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### RESEARCH ARTICLE

#### EFFECTIVENESS OF DICLOFENAC SUPPOSITORY AS AN ANALGESIC IN REDUCING POST- OPERATIVE URINARY RETENTION AFTER INGUINAL HERNIA REPAIR

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#### Manuscript Info

##### Manuscript History

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#### Abstract

**Background:** Inguinal hernia repair is a common surgical procedure associated with various postoperative complications, including postoperative urinary retention (POUR). The incidence of POUR varies significantly, affecting up to 22% of patients. This complication can prolong hospital stay, increase patient discomfort, and result in additional medical interventions. Diclofenac, a non-steroidal anti-inflammatory drug (NSAID), is often used for pain relief and has been hypothesized to reduce the incidence of POUR by alleviating postoperative pain and sympathetic nervous system stimulation. This study aimed to assess the efficacy of diclofenac suppository in preventing POUR following inguinal hernia repair.

**Objectives:** The primary objective of this study was to evaluate whether the use of diclofenac suppositories reduces the incidence of postoperative urinary retention in patients undergoing inguinal hernia repair.

**Methods:** A prospective cohort study was conducted at the Government Medical College Kozhikode, including 108 patients undergoing elective unilateral inguinal hernia repair under local or spinal anesthesia. Patients were randomly divided into two groups: one group received diclofenac suppositories postoperatively, while the other did not. The incidence of POUR was the primary outcome measure, and patients were monitored for urinary retention post-surgery. Data were collected and analyzed using SPSS software, employing Chi-square tests to determine statistical significance.

**Results:** Out of 108 patients, 10 experienced postoperative urinary retention, with 4 (7.4%) from the diclofenac suppository group and 6 (11.1%) from the non-diclofenac group. The analysis revealed no statistically significant difference in the incidence of POUR between the two groups ( $p$ -value = 0.506). The lack of significance might be attributed to the relatively small sample size or other confounding factors.

**Conclusions:** The study concluded that the use of diclofenac suppositories does not significantly reduce the incidence of postoperative urinary retention in patients undergoing inguinal hernia repair. While a trend towards lower incidence was observed in the diclofenac group, the difference was not statistically significant. The results indicate that factors such as sample size, patient selection, and

anesthesia type may influence outcomes, and further research with larger populations is warranted to confirm these findings.

**Implications:** The findings suggest that diclofenac suppositories may not be effective in preventing postoperative urinary retention in inguinal hernia repair, highlighting the need for alternative strategies and further investigation into perioperative management practices to mitigate this complication. Future studies should focus on larger sample sizes and consider additional variables that may affect POUR incidence.

**Discussion:** The present study which was done on 108 patients who underwent unilateral inguinal hernia repair under local or spinal anesthesia was completed within stipulated time and the data collected were entered and analyzed using SPSS software and the results were tabulated as below.

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## **Introduction:-**

Postoperative urinary retention (PUR)<sup>1</sup>, the failure to void spontaneously after surgery thus requiring bladder catheterization, is a well-recognized complication of herniorrhaphy with reported rates of incidence varying widely, ranging from 0.37 to 22%<sup>2</sup>. Although often viewed as a minor complication, PUR can cause anxiety, discomfort, and subject patients to additional procedures (i.e., catheterization) for relief. These procedures can prompt subsequent risks of urethral trauma, detrusor muscle damage, catheter-related infections, delay in discharge or possible admission, and increased costs. When PUR is diagnosed in a timely fashion, patients typically undergo catheter decompression in the recovery room. However, patients who are unable to void after discharge may need to be evaluated in the Emergency Department (ED) with subsequent readmission and urology consultation. Diclofenac<sup>3</sup> is a non-steroidal anti-inflammatory drug used to treat pain and inflammatory diseases. It is taken as an oral tablet or kept rectally as a suppository. Its primary mechanism of action is to inhibit COX-1 and COX-2 with relative equipotency. Different methods were used to prevent post-operative urinary retention, administration of alpha blockers<sup>4</sup> preoperative catheterization<sup>5</sup>. Diclofenac suppository achieves its maximum plasma concentration within two hours and is maintained for up to 12 hours<sup>6</sup>. In this study a single dose of diclofenac suppository(100mg) is used in the postoperative period, preferably within 2 hours of skin closure. This study hypothesizes that Diclofenac suppository would reduce postoperative urinary retention in patients undergoing inguinal hernia surgery. Diclofenac suppository has shown positive results in reducing postoperative urinary retention when used after hemorrhoidectomy<sup>7</sup>.

