

Stapled Transanal Rectal Resection: A New Surgical Treatment for Obstructed Defecation Syndrome

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ABSTRACT: **Background:** Rectal intussusception, rectocele and rectal prolapse are anatomic disorders in obstructed defecation syndrome. A relatively new surgical approach, Stapled Transanal Rectal Resection, was designed to treat these anomalies.

Objectives: To present our preliminary results with this technique.

Methods: Thirty patients with ODS not responding to medical treatment or biofeedback were operated on with the STARR technique. All the patients underwent a complete workup in the Pelvic Floor Unit. The operation was performed according to the technique described elsewhere.

Results: The patients' mean age was 67.1 years, and the median duration of symptoms was 7 years. The mean operating time was 40 minutes (range 35–80 min) and the mean hospital stay was 2 days (range 1–4 days). The mean follow-up was 26 months (range 6–48 months). ODS symptoms were ameliorated in 27 patients (90%), decreased significantly in 18, and in 9 patients the symptoms disappeared. The procedure failed in 3 patients (10%). Complications included minor bleeding that required homeostasis in eight patients during the operation. Three patients had transient tenesmus and five patients had anal pain. There were no cases of mortality or pelvic sepsis.

Conclusions: STARR is an effective and safe procedure for the treatment of obstructed defecation syndrome due to rectal intussusception, rectocele and small rectal prolapse.

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KEY WORDS: Stapled Transanal Rectal Resection, obstructed defecation, rectal intussusceptions, rectocele, constipation

the quality of life of many patients. There is an enormous disproportion between the large number of people who suffer from the disease and the small number of patient visits. In fact, it is considered by most patients as a common problem and not as a pathology. Thus, most of the patients treat constipation themselves.

The cost to the British National Health Service of prescription laxatives for the elderly is 143 million dollars a year [1]. Americans spend more than 725 million dollars annually on over-the-counter laxatives in an attempt to self-treat the most common gastrointestinal complaint in the country [2]. The exact prevalence of constipation in the U.S. population is not known. One epidemiological study [3] found an overall prevalence of 14.7% in adults, more frequently among blacks and women, and usually with increasing age [4]. Constipation is a common but complex problem, accounting for almost 2,500,000 physician visits each year in the United States [5].

Constipation has many causes, and a multidisciplinary approach is therefore necessary. A major cause of constipation is the obstructed defecation syndrome. ODS is defined in various ways. It includes a series of symptoms due to anomalies, difficulty or impossibility in expelling the feces. Failure to relax, or paradoxical contraction of the puborectalis muscles and the anal sphincters are acknowledged to be the main functional causes of ODS. The syndrome may be caused by functional and/or anatomic alterations, such as recto-anal intussusception which is diagnosed as a cinedefecographic finding of funnel-shaped infolding of the rectum during evacuation [Figure 1A] and rectocele. Several authors have stated that recto-anal intussusception represents the first stage of a dynamic anomaly that may eventually lead to an overt rectal prolapse [6,7].

Symptoms related to ODS are common in women who refer to coloproctologists. The patient complains of incomplete evacuation with painful effort, fragmented defecation, use of perineal support, digital evacuation, laxative and/or enema abuse, and rectal bleeding.

In order to avoid unnecessary and potentially dangerous surgery, conservative therapy can be suggested as the first treatment. More than 30% of patients with large recto-anal

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Constipation is a frequently occurring condition that can occur at any age. This disease implies a high economic burden for the patient and health care provider and can affect

ODS = obstructed defecation syndrome
STARR = Stapled Transanal Rectal Resection

intussusception showed an improvement only with diet and biofeedback [8]. Patients who do not respond to conservative treatment are usually multiparous females affected by a combination of intussusception and rectocele. In these patients the correction of rectocele with a vaginal or perineal levatorplasty is often ineffective [8,9].

Double Stapled Trans-Anal Rectal Resection, developed by Antonio Longo, was recently proposed as an effective alternative for the treatment of ODS [10,11]. In this study we present our preliminary results with the STARR operation for the treatment of obstructive defecation syndrome.

