Original Article

Intrathecal versus epidural morphine for analgesia following excisional haemorrhoidectomy: a comparative analysis

Job Gogo Otokwala [1], Fiekabo Ogan-Hart [2]

[1] Intensive Care Unit, Department of Anaesthesiology, University of Port Harcourt, Choba, Port Harcourt, Nigeria.

[2] Obstetric anaesthesia Unit, Department of Anaesthesiology, University of Port Harcourt, Choba, Port Harcourt, Nigeria

Abstract

Background: Postoperative pain remains a significant concern in open excisional haemorrhoidectomy, especially for patients with third- and fourth-degree haemorrhoids, which are often associated with severe pain, bleeding, and other debilitating symptoms. Poorly managed postoperative pain adversely affects recovery.

Aim: To compare postoperative pain scores using the Visual Analogue Scale (VAS) after the administration of intrathecal morphine versus epidural morphine, both combined with intravenous paracetamol and rectal diclofenac suppository, for pain management following open excisional haemorrhoidectomy.

Methods: A prospective, randomized controlled study was conducted at the University of Port Harcourt Teaching Hospital (UPTH) over 4years on adult patients with third- or fourth-degree haemorrhoids, for open haemorrhoidectomy. The differences between the two groups were measured using Student t-test and Chi-squared test and were considered statistically significant if $p< 0.05$.

Results: A total of sixty-six patients completed the study: 30 patients in Group A (intrathecal morphine) and 36 in Group B (epidural morphine). The mean time to a VAS score ≥ 5 cm was significantly shorter in Group A (8.3 ± 4 hours) compared to Group B (24 ± 6.8 hours), with a p-value of 0.0001. Patient satisfaction was reported by 78% of patients in Group A and by all patients (100%) in Group B ($p < 0.01$).

Conclusion: Epidural morphine, in combination with intravenous paracetamol and rectal suppository, provided superior postoperative pain relief following haemorrhoidectomy and facilitated earlier ambulation compared to intrathecal morphine.

Keywords: Postoperative, pain management, haemorrhoidectomy, epidural, intrathecal morphine

Address for correspondence: Dr. Job Gogo Otokwala, Intensive Care Unit, Department of Anaesthesiology, University of Port Harcourt, Choba, Port Harcourt.
Email: job.otokwala@uniport.edu.ng
Phone: +2348037971672

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INTRODUCTION

Haemorrhoids are a common benign condition affecting the anal region, frequently encountered by both physicians and surgeons. The lifetime risk of developing haemorrhoids is estimated to be as high as 75% in the general population, highlighting its prevalence as a significant health concern.[1,2] While most haemorrhoids can be effectively managed through conservative treatments, such as medication and office-based procedures, surgical intervention is often necessary for high-grade or complicated cases.[3]

Over the years, surgical treatment options for haemorrhoids have evolved, with a focus on minimizing postoperative pain and improving patient outcomes.[4] Excisional haemorrhoidectomy remains a widely accepted and effective treatment for advanced and complicated haemorrhoidal disease, despite the challenges associated with postoperative pain management.[2,5] This procedure allows for the removal of both internal and external components of haemorrhoids and is relatively straightforward to learn and perform in various clinical settings.[6-18]

Nonetheless, postoperative pain remains a significant challenge, frequently leading to prolonged recovery times, delayed mobilization, and reduced patient satisfaction. Effective pain management is vital to optimizing clinical outcomes and enhancing the overall patient experience.[8,9] Traditional pain management strategies, which largely depend on opioid and non-opioid analgesics, often fail to address the complex mechanisms of pain associated with haemorrhoidectomy.[10]

In recent years, multimodal pain management has become the preferred approach. This method combines pharmacological interventions, such as nerve blocks and combined analgesics, with non-pharmacological techniques, including sitz baths and early mobilization.[11] Targeting multiple pain pathways, this comprehensive approach offers superior pain relief with fewer side effects compared to traditional methods.[12] This study aims to evaluate the efficacy of a structured multimodal pain management plan in improving postoperative outcomes for haemorrhoidectomy patients.