## **Aims and Objective:-**

To study the efficacy of Diclofenac suppository in preventing post-operative urinary retention in patients undergoing elective inguinal hernia repair

## **Methodology:-**

### **Study Design**

Hospital based Prospective Cohort

### **Study Setting:**

Patients of Government medical college Kozhikode presenting in General Surgery

Department with Inguinal Hernia undergoing Lichtenstein tension free mesh repair

### **Study Period**

12 months from the date of getting ethical clearance (2023 – 2024)

### **Inclusion Criteria**

1. Patients of age 20-55 years
2. Patients undergoing unilateral hernia repair

**Exclusion Criteria**

1. Patients with hypersensitivity to Diclofenac
2. Contraindications to Diclofenac suppository

**a. NYHA class II-IV b. ischemic heart disease**

1. c. peripheral arterial disease
2. Prostatomegaly grade 2 and above
3. Undergoing bilateral repair
4. Hernia with bladder as content
5. Surgery duration more than 55 minutes.
6. Undergoing repair under GA
7. Emergency cases

**Study Population**

108 patients of either sex of age 20-55 years undergoing elective unilateral inguinal hernia repair

1. **SAMPLE SIZE**
2. Sample size is calculated,
3. Using the formula:
4.  $N = 4 * P * Q / L * L$
5.  $P = \text{prevalence of post-operative urinary retention after inguinal hernia repair} = 22\%$
6.  $Q = 100 - 22 = 78\%$
7.  $N = 108$

**Sampling Procedure**

Convenience sampling

**Methodology:-**

After the approval from institutional research committee and institutional ethics committee, written informed consent will be obtained from the patients taking part in the study. This prospective Cohort study will be conducted in 108 patients of either sex of age 20-55 years, satisfying inclusion and exclusion criteria. Study population is divided into two groups of 54, one with Diclofenac suppository in postoperative period and other group without rectal suppository. Diclofenac suppository is used within 2 hours of skin closure as a single dose of 100mg. Post-operative urinary retention will be assessed as inability to void urine normally after 6 hours of surgery with patient complaining of inability to void and which requires urinary catheterization. Participants will be asked to void normally within one hour of skin incision. After completion of the procedure, diclofenac suppository will be given to one group (within 2 hours of skin closure) and the other group will not be given suppository and are asked to void and the study hypothesize that diclofenac suppository group will have lesser incidence of post operative urinary retention compared to the other group.

