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Original Research Paper

Pharmacy

INGUINAL HERNIA: PAIN EVALUATION AND PHARMACOKINETIC APPROACHES TO MANAGE PAIN

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ABSTRACT

Background: An inguinal hernia occurs when tissue, such as part of the intestine, protrudes through a weak spot in the abdominal muscles. It often appears as a bulge in the groin area and can cause discomfort or pain. Inguinal hernia repair is one of the most frequently performed surgical procedures, totalling more than 20 million procedures in the world. **Objective:** The objective of this study was to assess pain intensity and pharmacokinetic approaches for pain management in patients undergoing hernioplasty surgery, with a specific focus on demographic characteristics, preoperative medication practices, and postoperative pain experiences. **Methodology:** A prospective analysis was conducted at the surgery ward of Government Cuddalore Medical College Hospital, involving 45 patients who underwent hernioplasty surgery for inguinal hernia repair. Demographic data, including age and occupation, were collected, with the highest representation observed among farmers and construction workers. Preoperative medication practices, including the administration of oral and intravenous paracetamol, were documented. **Results:** The study revealed that 78% of the patients were above the age of 50, with farmers comprising the largest occupational group (19 patients), followed by construction workers (15 patients). Preoperative medication practices demonstrated high adherence to oral paracetamol (89%), with a subset of patients receiving intravenous paracetamol (11%). Postoperatively, 28 out of 45 patients experienced severe pain on the first day following surgery, as assessed by the VAS. Pharmacological interventions for postoperative pain relief included intravenous diclofenac (77%) and tramadol (14%). **Conclusion:** In conclusion, effective pain management is crucial for optimizing surgical outcomes and enhancing patient satisfaction following hernioplasty surgery for inguinal hernia repair. Tailored pain management protocols, incorporating both preoperative and postoperative pharmacological interventions, are essential for addressing the diverse needs of patients, particularly in older age groups and those engaged in physically demanding occupations.

KEYWORDS : Inguinal hernia, Pre operative pain, Post operative pain, VAS [Visual Analogue Scale]

INTRODUCTION

An inguinal hernia occurs when tissue, such as part of the intestine, protrudes through a weak spot in the abdominal muscles. It often appears as a bulge in the groin area and can cause discomfort or pain. Inguinal hernia repair is one of the most frequently performed surgical procedures, totalling more than 20 million procedures in the world[1]. Inguinal hernias account for 75% of abdominal wall hernias, with a lifetime risk of 27% in men and 3% in women. Ninetyfive per cent of patients presenting to primary care are male. Most cause mild to moderate discomfort that increases with activity[2]. Most of the patients scheduled for surgery have no pain, and severe pain is uncommon (1.5% at rest and 10.2% on movement). Inguinal hernias can be caused by a combination of factors, including: Weakness or/and pressure in the abdominal muscles, aging, gender (more common in men) etc...

The primary treatment for an inguinal hernia is surgical repair (Hernioplasty). In some cases, especially if the hernia is small and not causing symptoms, watchful waiting may be recommended, with regular monitoring by a healthcare professional to ensure the hernia does not become larger or more symptomatic. However, surgery is usually the preferred treatment to prevent complications such as incarceration or strangulation of the hernia contents, which can be serious and require emergency surgery[3].

Postoperative inguinodynia or chronic postoperative inguinal pain (CPIP) is defined as new-onset groin pain and is a growing problem between patients who undergo surgical repair of an inguinal hernia[4].

Pain after open hernia surgery can be moderate to severe and may be associated with prolonged hospital stay, unanticipated hospital admission and delayed return to normal daily activities[5]. Multiple approaches, including pharmacological interventions, have been used to manage pain after hernia surgery, but optimal evidence-based pain therapy remains unknown. This information included pain scores, supplementary analgesic use, the time to first analgesic request, functional outcomes and adverse effects. It was assumed that the postoperative pain scores were assessed at rest, unless otherwise specified in the study report[6].

In this study, Pain scores were evaluated by using VAS (Visual Analogue Scale) Pain ratings on a 1–100-mm visual analogue scale (VAS): score 30 or less, low-intensity pain; over 30 but less than 50, moderate-intensity pain; 50 or more, high-intensity pain[7].

Conventional non-steroidal anti-inflammatory drugs or cyclo-oxygenase 2-selective inhibitors in combination with paracetamol, administered in time to provide sufficient analgesia in the early recovery phase, are optimal. In addition, weak opioids are recommended for moderate pain, and strong opioids for severe pain, on request[8].

OBJECTIVES

1. To evaluate the severity of pain associated with inguinal hernia among patients admitted in Government Cuddalore Medical College and Hospital.
2. To determine the pharmacotherapeutic approaches employed for managing pain in patients with inguinal hernia within the hospital setting.
3. To investigate demographic details, Socioeconomic factors and patient outcomes.