METHODOLOGY

We conducted a prospective, randomized controlled study on consented adults aged ≥ 18years, at University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt Nigeria presenting with type 3rd and 4th degree haemorrhoids for excisional haemorrhoidectomy under spinal anaesthesia. Ethical clearance was obtained from the ethics and research committee of UPTH. Recruitment started on 01 April 2022 to December 31st, 2024. Included were all consented patients aged ≥ 18 years with no absolute contraindications/ allergy to local anaesthetic and morphine and neuraxial block. Excluded were patients with failed spinal block, higher than American society of Anesthesiology (ASA) physical status greater than 2 and contraindications to neuraxial blocks. All the patients recruited in this study were operated by the same surgeon and using the same surgical technique. All the patients had done preoperative colonoscopy as required by the centre protocol. The Milligan-Morgan technique was used by the surgeon on all the patients.

Group A (spinal only group) had intrathecal morphine 0.25mg plus 5mg heavy bupivacaine. Group B (Epidural group for post operative pain) had spinal block with heavy bupivacaine 5mg and after surgery 3mg of epidural morphine was administered. All patients had intravenous paracetamol 900m-1g hourly and daily rectal diclofenac suppository 100mg for 3days. Patients in Group B had top-up epidural morphine if VAS was ≥ 4 and the time for the request was noted. For both groups, patients that required rescue analgesia received pethidine 50-100mg and the time for the request was noted. patient demographics, number of top ups for epidural morphine, VAS scores, rescue analgesia and complications were collated for analysis.

SPSS version 25 (IBM Corp, Armonk, New York, United States of America), was used for analysis. The differences between the two groups were measured using Student t-test and Chi-squared test and were considered statistically significant if $p < 0.05$.

RESULTS

Table 1: Demographic and clinical characteristics of patients in spinal and epidural morphine Groups

GROUP VARIABLES	GROUP A	GROUP B	t	P-value
Age (years)	40.8±5.02	40.6±4.96	0.495	0.842
Sex				
M	19(57.6)	24(72.7)	43(65.2)	
F	14(42.4)	9(27.3)	23(34.8)	
ASA				
ASA I	20(58.8)	23 (71.9)	43(65.2)	
ASA II	14(41.2)	9 (28.1)	23(34.8)	
Weight (kg)				
0.464	84.37±7.65	83.34±7.75		0.682
Height (M)				
0.929	1.70±0.08	1.71±0.09		0.327
BMI (kg/m^2)				
0.981	41.78±4.82	41.84±4.66		0.131

Table 2: Comparison of hourly Visual Analogue Scale (VAS) score between spinal and epidural morphine Groups over 24 hours

Time period (hours)	GROUP A Spinal Morphine (range)	GROUP B Epidural Morphine (range)	T Mann-Whitley U	P-value
1	0(0.0-0.0)	0(0.0)	0	
2	0(0.0-0.0)	0(0.0)	0	
3	0(0.0-0.0)	0(0.0)	0	
4	2.1(2.0-2.6)	0(0.0)	7.885	0.0001*
5	2.0(2.0-2.8)	0(0.0)	7.824	0.0001*
6	2.3(2.0-2.6)	0(0.0)	7.986	0.0001*
7	3.2(3.0-3.7)	0(0.0)	7.950	0.0001*
8	4.1(3.6-4,3)	0(0.0)	7.848	0.0001*
9	4.2(4.1-5.6)	0(0.0)	7.811	0.0001*
10	4.1(4.0-4.8)	0(0.0)	7.772	0.0001*
11	4.6(4.4-5.2)	2.0(2.0-2.6)	7.820	0.0001*
12	4.2(4.6-5.1)	2.0(2.1-2.6)	7.808	0.0001*
13	5.0(4.8-5.4)	2.0(2.1-2.4)	7.736	0.0001*
14	5.4(4.8-5.6)	2.2(2.0-2.8)	7.435	0.0001*
15	5.6(5.2-6.4)	2.0(2.1-2.6)	7.856	0.0001*
16	6.0(4.8-6.0)	2.4(2.6-2.8)	7.439	0.0001*
17	6.2 (6.1-6.8)	3.0(3.0-3.6)	7.642	0.0001*
18	6.0 (6.0-6.5)	3.0(3.1-3.8)	7.245	0.0001*
19	6.8(6.4-6.8)	3.2(3.2-3.8)	7.432	0.0001*
20	6.2(6.2-6.4)	3.0(3.4-3.8)	7.884	0.0001*
21	6.4 (6.2-6.8)	4.0(3.8-4.2)	8.104	0.0001*
22	6.6 (6.4-7.0)	4.0(3.6-4.5)	7.564	0.0001*
23	6.5 (6.4-6.8)	4.0(3.8- 4.8)	7.881	0.0001*
24	6.8 (6.2-6.6)	4.2(4.6-5.8)	7.354	0.0001*