PATIENTS AND METHODS

All patients presenting to our facility with classical ODS symptoms were admitted to the Pelvic Floor Unit and underwent:

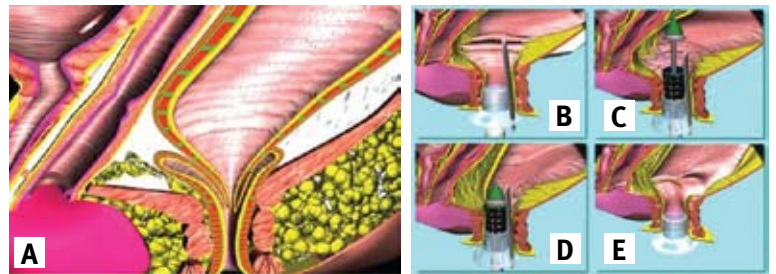
- Anamnesis and clinical examination of the perineum, rectum and vagina to evaluate the perineal descent, the size and the extension of rectocele, the validity of voluntary contraction of both external sphincter and puborectalis muscle, and the presence of genital prolapse.
- Rectoscopy to evaluate any concomitant anorectal diseases and internal rectal prolapse and colonoscopy to detect the presence of inflammatory bowel disease, polyps, or cancer.
- Manometric evaluation using a six-channel water perfusion polyvinyl catheter (Zinetics AMC[®]). The continuous pull-through technique was used with the catheter puller. The following measurements were recorded: resting pressure of the anal canal, squeeze pressure, and rectal sensitivity threshold volume.
- Electromyographic evaluation, including pudendal nerve terminal latency.
- Defecography performed by the introduction of 250 ml of contrast in the rectum. Radiographs were performed in the lateral projection at rest, during and after straining, until the complete evacuation of the contrast.

INCLUSION CRITERIA

Three of the following symptoms persisting for more than 6 months were required for inclusion in the study: feeling of incomplete evacuation, painful effort, unsuccessful attempts with long time spent in the toilet, defecation with use of perineal support and or odd posture, digital assistance, evacuation obtained only by use of enemas, and fragmented defecation.

In addition, patients with the following findings at defecography were included: recto-anal intussusception ≥ 10 mm extending into the anal canal, rectocele on straining, and small rectal prolapse < 3 cm. The presence of hemorrhoids was not a contraindication.

Figure 1. [A]. Rectal intussusception. [B] Anal dilator (CAD 33) and retractor inserted in the lower hole on the CAD 33. [C] Circular stapler, 33 mm, inserted into the lower rectum. [D] Anterior rectal intussusception resection by the 33 mm circular stapler. [E] Anterior stapled line.



EXCLUSION CRITERIA

These included severe fecal incontinence, enterocele (grade 3, 4, and 5), and full wall rectal prolapse of more than 3 cm.

SURGICAL TECHNIQUE

All patients were operated on by the same surgical team. Preoperatively, a cleansing enema was given, and the patients received a routine antibiotic prophylaxis, metronidazole 500 mg and 1 g ceftriaxone intravenously. The operation was performed under general or spinal anesthesia with the patient in the lithotomic position. A Foley catheter was inserted. A lubricated anal dilator (CAD 33) was gently introduced into the anal canal and held by knotting stitches; the posterior rectal wall was protected by a retractor inserted in the lower hole on the CAD 33 and pushed along the anal canal and lower rectal ampulla [Figure 1B]. The anoscope (PSA 33) was introduced into the CAD 33, and three half (180°) purse-strings with prolene 2-0 including prolapsed rectal wall with mucosa, submucosa and rectal muscle wall were inserted above the hemorrhoidal apex, 1–2 cm apart, to include the top of rectocele or prolapse.

The 33 mm circular stapler (PPH-01 Ethicon-Endosurgery) was opened, and the head placed above the posterior vaginal valve was withdrawn [Figure 1C]. A minimal mucosal bridge with a staple connecting the two edges of the anterior anastomosis was found in some cases and was cut with scissors. The anterior stapled line was reinforced using Vicryl 3-0 sutures and inspected for bleeding [Figure 1D]. Hemostatic stitches were occasionally required. The procedure was repeated in the posterior rectal wall, with the retractor inserted into the upper hole of the dilator [Figure 1E]. All surgical specimens obtained from both procedures were histologically examined.

RESULTS

Thirty patients were operated on, 29 women and 1 man. The mean age was 67.1 years (range 50–75 years), and the median duration of symptoms was 7 years.

