ORIGINAL ARTICLE

Colonoscopic Band Ligation for Internal Hemorrhoids - A Tertiary Care Experience

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ABSTRACT

Background and objectives: Rubber band ligation (BL) is the most widely used technique for treatment of symptomatic internal haemorrhoids (IH) that are refractory to conservative treatment. The aim of this study is to assess the efficacy of colonoscopic BL as therapy for symptomatic IH.

Methods: Patients seen at our center with symptomatic IH who underwent BL between January 2006 and December 2011 were included in this prospective study. The clinical and colonoscopic details were entered in uniform structured data forms.

Results: Two hundred and eighteen consecutive patients with symptomatic IH were enrolled in the study. The presentations were rectal bleeding in 150 (69%) and prolapse in remaining 68 (31%) patients. Twenty-four patients (11%) had chronic liver disease (child B-C). Same operator treated all the patients. The severity of the IH was classified by using Goligher grading system. The mean age of patients was 48.3 ± 15 years with range of 22 – 85 years. The mean follow up was 3 months (range 1 month – 36 months). In 209 patients (96%) there was at least 1 grade reduction in hemorrhoids as well the symptoms were controlled. Two patients required surgery and another 7 patients required repeat session of banding. After banding session 32 (15%) patients had perianal pain and 13 (6%) had mild bleeding.

Conclusions: Colonoscopic BL is a safe, and effective outpatient therapeutic procedure for symptomatic internal hemorrhoids. Furthermore, the BL is safe and effective in patients of coagulopathy associated with chronic liver disease. (*J Dig Endosc* 2013;4(1):6-9)

Key Words: Haemorrhoids - Haemorrhoid Band - Ligation - Colonoscopic banding

Introduction

Hemorrhoids are vascular structures in the anal canal. They become pathological or piles when swollen or inflamed. Internal hemorrhoids usually present with painless rectal bleeding while external hemorrhoids present with pain in the area of the anus.¹

Symptomatic IH are treated with conservative measures like high fiber diet, excess of fluids and sitz bath. Techniques to treat IH are based on the principle of removing or to cause sloughing of excess hemorrhoid tissue along with scarring that fixes the residual tissue to the underlying anorectal muscular ring. The non-surgical techniques include rubber band ligation (BL), infrared coagulation, bipolar diathermy (Bicap), laser photocoagulation, and sclerotherapy. Surgery is performed for unresponsiveness to conservative measures.^{2,3}

Conventional band ligation is performed with rigid anosopic devices, which has disadvantages of limited maneuverability, a narrow field of view and no facility for documentation.⁴ These deficiencies can be overcome by using a video-endoscopic system that provides a magnified detailed image of the operative field. This study assessed the safety and efficacy of BL using colonoscopy with multishot BL for treatment of patients with symptomatic IH.

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Material and Methods

Patients and staging of haemorrhoids

Two hundred and eighteen consecutive patients with symptomatic internal haemorrhoids were included in this prospective study between January 2006 and December 2011. All patients underwent hemorrhoidal BL by a single operator. IH were graded into 4 stages by using the system of Goligher.⁵ (Table 1)

Table 1: Grading of hemorrhoids by Goligher classification⁵

Grades of internal haemorrhoids	Description
Grade 1	Haemorrhoids with bleeding
Grade 2	Hemorrhoids with bleeding and protrusion, with spontaneous reduction
Grade 3	Hemorrhoids with bleeding and protrusion that require manual reduction
Grade 4	Hemorrhoids with prolapse that cannot be reduced.

All patients underwent colonoscopy to exclude other causes of bleeding per rectum. Patients were excluded if a polyp(s) or cancer was found at colonoscopy. All patients gave informed consent for the ligation procedure. The institute ethical committee approved the study protocol.

Procedure for band ligation

After the colonoscopic examination, patients were treated if grade 2 or larger IH were present. As with esophageal variceal ligation, a transparent plastic colonoscopic ligation cap (Multishot ligator cartridge, Medelec systems Pvt. Ltd, Kalindi, New Delhi) was attached to the top of a colonoscope (PENTAX, EC 3840L Itabashi, Tokyo, Japan). The dentate line was then identified, and ligation was performed 2 to 5 mm above the dentate line (Figure 1). The principle involves suction of the IH into the ligating drum, which is attached to the colonoscope. The ring is deployed to the neck of the IH through a trigger passed through the biopsy channel. A single band is released per IH. In a session maximum of 4 bands were applied as this procedure may take fewer sessions for eradication of haemorrhoids and the patients were followed up after 1 month, 3 months and later only if symptomatic. All the patients received life style modification – lot of fibre supplements, water, fruits along with bulk laxatives and sitz bath in the first week after banding. Oral pain medications included tablet diclofenac sodium 50 mg and/or tramadol hydrochloride. Prophylactic antibiotics (oral quinalones and ornidazole) were given in chronic liver disease and diabetic patients.

Figure 1: Haemorrhoids A. Proctoscopic view B. Colonoscopic view, C. Banding in progress, D. Banded hemorrhoids

Statistical analysis

The clinical and laboratory data are presented as mean value with standard deviation or median with range for continuous variables and as proportions for categorical variables. Comparison between categorical variables was done using Fisher's exact test. Statistical analysis was done using SPSS for windows 11.0.

