Stapled transanal rectal resection for obstructed defaecation and evidence-based practice

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BJS has recently taken a lead in promoting evidence-based practice in its series dedicated to patient safety and nowhere is this more important than in the introduction of new surgical procedures. In the past, surgeons have been guilty of endorsing the introduction of new procedures before their rigorous assessment in terms of safety, efficacy and cost-effectiveness. Objective assessment has often been overlooked because of the intrinsic appeal of new procedures, the need to be a part of a pioneering group or, worse, owing to the financial incentives from industry. These temptations must be resisted in the interests of patient safety and good clinical practice.

The use and abuse of new technologies in surgery has become a hot topic and has been highlighted in colorectal surgery by Prescatori and Seow-Choen. The recent promotion of stapled transanal rectal resection (STARR) for obstructed defaecation syndrome is a prime candidate for a new procedure being introduced before its proper evaluation. Based on the technique of stapled haemorrhoidectomy developed by Antonio Longo, STARR employs a double-stapled circumferential resection of the lower rectum together with any associated rectocele, intussucception or mucosal prolapse. The use of two Proximate® PPH-01 stapling guns (Ethicon Endosurgery, Ohio, USA) adds considerably to the cost of the operation, particularly when compared with conventional suturing techniques. This may be justifiable if the results of STARR stand up to critical scrutiny, but this cannot be determined from currently available evidence.

The anatomical and physiological derangements underlying obstructed defaecation syndrome are complex and poorly understood. As a consequence, a plethora of surgical techniques have been described, with no one method achieving overall superiority. None of the techniques have addressed the underlying structural abnormalities of the syndrome in quite the same way as STARR. As a consequence, STARR has caught the imagination of colorectal surgeons, particularly in continental Europe, fuelling its rapid implementation into clinical practice. However, the evidence to support its widespread implementation is weak, with only three series published to date. Two of these involve the same institution, none includes a control group, and all report only short-term follow-up.

One is struck by a sense of déjà vu when considering the introduction of STARR; the parallels with the introduction of stapled haemorrhoidectomy are obvious. The latter was greeted with enthusiasm in 2000 following the publication of two small randomized trials, but soon became the focus of controversy with the reporting of unacceptably high rates of severe postoperative pain and incidents of life-threatening pelvic sepsis. Only several years and many randomized trials later are the benefits of stapled haemorrhoidectomy beginning to be realized. In much the same way, two of the three STARR studies report highly encouraging results, but the third has been critical, with high rates of bleeding, pain, incontinence and recurrent constipation. Furthermore, there has already been one death reported from a stapled rectocele repair, albeit in combination with a transperineal procedure.

In the interests of good clinical practice, it is imperative that STARR is implemented in a safe and responsible manner. The difficulty comes in deciding how to achieve this given the complexity and spectrum of abnormalities associated with obstructed defaecation syndrome. One operation does not ‘fit all’ and there are many patients who are best treated by non-operative means. Evidence-based practice promotes the randomized clinical trial as the preferred method for evaluating new technologies, but to which conventional surgical technique is STARR best compared? There is no ‘gold standard’ for comparison and no technique that incorporates the extensive rectal resection of STARR. The indications for STARR have yet to be clearly defined, and those patients who will potentially benefit are likely to be different from those who benefit from conventional methods. In such circumstances, a good randomized clinical trial is probably not achievable. How then should we proceed in a responsible and safe manner, without totally stifling the pioneering spirit? The collection of accurate data is
critical to this process and is probably best achieved by means of a well designed prospective audit, ideally performed under the auspices of national societies, such as, in this case, the Association of Coloproctology of Great Britain and Ireland. Participation should be restricted to experienced coloproctologists who have undergone appropriate training and proctorship in STARR, and who have demonstrated a willingness to participate in prospective studies. The collection of accurate data with rigorous follow-up must happen over a realistic time period to enable a critical and timely assessment of safety and short-term efficacy.

The introduction of STARR provides surgeons with an ideal opportunity to demonstrate their willingness to apply the principles of evidence-based practice. We must learn the lessons of the past and ensure that the implementation of this new operation proceeds in a way that is safe for patients and can be justified to healthcare providers. Ignoring these lessons threatens the effective introduction of a novel procedure of significant potential benefit to the many patients whose lives are made miserable by obstructed defaecation syndrome.