Statistically significant

Table 3: Comparison of mean duration of analgesia between spinal and epidural morphine Groups

	Mean ±SD	t	P-value
Group A (Spinal morphine)	8.3±1.02	0.529	
			0.0001*
Group B (Epidural morphine)	21.4±26.2	1.902	

Statistically significant

Table 4: Comparison of side effects and patient satisfaction between spinal and epidural morphine Groups

Variables	Group A Spinal morphine (n=30)	Group B Epidural morphine (n=36)
Pruritus	15 (50.0)	23(63.9)
Vomiting	7 (23.3)	7(19.4)
Nausea	4 (13.3)	3(8.3)
Rebleeding	2 (6.7)	0(0)
Constipation	2 (6.7)	3(8.3)
Patient satisfaction	26(86.7)	36(100)

Table 1 shows the demographic and clinical characteristics of patients in spinal and epidural morphine Groups. The mean age of participants in Group A was 40.8 ± 5.02 years, while that of Group B was 40.6 ± 4.96 years. The difference was not statistically significant (t = 0.495, p = 0.842). In terms of sex distribution, Group A had 19 males (57.6%) and 14 females (42.4%), while Group B had

24 males (72.7%) and 9 females (27.3%). The overall sex distribution across both groups was 43 males (65.2%) and 23 females (34.8%). For ASA classification, Group A included 20 patients (58.8%) classified as ASA I and 14 patients (41.2%) as ASA II. Group B had 23 patients (71.9%) in ASA I and 9 patients (28.1%) in ASA II. The total distribution was 43 patients (65.2%) in ASA I and 23 patients (34.8%) in ASA II. The mean weight was 84.37 ± 7.65 kg in Group A and 83.34 ± 7.75 kg in Group B, with no significant difference ($t = 0.682$, $p = 0.464$). Mean height was 1.70 ± 0.08 metres in Group A and 1.71 ± 0.09 metres in Group B, which was also not significantly different ($t = 0.327$, $p = 0.929$). Body Mass Index (BMI) averaged 41.78 ± 4.82 kg/m² in Group A and 41.84 ± 4.66 kg/m² in Group B, showing no significant difference ($t = 0.131$, $p = 0.981$).

Table 2 shows the comparison of hourly Visual Analogue Scale (VAS) score between spinal and epidural morphine Groups over 24 hours. The hourly VAS scores revealed a significant difference in the duration and intensity of postoperative pain relief between the two groups. Patients in the epidural morphine group maintained lower VAS scores consistently over a 24-hour period, indicating prolonged analgesia. In contrast, the spinal morphine group experienced a marked increase in pain scores from the eighth hour onwards. The difference between the two groups was statistically significant from the eighth hour through the twenty-fourth hour, demonstrating the superior and sustained analgesic effect of epidural morphine compared to spinal morphine.

Table 3 depicts the comparison of mean duration of analgesia between spinal and epidural morphine Groups. The comparison of mean duration of analgesia between the two groups showed a significantly prolonged effect in the epidural morphine group compared to the spinal morphine group. While patients who received spinal morphine experienced pain relief for a shorter duration, those in the epidural group maintained effective analgesia for a substantially longer period. This difference was statistically significant, underscoring the enhanced and sustained analgesic benefit of epidural administration.

Table 4 shows the comparison of side effects and patient satisfaction between spinal and epidural morphine Groups. In the spinal morphine group (Group A, n=30), pruritus occurred in 15 patients (50.0%), vomiting in 7 patients (23.3%), nausea in 4 patients (13.3%), rebleeding in 2 patients (6.7%), and constipation in 2 patients (6.7%). Patient satisfaction was recorded in 26 patients, representing 86.7% of the group. In contrast, the epidural morphine group (Group B, n=36) reported pruritus in 23 patients (63.9%), vomiting in 7 patients (19.4%), nausea in 3 patients (8.3%), and constipation in 3 patient (8.3%), with no incidences of rebleeding. Notably, all 36 patients (100%) in the epidural group expressed satisfaction with their analgesic management, indicating a higher overall patient satisfaction rate compared to the spinal group.