**Data Analysis**

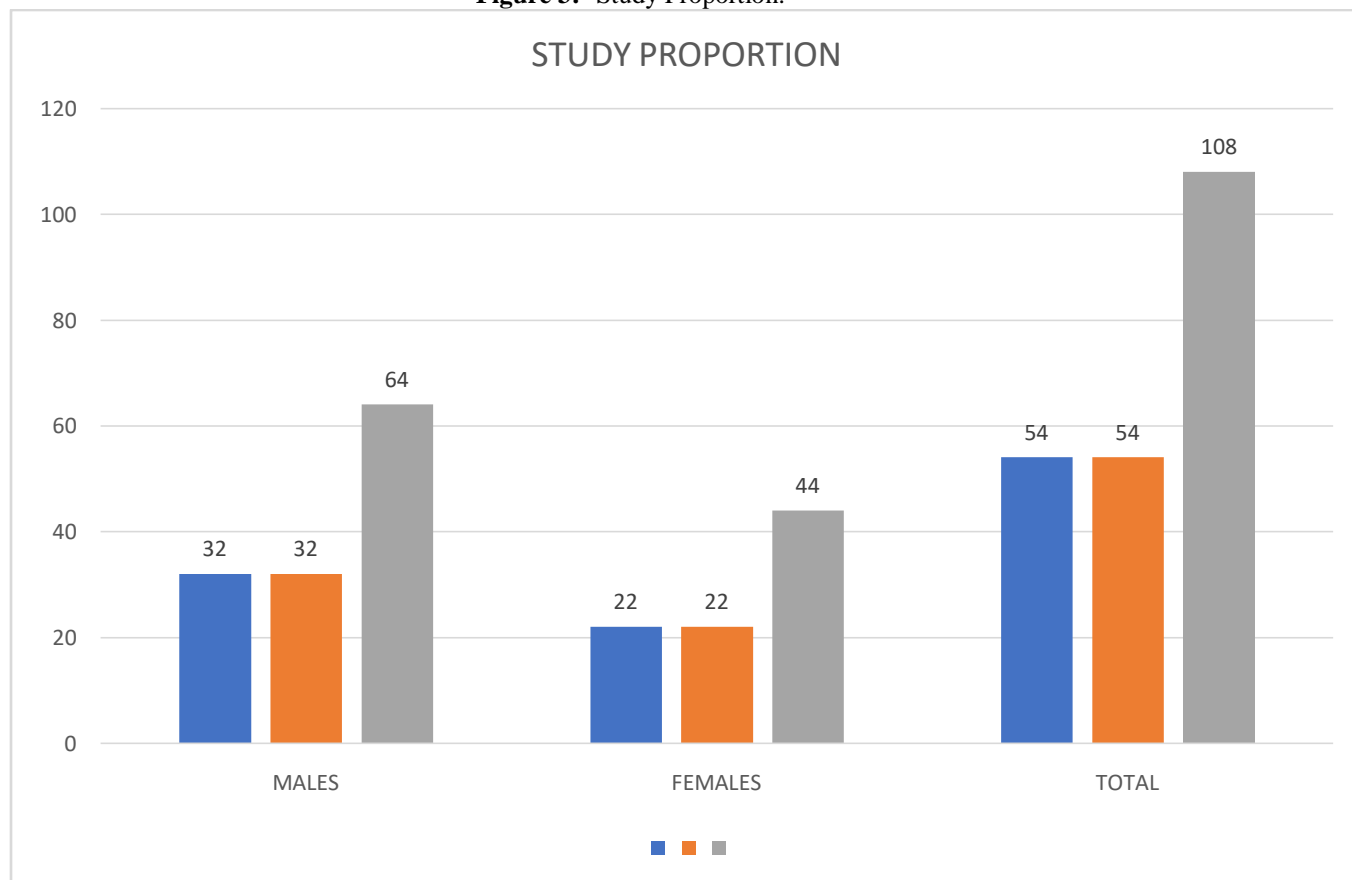
Data was entered into an excel sheet. Data analysis was done using SPSS software. Categorical variables were expressed in percentages and continuous variables were expressed as medians. A p value of 0.05 or less was considered statistically significant. Categorical and continuous variables were compared using chi-square test.

**Ethical Considerations**

1. The study will be conducted only after Institutional Research Committee & Institutional Ethical committee clearance is obtained.
2. Informed written consent will be obtained from participants.
3. Subjects will have full freedom to exit the study at any time.
4. Patients will not have to bear any expenses for the study.
5. Confidentiality will be ensured and maintained throughout the study
6. The present study consisted of 108 patients undergoing elective unilateral inguinal hernia repair under local or spinal anesthesia in government medical college Kozhikode. They were divided into two groups randomly with 54 patients in each group. The following observations were made from the data collected

