Rubber Band Ligation Techniques

Rubber Band Ligation
Application of a small rubber band around the base of an internal hemorrhoid causes ischemic necrosis and sloughing of hemorrhoidal tissue, with ulceration resulting in fibrosis and obliteration of the submucosal tissue.

This procedure was originally performed via rigid proctoscopy and required 2 people for proper placement of the bands: one to hold the proctoscope and the other to place the rubber band. Despite the difficulties involved with this system, hemorrhoidal banding was found to be quite effective, caused much less pain than surgical hemorrhoidectomy, and was associated with fewer complications. Hemorrhoid banding was reported to cure 79% of patients, have a recurrence rate of 20%, and a failure rate of 2%. Newer techniques for hemorrhoidal banding can be used by a single operator with better visualization and improved efficacy.

The most common complication of hemorrhoid banding is postoperative anal pain that can last 1 to 2 days or as many as 7 days. It usually responds to warm sitz baths and analgesics. Severe pain immediately following the procedure is usually due to banding on or too close to the dentate line and is usually relieved by prompt removal of the offending band. Other less common complications include delayed hemorrhage, urinary retention, and, rarely, pelvic or perineal cellulitis.

General
Although 3 dominant internal hemorrhoidal plexus have been described and emphasized by proctologists, patients with chronic internal hemorrhoids develop cushions circumferentially distributed in all sectors around the rectal canal. We advocate grading of internal hemorrhoids in 8 sectors around the rectal canal with a slotted anoscope. Useful accessories are a head lamp (for hands-free illumination), a suction machine (if anoscopy is done), and an examining table that elevates to facilitate anal examination and treatment.

We recommend several guidelines to avoid or reduce pain or complications for banding of internal hemorrhoids, using any technique.

First, place the band at least 1 cm above the dentate line. When suctioning the internal hemorrhoidal tissue, ask the patient if there is pain. If so, do not deploy the band at that location and move proximally with repeat suctioning and inquiry about pain. Second, place no more than 3 bands per session because pain and other complications correlate with the number of bands per session. Third, place the bands in different locations around the rectal canal, such as in the 2, 6, and 9 o’clock positions with the patient in left lateral decubitus position and avoid placing bands adjacent to each other. Fourth, wait 4 to 6 weeks between sessions and continue medical treatment. This delay will allow the full effects of banding, healing (of 2° ulcers), and retraction of internal hemorrhoidal tissue to be achieved. Finally, be cautious with patients who have irritable bowel syndrome (IBS) because banding of internal hemorrhoids often aggravates IBS symptoms. Discuss this with the patient prior to initiating therapy, reduce the number of bands per session, and be prepared to intensify medical treatments for both IBS and internal hemorrhoids.

Standard Rubber Band Ligation
Ligation can be performed using a standard rigid anoscopic rubber band ligator (RBL) through an anoscope or with an endoscope. For the endoscope, we use a diagnostic size instrument with either single
shot or multiple band ligators. End-on internal hemorrhoidal ligators or banding above the dentate line in retroflexion is feasible.

**CRH-O’Regan Hemorrhoid Ligator and Kit**
The CRH-O’Regan Disposable Hemorrhoid Banding System for internal hemorrhoid ligation consists of a slotted anoscope, a ligator that resembles a syringe, and rubber bands for ligation. The advantages of the CRH-O’Regan kit are the inclusion of key elements for slotted anoscopic diagnosis, the ligator for treatment, and the single use disposable design that does not require equipment reprocessing.

Internal hemorrhoid ligation can be performed with the anoscope for visualization of the placement site. Another option is placement of the bands with a blind technique. This latter technique is particularly useful for patients returning for follow-up in an office setting who did well after initial or prior treatments of internal hemorrhoids with this ligator.

**Comparisons of Standard Rubber Band Ligation and CRH-O’Regan Ligation**
To our knowledge, randomized studies comparing internal hemorrhoid ligation results for standard RBL versus the CRH-O’Regan ligation system have not been reported. The most extensive experience was reported by Cleator and Cleator as a large case series of 1852 patients with symptomatic grade I to IV internal hemorrhoids. Their success rate was 95.5% and the recurrence rate was 4.5%. Minor complications reported were bleeding (0.4%), thrombosis (0.3%), and minor pain (0.2%) for a total complication rate of 0.9%. Pelvic sepsis, urinary retention, and anal stenosis were not reported. Cleator and Cleator24 relate this to placement of a single band per session and avoidance of banding the underlying muscle. Another prospective study in 60 patients also reported very high efficacy with very few complications. Minor early rebleeding occurred in 10% and late rebleeding in 6.7% of patients. Manageable pain was observed in 6.7% of patients.

In experienced hands, both standard and CRH-O’Regan band ligation are reported to be safe and effective. The range of complications in the literature correlates with the experience of the physician, the number of bands placed per session, and the standardization of banding techniques (such as placement ≥1 cm above the dentate line).

For the physician, the advantages of the CRH-O’Regan ligator are that it is a single use disposable complete kit, bands can be deployed easily (by either blind technique or via anoscopy), and complications may be somewhat fewer than with standard RBL (if guidelines are followed).

One of the recommendations advocated with use of the CRH-O’Regan system is to roll the band off the underlying muscle layer in case the patient experiences pain after band ligation. This and placement of only 1 band per session could explain the lower complication rates reported in the large series by Cleator and Cleator as compared with standard banding reports. This “rolling” technique is recommended for patients who have banding by any technique and experience rectal pain after band placement above the dentate line.

**Training, Resources, and Economic Considerations**
Training is required for gastroenterologists and other physicians who are interested in providing diagnosis and treatment of internal hemorrhoids. First, practitioners will require cognitive training about the anatomy of the anorectum, disorders and diseases of this organ, differential diagnosis, and treatments available. Second, an adequate knowledge of the technical guidelines and application of anoscopy and anoscopic or endoscopic treatments should be obtained. Finally, additional instruction or training is recommended for anyone contemplating use of the CRH-O’Regan disposable bander or any other banding technique.