Scientific Research Publishing

Open Journal of Gastroenterology, 2025, 15(7), 367-375
https://www.scirp.org/journal/ojgas
ISSN Online: 2163-9469
ISSN Print: 2163-9450

Management of Internal Hemorrhoidal Disease by Elastic Ligation in Ouagadougou, Burkina Faso

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How to cite this paper: Coulibaly, A., Sanne, Z.S., Keubou Zebaze, B.F., Sawadogo, S.I.A., Sawadogo, Y.E., Zoungrana, L., Somda, K.S. and Sombie, A.R. (2025) Management of Internal Hemorrhoidal Disease by Elastic Ligation in Ouagadougou, Burkina Faso. *Open Journal of Gastroenterology*, **15**, 367-375.
https://doi.org/10.4236/ojgas.2025.157034

Received: April 30, 2025
Accepted: July 11, 2025
Published: July 14, 2025

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Abstract

Introduction: Hemorrhoidal disease is the leading cause of proctology consultations. The management of internal hemorrhoids can be medical, instrumental, and surgical. Instrumental treatment is a recent practice in Burkina Faso. The aim of our study was to evaluate rubber band ligation of hemorrhoids in Burkina Faso. **Patients and method:** This was a descriptive case series study with retrospective data collection. It took place from January 1, 2021 to April 30, 2023 at the ILBOUDO BRUNO clinic. All patients with internal hemorrhoidal disease, who had undergone hemorrhoid ligation, with a usable medical record and a valid telephone contact, were included. **Results:** A total of 107 patients underwent rubber band ligation. The mean age of the patients was 42.8 years ± 13.16 years. The sex ratio was 3.1. The patients resided in Ouagadougou at 84.1%. Hematochezia was the dominant symptom (83.2%). Hemorrhoidal prolapse was grade II (23.3%) and grade III (15%). An anal fissure was associated in 6.5% of patients. A ligation session was performed in 49 patients compared to 2 to 4 sessions for the other 58. The number of hemorrhoidal bundles treated per session varied from 2 to 3. Elastic ligation of hemorrhoids was effective for 86.5% of hematochezias and for 73.2% of hemorrhoidal prolapses. Immediate complications were observed in 7.5% of cases, such as anal pain. Fifteen patients experienced a recurrence, or 14%, within a period of 3 to 6 months. **Conclusion:** Rubber band ligation is an effective tech-

nique. It must find a place and an indication here before surgery. It must be developed and made accessible to patients in Burkina Faso.

Keywords

Rubber Band Ligation, Internal Hemorrhoidal Disease, Hematochezia, Hemorrhoidal Prolapse

1. Introduction

Hemorrhoidal disease is the leading cause of proctology consultations worldwide, affecting between 10% and 40% of the general population [1]. The prevalence of haemorrhoidal disease is over 50% in the United States and accounts for over 95% of anorectal diseases in China, with 60% of internal haemorrhoidal disease [2]. In Burkina Faso, studies have reported hemorrhoidal disease as the leading anorectal disease with varying prevalences of 29.6% in 1995 and 60% in 2007 [3]. In 2016, it represented 6.1% of hepato-gastroenterology and digestive surgery consultations [3].

Internal hemorrhoidal disease mainly manifests as hematochezia and/or prolapse. Treatment is based on three axes: medical, instrumental, and surgical. They are sometimes combined, especially medical and instrumental, but very often all three are used in succession. Medical and instrumental treatment should account for 90%, with surgery accounting for 10%. The principle of instrumental treatment is to induce scarring fibrosis at the apex of the internal hemorrhoidal plexuses. This then fixes the anal mucosa to the deep muscular plane and closes off the submucosal vascular network originating from the superior rectal artery. Of these procedures, elastic ligation is the most effective in the long term. It provides a physical reduction in internal muco-hemorrhoidal prolapse [1].

In Burkina Faso, the treatment of internal hemorrhoids was medical and surgical until recently. Instrumental treatment began in 2021. Currently, two private centers in Ouagadougou offer treatment of internal hemorrhoids using rubber band ligation. The aim of our study was to evaluate this long-standing but recent practice in our context.

