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Randomized Controlled Trial Comparing Preemptive Multimodal Analgesia vs. Placebo on Postoperative Pain Outcomes in Unilateral Lichtenstein Hernioplasty

Shalini Biman[1], Nandhini Saha[2]

Abstract: ***Pain management is crucial in surgical procedures to improve patient recovery and comfort. This study evaluates the effectiveness of preemptive intravenous (IV) paracetamol in reducing postoperative pain in patients undergoing unilateral open inguinal hernia mesh repair. Conducted as a randomized controlled trial, the study included 56 patients divided into two groups: Group A received IV paracetamol (15 mg/kg in 100 ml normal saline) before surgery, while Group B received a placebo (100 ml normal saline). Pain levels were assessed using the Visual Analog Scale (VAS) at multiple time intervals postoperatively. Results indicated that Group A experienced significantly lower pain scores at 24, 36, and 48 hours, with near-complete relief by 72 hours. Additionally, Group B required more standard and rescue analgesia compared to Group A. These findings suggest that preemptive IV paracetamol effectively reduces postoperative pain and the need for additional analgesics, making it a safe and beneficial option for pain management in hernia repair surgery. Further research may explore the use of alternative analgesics such as diclofenac for improved outcomes.***

Keywords: postoperative pain, preemptive analgesia, IV paracetamol, inguinal hernia, pain management

1. Introduction

1) Pain during surgery is caused by tissue trauma, which causes central sensitization of pain receptors.
2) Pre-emptive analgesia prevents establishment of central sensitization, and hence has potency to reduce immediate postoperative pain, as well as prevention of chronic pain.
3) IV Paracetamol is used in this study as the preemptive analgesia, because of its safety in wide range of patients, with comorbidities.
4) Inguinal hernia is one of the most common elective surgery, which can cause patients pain in immediate post op as well as for long time.

Objective

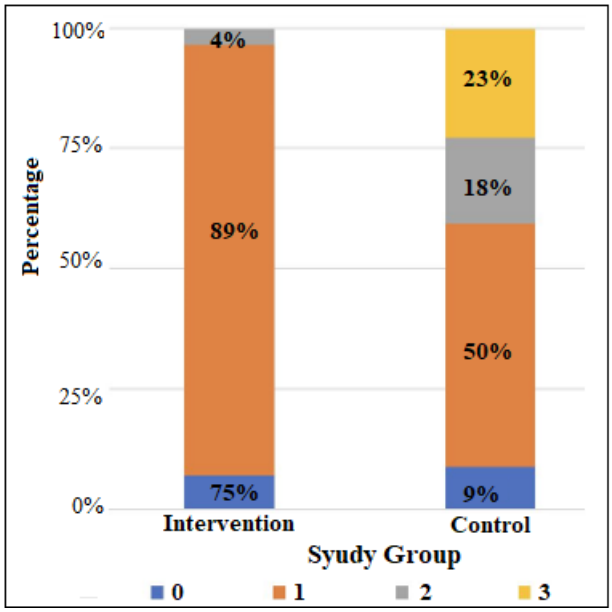
- To assess the postoperative pain in patients undergoing unilateral open inguinal hernia mesh repair after giving preemptive analgesia (IV Paracetamol) to group A, and placebo (Normal Saline) to group B, using VAS.
- To compare the use of standard analgesia (IV Paracetamol), and rescue analgesia (IV Tramadol) between the 2 groups.

2. Materials and Methods

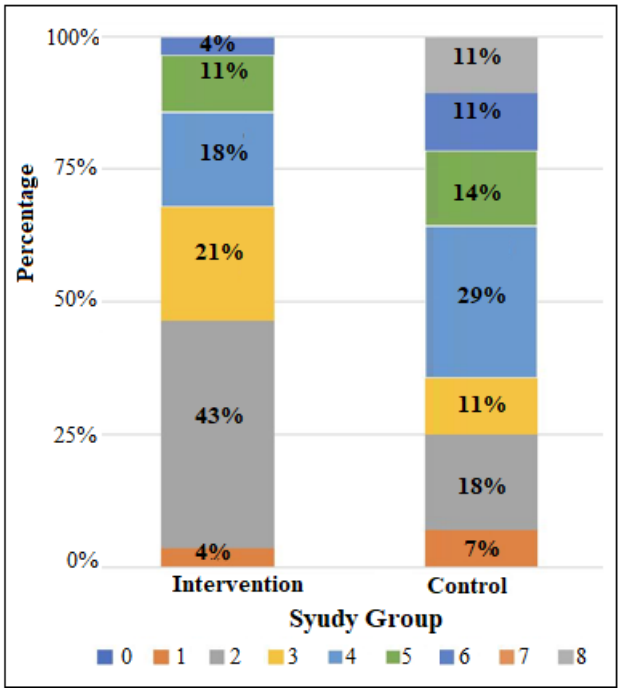
- Source - 18 years and above, ASA 1 and 2, unilateral repair, under spinal anaesthesia at KLE DR PRABHAKAR KORE HOSPITAL
- Study type- Randomised control trial
- Study period- 1 year
- Sample size- 28 for each group
- Group A- patients will receive IV Paracetamol 15mg/kg in 100ml NS 30 minutes before incision
- Group B- patients will receive placebo 100ml NS before surgery
- Pain assessment done by VAS scoring at 6,12,24,48,36 and 72 hrs