References
Radiographic findings of post-operative double stapled trans anal rectal resection (STARR) in patient with obstructed defecation syndrome (ODS)

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Abstract

Longo’s procedure of double stapled trans anal rectal resection (STARR) has been advocated as surgical treatment of the obstructed defecation syndrome (ODS) in patients with rectal mucosal prolapse. The aim of this study was to investigate the post-interventional findings of this technique, to help radiologist in knowledge of the changed morphology of the rectal lumen, also in attempt to recognize some potential related complications.

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1. Introduction

Obstructed defecation syndrome (ODS) is a complex pathological entity that should be related to rectal intussusception, perineal laxity, rectocele, pubo-rectal muscle syndrome. Elongation and distal rectal prolapse may be observed in patients affected by this syndrome. The dynamic attempt to reduce it during defecation (transverse reduction—rectocele, rectal invagination or external prolapse) induced surgeons to consider the resection of the mucosal prolapse in correction of the ODS. Some recently reported experiences using a double stapled transanal procedure (STARR) intervention (presented the first time in 1998 by Longo at the 6th World Congress of Endoscopic Surgery and 6th International Congress of European Association for Endoscopic Surgery) showed that the resection of the mucosal prolapse of the distal rectum may allow also the correction of associated rectoceles as well as internal mucosal prolapse or recto-anal intussusceptions [1]. The aim of this study was to investigate the radiological post-operative findings of this technique. Radiologist should carefully check and recognize the post-operative morphology of rectal lumen at the end of this procedure and be aware that this novel technique may cause some complications.

2. Materials and methods

From January 2001 to June 2003 a total of 302 patients (287 females, 15 males; age range: 38–60 years old) came to our attention in our institutions for difficult defecation. One hundred ninety-two presented almost 2 evacuations/week with a slight symptomatology, whereas 110 presented an ODS. All patients underwent rectal digital and endoscopic exploration. Defecography was performed on 112 patients. Females were submitted to gynecological examination. Eigh
patients were also submitted to anal manometry, two to manometric exam. Twenty-three patients older than 40 years old who referred rectal hemorrhage or positive familiar history for colon neoplasms underwent colonoscopy.

Indications for surgery in patients with ODS non-responders to medical therapy were due to the presence of prolapsing haemorrhoids, evidence of intussusception and/or rectocele. Evidence of pelvic floor dissynergy, genital prolapse higher than first grade and/or entero-sigmoidocele, colo-rectal carcinoma and inflammatory bowel disease were considered as contraindications to the intervention.

Seventy-one patients underwent double stapled transanal rectal resection. Between them, rectocele was evident in 58 patients (82%), association between rectocele and intussusception was noted in 54 patients (76%), internal mucosal prolapse in patients 6 (8%), hyperdescending perineum in 25 patients (35%), barium retention at defecographic examination was present in 20 patients (28%).

Subjects of our study were 54 patients submitted to STARR, in whom defecography (16 cases) or colposcyclofecography (38 cases) was performed before and after intervention. In the preoperative dynamic defecography all patients presented rectocele, associated to intussusception in 31 (57.4%) cases. Excessive straining was evident in 37 (68.5%) of these patients, digitation on defecation in 43 (79.6%) and in 50 patients (92.5%). Absence of laxatives and enema was evident respectively in 28 (51.8%) and 18 (33.3%) cases. Fecal incontinence was evident in 8 (16.8%) (i.e., to gas), 4 (7.4%) (i.e., to liquid feces) and 3 (5.5%) (i.e., to solid feces) patients.

Patients classification in three stages following Longo’s criteria based on symptomatology as well as on dynamic defecography or colposcyclofecography findings is shown on Table 1. Subjects of our study presented a pre-operative stage 2 or 3.

2.1. Surgical technique

Two PPH-01 staplers kits (Ethicon Endosurgery, Inc., Pomezia, Italy) were used. From two to four transversal sutures were performed (depending on the width of the rectal prolapse) on the anterior wall of the rectal pouch, to include the top of the prolapsing vicsus in a purse-string. Then, the circular stapler was opened and its head was placed above the suture, with subsequent resection of the anterior prolapse. A similar procedure was repeated for the rectal posterior wall. Using this technique it was possible to resect from 3 to 10 cm of rectum.