2. Patients and Method

This was a descriptive case series study, with retrospective data collection, of elastic ligation. It was carried out in the diagnostic and interventional endoscopy unit of the ILBOUDO BRUNO clinic, in Ouagadougou. The study period was 28 months, from January 1, 2021 to April 30, 2023. This clinic, specializing in hepato-gastroenterology care, is a private referral center for patients requiring therapeutic endoscopy in Burkina Faso.

The study population consisted of patients, followed for internal hemorrhoidal disease and who had benefited from rubber band ligation, during this 28-month

period in the clinic. The study included all adult patients of both sexes, with internal hemorrhoidal disease treated by rubber band ligation, with a usable medical record and a valid telephone contact.

Data on epidemiological, diagnostic, therapeutic and evolutionary variables were collected from patient records and entered into a structured questionnaire form. Data collection was carried out while respecting patient anonymity and confidentiality of their information. The collected data were entered and analyzed using Epi-Info 7 software.

Hemorrhoidal ligations were performed by qualified hepato-gastroenterologists working at this center. After the ligation procedure, patients were subjected to minimal preparation by micro-enema with sorbitol citrate and sodium lauryl sulfoacetate thirty minutes before the procedure. Anticoagulants must be stopped if necessary before the procedure and antibiotic prophylaxis with metronidazole may be administered. The patient is installed in knee-chest position or left lateral decubitus. An anoscope of the correct size for the ligator is used. This is an autoclavable suction hemorrhoid ligator angled at 25 degrees. An elastic band is positioned over the ligator using a suitable removable cone and the ligator is connected to the suction. The anoscope is introduced into the anus and then the bundle(s) to be ligated are located. The ligation must be made at the top of the hemorrhoids and must not extend beyond the pectinate line. It is therefore essential to clearly identify these different structures. To ensure that the elastic is placed in the right place, a blank suction is performed (without releasing the elastic). The suction should not be painful. Also, the patient is asked to push gently at the same time to facilitate positioning. Following all these precautions, the suction is made and then held for 1 to 2 seconds (in order to completely fill the ligator cylinder with the mucosa), and the elastic is released. The number of elastics used per session depended on the number of hemorrhoidal packets and the risk of post-ligation stenosis, assessed in relation to the space available. Up to 4 elastics could be used. After examination and absence of bleeding, the device was removed. Following the procedure, the patient is treated with an antibiotic for 2 to 3 days, a painkiller or anti-inflammatory medication in case of pain, and laxatives in case of constipation. The number of ligation sessions varied from one to four, depending on the grade of procidence and the number of packets to be treated.

For the purposes of the study, we have established the following operational definitions:

❖ Treatment efficacy was defined by the improvement of hematochezia and/or regression of prolapse.

❖ Failure was defined as the absence of clinical response after the last ligation session.

❖ Goligher's classification of internal hemorrhoids was used:

- Stage I: Non-prolapsed congestive internal hemorrhoids;
- Stage II: internal hemorrhoids prolapse during defecation or physical exertion but reintegrate spontaneously;
- Stage III: internal hemorrhoids prolapsed during defecation or physical exer-

tion but requiring manual reinsertion;

- Stage IV: Internal hemorrhoids that are permanently prolapsed or prolapse immediately after attempted manual reintroduction.

3. Results

In our series, the study population was 107 patients. The mean age was 42.8 years ± 13.16 years, with extremes of 19 years and 77 years. A male predominance of 75.7% (n = 81) was found with a sex ratio of 3.1. Our patients resided in 84.1% (n = 90) in the city of Ouagadougou. Executives represented 56.1% (n = 60) and traders 25.2% (n = 27). Hematochezia and hemorrhoidal prolapse represented, respectively, 83.2% (n = 89) and 38.3% (n = 41). An anal fissure was found in 6.5% (n = 7) of patients and an anal fistula in 1.9% (n = 2). Table 1 illustrates the stages of hemorrhoidal disease according to Goligher.

Table 1. Hemorrhoidal stage according to the Goligher classification.

Hemorrhoidal stage according to the Goligher classification	Number (n)	Frequency (%)
Stage 1	66	61.7
Stage 2	25	23.3
Stage 3	16	15
Total	107	100

Stage I patients had associated hematochezia, hence the indication for ligation.

