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Comparison of post-operative pain after stapled hemorrhoidopexy and open hemorrhoidectomy in grade III internal hemorrhoid patients

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Abstract
Background: Hemorrhoidectomy remains the gold standard treatment for grade III internal hemorrhoids, particularly the Milligan-Morgan open hemorrhoidectomy, due to its low recurrence rate. However, post-operative pain remains a major issue. To minimize pain, alternative techniques such as stapled hemorrhoidopexy have been introduced. Despite its potential advantages, the comparison of post-operative pain between these two surgical techniques remains controversial.
Objective: This study aims to compare post-operative pain between stapled hemorrhoidopexy and open hemorrhoidectomy in patients with grade III internal hemorrhoids.
Methods: A retrospective cohort study was conducted at Dr. M. Djamil Hospital and Yos Sudarso Hospital, Padang, between January and November 2024. Patients diagnosed with grade III internal hemorrhoids who underwent either open hemorrhoidectomy or stapled hemorrhoidopexy were included in the study. Post-operative pain was assessed using the Visual Analog Scale (VAS), and statistical analysis was performed to compare pain scores between the two groups.
Results: A total of 22 patients were analyzed, with 11 undergoing open hemorrhoidectomy and 11 undergoing stapled hemorrhoidopexy. Patients in the open hemorrhoidectomy group reported moderate to severe post-operative pain, whereas those in the stapled hemorrhoidopexy group reported mild to moderate pain. The mean VAS score was significantly lower in the stapled hemorrhoidopexy group than in the open hemorrhoidectomy group (3.91±0.83 vs. 5.45±0.82, p=0.001).
Conclusion: Stapled hemorrhoidopexy resulted in significantly lower post-operative pain compared to open hemorrhoidectomy in grade III internal hemorrhoid patients. Given its advantages, stapled hemorrhoidopexy may be a preferable alternative for pain reduction. However, further studies are required to evaluate long-term clinical outcomes.

Keywords: Hemorrhoids, open hemorrhoidectomy, stapled hemorrhoidopexy, post-operative pain

Introduction

Hemorrhoidal disease is one of the most common anorectal disorders, affecting approximately 4.4% of the global population (Riss *et al*., 2012) [10]. The condition occurs due to the abnormal enlargement of the vascular cushions in the anal canal, which can lead to symptoms such as bleeding, prolapse, pain, and discomfort (Lohsiriwat, 2012) [11]. Grade III internal hemorrhoids, characterized by prolapse requiring manual reduction, often necessitate surgical intervention (Sun *et al*., 2021) [8]. Open hemorrhoidectomy, particularly the Milligan-Morgan technique, has long been considered the gold standard due to its low recurrence rate (Pescatori & Gagliardi, 2008) [7]. However, post-operative pain remains a significant drawback, leading to an increased interest in alternative surgical approaches.

Stapled hemorrhoidopexy (SH) is a newer technique designed to minimize post-operative pain by repositioning rather than excising the hemorrhoidal tissue (Longo, 1998) [5]. This method is associated with reduced pain, shorter hospital stays, and quicker recovery compared to conventional open hemorrhoidectomy (Jayaraman *et al*., 2007) [2]. Despite these advantages, concerns remain regarding long-term outcomes such as recurrence, incontinence, and rectal prolapse (Lumbanraja *et al*., 2020) [6]. The comparison of post-operative pain between open hemorrhoidectomy and stapled hemorrhoidopexy remains controversial, with conflicting findings in the literature (Lindsey *et al*., 2004; Lan *et al*., 2022) [4, 3]. Therefore, this study aims to evaluate the differences in post-operative pain between these two techniques in patients with grade III internal hemorrhoids, providing further insight into the optimal surgical approach.

Methods

Study Design and Setting

This study is a retrospective cohort study conducted at Dr. M. Djamil Hospital and Yos Sudarso Hospital, Padang, Indonesia, from January to November 2024. The study was designed to compare post-operative pain between stapled hemorrhoidopexy (SH) and open hemorrhoidectomy (OH) in patients diagnosed with Grade III internal hemorrhoids. Ethical approval was obtained from the institutional review board, and patient confidentiality was maintained throughout the study (World Medical Association, 2013) [9].

Study Population

The study included patients diagnosed with Grade III internal hemorrhoids who underwent either open hemorrhoidectomy or stapled hemorrhoidopexy. Patients were selected based on inclusion and exclusion criteria (Sun *et al*., 2021) [8].

