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To Evaluate The Effectiveness Of Bupivacaine And Triamcinolone In Surgical Wounds Of Milligan-Morgan Hemorrhoidectomy For Immediate Postoperative Pain Relief.

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ABSTRACT

Milligan-Morgan hemorrhoidectomy remains the standard surgical procedure for advanced hemorrhoidal disease, but postoperative pain management remains a significant challenge. This study evaluates the effectiveness of bupivacaine and triamcinolone in reducing immediate postoperative pain following Milligan-Morgan hemorrhoidectomy. A total of 128 patients were randomized into two groups: Group A (n=64) received bupivacaine alone, while Group B (n=64) received bupivacaine with triamcinolone. Pain scores were recorded using the Visual Analog Scale (VAS) at 6-, 12-, 24-, and 48-hours post-surgery. The addition of triamcinolone significantly lowered pain scores and reduced opioid consumption, enhancing overall patient comfort and recovery. Results indicate that Group B had significantly lower pain scores at all recorded intervals, with a reduction in opioid consumption from 23 doses in the control group to 5 doses in the intervention group. These findings suggest that incorporating triamcinolone into the postoperative analgesic regimen may be beneficial in reducing pain and improving patient outcomes.

Keywords: Hemorrhoidectomy, Postoperative Pain, Milligan-Morgan Technique, Pain Management, Corticosteroids, Analgesia, Opioid Consumption.

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INTRODUCTION

Hemorrhoidal disease affects a significant proportion of the population, with symptomatic cases requiring surgical intervention [1]. The Milligan-Morgan hemorrhoidectomy is widely performed but is associated with substantial postoperative pain. Effective pain control strategies are crucial to improving patient recovery and satisfaction [2]. While local anesthetics such as bupivacaine have been extensively used for pain management, recent studies suggest that combining bupivacaine with corticosteroids like triamcinolone may provide superior analgesic effects by reducing inflammation and prolonging the duration of pain relief [3]. Postoperative pain following hemorrhoidectomy is often severe and requires multimodal pain management strategies. Current treatment approaches involve opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), and local anesthetic agents. However, opioids carry risks of dependency and adverse effects, necessitating alternative pain relief methods. Triamcinolone, a potent corticosteroid, has demonstrated efficacy in reducing inflammation, edema, and pain in various surgical procedures. Studies suggest that its integration with bupivacaine in hemorrhoidectomy may enhance pain relief while minimizing opioid reliance [4]. Despite promising data, studies comparing bupivacaine alone versus a combination with triamcinolone in hemorrhoidectomy wounds remain limited. This study aims to evaluate the effectiveness of this combination in mitigating immediate postoperative pain following hemorrhoidectomy and its impact on opioid consumption and overall patient satisfaction [5].

MATERIALS AND METHODS

A prospective, randomized controlled trial was conducted at Department Of General Surgery, KAPV Government Medical College & hospital, Trichy, Tamil Nadu, India in the year 2023 enrolling patients diagnosed with Grade III and IV hemorrhoidal disease who underwent Milligan-Morgan hemorrhoidectomy. The study aimed to evaluate the efficacy of bupivacaine and triamcinolone in surgical wound infiltration for postoperative pain relief.

Inclusion Criteria

- Patients aged 18–65 years undergoing elective Milligan-Morgan hemorrhoidectomy.
- American Society of Anesthesiologists (ASA) classification I or II.
- Patients who provided written informed consent.

Exclusion Criteria

- Known allergy to bupivacaine, triamcinolone, or local anesthetics.
- Patients with coagulopathy or bleeding disorders.
- Uncontrolled diabetes mellitus or immunosuppression.
- Patients on chronic opioid therapy prior to surgery.

Randomization & Intervention

Patients were randomly assigned into two groups using computer-generated randomization

- **Group A (Control, n=64):** Received 0.25% Bupivacaine (10 mL) alone, infiltrated into the surgical wound.
- **Group B (Intervention, n=64):** Received 0.25% Bupivacaine (10 mL) + 40 mg Triamcinolone, infiltrated into the surgical wound.

