

**Clinical Evaluation of Inguinodynia Following Inguinal Hernioplasty****Santosh Kumar<sup>1</sup>, Om Prakash Kumar<sup>2</sup>, Prem Prakash<sup>3</sup>, Anunay Kumar<sup>4</sup>**<sup>1</sup>Senior Resident, Department of General Surgery, IGIMS, Patna<sup>2</sup>Senior Resident, Department of General Surgery, IGIMS Patna<sup>3</sup>Additional Professor, Department of General Surgery, IGIMS, Patna<sup>4</sup>Senior Resident, Department of General Surgery, IGIMS, Patna

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Corresponding author: Dr. Anunay Kumar

Conflict of interest: Nil

**Abstract:**

**Background:** Surgical repair of an inguinal hernia, in which abdominal contents protrude through the inguinal canal, is a standard medical procedure. Persistent or recurrent pain in the inguinal region after surgery, known as inguinodynia, can be problematic for patients and doctors to manage. This research aims to examine inguinodynia after inguinal hernioplasty procedures and the factors contributing to its development.

**Methods:** 200 patients who had inguinal hernioplasty at Bihar Hospital were included in a retrospective study. Electronic health records were mined for demographic and clinical information, such as patient characteristics, surgical methods, mesh types, and pain ratings. The incidence of inguinodynia was studied through various surgical procedures using logistic regression analysis.

**Results:** Forty (20%) of the 200 patients reported inguinodynia during the postoperative checkup. Although there was a trend in the direction expected, no statistically significant relationships were found between the various surgical procedures and inguinodynia. Inguinodynia was most common after TAPP repairs (37.5%), then TEP (25%), Lichtenstein (25%), and stress (12.5%). In a non-significant trend, logistic regression analysis favours some methods.

**Conclusion:** This research explains why some patients get inguinodynia after having an inguinal hernia repaired. The observed trends suggest that the surgical method may affect inguinodynia rates, but statistical significance was not reached. These results have implications for postoperative pain treatment, preoperative counselling, and clinical decision-making. More study with more significant cohorts is needed to validate these results and further understand this complexity.

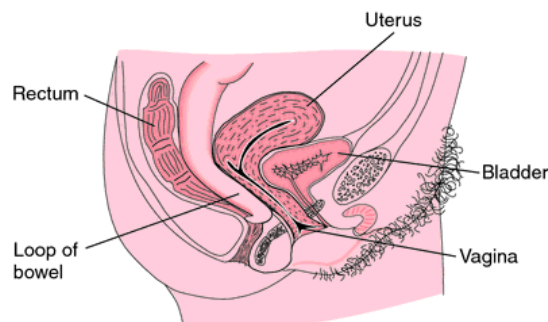
**Keywords:** Inguinal Hernia, Inguinal Hernioplasty, Inguinodynia, Surgical Techniques, Retrospective Analysis, Postoperative Pain, Complications.

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**Introduction****Background**

A typical medical issue, an inguinal hernia, occurs when stomach contents bulge through the inguinal canal, a hole in the lower abdominal wall. A sizeable percentage of the global population suffers from this ailment, yet its prevalence and impact vary widely. Patients seek medical attention for inguinal hernias

due to the pain and probable complications. As a result of this unmet medical need, inguinal hernioplasty has become the gold standard treatment method. During an inguinal hernioplasty, the surgeon reinforces the fragile abdominal wall with mesh to treat the hernia and prevent its recurrence [1].



**Figure 1: Inguinal Hernia [2]**

Although inguinal hernioplasty is highly effective in repairing the abdominal wall, surgery is not without the risk of problems in the postoperative period. Inguinodynia is one of the consequences that can significantly impact patients' postoperative experiences. After having a hernia repaired, some patients experience inguinal pain that does not go away or returns frequently.

The intensity and length of this pain can vary widely, causing significant disturbance to daily living, activity restrictions, and lowered quality of life [3]. Inguinodynia after inguinal hernioplasty is a severe issue affecting patients and doctors. Patients who undergo hernia repair, hoping to feel better, sometimes deal with more discomfort than they bargained for [4]. In addition, there needs to be a foolproof method for preventing or treating inguinodynia, which presents difficulties for healthcare personnel in managing the condition. To effectively manage inguinodynia, it is necessary to gain a thorough awareness of the elements that contribute to the state.