MATERIALS AND METHODOLOGY:

The study was conducted at the surgery ward of Government Cuddalore Medical College Hospital, focusing on patients undergoing hernioplasty surgery for inguinal hernia repair. A total of 45 patients were included in the study, with a demographic profile revealing that the majority (78%) were above the age of 50. Occupational distribution highlighted the prevalence of farmers (19 patients) and construction workers (15 patients), shedding light on the potential impact of physical labor on hernia development and postoperative pain experiences.

Preoperative medication administration was meticulously documented, with 89% of patients receiving oral paracetamol (500mg) as a standard analgesic regimen. Additionally, 11% of patients received intravenous paracetamol (1g), indicating a subset of individuals with more severe preoperative pain or contraindications to oral medication. This underscores the importance of tailoring preoperative pain management strategies to individual patient needs and clinical presentations.

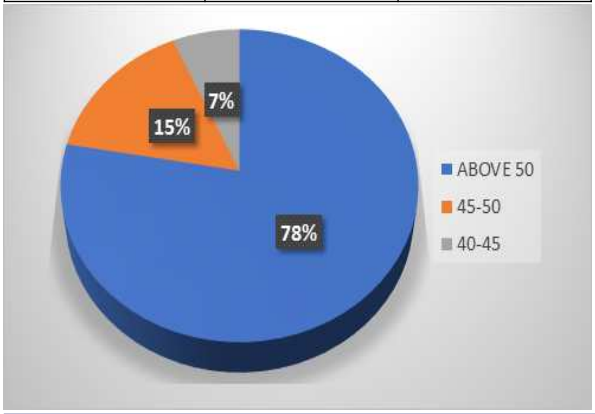
Postoperatively, pain intensity was assessed using the visual analogue scale (VAS), revealing that 28 out of 45 patients experienced severe pain on the first day following surgery. This highlights the significant burden of postoperative pain in this patient population and underscores the need for effective pain management interventions.

Pharmacological interventions for postoperative pain relief were analyzed, with the majority of patients receiving intravenous diclofenac (77%) and a minority receiving tramadol (14%). Diclofenac, a nonsteroidal anti-inflammatory drug (NSAID), is known for its potent analgesic and anti-inflammatory properties, making it a preferred choice for managing moderate to severe postoperative pain. The relatively low utilization rate of tramadol may reflect concerns regarding opioid-related adverse effects and the preference for non-opioid analgesics in this setting.

RESULTS

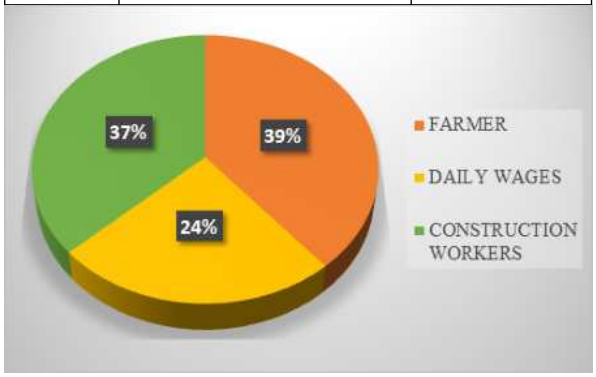
Age Wise Distribution

S. NO	AGE	NO OF PATIENTS
1.	ABOVE 50	35
2.	45-50	7
3.	40-45	3



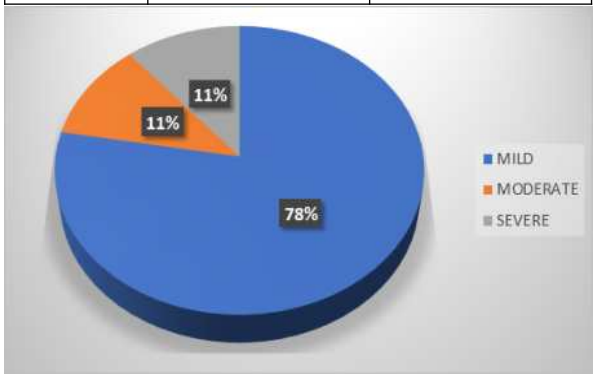
Occupation Of Patients

S.NO	OCCUPATION	NO OF PTS
1.	FARMER	18
2.	DAILY WAGES	10
3.	CONSTRUCTION WORKER	18



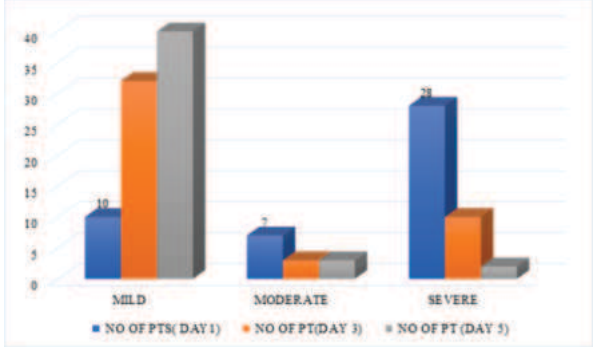
Pre-operative Pain Evaluation Using VAS Scale

