

Case Report

Initial Experience with Stapled Transanal Rectal Resection under Laparoscopic Surveillance for Rectocele and Rectal Internal Intussusception

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Key Words

Stapled transanal rectal resection (STARR);

Rectocele;

Intussusception;

Obstructive defecation disorder

Purpose. Rectocele and rectal internal intussusception are two organic causes of obstructed defecation syndrome. A surgical procedure called the stapled transanal rectal resection (STARR), is gaining acceptance as a recommended surgical option to treat these types of obstructed defecation syndrome. We report the initial experience with the stapled transanal rectal resection under laparoscopic surveillance.

Patients and Methods. Five patients with symptomatic rectocele and coexistent intussusception underwent STARR procedure combined with laparoscopic surveillance.

Results. Post-operative complications included immediate postoperative staple line bleeding in two cases, transient incontinence to flatus in three cases and temporary urge incontinence of flatus in two cases. The post-operative subjective sense of pain was low; all five patients did not need any IM analgesics. In addition, no major complications such as intra-abdominal bleeding, rectovaginal fistula or late abscess in the staple line were observed. Postoperatively, all patients experienced better defecation with less straining, less tenesmus and less sensation of incomplete evacuation. No fecal incontinence was detected.

Conclusion. STARR procedure under laparoscopic surveillance appears to be a safe and effective therapy for obstructive defecation disorder caused by symptomatic rectocele with internal intussusception. The combination of stapled transanal rectal resection procedure and laparoscopy avoids the threat of intra-abdominal lesions resulting from enterocele or rectovaginal fistula.

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Stapled transanal rectal resection (STARR) is developed from the popular Procedure for Prolapse and Hemorrhoids (PPH) for symptomatic hemorrhoids. It is becoming a recommended surgical treatment for the obstructed defecation syndrome (ODS) secondary

to internal rectal intussusception and rectocele.^{1,2}

Constipation and fecal incontinence are commonly encountered challenging clinical problems in the practice of colorectal surgeons and gastroenterologists. These disorders socially and psychologically

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distress patients and greatly impair their quality of life. Almost half of constipated patients suffer also from obstructed defecation.³

ODS is a broad term of the pathophysiologic condition describing the inability to adequately evacuate contents from the rectum and may have multiple causes. Patients with ODS report prolonged period of symptoms such as incomplete and fragmented evacuation, prolonged straining, and anorectal bleeding. Some female patients need digital vaginal assistance to induce defecation, and sometimes even require digital manual evacuation or enema. Conservative treatment with biofeedback may also alleviate ODS with success rates ranging between 70 and 90%.^{4,5}

Surgical treatment of some patients with outlet obstructive defecation disorders such as rectocele and/or internal intussusception may be considered after conservative measures have failed. Several operative methods are available as therapy for symptomatic rectocele with a mean success rate of approximately 80%.^{6,7} In the treatment of symptomatic distal intussusception, procedures include transanal resection of the mucosa to abdominal rectopexy.⁸⁻¹⁰

Derived from the technique of stapled hemorrhoidopexy and developed by Dr. Antonio Longo, STARR employs a double-stapled circumferential resection of the distal rectum to treat rectocele and intussusception.¹ In the STARR procedure, the distal rectum is strengthened and the redundant tissue is transected. One potential drawback of using a transanal stapling device for rectal surgery is the potential risk of unintentional injury to the bowel trapped in front of the anterior rectal wall.

Patients and Methods

During the period of May to October 2006, a total of five female patients, aged between 34 and 65, were treated surgically for rectocele and intussusception. All five patients underwent defecography study and documented to have rectocele and rectal internal intussusception which were refractory to conservative management. They underwent stapled transanal rectal resection with laparoscopic surveillance.

Defecography study of the five patients showed

distal intussusception of the rectal mucosa combined with a symptomatic rectocele. Prior to surgery, all five patients failed at least six months of conservative therapy with high fiber diet, adequate fluid, and laxative. Each of the five patients tended to spend a significant amount of time in each day attempting bowel evacuation which tremendously affected their physical activities. Colonoscopy was also performed on all patients to exclude any organic lesions. None of the patients had colonic inertia, anismus, fecal incontinence, or previous anorectal surgery.