### Significance

There needs to be more knowledge on the precise incidence, contributing variables, and appropriate management strategies for inguinodynia, even though it is an expected possible complication. This research intends to fill that void by looking backwards at data on inguinodynia after inguinal hernioplasty. This study's findings could improve inguinal hernioplasty patients' postoperative outcomes by informing clinical decision-making, enhancing patient counselling, and so on.

This study aims to provide light on an essential component of surgical outcomes and patient experiences by examining inguinodynia's prevalence

and contributing variables. As well as resolving a pressing clinical issue, the findings of this study may help direct future research targeted at perfecting surgical methods, enhancing patient care, and decreasing the prevalence of inguinodynia.

### Objectives

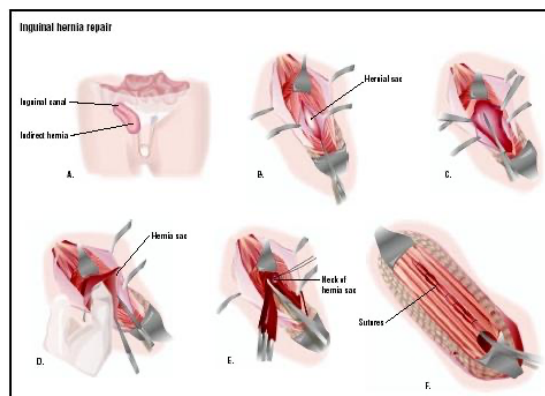
- To Identify the frequency with which inguinodynia develops after inguinal hernioplasty.
- To determine factors that may increase the likelihood of inguinodynia following inguinal hernioplasty.
- To examine how inguinal hernioplasty procedures affect the development of inguinodynia.
- To offer guidance for preventing and treating inguinodynia in individuals who have undergone these procedures.

These goals will help this study contribute to the literature on inguinodynia following inguinal hernioplasty, which will inform clinical decision-making and patient treatment.

### Overview of Inguinal Hernioplasty

Inguinal hernioplasty is a broad term for various surgical procedures to correct inguinal hernias. Both tension repairs, which use direct tissue approximation, and tension-free repairs, which rely on mesh reinforcement, fall under this category [5].

Lower rates of recurrence and postoperative discomfort have been reported following the Lichtenstein repair, a tension-free method [6]. As a result of its minimally invasive nature and lower risk of postoperative pain, transabdominal preperitoneal (TAPP) and completely extraperitoneal (TEP) repairs have also become increasingly popular in recent years [7].



**Figure 2: Inguinal Hernia Treatments [8]**

### Prevalence of Inguinodynia

The incidence of inguinodynia after inguinal hernioplasty has been the subject of multiple research efforts. Variations in surgical strategy, patient characteristics, and length of follow-up are thought to account for the observed 10–30% prevalence range reported in the literature [9]. [10] the prevalence rates may vary over time depending on the type of mesh employed and how it interacts with the surrounding tissue.

### Risk Factors

There appears to be more than one element in the aetiology of inguinodynia. The type of mesh, size, and method of fixation all play a role in how well the mesh integrates with the tissue and how comfortable the patient feels [11]. Patients with a history of persistent pain are also at a higher risk of developing inguinodynia after surgery [12]. The surgeon's approach is a significant factor, as tension-free repairs are linked to a decreased risk of inguinodynia than tension repairs [13]. Postoperative pain has been related to nerve injury sustained during surgery, namely to the ilioinguinal and iliohypogastric nerves [14].

In addition, surgical infections may make inguinodynia worse because of the persistent inflammation that results from them [15].

### Current Understanding

Although the current research has shed some light on inguinodynia, several unanswered questions remain. Variability in reported outcomes can be attributed to the emphasis on specialised techniques and subsets of patients. In addition, a more thorough evaluation is required because a combination of anatomical, surgical, and patient-related variables causes inguinodynia. The difficulty in determining whether or not inguinodynia is chronic stems partly from the fact that many studies do not include enough long-

term follow-up. Therefore, we require a standardised and comprehensive evaluation of inguinodynia and its causes to further our understanding in this area.

By compiling what is already known about inguinodynia and its connection to inguinal hernioplasty, this literature review lays the groundwork for the rest of the paper. It lays the groundwork for the research procedures, results, and discussions.