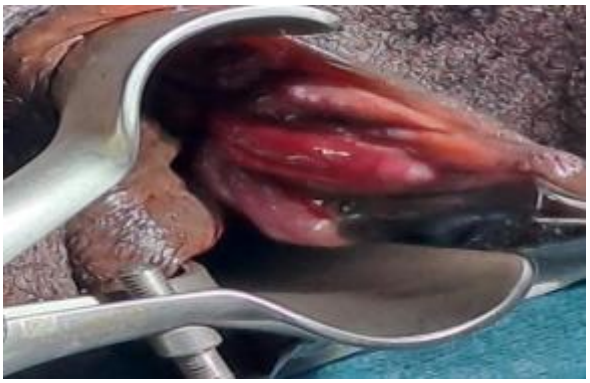

Figure 1: Showing internal haemorrhoids during anoscopy

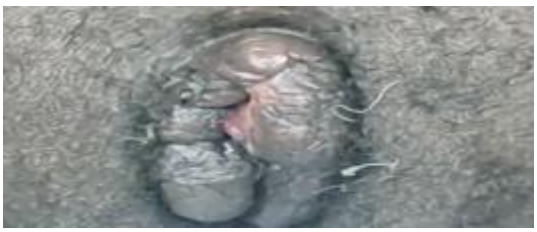

Fig. 2: External haemorrhoids on one of the patients

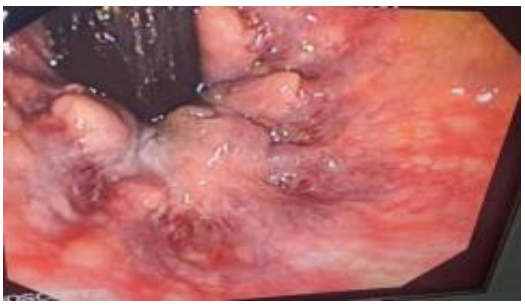

Fig. 3: Haemorrhoids on colonoscopy

DISCUSSION

The findings of this study provide compelling evidence in support of a structured multimodal pain management plan for patients undergoing excisional haemorrhoidectomy, a surgical procedure commonly associated with significant postoperative discomfort. The management of postoperative pain in such procedures remains a critical challenge due to the complexity of the pain mechanisms involved and the need for effective, long-lasting analgesia. Ng et al.[19] highlighted the growing demand for personalized pain strategies for patients, recognizing that conventional methods often fail to adequately address pain in the early postoperative period. In this study, we evaluated the comparative efficacy of two different pain management modalities: intrathecal and epidural morphine, combined with adjunct analgesics.

Group A, which received 0.25 mg of intrathecal morphine in combination with 5 mg of heavy bupivacaine, experienced a postoperative pain-free period of approximately eight hours. The choice of a lower dose of intrathecal morphine is particularly important as it has been associated with fewer complications compared to higher doses, thus enhancing the safety profile of the treatment.[14] Previous studies have demonstrated that the use of reduced doses can provide effective analgesia with a lower risk of adverse effects such as respiratory depression and hypotension. This finding aligns with the work of Amanor-Boadu,[21] who achieved an eight-hour pain-free period using a higher-dose regimen of 15 mg spinal bupivacaine and 0.5 mg of intrathecal morphine. Notably, our study found that a reduced dose of intrathecal morphine (0.25 mg) provided comparable pain relief, suggesting that effective analgesia can be achieved while minimizing the risk of side effects. This is an important consideration for clinicians when deciding on the optimal dosing strategy for pain relief following haemorrhoidectomy.