Under general anesthesia; the patient was placed in the lithotomy position. A CO₂ peritoneum (12-14 mmHg) was generated by using a Veress needle in a 1 cm incision below the umbilicus. A 10-mm optic trocar was placed through the incision and the patient was laid in a Trendelenburg position to let small bowels keep clear of the pelvis. If necessary, a second working instrument would be inserted through another trocar access incision in the lower abdomen to hold back the small bowels or sigmoid colon. STARR procedure in all cases was carried out according to the steps described in the Longo and Boccasanta reports.^{1,2}

After gentle dilation of the anal verge, a gauze swab was used to slightly stretch the anal canal and the anal dilator was introduced and fixed on the anal skin with 4 stitches. Three longitudinal sutures with Prolene 2-0 were placed on the ventral side and spaced at intervals of approximate 5 cm while the lowest of which should lie 2 cm above the dentate line. Suture ends were knotted to ensure traction of the prolapse.

Through the posterior window of anal dilator, a metallic spatula was inserted about 8-10 cm into the rectum to protect the posterior rectal wall and avoid catching posterior rectal mucosa into the stapler when the stapler is fired (Fig. 1). Furthermore, two fingers were inserted into the rectum to move prolapsing rectal wall, thus avoiding injury or a perforation of the rectum.

The stapler was inserted with complete opening and the head of the device specifically positioned right above the semicircular purse-strings. Then the suture-threader was used to pull out the ends of the threads through the lateral holes of casing.

Moderate traction was applied to the purse-string

sutures and the stapler was gently pushed further into the rectum until the casing was inserted into anal dilator by 4 cm. Further traction was exerted onto the sutures so that the stapler became tightened until it was almost completely closed (Fig. 2). In all patients, two fingers were inserted into the vagina to push against the anterior rectal wall to make sure the top of the stapler casing is above the levator ani muscle, and to ensure that the prolapse had been drawn into the casing and the posterior vaginal wall became freely movable and not being caught in the stapler.

Next, the stapler was closed completely and checked by means of the display scale. Markings must be at the lower end of the scale to achieve optimum closure. Finally, the stapler was fired in an axial position to the rectum and then opened by giving it a one-quarter or half turn before being removed carefully.

While the posterior wall of the vagina was under meticulous protection, the anterior rectal mucosa flap was resected by the stapler. The procedure was re-

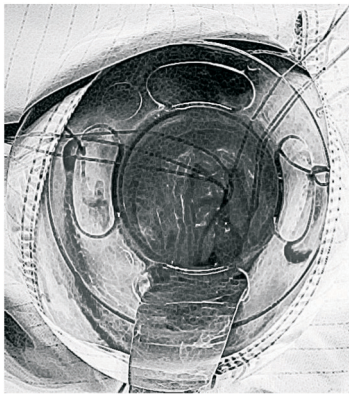


Fig. 1. A metallic spatula is into the rectum to protect the posterior rectal wall.

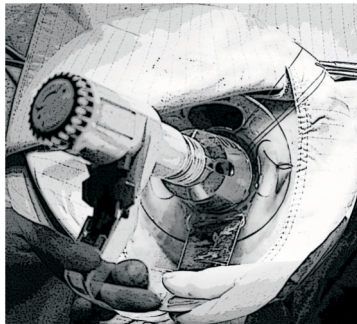


Fig. 2. Tighten the stapler until it is almost completely closed.

peated on the posterior side with an additional stapler (Fig. 3). Resected flaps were sent for pathological examination (Fig. 4). Postoperative treatment was similar to that for stapled hemorrhoidectomy including immediate oral intake. The patients were discharged after stool passage without active bleeding.

Results

We observed mild operative complications of immediate hemorrhaging from the staple row in two cases which were controlled by direct suture with 3#0 Chromic, and a temporary dysuria in one patient requiring one-time urinary catheter insertion. During the postoperative period none of the patients required IM analgesic drug such as Demerol. Pain score measured on a quantitative 10-point visual analog scale were between 2nd and 4th postoperative day. The length of hospital stay ranged from 2 to 3 days.

Follow-up evaluations were conducted 1 week, 2 weeks, 1 month and 3 months after the surgery. All five patients were satisfied with the functional results of the operation and clinical digital examination showed no stricture and decreased rectocele size. All patients had improved stool evacuation with less

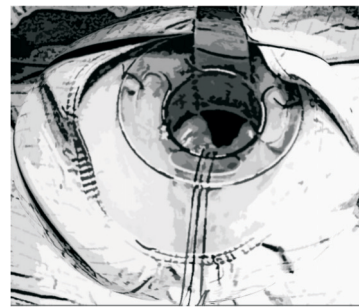


Fig. 3. The procedure is repeated on the posterior side with an anterior spatula to protect the anterior wall.