Results

Two hundred and eighteen consecutive patients with symptomatic IH were enrolled in this prospective study during the study period of 5 years. The mean age was 48.3 ± 15 years with rage range of 22 – 85 years and 60.5% were males. Rectal bleeding was present in 150 (69%) and prolapse in remaining 68 (31%) patients. Same operator treated all the patients. Twenty-four patients (11%) had chronic liver disease (child B-C) and one was retrovirus positive on anti viral therapy along with coagulopathy and poor nutrition. Four patients had associated rectal varices, which were banded in the same session. Three patients had combined lesions like AV malformations, two of them had Klippel Trenauny syndrome and other one had solitary punctum like lesion; they were also banded prior to haemorrhoids BL (Figures 2 and 3). In 209 patients (96%) symptoms were

Follow-up and complications

The mean follow up was 3months (range 1 month – 6 months). Seven patients had persistent symptoms and were referred for surgical treatment. Two patients had a repeat session of banding during follow up. After banding session, 32(15%) patients had perianal pain and 13(6%) had mild bleeding. The bleeding was self-limiting and needed no intervention except for fiber supplements.

Discussion

Hemorrhoids are the most prevalent anorectal disorder among adults. Over 90% of patients undergoing sigmoidoscopy or colonoscopy have haemorrhoids of varying degrees.⁶ Ming *et al*, used esophageal variceal band ligator for application of bands for IH with the bleeding controlled in more than 95% of the patients.⁶ Trowers *et al* reported preliminary experience with endoscopic hemorrhoidal ligation in 1997 in which 95% of internal hemorrhoids were reduced by more than one grade after therapy.⁷ Berkelhammer and Moosvi used retroflexed endoscopic band ligation to treat bleeding internal haemorrhoids, but these studies used regular endoscopic variceal band ligators for hemorrhoidal BL.⁸

In a meta-analysis of five trials comparing the efficacy and side effects of infrared coagulation, injection

Figure 2: Coexisting bleeding lesions banded with haemorrhoids, A. Malformatin, B. After banding, C. Rectal varices

controlled with reduction of at least 1 grade in size of haemorrhoids (Table 2). The ligation procedure was completed in less than 15 minutes and 185(85%) patients had banding on outpatient basis. Majority of patients underwent BL of 3 bands per session and 30 (14%) had 2 bands per session.

Table 2: Results of band ligation

Grade of hemorrhoids	Before banding (n= 218)	After banding at 1 month follow up (n= 218)	After banding at 3 months follow up (n =218)
4	1(0.4%)	0	0
3	120 (55.2%)	8 (3.3%)	10 (4.5%)
2	97(44.4%)	120 (55.5%)	98 (44.9%)
1	0	90 (41.2%)	110 (50.6%)

Figure 3: Colonoscopic multiband ligator kit

sclerotherapy, and rubber band ligation, recurrent symptoms were less common in patients undergoing rubber band ligation but there was higher incidence of post-treatment pain as compared to infrared coagulation.⁹ Peng *et al*, compared stapled hemorrhoidectomy to band ligation and reported that hemorrhoidectomy was associated with increased pain and analgesia usage at both 2-week and 2-month follow-up ($p < 0.001$). Rubber BL and stapled hemorrhoidectomy were equally effective in controlling symptomatic prolapse, but BL was associated with an increased incidence of recurrent bleeding ($p = 0.002$). This study emphasises the band ligation as a modality of treatment is comparable to hemorrhoidectomy.¹⁰ Furthermore, the American Society of Colon and Rectal Surgeons (ASCRS) emphasises that hemorrhoidal banding as the most effective outpatient option for internal haemorrhoids.¹¹

Marshman, *et al*¹² in a series of 241 patients who underwent BL, reported the following complications: pain in 8%; bleeding in 3 patients who required hospitalization – 2 of whom were on oral anticoagulants; and, abscess in one case that resolved with drainage. Only three patients required subsequent surgical hemorrhoidectomy. In our study, only 32 (15%) patients had perianal pain and another 13 (6%) had mild bleeding. But no major adverse events needing hospital admission were noted.

The present study employed indigenously modified multishot band ligator used over the routine colonoscope with the band applicator having 4 bands and the release system similar to the endoscopic band ligator. There is no reported literature in the usage of this ligator and the use of colonoscope for BL. The majority of the patients had 2-3 bands applied per session. At the start of the study majority of the patients had grade 3 hemorrhoids ($n=120$) and during follow up the majority of the haemorrhoids became grade 1 ($n=110$). But seven patients had recurrence of the haemorrhoids for which they had repeat session of banding. The remaining patients did not require another session. A single session of banding was enough for symptomatic haemorrhoids to become asymptomatic. The procedure was well tolerated by the patients with no major adverse events. More so hemorrhoidal BL is useful for patients of chronic liver disease with coagulopathy and patients with poor nutritional status. Another advantage of BL is extension of same therapy to associated lesions such as rectal varices and AV malformations in the same sitting.

In view of low rate of recurrence this procedure can be followed as alternative for surgery. But comparative studies are required to assess the superiority of usage of colonoscopic banding over surgery and as well long term follow up are necessary to assess the recurrence rate.

Conclusions

The present study showed that colonoscopic hemorrhoidal band ligation is an effective and safe therapy for symptomatic large hemorrhoids. It offers additional advantage of treating concomitant lesions such as rectal varices and AV malformations in the same sitting. The major complications were not encountered. Majority of symptomatic hemorrhoids became asymptomatic with a single session of band ligation. Hemorrhoidal surgery was necessitated in a small number of patients.

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