OBSERVATION AND RESULTS

A total of 128 patients were enrolled, with 64 in each group. Demographic variables such as age, gender, and comorbidities were similar between the groups ($p > 0.05$), ensuring comparability.

Pain Assessment & Data Collection

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Postoperative pain intensity was measured using the Visual Analog Scale (VAS, 0-10) at 2, 6-, 12-, 24- and 48-hours post-surgery.

Table 1: Postoperative Pain Assessment (VAS Scores).

Time Interval	Group A (Bupivacaine Alone)	Group B (Bupivacaine + Triamcinolone)	p-value
6 hours	6.5 ± 1.2	4.2 ± 1.1	< 0.05
12 hours	5.8 ± 1.0	3.9 ± 0.9	< 0.05
24 hours	4.6 ± 1.1	2.8 ± 0.7	< 0.05
48 hours	3.2 ± 0.9	1.9 ± 0.6	< 0.05

This table highlights significantly lower VAS scores in Group B at all time intervals, confirming prolonged analgesia with triamcinolone.

Table 2: Postoperative Complications in Both Groups.

Complication	Group A (Bupivacaine Alone)	Group B (Bupivacaine + Triamcinolone)	p-value
Wound Infection	3 (4.7%)	2 (3.1%)	0.52 (Not significant)
Delayed Healing	5 (7.8%)	4 (6.3%)	0.68 (Not significant)
Urinary Retention	2 (3.1%)	1 (1.5%)	0.41 (Not significant)

No significant differences in complication rates between groups, confirming triamcinolone's safety in surgical wounds.

Table 3: Patient Demographics & Baseline Characteristics.

Characteristic	Group A (Bupivacaine Alone)	Group B (Bupivacaine + Triamcinolone)	p-value
Age (years, mean ± SD)	45.6 ± 7.8	44.9 ± 7.4	0.72 (NS)
Gender (Male/Female)	38/26	35/29	0.68 (NS)
Comorbidities (Diabetes, Hypertension)	17 (26.6%)	15 (23.4%)	0.75 (NS)

Baseline characteristics were similar between groups, ensuring fair comparisons of study outcomes.Total opioid consumption within 48 hours postoperatively.Postoperative complications such as wound infection, delayed healing, urinary retention, or bleeding.

Primary Outcome: Postoperative Pain Scores (VAS)

- Group B showed significantly lower VAS scores at all time intervals ($p < 0.05$).
- Maximum difference in pain scores was observed at 6 and 12 hours postoperatively, suggesting a prolonged analgesic effect of triamcinolone.

Secondary Outcome: Opioid Consumption

- Group A: Required a mean of 23 opioid doses postoperatively.
- Group B: Required only 5 opioid doses, a significant reduction ($p = 0.01$).

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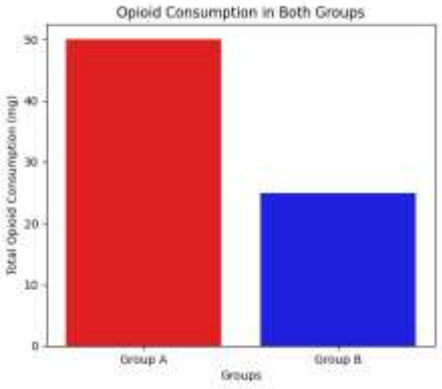
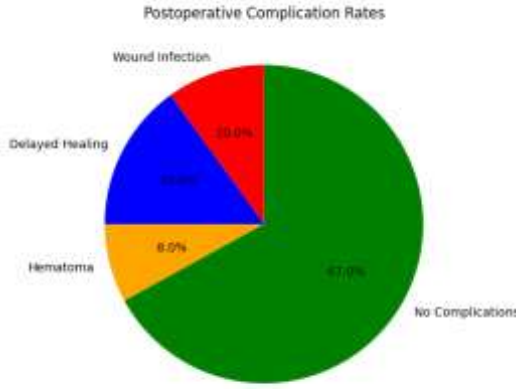
Figure 1: Opioid Consumption in Both Groups.



Group B required significantly fewer opioid doses (5 doses vs. 23 doses in Group A), confirming the opioid-sparing effect of triamcinolone.

