



# The Sub-Saharan Experience of Excisional Haemorrhoidectomy with Simultaneous Lateral Internal Sphincterotomy

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Received: 18 October 2019 / Accepted: 1 April 2020 / Published online: 4 June 2020

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## Abstract

Milligan-Morgan haemorrhoidectomy (MMH) is still regarded as the standard excisional haemorrhoid procedure. In our centre, prophylactic lateral internal sphincterotomy (LIS) has been routinely performed simultaneously with MMH due to increased incidence of concurrent chronic anal fissure (CAF). We aimed to review our practice, the safety and feasibility of routine MMH+LIS among patients with or without CAF. A prospective observational study was conducted to examine the outcome of MMH + LIS in Kassala, Sudan, from 2015 to 2018. The short-term outcomes of patients undergoing MMH+LIS were compared between patients with or without CAF. There were 252 patients included in the study, with the median age of 33 (ranged 13–80), and 146 (57.94%) were male patients. Of these, 205 patients (81.3%) had third-degree prolapsed haemorrhoids, and 47 patients (18.7%) had fourth-degree prolapsed haemorrhoids, with 73 (29%) patients had a concurrent chronic anal fissure. There were no significant difference ( $p > 0.05$ ) between the comparing groups with regard to the complications occurred, which were post-operative bleeding ( $n = 4$ , 1.6%), anal stenosis ( $n = 5$ , 1.98%), faecal incontinence ( $n = 2$ , 0.79%), chronic anal pain ( $n = 5$ , 1.98%), chronic anal discharge ( $n = 3$ , 1.19%), pruritus ani ( $n = 4$ , 1.58%) and obstructed defaecation symptoms ( $n = 4$ , 1.58%). The overall complication rates were 16/252 (6.3%). Patients without pre-existing CAF were significantly associated with increased post-operative pain ( $p < 0.0001$ ) after LIS. Prophylactic LIS, along with MMH, is a safe strategy with reasonable desired short-term outcomes and low complication rates. Patients with pre-existing CAF gain better pain control having had concurrent LIS which ultimately justify the procedure.

**Keywords** Haemorrhoidectomy · Lateral internal sphincterotomy · Complications

## Introduction

Haemorrhoids are cushions of tissue located at the anal canal which contribute to the continence especially to air [11]. These cushions when engorged will have a preponderance to bleed or prolapsed. The widely acceptable pathophysiological theory of haemorrhoids is the engorgement of the interlacing arteriovenous haemorrhoidal plexus which may then lead to bleeding, but this theory does not explain the reason for

irreducible prolapsed. These interlacing arteriovenous haemorrhoidal plexus have been described classically at right lateral, left anterior and left posterior or in relation to a clock-face 3, 7 and 11 o'clock position [11].

In the surgical treatment of haemorrhoid disease over the years with different techniques, several important outcomes are measured, which include post-operative pain, days of return to work, cost-effectiveness and the long-term quality of life. These outcome comparisons play an important deciding factor towards the endeavour of choice of surgery. Excisional haemorrhoid procedure has evolved over the years from the Whitehead, Park, Milligan-Morgan, Ferguson Haemorrhoidectomy to the stapler haemorrhoidopexy and the Harmonic®/LigaSure® haemorrhoidectomy, as these advancements may reduce the occurrence of complications and morbidity associated with excisional haemorrhoidectomy [10].

Studies have shown that high resting pressure of the internal anal sphincter can develop concomitantly with haemorrhoids among young patients, which may account for the increased post-operative pain after an excisional procedure

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[5]. Therefore, partial sphincterotomy of the internal sphincter can be performed simultaneously with haemorrhoidectomy (MMH+LIS) to reduce the anal sphincter tone [5, 14]. However, this additional procedure also carries the risk of transient faecal and flatus incontinence [5, 13].

