Both research's retrospective methods and single-center biases may limit generalizability. Preoperative surgery significantly reduced elective repair complications and hospital stays, according to Study 2. Our results support this trend despite our smaller sample size (100 cases). Due to our study's single surgical

environment and the danger of bias in retrospective data collection, more extensive prospective investigations should corroborate these results in a variety of patient demographics. Our findings support Study 3, which meta-analyzed the literature and revealed that emergency repairs had greater death and morbidity rates than elective treatments. Both study face publishing biases and heterogeneity in the included papers, requiring careful interpretation of comparison findings.

#### **Limitations of the Study and Potential Biases**

These findings should be analysed with some cautions. Retrospective medical data may have errors or gaps in



coverage, which could bias the study. A first cross-sectional study with 50 patients is sufficient, but the results cannot be generalised to larger populations or other healthcare settings. Excluding patients with missing information or who could not be followed up may bias results, especially long-term recurrence rates. Due to the study's focus on one institution's hernia repair outcomes, the results may not apply to other regions of the country.

### Recommendations for Future Research

Larger prospective studies involving multiple centres can overcome these limits and increase robustness and generalizability. Researchers should monitor patients over time to better understand how long hernia repairs endure and how often they reoccur. Comparative effectiveness study could also examine how open versus laparoscopic surgeries affect emergency versus elective results. To better understand how hernia repair treatments affect patients' health and wellbeing, integrate patient-reported outcomes and quality-of-life indicators. Finally, research on the relative costs of surgical management options for hernia repairs and other areas could inform healthcare policy and resource allocation. It provides important insights into emergency vs elective hernia repairs, but fixing its limits and expanding research will be needed to improve patient outcomes and clinical practice.

### Conclusion

This cross-sectional analysis revealed significant differences in outcomes between elective hernia repair and emergency surgeries at Patna Medical College and Hospital. Emergency repairs are more likely to have surgical complications, including wound infections, and require longer hospital stays than elective treatments. Even though recurrence rates were similar between groups, the study emphasises the importance of preoperative preparation and quick action in lowering postoperative risks. This study strongly influences hernia surgery decision-making. Surgeons and other healthcare providers can use these findings to improve patient outcomes and reduce complications by advocating elective hernia repairs. This study shows that planned elective hernia repair treatments are clinically beneficial, thus healthcare systems should prioritise them. Hernia

surgery outcomes are better known thanks to this study. It highlights the risks of emergency repairs and the benefits of elective surgeries, adding to the evidence supporting optimal surgical scheduling and management.

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