In contrast, Group B, which received 3 mg of epidural morphine immediately after surgery, enjoyed a much longer duration of analgesia, with pain control lasting for at least 24 hours. The visual analogue scale (VAS) scores in this group remained minimal during the first 24 hours postoperatively, indicating effective and sustained pain relief as shown in Table 2. The results from Group B align with the findings of Kuo,[3] who used 4 mg of epidural morphine, Behar et al.,[1] who administered 2 mg, and Shapiro et al.,[2] who used 4 mg. All these studies reported excellent pain relief extending beyond 24 hours, emphasizing the efficacy of epidural morphine in providing prolonged analgesia following major surgical procedures. Epidural morphine, being a neuraxial opioid, offers a potent means of pain control by directly targeting the spinal cord and inhibiting pain transmission. This results in superior pain relief, particularly in cases where longer durations of analgesia are required, such as after haemorrhoidectomy.

The use of adjunct medications, such as intravenous paracetamol and rectal diclofenac, in both groups also likely contributed to the overall reduction in postoperative pain. These agents help attenuate pain by targeting different pathways, with acetaminophen providing central analgesic effects and diclofenac acting as a nonsteroidal anti-inflammatory drug (NSAID) that reduces inflammation and alleviates pain. This multimodal approach, combining opioids with non-opioid analgesics, is crucial for minimizing opioid consumption and reducing the risk of opioid-related side effects, such as nausea, vomiting, and constipation.[12]

Interestingly, although both groups received adjunct analgesics, patients in Group B, who received epidural morphine, reported significantly better outcomes in terms of overall pain control, early mobilization, and patient satisfaction as shown in Table 3. Effective pain management is closely linked to a patient's ability to mobilize early after surgery, which plays a key role in reducing the risks of complications such as deep vein thrombosis, pneumonia, and ileus. The ability to maintain pain relief while mobilizing quickly postoperatively has significant implications for improving recovery time and enhancing the patient's overall experience.[14,18]

Side effects such as pruritus, nausea, and vomiting were observed in both groups, with pruritus being more pronounced in the epidural

group with 63.9%, and 50.0% respectively as shown in Table 4. These side effects are well-documented in the literature and are commonly associated with opioid use, particularly neuraxial opioids.[16,19] Pruritus can be bothersome, but it was generally manageable with parenteral ondansetron or resolved spontaneously. Nausea and vomiting, also opioid-related side effects, were effectively controlled in most patients using standard antiemetic treatments. However, it is important to note that one patient in Group B developed postoperative constipation and urinary retention, both known complications of neuraxial opioid administration.

The demographic profile of the study participants revealed a male predominance, with an average patient age in the early forties as shown in Table 1. This is consistent with prior research in Nigeria,[9,15,16] where similar demographic trends have been observed in patients undergoing haemorrhoidectomy.[21] The higher incidence of haemorrhoidal disease among men in their middle years may be attributed to lifestyle factors such as prolonged sitting, high-fat diets, and low fibre intake, which contribute to constipation and increased intra-abdominal pressure. This demographic pattern underscores the importance of addressing lifestyle modifications and providing targeted interventions to prevent haemorrhoidal disease. Collectively, the results of this study underscore the value of a comprehensive multimodal analgesic strategy in improving the postoperative experience for haemorrhoidectomy patients.

Limitations

Despite the valuable insights obtained, this study has certain limitations. The sample size, though sufficient for preliminary conclusions, may not be large enough to detect rare complications or to generalise the findings across different patient populations. Furthermore, all patients were operated on by a single surgeon, which, while controlling for procedural variability, may introduce performance bias. The study also relied on patient-reported VAS scores, which are inherently subjective. Additionally, follow-up was limited to the immediate postoperative period, and thus longer-term pain control and complications were not assessed. Future multicentre studies with larger cohorts and extended follow-up are recommended to validate and expand upon these findings.

CONCLUSION

This study demonstrates the effectiveness of a structured multimodal pain management plan in improving postoperative outcomes for patients undergoing excisional haemorrhoidectomy. The significant reductions in pain scores, faster recovery times, and higher patient satisfaction observed in the intervention group underscore the benefits of a comprehensive pain control strategy. Adoption of such protocols may enhance patient experiences, reduce hospital stays, and improve overall surgical outcomes.