Several studies in the current literature have shown that lateral internal sphincterotomy procedure performing simultaneously with excisional haemorrhoidectomy effectively reduces post-operative pain and analgesic requirements [5, 14]. Nevertheless, this approach has not been adopted widely due to lack of randomised clinical trial, and also, these studies did not examine the prevalence of CAF among patients before undergoing MMH+LIS, which might represent the valid justification for prophylactic LIS. Therefore, this study was carried out to review our experience, the safety and feasibility of MMH+LIS in the treatment of advance prolapsed internal haemorrhoids, in relation to patients with or without pre-existing CAF.

## Methodology

This was a prospective observational study of MMH+LIS in Kassala, Sudan. Data were collected from 2015 to 2018. Due to the increased incidence of chronic anal fissure among patients with chronic haemorrhoidal disease, MMH was routinely complimented with prophylactic LIS for all patients. Analyses were performed on short-term complications after surgery, which included post-operative bleeding, anal stenosis, faecal incontinence, chronic anal pain, chronic anal discharge, pruritus ani and defaecatory dysfunction. Pain score was measured using visual analogue scale 0 to 10. Multiple complications were defined as having more than one type of complications described above. All the patients were followed up at our outpatient clinic first at post-operative 2 weeks, 2 months, followed by consecutive 6 monthly visit for at least 12 months.

For comparisons, patients were divided into two groups: MMH+LIS+CAF (patients with pre-existing CAF) and MMH+LIS-CAF (patients without pre-existing CAF). Comparisons of categorical data between the two groups were made using nonparametric continuity-corrected chi-square test. Continuous variables were compared using the Mann-Whitney *U* test or the Wilcoxon signed-rank test. All analyses were performed using the Statview Version 5.01 (SAS Institute Inc). A *p* value of less than 0.05 was considered significant.

## Results

There were 252 patients included in the study (Table 1). The overall median age of the cohort was 33 years old (ranged 13–

80), with the mean age of 35.8 years old ( $\pm 14.3$  SD). There were 146 (57.94%) male and 106 (42.06%) female patients. Of 252 patients, 205 (81.3%) had third-degree prolapsed haemorrhoids, and 47 (18.7%) had fourth-degree prolapsed haemorrhoids. Seventy-three patients of 252 (29%) had a concurrent chronic anal fissure. During the post-operative period, all patients received oral nonsteroidal anti-inflammatory drugs (NSAID), and only four patients (1.58%) had additional intramuscular NSAID for pain control.

There were 16/252 (6.3%) patients who suffered from complications, with 11 (4.4%) patients who suffered a single complication and 5 (2.0%) patients who suffered more than one complication. Overall, 4 (1.6%) patients had post-operative bleeding, 5 (1.98%) had anal stenosis, 2 (0.79%) had faecal incontinence, 5 (1.98%) had chronic anal pain, 3 (1.19%) had chronic anal discharge, 4 (1.58%) had pruritus ani, and 4 (1.58%) had defaecatory dysfunction.

When comparing the two groups (Table 1), patients without pre-existing CAF were significantly associated with higher pain score ( $p < 0.0001$ ) after MMH+LIS. The use of injected NSAIDs (4 patients in the MMH+LIS+CAF group and 0 patients in the MMH+LIS-CAF group) did not contribute to the difference in the pain score observed ( $p = 0.1543$ ). The overall and subtype complication rates did not differ among the two groups ( $p > 0.05$ ).

## Discussion

Excisional haemorrhoidectomy remains a preferred treatment for chronic haemorrhoid because it is associated with low disease recurrent rate [12]. A recent study in Italy involving 32,000 patients has shown that surgeons preferred excisional haemorrhoidectomy to other techniques [1]. However, high post-operative pain level and complications following this procedure appear to be the most important motivating factor for other methods [6]. Post haemorrhoidectomy pain involves multiple inflammatory mediators triggered by tissue damage. Therefore, relaxing the internal sphincter would encourage more local tissue blood flow and wash out of the pain mediators, resulting in reduced oedema and spasm and eventually decreased pain intensity [2].