All our patients underwent rubber band ligation of internal hemorrhoids. The duration between sessions ranged from 3 to 4 weeks. Table 2 shows the number of ligation sessions per patient in this study.

Table 2. Number of elastic ligation sessions per patient.

Number of sessions	Number (n)	Frequency (%)
1	49	45.8
2	30	28
3	24	22.5
4	4	3.7
Total	107	100

Two to three hemorrhoidal bundles were treated during the ligation sessions. The number of hemorrhoidal bundles ligated per session is shown in Table 3.

The effectiveness of the ligation technique in the indications of hematochezia and hemorrhoidal prolapse in our series is illustrated in Table 4 and Table 5.

Immediate complications such as anal pain were observed in 7.5% (n = 8) of patients. Recurrences occurred in 14% (n = 15) of patients between 3 and 6 months after the last ligation.

Table 3. Number of hemorrhoidal packages treated per session.

Number of tied bundles	Number n (%)			
	Session 1	Session 2	Session 3	Session 4
1	8 (7.5)	3 (5.2)	0 (0)	0 (0)
2	34 (31.8)	16 (27.6)	8 (28.6)	2 (50)
3	65 (60.7)	39 (67.2)	20 (71.4)	2 (50)
Total	107 (100)	58 (100)	28 (100)	4 (100)

Table 4. Effectiveness of elastic ligation in hematochezia and hemorrhoidal prolapse.

Symptoms/Stage	Number n (%)	Amendment n (%)	Failure n (%)
Hematochezia	89 (100)	77 (86.5)	12 (13.5)
Hemorrhoidal prolapse	41 (100)	30 (73.2)	11 (26.8)
Stage 2	25 (100)	22 (88)	3 (12)
Stage 3	16 (100)	12 (75)	4 (25)

* A patient could have hematochezia and associated hemorrhoidal prolapse.

Table 5. Effectiveness of ligation on hematochezia and hemorrhoidal prolapse depending on the number of sessions.

Symptoms	Number of sessions	Number n (%)	Amendment n (%)	Failure n (%)
Hematochezia	1	40 (100)	30 (75)	10 (25)
	2	26 (100)	24 (92.3)	2 (7.7)
	3	19 (100)	19 (100)	0 (0)
	4	4 (100)	4 (100)	0 (0)
Hemorrhoidal prolapse	1	20 (100)	9 (45)	11(55)
	2	12 (100)	10 (83.3)	2 (16.7)
	3	6 (100)	6 (100)	0 (0)
	4	3 (100)	3 (100)	0 (0)

4. Discussion

In our study, 107 patients with internal hemorrhoids were treated with rubber band ligation. The mean age was 42.8 years ± 13.16 years. This result is similar to those of Coulibaly in Burkina Faso [3], Mongo in Brazzaville [4] and Sangare in Mali [5] which were respectively 39.58 years, 48.76 years and 50.6 years. The frequency of this disease according to age is consistent with the data in the literature. A male predominance was found with a sex ratio of 3.1. Several authors [3]-[5] reported the same observation. Yu in his study found a female predominance [6]. The urban residence of the majority of our patients could be associated with a high socio-economic level and an urban lifestyle which would favor the occurrence of hemorrhoidal disease [7].

Hematochezia was the first indication for rubber band ligation of hemorrhoids. It is a common symptom of the disease according to several authors. Samrobinson in India in his study evaluating the effectiveness of ligation compared to sclerotherapy found hematochezia at 65% and 67% in the two groups followed [8]. Likewise Mongo in Brazzaville [4] and Kumar still in India [9] found this symptom as the primary cause of ligation in their series with 52.27% and 92% respectively. Hemorrhoidal prolapse was also an indication for elastic ligation. In Yu's series, it was found in the foreground [6]. The frequency of hematochezia and hemorrhoidal prolapse could be explained, in addition to their distressing nature for patients, motivating them to consult, by the sampling method of our study, which only took into account patients who had been ligated for hemorrhoids, therefore those who had an indication for ligation. Among the cases of hemorrhoidal prolapse treated, grade II was predominant, followed by grade III. Komporozos in Greece also found a predominance of grade II at 47.7% followed by grade III at 44% [10]. Unlike our series, Xu in China [2] and Mongo in Brazzaville [4] reported a predominance of grade III at 42.1% and 65.15% respectively. These differences between studies can be explained by patient sampling. Grades II and III constitute formal indications for rubber band ligation [1].