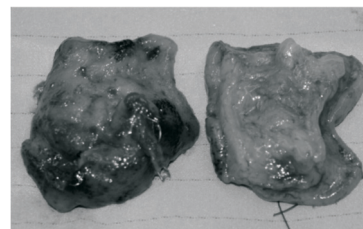


Fig. 4. Resected specimen.

straining and three patients had transient incontinence to flatus and fecal urgency which were improved after three months without additional treatment. No post-defective bleeding was noted in all five patients.

Discussion

Rectocele and rectal intussusception are frequent findings in women, but less than 25% of patients are symptomatic and can be associated with refractory constipation that described as obstructive defecation syndrome (ODS). ODS is characterized by a symptom complex; including incomplete evacuation of the bowel associated with the need to strain excessively, the use of external assistance (digital, mechanical or positional maneuvers, enemas, or suppositories) to aid defecation, anal pain, and bleeding. It is a very common disorder in the elderly multiparous woman.^{11,12}

ODS usually has multiple causes and its treatment is a widely debated issue; without clear consensus which surgical technique is most effective. It has been demonstrated that patient selection for surgery should be very strict and careful because only symptomatic rectocele or intussusception justifies surgical treatment. It should be explained to patients that only the symptoms caused by the rectocele will be improved.¹³⁻¹⁵

A conservative treatment with biofeedback should be offered as an option. Biofeedback is a safe and can be effective treatment option for patients who are willing to complete the course of treatment targeted at constipation and fecal incontinence due to rectal intussusception. However, long-standing constipation has been shown to be less effectively cured by biofeedback.¹⁶ The surgical treatment of obstructed defecation syndrome has presented a challenge to surgeons for a long time. There are several different sorts of surgical techniques performed for the treatment of rectocele, including transvaginal, transperineal, transrectal, transabdominal and combined approaches.¹⁷⁻²²

Understanding the anatomical basis for rectocele and rectal intussusception formation is fundamental to planning surgical repair thereof. Rectocele has been considered a consequence of childbirth. Advancing age with increasing laxity of rectovaginal septum and obstetric damage are possible pathogenetic factors.

The cause of intussusception is unknown, although it is associated with straining at stool. The two most important organic causes of outlet obstruction, which can be cured surgically, are rectocele and distal intussusception. Mellgren et al. described a combination of both findings in 5% of all defecographies.²³

In 2003 Dr. Longo introduced the STARR procedure as a new therapeutic option to treat obstructed defecation syndrome. The STARR technique was developed from the stapled hemorrhoidopexy procedure.

A number of studies have demonstrated good results with STARR procedure to improve constipation symptom and quality of life. The one year outcome of a prospective multicenter trial showed excellent in 48 out of 90 patients, good in 33, fair good in 5, and poor in 4.²⁴ A randomized controlled trial showed all constipation symptoms significantly improved without worsening of anal continence and with excellent/good outcome at 20 months in 88% STARR group.²⁵ Renzi et al. reported a successful outcome was achieved in 61/68 (89.7%) patients after 6-month follow-up.²⁶ Ommer et al. treated 14 patients with STARR with all improvement in rectal evacuation. The mean score of defecation decreased from 13 to 4 after 1 month and remained low.²⁷ Frascio et al. reported overall clinical outcome was positive for 88% patients.²⁸ Dindo et al. reported a median follow-up of 18 months, Cleveland Constipation Score significantly decreased from 11 to 5. In 15 out of 20 patients, preexisting intussusception was no longer visible in the magnetic resonance defecography. Anterior rectoceles were significantly reduced in depth.²⁹ One-year results of the European STARR registry (2838 patients) show significant improvements in obstructive defecation, symptom severity scores and quality of life between baseline and 12 months (obstructed defecation score: 15.8 vs. 5.8, respectively, $p < 0.001$; symptom severity score: 15.1 vs. 3.6, respectively, $p < 0.001$). Complications were reported in 36.0% and included defecatory urgency (20.0%), bleeding (5.0%), septic events (4.4%), staple line complications (3.5%), and incontinence (1.8%). One case of rectal necrosis and one case of rectovaginal fistula were reported.³⁰

The STARR technique employs a double-stapled circumferential full-thickness rectal wall resection to

treat associated rectocele, intussusception or mucosal prolapse. The rationale of this operation is to restore normal anatomy and function by excising redundant tissue. The STARR procedure is performed with transanal approach and thereby avoids the complications from perineal, transvaginal or abdominal approaches.