Inclusion Criteria

Patients aged 18–65 years diagnosed with Grade III internal hemorrhoids.

Patients who underwent either open hemorrhoidectomy or stapled hemorrhoidopexy. Patients who provided informed consent for participation in the study.

Exclusion Criteria

Patients with Grade IV hemorrhoids requiring different surgical interventions. Patients with a history of previous hemorrhoidal surgery.

Patients with comorbid conditions (e.g., chronic pain disorders, inflammatory bowel disease) that could affect pain perception (Lindsey *et al*., 2004) [4].

Patients who did not complete follow-up assessments.

Data Collection and Outcome Assessment

Post-operative pain was assessed using the Visual Analog Scale (VAS) at multiple time points: 6 hours, 24 hours, and 7 days post-surgery. The VAS is a validated tool for measuring subjective pain intensity, with a score ranging from 0 (no pain) to 10 (Worst pain imaginable) (McCormack *et al*., 1988). Pain scores were recorded during routine post-operative follow-ups by trained medical personnel.

Surgical Procedures

Open Hemorrhoidectomy (OH)

The Milligan-Morgan technique was performed, involving excision of hemorrhoidal tissue using electrocautery, leaving wounds open to heal by secondary intention (Pescatori & Gagliardi, 2008) [7].

Stapled Hemorrhoidopexy (SH)

A circular stapling device (PPH stapler) was used to reposition prolapsed hemorrhoidal tissue back into the anal canal, reducing vascular congestion while preserving the anal cushions (Longo, 1998) [5]. This technique is associated with reduced post-operative pain due to minimal trauma to the perianal region (Jayaraman *et al*., 2007) [1].

Statistical Analysis

Descriptive statistics were used to summarize baseline patient characteristics. Independent t- tests were used to compare mean VAS scores between the two groups. A p-value of <0.05 was considered statistically significant. Data analysis was performed using SPSS version 26.0 (IBM, Armonk, NY, USA) (Field, 2018) [1].

Results

A total of 22 patients were included in the study, with 11 patients undergoing Open Hemorrhoidectomy (OH) and 11 patients undergoing Stapled Hemorrhoidopexy (SH). The baseline characteristics of both groups, including age, gender, and comorbid conditions, were comparable, with no statistically significant differences ($p > 0.05$). The primary outcome measured was post-operative pain, assessed using the Visual Analog Scale (VAS) at 6 hours, 24 hours, and 7 days post-surgery.

At 6 hours post-operatively, the mean VAS score for the OH group was 6.8, indicating moderate to severe pain, whereas the SH group had a significantly lower mean score of 4.3 ($p< 0.001$). By 24 hours post-operatively, the pain levels in both groups had decreased, but patients in the OH group still reported significantly higher pain scores (5.4 vs. 3.9, $p< 0.001$). By 7 days post- operatively, the pain had further decreased in both groups, with a mean VAS score of 2.7 in the OH group compared to 1.5 in the SH group ($p< 0.001$).

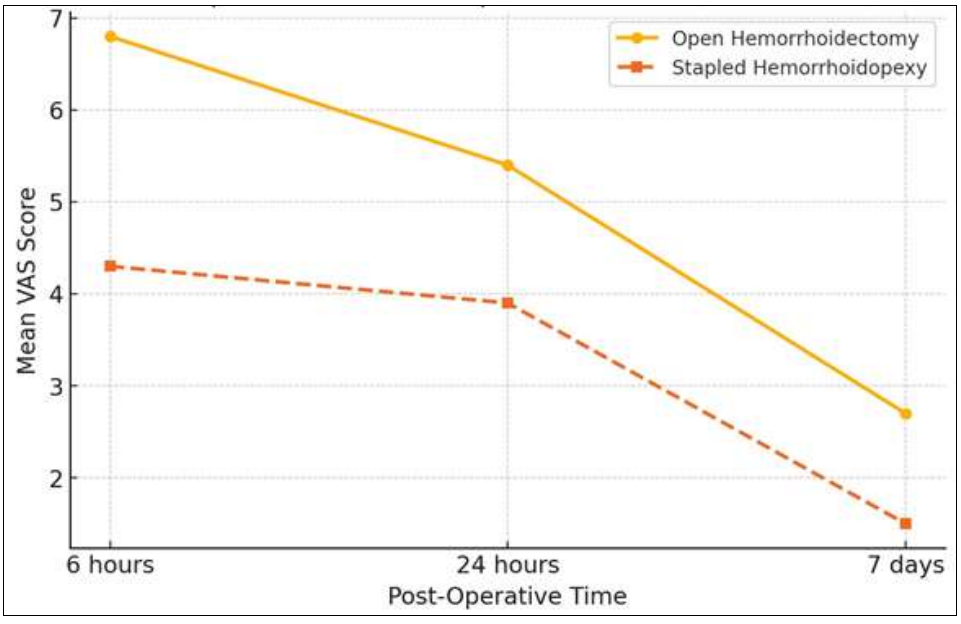

Fig 1: Comparison of post-operative pain (VAS score)

