

## How I Do It

# A new anoscope for transanal surgery

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### KEYWORDS:

Stapled mucosectomy;  
Anoscope;  
Hemorrhoids;  
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### Abstract

**BACKGROUND:** Although stapled mucosectomy has several advantages over hemorrhoidectomy for hemorrhoidal prolapse, complications such as hemorrhage, pain, and life-threatening pelvic sepsis may occur, often due to poorly executed purse-string suture. We describe a simple new anoscope that makes it easy to correctly perform and position the purse-string suture that is an integral part of stapled mucosectomy.

**METHODS:** The apex of the middle part of the new anoscope consists of digitiform projections separated by spaces. After insertion of the instrument into the anus, the inner part is removed, allowing strips of rectal mucosa to protrude through the spaces between the digitiform projections. The purse-string suture is made through these protrusions. The suture catches the mucosa and submucosa but not the deeper muscle layer, which does not protrude through the spaces.

**CONCLUSION:** Preliminary histologic studies in the pig suggest that the design of the anoscope prevents inclusion of the muscular layer in the pursestring.

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Resection of a cylindrical tract of rectal mucosa combined with mechanical anopexy—a technique first described by Pescatori et al in 1997<sup>1</sup> and later refined by Longo<sup>2</sup>—is used worldwide with satisfactory results to treat selected patients with rectal mucosal prolapse, third or fourth degree piles<sup>3,4</sup> and rectocele associated with mucosal prolapse.<sup>5,6</sup> A crucial step in the procedure is placement of a purse-string suture 4 to 5 cm from the anal verge, which is closed around the central rod of the stapler. When activated, the stapler resects the mucosal cylinder and staples the mucosal ends together. The purse-string suture is typically placed transanally using the anoscope conceived by Longo and consisting of 3 plastic components. The suture should include only rectal mucosa and submucosa, and should be at a constant distance from the dentate line.

However, many authors report difficulties in performing the purse-string correctly.<sup>7–12</sup>

Although stapled mucosectomy has several advantages over hemorrhoidectomy, complications may include hemorrhage, pain, fecal urgency, and life-threatening pelvic sepsis.<sup>7–10,13–16</sup> Such complications are often due to inadequate purse-string placement or technique.

We have developed a new surgical device (anoscope) designed to facilitate purse-string suture placement, which promises to reduce the complications of stapled mucosectomy and improve outcomes.

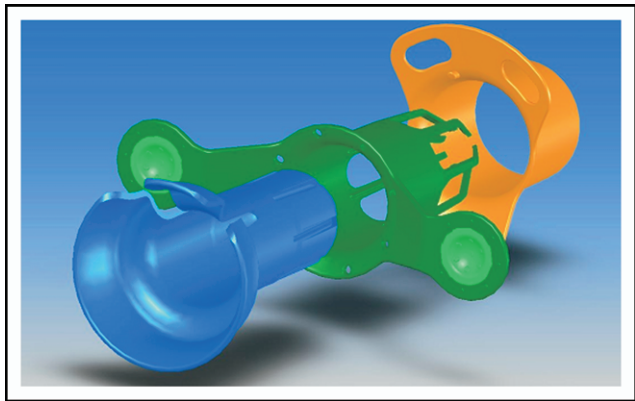
## The Anoscope

The anoscope, which is plastic and disposable, consists of inner, middle, and outer parts (Figure 1) that fit together to form a conic frustum (Figure 2) with conical tip and

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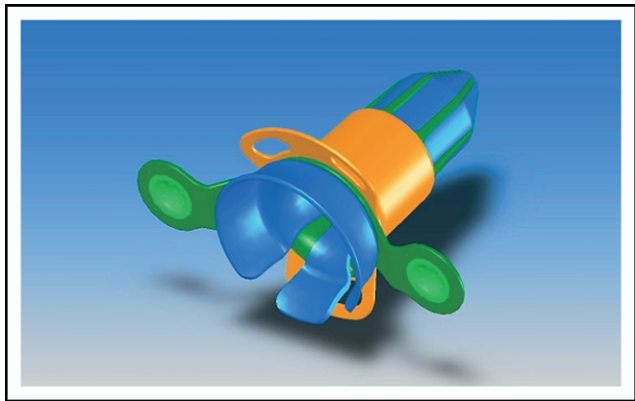