Since the STARR procedure is to staple the full-thickness rectal wall, there is a risk to injury the surrounding organs including vaginal posterior wall and enterocele (small bowel in pelvis). Aumann reported a case of severe intra-abdominal bleeding following stapled mucosectomy due to enterocele, where the stapled mucosectomy was only to remove rectal mucosa while the STARR was to remove the whole rectal wall. Thus the injury risk would be increased.³¹ To ensure the safety of the procedure, laparoscopic surveillance was performed in our early five cases to avoid small bowel injury.³² Although extra-procedure with laparoscopy is associated with prolonged operative time and additional staffs, it allows STARR procedure of higher safety, even if the patient is with a concomitant enterocele. We think there are other techniques available that would avoid the potential threat to the abdomen when operating from anus. Alternative methods would be laying patients in the prone jack-knife position or keeping Trendelenburg position while in the lithotomy position. With these positions, gravity would pull small bowels cephalad to the upper abdomen and keep clear of the unsafe anterior rectal wall. Our study shows significant postoperative improvement on rectal outlet functions together with low peri-operative discomfort and great safety (Fig. 5).

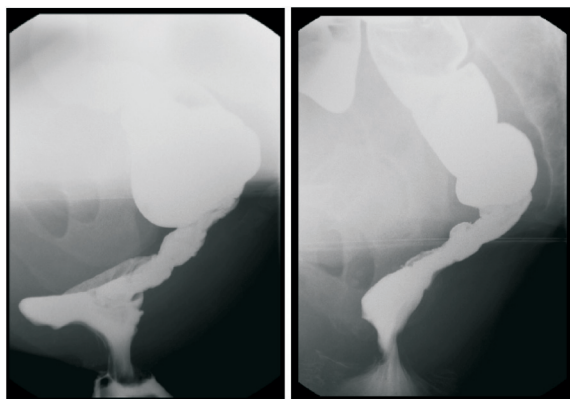


Fig. 5. Preoperative and postoperative defecography.

Conclusion

Stapled transanal rectal resection (STARR) offers a new effective option for surgical treatment of rectal outlet obstruction caused by symptomatic rectocele and distal rectal intussusception. The most important factor to obtain good functional results is the optimized selection of patients with failure to respond to conservative treatment options. Our initial experience showed that the STARR under laparoscopic surveillance provided a safe transanal rectal wall resection while minimizing risk of bowel injury. Although the addition of laparoscopy is associated with prolonged operative time and additional staff, it allows STARR of higher safety. At present we would consider laparoscopic surveillance for all patients especially with evidence of an enterocele, no matter whether it is functional or permanent.

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病例報告

在腹腔鏡監視下，經肛門以吻合器行直腸切除 治療直腸前突及直腸內套疊的最初經驗

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目的 直腸前突 (rectocele) 及直腸內套疊 (rectal internal intussusceptions) 是出口阻塞型便秘的器質性原因。針對出口阻塞型便秘，經肛門以吻合器行直腸切除 (STARR) 在近年來成為手術選擇的一種方法。這篇文章描述了我們在腹腔鏡監視下，經肛門以吻合器行直腸切除的最初經驗。

病人及方法 5 個同時有直腸前突及直腸內套疊的病人，接受了在腹腔鏡監視下，經肛門以吻合器行直腸切除。

結果 在併發症方面，有 2 個病人在吻合處發生了術後立即性的出血；3 個病人有暫時性的排氣失禁；還有 2 個病人有暫時性的急迫性尿失禁。術後疼痛感是很低的；這 5 個病人都不需要術後使用肌肉注射止痛針。術後沒有發生如腹腔內出血、直腸陰道瘻管或吻合處膿瘍等主要併發症。術後，所有的病人在排使用力、裡急後重及排便不全感上都有明顯的改善。並無排便失禁的情形。

結論 針對同時有直腸前突及直腸內套疊的病人，在腹腔鏡監視下，經肛門以吻合器行直腸切除是個有效且安全的手術方法。在施行經肛門以吻合器行直腸切除時，結合腹腔鏡可以避免如腸脫垂 (enterocele) 而造成的腹腔內器官傷害及直腸陰道瘻管等的發生。

關鍵詞 經肛門以吻合器直腸切除 (STARR)、直腸前突、直腸內套疊、出口阻塞型便秘。