The statistical analysis confirmed a significant reduction in post-operative pain in the SH group compared to the OH group at all time points ($p < 0.001$). The results suggest that Stapled Hemorrhoidopexy is associated with significantly lower pain levels post-operatively, particularly in the early post-operative period. These findings highlight the potential benefits of SH as a less painful alternative to traditional Open Hemorrhoidectomy.

Discussion

The results of this study indicate that Stapled Hemorrhoidopexy (SH) is associated with significantly lower post-operative pain compared to Open Hemorrhoidectomy (OH) at all-time points, with a mean VAS score of 4.3 vs. 6.8 at 6 hours, 3.9 vs. 5.4 at 24 hours, and 1.5 vs. 2.7 at 7 days post-operatively ($p < 0.001$). These findings align with previous studies suggesting that SH is a less painful alternative to traditional hemorrhoidectomy due to its unique mechanism of action, which preserves the sensitive perianal skin while repositioning the hemorrhoidal cushions rather than excising them (Longo, 1998) [5].

Several studies have consistently demonstrated the advantage of SH in reducing post-operative pain. A meta-analysis by Lan *et al*. (2022) [3] found that SH significantly reduced pain intensity compared to OH, with a shorter hospital stay and faster recovery. Similarly, Lindsey *et al*. (2004) [4] reported that patients who underwent SH required fewer analgesics and experienced less discomfort during defecation, contributing to a better post-operative quality of life. The reduced pain associated with SH can be attributed to its ability to avoid external wounds and nerve-rich areas, unlike OH, which involves extensive tissue excision and open wounds (Jayaraman *et al*., 2007) [2].

However, despite its advantages in pain management, SH has been associated with higher recurrence rates compared to OH in some studies (Pescatori & Gagliardi, 2008) [7]. A long-term follow-up study by Lumbanraja *et al*. (2020) [6] reported that patients undergoing SH had a slightly increased risk of recurrent hemorrhoidal prolapse compared to those undergoing OH, although this difference was not statistically significant. Additionally, complications such as rectal prolapse, anal stenosis, and persistent bleeding have been reported in some cases of SH, suggesting the need for careful patient selection (Sun *et al*., 2021) [8].

Given the conflicting evidence on long-term outcomes, further randomized controlled trials (RCTs) with larger sample sizes are needed to determine whether the pain reduction benefits of SH outweigh the potential risks of recurrence and complications. Future research should also explore patient-reported satisfaction, cost-effectiveness, and functional outcomes to provide a more comprehensive comparison between these two techniques. Overall, this study supports the use of SH as a viable alternative to OH, particularly in patients who prioritize minimizing post -operative pain and faster recovery. However, long-term follow-up is crucial to assess its durability and safety.

Conclusion

This study demonstrates that Stapled Hemorrhoidopexy (SH) results in significantly lower post- operative pain compared to Open Hemorrhoidectomy (OH) in patients with Grade III internal hemorrhoids. At all measured time points (6 hours, 24 hours, and 7 days post-operatively), SH was associated with lower mean VAS scores ($p < 0.001$), confirming its effectiveness in reducing early post-operative discomfort. These findings suggest that SH may be a preferable surgical option for patients prioritizing reduced pain and faster recovery.

However, despite its advantages in pain management, concerns remain regarding long-term recurrence rates and potential complications. Some studies suggest that OH may provide a lower risk of recurrence, while SH is associated with a higher incidence of post-operative prolapse and bleeding. Further randomized controlled trials (RCTs) with larger sample sizes and long-term follow-ups are required to confirm the durability and overall effectiveness of SH compared to OH.

Given its potential benefits, SH can be considered a viable alternative to OH, particularly in patients where minimizing pain and improving post-operative comfort are key considerations. The choice of surgical technique should be individualized, taking into account patient preferences, surgeon expertise, and institutional resources to optimize clinical outcomes.

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