3. Results

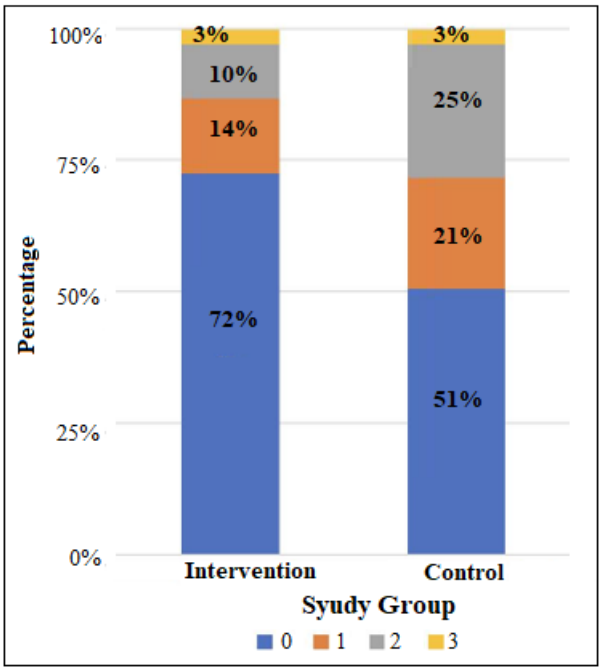
- Group A has marked improvement in pain reduction at 24, 36, 48 hrs.
- By 72 hrs, both groups experienced reduced pain, group A patients with near complete pain relief.
- Group B required higher dosage of overall standard analgesia (115) as compared to Group A (84)
- Group B required a total of 23 doses of rescue analgesia in 72 hrs as compared to 13 doses in Group A



Staked bar chart of comparison of pain scores (VAS) at 48 Hours between study group (N=56)



Standard Analgesia



Rescue Analgesia

4. Conclusion

Use of pre-emptive IV paracetamol as part of pain management in inguinal hernia repair surgery significantly reduces postoperative pain, minimizes the need for additional analgesic intervention, and has the potential to prevent chronic pain by inhibiting central sensitization.

This study demonstrates that pre-emptive analgesia with IV paracetamol is not only effective but also safe for a wide range of patients, including those with significant comorbidities.

There may be opportunities to achieve even better outcomes with alternative analgesics, such as diclofenac.

5. Discussion

In other studies, tramadol, diclofenac have been administered with paracetamol, as compared to only paracetamol in this study. The results vary depending on the strength of analgesic given.

In some studies, local analgesia was infiltrated in skin before taking incision, the case group experienced significantly lower pain scores

Hence, with better analgesics and local infiltration, postoperative pain can be reduced significantly

6. Summary

Pain management is crucial in surgical procedures to improve patient recovery and comfort. This study evaluates the effectiveness of preemptive intravenous (IV) paracetamol in reducing postoperative pain in patients undergoing unilateral open inguinal hernia mesh repair. Conducted as a randomized controlled trial, the study included 56 patients divided into two groups: Group A received IV paracetamol (15 mg/kg in 100 ml normal saline) before surgery, while Group B received a placebo (100 ml normal saline). Pain levels were assessed using the Visual Analog Scale (VAS) at multiple time intervals postoperatively. Results indicated that Group A experienced significantly lower pain scores at 24, 36, and 48 hours, with near-complete relief by 72 hours. Additionally, Group B required more standard and rescue analgesia compared to Group A. These findings suggest that preemptive IV paracetamol effectively reduces postoperative pain and the need for additional analgesics, making it a safe and beneficial option for pain management in hernia repair surgery. Further research may explore the use of alternative analgesics such as diclofenac for improved outcomes.

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