**Study proportion****Table 1:-** Study Proportion.

	DICLOFENAC GROUP	NO DICLOFENAC	TOTAL
MALES	32	32	64
FEMALES	22	22	44
TOTAL	54	54	108

**Figure 3:-** Study Proportion.

Above data shows that, out of 54 patients in diclofenac group and no suppository group 22 are female accounting for 40% of patients

**Age distribution****Table 2:-** Age distribution.

AGE (in years)	Urinary retention	No urinary retention	Total
20-32	1	7	8
33-43	1	25	26
44-55	8	66	74

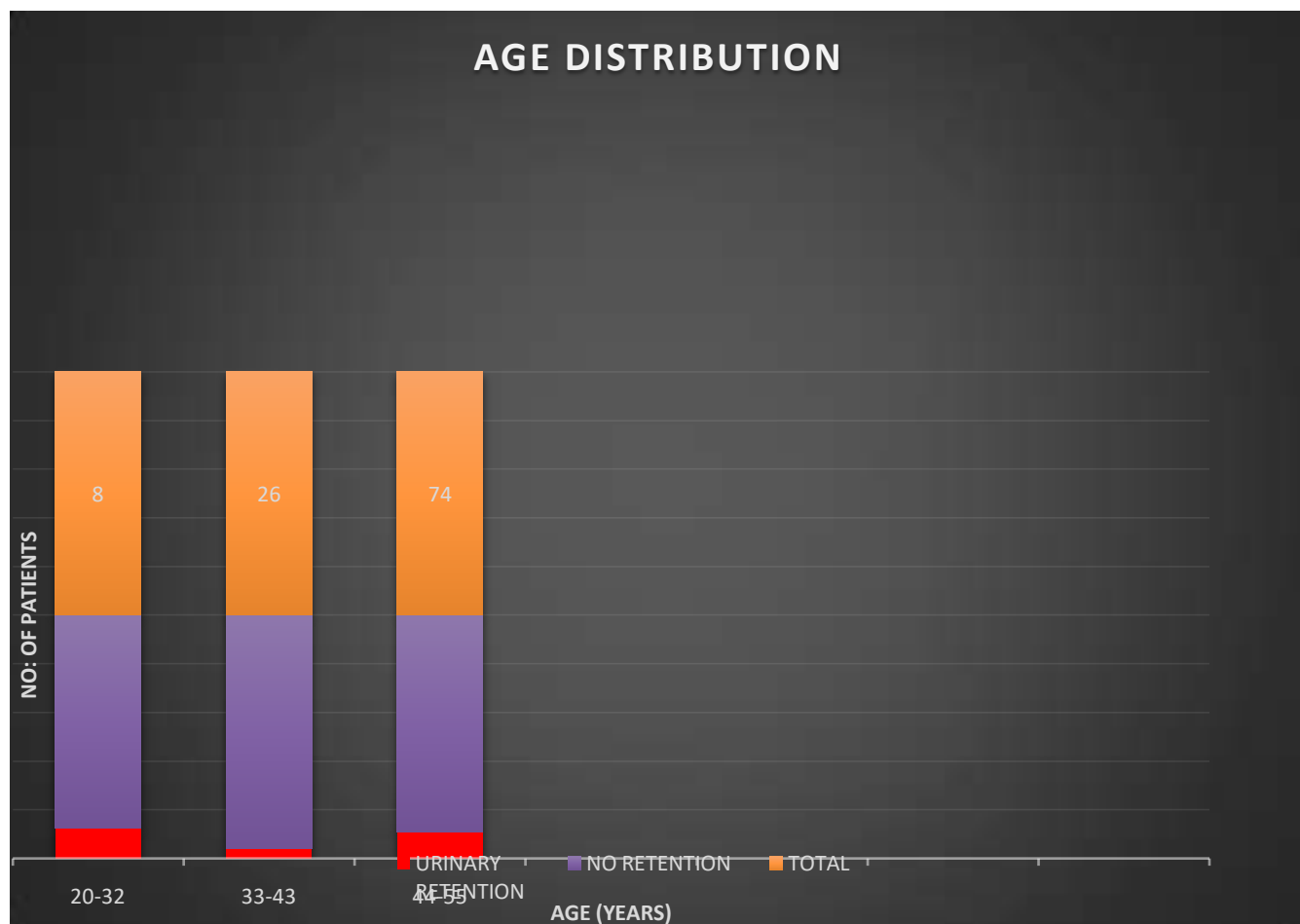


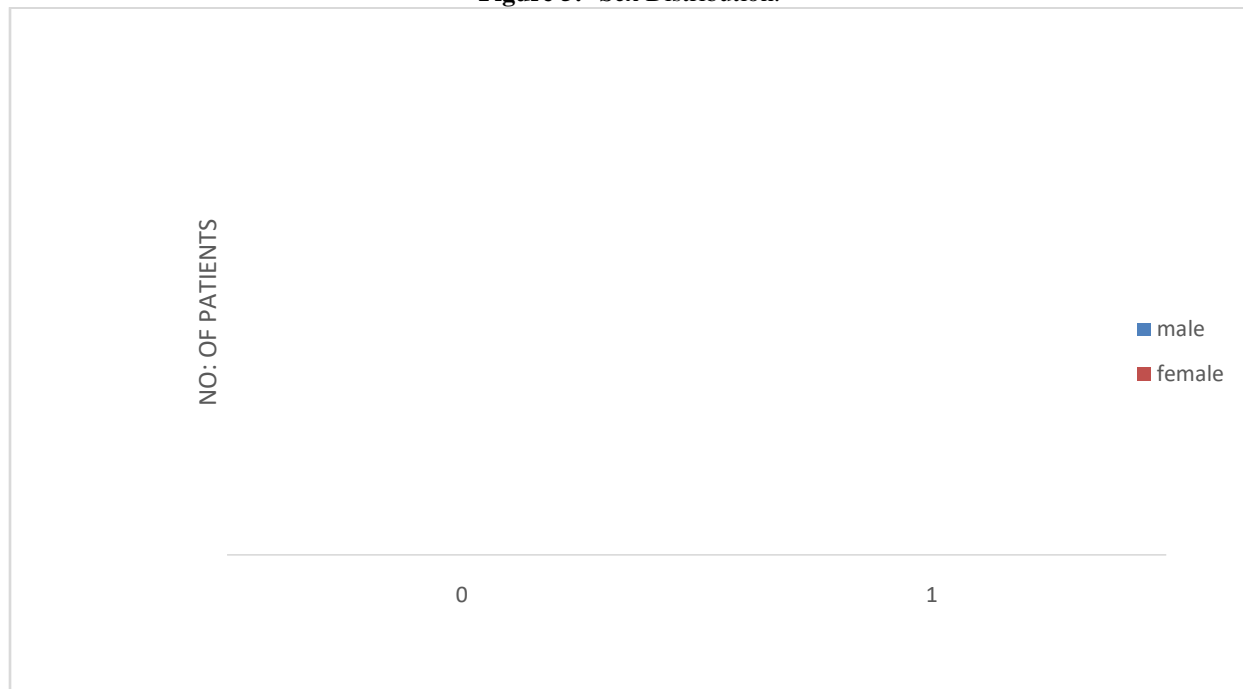
FIGURE 4: AGE DISTRIBUTION

The above data shows that as age increases urinary retention also increase

#### Sex Distribution

Table 3:- Sex Distribution.

SEX	Urinary retention	No urinary retention
MALE	7	57
FEMALE	3	41

**Figure 5:- Sex Distribution.**

The above data shows retention is mostly seen in males (10.9%) when compared to females(0.06%)

Urinary retention among two study groups

**Table 4:-** Comparing Two Study Groups.

	URINARY RETENTION	NO RETENTION
DICLOFENAC SUPPOSITORY	4	50
NO SUPPOSITORY	6	48

**Figure 6:-** Comparing Two Study Groups.