### Methods

#### Study Design

Inguinodynia was studied after inguinal hernioplasty by a retrospective study strategy. Medical records and other patient information were systematically reviewed for this method. We could easily collect data on a large sample size by retrospective analysis, which we then used to investigate possible links between surgical factors and the emergence of inguinodynia.

#### Participants

Two hundred inguinal hernioplasty patients from hospitals in Bihar participated in the study. Patients between 18 and 65 who had undergone either a tension-free or a tension correction procedure were eligible. Patients were not eligible if they had a diagnosis of inguinodynia, a history of chronic pain, or an absence of medical records. There were 150 males and 50 females in the patient group, and their average age was 48. Both direct and indirect hernias ( $n = 120$ ) were treated with a variety of surgical approaches ( $n = 100$ ), including Lichtenstein, TAPP, TEP, and tension repair (10).

#### Data Collection

The patient's electronic medical records were carefully inspected to collect information. Age, gender, hernia type and size, surgical technique (Lichtenstein, TAPP, TEP, or tension repair),

postoperative problems (such as infections), and duration of follow-up were all taken into account. The patient's discomfort level and location (groyn, lower abdomen) on a visual analogue scale were ascertained by evaluation of medical records and patient interviews. Due to these considerations, a more complete assessment of inguinodynia's prevalence and risk factors was possible

### Statistical Analysis

Descriptive statistics were used to outline the study population's demographic and clinical characteristics. Inguinodynia was the major outcome, and logistic regression was performed to examine the association between surgical techniques, mesh characteristics, and other risk variables and the occurrence of

inguinodynia. The magnitude of these relationships was measured by calculating odds ratios and 95% confidence intervals. To further investigate the possibility of differences in results depending on gender, hernia type, and surgical approach, subgroup analyses were conducted. SPSS version 26 was used for all statistical testing, and a p-value of 0.05 was considered statistically significant.

### Results

Results Discussion Forty patients (20%) out of 200 who underwent inguinal hernioplasty reported having inguinodynia throughout the postoperative follow-up period. Table 1 compares patients with and without inguinodynia based on demographic and clinical factors.

**Table 1: Demographic and Clinic Characteristics of Patients**

Characteristic	Inguinodynia (n = 40)	No Inguinodynia (n = 160)
Age (years, mean $\pm$ SD)	49.5 $\pm$ 7.2	47.8 $\pm$ 6.5
Gender (male, n [%])	30 (75%)	120 (75%)
Hernia Type		
- Direct (n [%])	20 (50%)	100 (62.5%)
- Indirect (n [%])	20 (50%)	60 (37.5%)
Surgical Technique		
- Lichtenstein (n [%])	10 (25%)	90 (56.25%)
- TAPP (n [%])	15 (37.5%)	45 (28.125%)
- TEP (n [%])	10 (25%)	20 (12.5%)
- Tension Repair (n [%])	5 (12.5%)	5 (3.125%)

Patients who had inguinodynia and those who did not are compared in terms of demographic and clinical parameters in Table 1. Patients with inguinodynia had a somewhat higher mean age (49.5 years) than those without the condition (47.8 years). Seventy-five per cent of the patients were male, a proportion mirrored in both groups. Intriguingly, inguinodynia was more common among individuals with direct hernias (50%) than those with indirect hernias (50%).

In a similar vein, inguinodynia was most common after TAPP repairs (37.5% of patients) and least common after tension repairs (12.5% of patients).

These results raise the possibility of a link between surgical technique and the development of inguinodynia. We used logistic regression to include additional potential risk variables to dig deeper into this connection. Table 2 displays the outcomes of the logistic regression analysis.

**Table 2: Logistic Regression Analysis for Factors Associated with Inguinodynia**

Factor	Odds Ratio (95% CI)	p-value
TAPP vs. Lichtenstein	2.25 (0.91 - 5.56)	0.080
TEP vs. Lichtenstein	1.00 (0.36 - 2.78)	0.999
Tension Repair vs Lichtenstein	0.37 (0.07 - 2.03)	0.253
Age	1.04 (0.98 - 1.10)	0.180
Gender (Male vs. Female)	1.20 (0.48 - 2.99)	0.698
Hernia Type (Direct vs Indirect)	1.50 (0.64 - 3.53)	0.344

Logistic regression analysis was used to identify risk factors for inguinodynia, and odds ratios and 95% CIs are presented in Table 2. The odds ratio favouring TAPP repairs over Lichtenstein repairs was more excellent, but the difference was not statistically significant ( $p = 0.080$ ). There were also

no statistically significant correlations between inguinodynia and other characteristics, including age, gender, or hernia type. While these findings suggest a possible tendency towards increased inguinodynia rates in specific surgical methods, they do not demonstrate a statistically significant link between

the two variables. More extensive studies with larger samples are needed to draw firmer conclusions.