S.NO	PAIN SEVERITY	NO OF PTS
1.	MILD	35
2.	MODERATE	5
3.	SEVERE	5

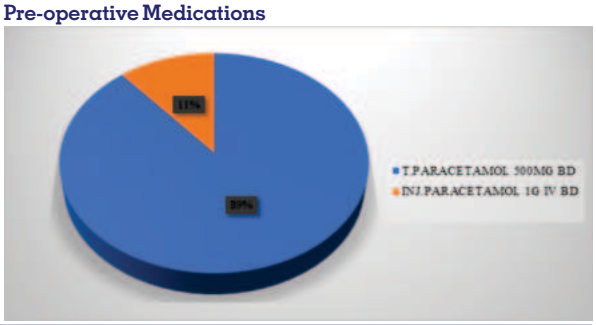


Post-opeartive Pain Evaluation Using Vas Scale

S.NO	PAIN SEVERITY	DAY1	DAY3	DAY5
1.	MILD	10	32	40
2.	MODERATE	7	3	3
3.	SEVERE	28	10	2



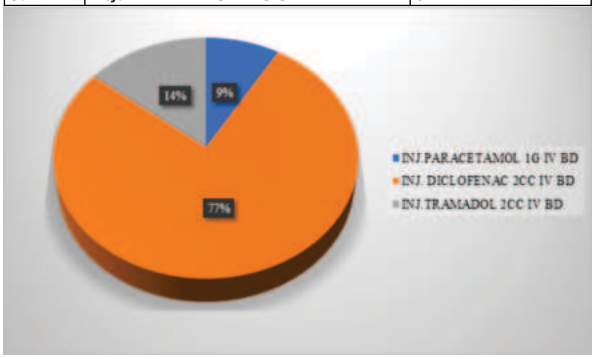
Pre-operative Medications



S.NO	MEDICATIONS	DRUGS
1.	T. PARACETAMOL 500MG BD	40
2.	INJ.PARACETAMOL 1G IV BD	5

Post-operative Medications

S.NO	MEDICATIONS	NO OF PATIENTS
1.	INJ.PARACETAMOL 1G IV BD	3
2.	INJ.DICLOFENAC 2CC IM BD	27
3.	INJ.TRAMADOL 2CC IM BD	5



DISCUSSION

The findings of this study shed light on the demographic characteristics, preoperative medication practices, and postoperative pain experiences of patients undergoing hernioplasty surgery for inguinal hernia repair. The predominance of patients above the age of 50 underscores the age-related risk factors associated with inguinal hernia development, highlighting the importance of targeted screening and management strategies in older adults.

Occupational distribution revealed a significant representation of farmers and construction workers, suggesting a potential association between physical labor and hernia development. Future studies may explore occupational risk factors in more depth to inform preventive measures and occupational health interventions aimed at reducing the incidence of inguinal hernias in high-risk populations.

Preoperative pain management practices primarily consisted of oral and intravenous paracetamol administration, with a high adherence rate observed for the oral formulation. However, the significant proportion of patients experiencing severe pain postoperatively indicates the need for more robust pain management protocols, potentially incorporating multimodal analgesia strategies to optimize pain control and improve patient outcomes.

The utilization of intravenous diclofenac as the primary analgesic agent postoperatively reflects its established efficacy in managing moderate to severe pain and underscores its role as a cornerstone of postoperative pain management protocols. However, the relatively low utilization rate of tramadol suggests a cautious approach to opioid prescribing, possibly driven by concerns regarding opioid-related adverse effects and the potential for dependence.

Overall, the findings highlight the multifaceted nature of inguinal hernia pain management and underscore the importance of tailored approaches that account for patient demographics, occupational factors, and individual pain experiences. Further research is warranted to explore alternative analgesic modalities and optimize pain management protocols to enhance patient outcomes and satisfaction following hernioplasty surgery. Additionally, prospective studies may investigate the long-term efficacy and safety of different analgesic agents in this patient population to inform evidence-based clinical practice guidelines.

CONCLUSION

In conclusion, effective pain management for inguinal hernia patients requires a tailored approach. While preoperative mild pain can be managed with drugs like paracetamol, the postoperative period often presents challenges, with severe pain commonly experienced on the first day. Utilizing pharmacotherapeutic interventions such as diclofenac can effectively alleviate postoperative pain, thereby improving patient comfort and facilitating recovery. However, further research is warranted to explore additional strategies for optimizing pain management in this patient population.

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