Fissure and fistula are the proctological pathologies most associated with hemorrhoidal disease [7]. In our study, anal fissure was the most associated. This association was also found in other African studies with Coulibaly [3] in Burkina Faso and Katile in Mali [11]. This could be explained by the fact that both of these pathologies have constipation as a contributing factor.

More than half of our patients benefited from 2 to 4 sessions within a 3 to 4-week interval. Repeated sessions with a delay of 4 weeks are most often necessary to obtain a good result [1] [12]. Spacing the sessions 3 to 4 weeks apart allows for post-ligation healing to occur in 2 to 3 weeks before a new session. Unlike us, Mongo in Brazzaville achieved healing in 90.15% of his series in one ligation session [4]. The performance of a single ligation session could be explained by the sampling of our patients in whom a single ligation session would have been effective, by the ligation of 2 to 3 hemorrhoidal bundles per session, by the high cost of the session for the middle class and by the period of the study which could have excluded patients who had only one session at the time of the study and who were able to continue the sessions at the end of the study period.

In our series, ligation of two to three hemorrhoidal bundles was frequently performed during sessions. For Kang in Korea, triple ligation in one session only concerned 3.8% (n = 12) of patients in his study. To do this, the ligatures must be done in such a way as to avoid rectal stenosis, that is, the elastics are placed well above the pectineal line [13]. It is known that the results of 3 ligatures in the same session or of 3 successive sessions of single ligatures are comparable [1] [14]. While for some, triple ligation in one session is possible and would reduce the number of sessions required, with a high rate of complications [15]; for others, on the other hand, there would be no increase in the occurrence of complications

[16]-[18]. Further studies are therefore needed to elucidate these contradictory results.

Rubber band ligation of hemorrhoids in our study population resulted in symptomatic relief in 86.5% of cases of hematochezia and 73.2% of cases of prolapse. Several authors agree that rubber band ligation is a safe and effective procedure [1] [17] [19]. For Ainul in Pakistan, the success rate was 73.3% for hematochezia and 73.1% for prolapse [15]. For Ray-Offor in Nigeria, symptomatic cure was achieved in 90.2% of patients suffering from hematochezia and procidentia at one-month follow-up [20]. Still in Nigeria, Abiodun, comparing ligation to sclerotherapy on grade II and III hemorrhoids, obtained a resolution of hematochezia in 95.7%, complete resolution of prolapse of 64.4% and partial resolution of 40.9% [21]. The effectiveness of this technique improves with the number of sessions. For hematochezia and for prolapse, an improvement is observed in all patients after 3 to 4 sessions. Repeated sessions improve the effectiveness of the ligation [12].

In our series, anal pain was the only immediate complication observed in 7.5% (n = 8) of patients. No other complications such as bleeding, infection or thrombosis occurred in our study. In addition to 55.2% anal pain, authors such as Schleinstein reported bleeding in 29.3% of cases [18]. Recurrences occurred in 14% (n = 15) of patients between 3 and 6 months after the last ligation. The descriptive nature of the study did not allow for a longer follow-up period. Several authors have reported variable recurrence rates depending on the duration of follow-up. Kang noted a recurrence of hematochezia at 2.5% and of procidentia at 0.6% after one year of follow-up [13].

The study was conducted in one of the two centers in Burkina Faso that offer instrumental treatment of internal hemorrhoidal disease by rubber band ligation. This does not allow us to extrapolate our results to the entire population. In addition, of the known instrumental techniques, rubber band ligation alone was available in our context, which did not allow a comparative analysis of the effectiveness of the different instrumental treatment methods. Finally, the retrospective nature of the study did not allow for exhaustive data collection for the period. Despite these limitations and constraints, this study allowed us to evaluate the practice of rubber band ligation in our context of a country with limited resources.

5. Conclusion

Rubber band ligation, in view of the results obtained, should be popularized as a means of treating hemorrhoidal disease. This would reduce the previously predominant role of surgery. Given the frequency of this condition, its impact on quality of life and the complications of surgery, the development of rubber band ligation and other instrumental techniques is essential in Burkina Faso.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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