Table 1. Preoperative anatomic disorders

No. of patients	Anatomic disorders
4	Rectal intussusception
20	Intussusception & rectocele
5	Rectal prolapse
1	Intussusception & enterocele

Table 2. Postoperative amelioration of symptoms rate

	Patients (n=30)	
Full	30	100%
Significant	9	30%
None	18	60%
	3	10%

Table 3. Postoperative defecography results

No. of patients	Anatomic disorders
2	Intussusception
1	Intussusception & rectocele
7	Normal

The anatomic disorders in our patients included a combination of intussusception and rectocele in 20 patients, a small rectal prolapse of < 3 cm in 5 patients, and rectal intussusception in 4. The remaining patient had a intussusception and concomitant enterocele, for which a combination approach of laparoscopy and STARR was used [Table 1]. Anesthesia was general in 8 patients and spinal in 22. The mean operating time was 40 minutes (range 35–80 min), and the mean hospital stay was 2 days (range 1–4 days).

Control of bleeding following stapling was required in eight patients (during surgery). The mean follow-up was 26 months (range 6–48 months). Obstructive defecation symptoms were ameliorated in 27 patients (90%); a significant improvement was noted in 18 patients, and in 9 patients the symptoms disappeared completely. The procedure failed in three patients (10%) [Table 2].

In order to assess the anatomic results we performed defecography 3 months postoperatively in 10 patients. In three patients there was a recurrent intussusception and in one of them a rectocele as well [Table 3]. Recurrent rectal prolapse was diagnosed clinically in one patient. The patients with normal postoperative defecography reported significant amelioration of their preoperative symptoms.

Three patients had transient tenesmus which resolved spontaneously, and five patients had anal pain relieved by analgesics. No late complications were noted, and there were

no deaths or cases of pelvic sepsis. Rectal smooth muscle fibers were found in all the specimens.

DISCUSSION

Until the development of the STARR technique there was no surgical procedure for correction of obstructive defecation syndrome, and patients were treated conservatively with biofeedback. In contrast to the transvaginal approach and perineal levatorplasty used to treat rectocele, the STARR procedure corrects both rectocele and intussusception.

Traditional operations in patients with both mucosal prolapse and rectocele are associated with a high incidence of delayed healing of the perineal wound, and dyspareunia. The combined endo-anal and perineal approach increased the risk of sepsis due to fecal contamination and led to potentially fatal cases of pelvic gangrene [12]. Another multicentric study [13] demonstrated that the STARR intervention, a unique approach in patients with ODS, is technically simple to perform and able to revert all constipation symptoms; the operative time and hospital stay are short, the postoperative pain and bleeding are minimal, there is no sepsis or postoperative dyspareunia, and patients return early to work.

The major exclusion criterion for performing the STARR procedure is enterocele. Petersen et al. [14] reported the combination of STARR and the laparoscopic approach to be a safe procedure even in the presence of concomitant enterocele. This approach was used by us in one of our patients.

Gagliardi and collaborators [15] demonstrated acceptable results at the cost of a high reoperation rate of 37%. There were no reoperations in our study. A French multicentric study suggests that the STARR approach is feasible and safe for the treatment of rectocele as a single anatomic disorder [16]. In another multicentric, randomized controlled trial [17], STARR was more effective than biofeedback in treating ODS.

Our results demonstrated that STARR is a safe and effective procedure in the surgical treatment of ODS. The amelioration of symptoms related to the correction of intussusception and rectocele was very satisfactory. Our results confirmed that the rate of postoperative pain was low and there was no case of dyspareunia. The risk of serious complications like sepsis and rectovaginal fistula after STARR should not be underestimated, since the operation involves a full-thickness resection of the rectal wall. STARR seems to be preferable, particularly in young females, due to the absence of complications related to the perineal levatorplasty and better results on postoperative pain and clinical outcome.

CONCLUSIONS

STARR is a safe and effective procedure for patients with ODS due to a combination of rectal intussusception and rectocele.

The STARR intervention is associated with minimal post-operative pain, short operating time and hospital stay, and early return to normal activities. Overall patient satisfaction increased following the STARR procedure. However, longer follow-up with a larger number of operated patients is necessary to reach definitive conclusions. Nonetheless, we hope to increase the communication and cooperation regarding this procedure among proctologists, gynecologists, gastroenterologists, and family physicians.

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