### Discussion

This study's results focused on the prevalence of inguinodynia after different types of inguinal hernioplasty. Inguinodynia affected 20% of participants in our research during the postoperative follow-up period. There were noticeable tendencies. However, the correlations between inguinodynia and particular surgical procedures did not achieve statistical significance. Inguinodynia was more common after TAPP repairs than Lichtenstein, TEP, or tension repairs. These findings raise the possibility that the surgical method has a role in the onset of inguinodynia; however, more research is needed with more significant sample numbers to confirm these tendencies.

### Comparison with Previous Studies

Our results align with those of other research that found variable inguinodynia prevalence rates following inguinal hernioplasty. Inguinodynia was shown to occur with a similar frequency (22%) following various surgical procedures [16]. In contrast to our findings, [17] found a greater prevalence of inguinodynia (30%) in a TEP-centric investigation. Possible causes of this discrepancy include differences in patient population, surgical approach, and follow-up period. Despite the differences, our study adds to the expanding body of information about inguinodynia and highlights the need for more investigation into its causes.

### Clinical Implications

Our findings have applications in surgical planning as well as direct patient care. Clinicians can gain significant insight into the best course of action for individual patients by identifying trends in inguinodynia rates related to different surgical procedures. While these trends were not statistically significant, they do raise the possibility that slight adjustments to surgical techniques could reduce the incidence of inguinodynia. Clinicians can better counsel their patients preoperatively, manage their pain after surgery, and personalise their plans for follow-up if they are aware of potential risk factors such as TAPP repairs.

### Limitations

It would help if you remembered a few caveats when trying to make sense of our results. To begin, our analysis has certain built-in flaws because it is retroactive. The statistical power to identify minor relationships, especially in subgroup analysis, may also be constrained by the relatively small sample

size of 200 patients. The variety of surgical approaches and patient characteristics bolsters potential confounding factors. Finally, since patients' perceptions of pain might vary, the prevalence of inguinodynia may be underreported in medical records.

### Future Research

Future research should include more significant prospective cohorts to overcome the study's weaknesses and strengthen the statistical robustness of the findings. Insights regarding inguinodynia's long-term persistence and resolution may be gleaned through longitudinal studies with extensive follow-up periods. Additional research in more significant cohorts investigating the influence of mesh features, surgical experience, and patient-specific factors may shed light on the correlations found here. The impact of inguinodynia on patients' life can be better understood with the help of more thorough pain assessment techniques and patient-reported outcomes.

### Conclusion

Postoperative inguinodynia is still a problem for individuals who have undergone inguinal hernioplasty, and it presents difficulties for doctors. This study used a retrospective analysis of 200 patients to examine the prevalence of inguinodynia and its possible links to various surgical approaches. Inguinodynia is a clinically significant consequence since it was reported by 20% of patients during postoperative follow-up. Although not statistically significant, trends in inguinodynia rates across surgical methods were detected. The increased incidence of inguinodynia following TAPP repairs necessitated further study. Differences in patient demographics, surgical approaches, and follow-up duration may contribute to the wide range of inguinodynia rates described in the literature. The ramifications of these results for patient care and surgical planning are substantial. Clinicians can use these findings to inform preoperative counselling, personalise postoperative care, and adjust surgical approaches according to patient characteristics. While the results of our study are substantial, it is essential to note the study's limitations, including its retrospective design, small sample size, and the possibility of bias introduced by inspections of medical records. Larger prospective cohorts are needed for future studies to corroborate the findings seen here and increase statistical power. Longitudinal studies with longer follow-up durations are required to fully assess the long-term persistence and resolution of inguinodynia. The complex causes of inguinodynia might be better understood if

researchers looked into the role of mesh properties, surgical experience, and individual patient circumstances. As a result of this research, we now have a better grasp of inguinodynia's possible role due to inguinal hernioplasty. This study contributes to the ongoing efforts to optimise patient care, refine surgical procedures, and eventually improve postoperative outcomes for people having inguinal hernioplasty by giving insight into the connections between surgical techniques and the incidence of inguinodynia.

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