The uses of local anaesthetic infiltration, oral analgesics, topical muscle relaxants, incorporated with oral metronidazole and stool softeners have been the standards to improve post-operative pain [3, 4, 9]. Numerous surgical innovations such as Harmonics Scalpel® and LigaSure® have been used for excisional haemorrhoidectomy with claims of reduced pain and faster recovery. In our study, all excisional haemorrhoidectomies were performed with a combination of diathermy and LigaSure®. Our results demonstrated a low incidence of surgical complications despite routine LIS, and

**Table 1** Comparative analyses of patient demographics and outcomes among patients undergoing MMH+LIS with or without the pre-existing CAF

	Overall included	MMH+LIS+CAF	MMH+LIS-CAF	<i>p</i> value
No. of patients ( <i>n</i> /%)	252 (100%)	73 (28.9%)	179 (71.1%)	NA
Age (median/range)	33 (ranged 13–80)	35 (ranged 16–70)	33 (ranged 13–80)	0.7852
Gender ( <i>n</i> /%)	Male	41	105	0.7159
	Female	106 (42.1%)	32	
Pain score (median/range)	Overall 4 (ranged 2–8)	4 (ranged 3–5)	4 (ranged 2–8)	<i>&lt; 0.0001</i>
Oral NSAIDS ( <i>n</i> /%)	252 (100%)	73	179	NA
Injected NSAIDS ( <i>n</i> /%)	4 (1.6%)	4	0	NA
Complication rate:				
No complication	236 (93.7%)	69/73	167/179	0.7177
Single complication	11 (4.4%)	4/73	7/179	0.5803
Multiple complications	5 (2.0%)	0/73	5/179	0.1492
Types of complications:				
Bleeding	4 (1.6%)	2	2	0.3499
Anal stenosis	5 (2.0%)	1	4	0.6552
Faecal incontinence	2 (0.8%)	0	2	0.3645
Chronic anal pain	5 (2.0%)	1	4	0.6552
Chronic anal discharge	3 (1.2%)	0	3	0.2658
Pruritus ani	4 (1.6%)	0	4	0.1979
Defaecatory dysfunction	4 (1.6%)	0	4	0.1979

Statistically significant value is shown in italic

none of our patients required opiates as an adjunct to the NSAIDS for post-operative pain management.

Studies comparing patients after haemorrhoidectomy with and without LIS showed less pain score and fewer analgesic requirements for the LIS group [6, 7, 15]. Besides, LIS was associated with a lower incidence of anal stenosis after haemorrhoidectomy, probably because of an increase in the mucocutaneous bridges between the excised haemorrhoids [15]. The healing rate was also found to be acceptable with a lesser occurrence of stenosis and incontinence [8].

In our study, we found a high percentage (29%) of patients who suffered concurrent chronic anal fissure along with their prolapsed haemorrhoids. It is this group of patients with CAF that had a lower pain score after LIS compared with the group without CAF. We believe that this is the first study in the literature to examine the prevalence of pre-existing CAF among patients undergoing MMH. Although our study did not include patients undergoing MMH only (without simultaneous LIS) for comparison, we postulated that a better pain control demonstrated by MMH+LIS in the literature might be derived from patients with pre-existing CAF.

## Conclusion

MMH with simultaneous LIS is a safe technique and associated with low incidence of complications. Patients with pre-existing CAF gain better pain control having had concurrent LIS, and it is this group of patients that has the ultimate

justification for LIS. Therefore, future study should aim to ascertain the prevalence of CAF and to compare the effectiveness of MMH with or without LIS in relation to concurrent CAF.

## What Does This Paper Add to the Literature?

The current literature suggests that prophylactic lateral internal sphincterotomy (LIS) improves pain among patients undergoing excisional haemorrhoidectomy. Our study not only showed low complication rate with LIS, but also demonstrated that it was more effective among patients with pre-existing chronic anal fissure. Therefore, careful patient selection is required for prophylactic LIS.

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