**Figure 1** Inner (blue), middle (green), and outer (orange) parts of anoscope.

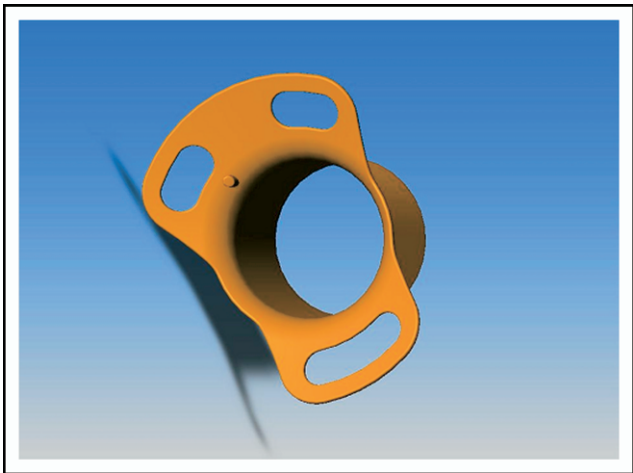
smooth surface facilitating insertion, without trauma, into the anal canal. The outer part (Figure 3) is a cylindrical anal dilator with 2 flanges. One flange is large with 2 holes and is intended to be oriented anteriorly; the other flange with a single hole is oriented posteriorly. The holes accommodate sutures to stably immobilize the device during surgery. The flanges also serve as handles for inserting the assembled anoscope into the anal canal and as stops against the anal margin. The apex of the middle part of the anoscope consists of a series of digitiform projections separated by spaces (Figures 4 and 5).

**Technique**

The assembled anoscope is introduced into the anal canal. Once in place, the outer part is secured to the perianal skin with 3 stay sutures and remains fixed there throughout the operation. The inner part of the anoscope is then removed, whereupon strips of rectal mucosa bulge through the spaces between the digitiform projections of the middle part, and into the lumen. The purse-string suture is made by passing the needle through each of the protruding mucosal strips in turn (Figure 6). The suture catches the protruding



**Figure 2** Assembled anoscope.

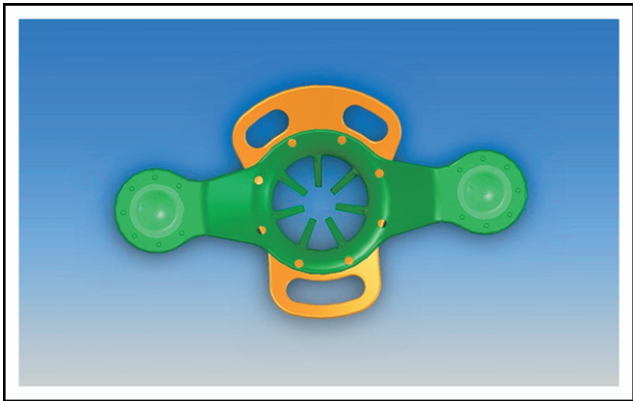


**Figure 3** Outer part of anoscope showing the flanges with holes for the sutures that anchor the device to the perianal skin during surgery.

mucosa and submucosa, but not the deeper muscle layer, which does not protrude through the spaces (histological data available in pigs; not presented here). The middle part of the anoscope is not moved during the operation so the suture can be placed at a predetermined and constant distance from the anal verge. It is also possible to add additional purse-string sutures at various distances from the anal verge (Figure 7).

**Comments**

The most important step in stapled mucosectomy is placement of the purse-string suture. The anoscope supplied with the widely used linear stapler Ethicon PPH (procedure for prolapse of hemorrhoids) kit is not ideal in view of the difficulties in placing the purse-string. This anoscope has to be removed, rotated, and reinserted after each stitch to expose a new section of mucosa for the next stitch; further-



**Figure 4** Axial view of assembled anoscope with inner part removed. The digitiform projections of the middle part are clearly visible.

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