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Conflicts of interest
There are no conflicts of interest

REFERENCES

1. Behar M, Magora F, Olshwang D, Davidson JT. Epidural morphine and the treatment of pain. Lancet 1979;1(8115):527-529.
2. Shapiro LA, Hoffman S, Jedeikir R, Kaplan R. Single-injection epidural anaesthesia with bupivacaine and morphine for prostatectomy. Anesth Analg 1981;60(11):818-820.
3. Kuo RJ. Epidural morphine for post-haemorrhoidectomy Analgesia. Dis Colon Rectum 1984;27(8):529-530.
4. Ho YH, Seow-Choen F, Tan M, Leong AF. Randomized controlled trial of open and closed haemorrhoidectomy. Br J Surg 1997;84(9):1729-1730.
5. Ibrahim S, Tsang C, Lee YL, Eu KW, Seow-Choen F. Prospective, randomized trial comparing pain and complications between diathermy and scissors for closed hemorrhoidectomy. Dis Colon Rectum 1998;41(11):1418-1420.
6. Brunat G, Pouzeratte Y, Mann C, Didelot JM, Eledjam JJ. Posterior perineal block with ropivacaine 0.75% for pain control

during and after hemorrhoidectomy. Reg Anesth Pain Med 2003;28(3):228-232.

7. Arroyo A, Perez F, Miranda E, Serrano P, Candela F, Lacueva J, et al. Open versus closed day-case haemorrhoidectomy: Is there any difference? Results of a prospective randomized study. Int J Colorectal Dis 2004;19(4):370-373.
8. Gehling M, Tryba M. Risks and side effects of intrathecal morphine combined with spinal anaesthesia: a meta-analysis. Anaesthesia 2009;64(6):643-651.
9. Alatise OI, Agbakwuru AE, Takure AO, Akinkuolie AA. Open haemorrhoidectomy under local anaesthesia for symptomatic haemorrhoids: our experience from Nigeria. Arab J Gastroenterol 2011;12(2):99-102.
10. Lohsiriwat V. Hemorrhoids: from basic pathophysiology to clinical management. World J Gastroenterol 2012;18(17):2009-2017.
11. Misauno MA, Usman BD, Nnadozie UU, Obiano SK. Experience with rubber band ligation of hemorrhoids in Northern Nigeria. Niger Med J 2013;54(4):258–260.
12. Kim BC. Spinal block anaesthesia with morphine in a haemorrhoidectomy. Ann Coloproctol 2014;30(3):107-108.
13. Shaikh AR, Dalwani AG, Sushel C, Halepoto A. Diathermy haemorrhoidectomy: under local Anaesthesia. Professional Med J 2016;23(8):948-952.
14. Bhatti MI, Sajid MS, Baig MK. Milligan–Morgan (open) versus Ferguson haemorrhoidectomy (closed): a systematic review and meta-analysis of published randomized, controlled trials. World J Surg 2016;40(6):1509-1519.
15. Akindiose C, Alatise OI, Arowolo OA, Agbakwuru AE. Evaluation of two injection sclerosants in the treatment of symptomatic haemorrhoids in Nigerians. Niger Postgrad Med J 2016;23(3):110–115.
16. Ray-Offor E, Amadi S. Haemorrhoidal disease; predilection sites, pattern of presentation, and treatment. Ann Afr Med 2019;18(1):12-16.
17. Gallo G, Martellucci J, Sturiale A, Clerico G, Milito G, Marino F, et al. Consensus statement of the Italian Society of Colorectal Surgery (SICCR): management and treatment of hemorrhoidal disease. Tech Coloproctol 2020;24(2):145-164.
18. Godeberge P, Sheikh P, Zagriadskiĭ E, Lohsiriwat V, Montaño AJ, Košorok P, et al. Hemorrhoidal disease and chronic venous insufficiency: concomitance or coincidence; results of the CHORUS study (Chronic venous and Hemorrhoidal diseases evaluation and Scientific research). J Gastroenterol Hepatol 2020;35(4):577-585.
19. Ng KS, Holzgang M, Young C. Still a case of ‘no pain, no gain’? An updated and critical review of the pathogenesis, diagnosis and management options for haemorrhoids in 2020. Ann Coloproctol 2020;36(3):133-147.
20. Srivastav Y, Prajapati A, Kumar M. Review of haemorrhoids, including quality of life (QOL) and associated contemporary treatments. World J Pharm Res 2023;12(17):283-311.
21. Amanor-Boadu SD. Assessment of minidose intrathecal morphine for analgesia after haemorrhoidectomy. West Afr J Med 1992;11(2):146-149.