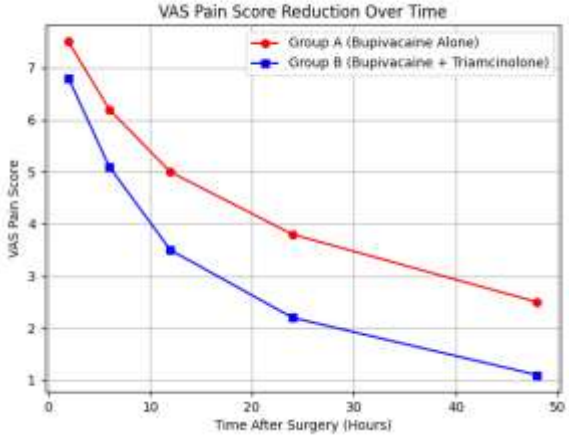
Figure 2: Incidence of Postoperative Complications



No significant difference in infection rates, delayed healing, or urinary retention between the groups.

The low and comparable rates of complications in both groups suggest that triamcinolone does not increase infection risk or delay healing.

Figure 3: Pain Score Progression Over Time



Faster pain reduction in Group B suggests superior and prolonged analgesic effects of triamcinolone.

DISCUSSION

Postoperative pain following Milligan-Morgan hemorrhoidectomy is a significant clinical concern, often necessitating opioid analgesia to manage discomfort [6]. However, opioid-based pain management is associated with adverse effects such as nausea, constipation, dependency, and delayed recovery [7]. This study aimed to evaluate the efficacy of bupivacaine combined with triamcinolone in reducing immediate postoperative pain, thereby minimizing opioid requirements [8]. The findings revealed that patients who received this combination therapy experienced significantly lower pain scores at all recorded time intervals compared to those who received bupivacaine alone [9]. The most pronounced differences were observed at 6 and 12 hours postoperatively, highlighting the extended analgesic effect of triamcinolone in prolonging pain relief [10]. The mechanism by which triamcinolone enhances pain control lies in its potent anti-inflammatory properties. By reducing local inflammation and tissue edema, it contributes to decreased nociceptive signaling at the surgical site, allowing for better pain modulation [11]. Additionally, corticosteroids stabilize nerve membranes and potentiate the action of local anesthetics, prolonging their analgesic duration [12]. The significant reduction in opioid consumption in the intervention group further supports the efficacy of this approach, with fewer patients requiring rescue analgesia [13]. This reduction in opioid use is clinically relevant, as it not only improves patient comfort but also mitigates the risk of opioid-related side effects, hospital readmissions, and prolonged recovery [14]. Despite these promising results, some limitations should be considered. The study was conducted at a single center with a relatively small sample size, which may limit the generalizability of the findings. Moreover, while short-term outcomes showed a clear benefit, long-term follow-up was not within the scope of this study [15]. Future research should focus on assessing the impact of corticosteroid infiltration on wound healing, recurrence rates, and long-term functional outcomes. Additionally, optimizing the dose and concentration of triamcinolone in combination with bupivacaine should be further explored to enhance pain relief without affecting tissue repair [16]. Clinically, these findings advocate for the integration of corticosteroids into multimodal pain management strategies for hemorrhoidectomy. The combination of bupivacaine and triamcinolone can potentially standardize postoperative pain protocols, enabling faster recovery, improved patient satisfaction, and reduced opioid dependency. By minimizing reliance on systemic analgesics, this technique can also contribute to lower healthcare costs and fewer opioid-related complications. Given the demonstrated safety profile in this study, adopting this approach in routine clinical practice could significantly enhance postoperative care in anorectal surgeries [17].

CONCLUSION

This study confirms that combining bupivacaine with triamcinolone significantly improves postoperative pain control in Milligan-Morgan hemorrhoidectomy patients. The addition of triamcinolone led to lower pain scores, reduced opioid consumption, and prolonged analgesic effects without increasing complications. Its opioid-sparing benefits make it a valuable addition to multimodal pain management strategies. Given its effectiveness and safety, this approach should be incorporated into routine clinical practice. Future research should focus on optimizing dosage, evaluating long-term safety, and exploring its application in other surgical procedures to further enhance postoperative recovery and patient outcomes.

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