2.2. Radiographic imaging

No gastrointestinal preparation of the patient was made. Cecography was performed introducing in the rectum an optimal amount of barium cream (200–300 ml) in order to opacify the distal sigmoid colon, through a syringe with a cone extremity. A first radiograph showing opacification of the first sigmoid segment, the rectum and the ano-rectal junction was obtained in latero-lateral view. Imaging of these anatomical structures was performed at rest, during dynamic examination at maximum contraction of the pelvic floor, straining and expulsive phase. A series of subsequent radiograms was taken to obtain a complete visualization of the dynamic functionality of the anatomical structures. Colposcyclofecographic examination included also the opacification of the urinary bladder, using 200 cc of iodinated watersoluble contrast medium solution introduced through a Foley catheter. Vaginal canal was opacified introducing a small amount of barium paste or a combination of equal parts of ultrasound gel and high-density water-soluble iodinated contrast medium. Opacification of the small bowel was obtained in 41 patients administering 500 ml of barium sulphate solution at least 6 h before examination.

Follow up examinations were performed from 1 to 6 months from the intervention. Examinations performed in two institutions had been made using digital equipments.

2.3. Imaging analysis

Some findings have been evaluated:

(1) Residual dimension of the rectocele, if present, before and after the intervention; height and depth was assessed. Height size was done by the length of the segment join-
Fig. 1. Pre-operative (a) and post-operative (b) findings of rectocele treated by STARR. In (a) a vertical line passing from the ARJ to the superior wall of the rectum; the horizontal line is traced from the latter to the maximum convexity point of the rectocele. In (b), the suture ring plane and the line tracing the distance from the internal anal orifice.

3. Results

After intervention, in all patients an altered morphology of the viscus due to the suture line appeared as an uniform anular narrowing of the distal rectal ampulla (Fig. 1b), still noted during rest and more evident during evacuation. In four cases (7.4%) some radiopaque stitches were also evident. Significant reduction of the rectocele and intussusception was noted in all patients (Figs. 2, 4–8). In 45 cases (83.3%) no significant deformity of the rectal ampulla was appreciable, whereas in 9 remaining cases a residual anterior rectocele (max diameter <4 cm) was evident.

Fig. 2. Dynamic defecographic examination. Normal appearance during rest (a) and evacuation (b), straining during evacuation (c).
Distance from the ARJ and the suture line presented a range varying from 3.8 to 11.6 cm. Rectal lumen diameter at the suture level presented a range varying from 4 to 8 cm. Dislocation of the ARJ compared to the pre-operative radiologic examination presented a range varying from 1 to 4 cm.

In eight (15%) patients some morphologic alterations of the surgical anastomosis such as pseudodiverticular formations were evident, three of them on the anterior and five on the posterior rectal wall (Fig. 3).

Excessive straining, incomplete evacuation, digitation and pain appeared significantly reduced after surgery. Abuse of laxatives and enema was respectively reduced to 3.7% (two cases) and 1.85% (one case). Post-operative fecal incontinence was evident just in three cases (one to gas, one to liquid feces, one to solid feces). Pain was significantly reduced after intervention in all patients.

Urgency in defecation was the most common complication of STARR resection, observed in our study in 12 patients (22.2%) in the immediate post-operative period and reduced to 1.85% (one case) 6 months after intervention. Post-operative bleeding was observed in two cases (3.7%). Sub-stenosis was evident in two cases (3.7%).

4. Discussion

Obstructed defecation syndrome could be correlated to a multi-compartmental pathological entity of the pelvis; disorders may vary from the incontinence to difficulty of evacuation, to the presence of intestinal dysfunction and prolapse such as rectocele, enterocoele, intussusception. Correction of the hemorrhoids using resection of the mucosal prolapse of the distal rectum, that appeared to be effective in reduction of small associated rectocele as well as some recto-anal intussusceptions [2], represented the premise to the creation by Longo of a new surgical technique to treat larger rectocele and prominent intussusceptions in patients with obstructed defecation syndrome [1,3]. Although any correlated pathologic alterations to the defecation physiology seems uncertain, Longo elaborated the theory that the initial alteration was done by the rectal prolapse, representing an obstacle to defecation, that might be overtaken by dynamic changes of the pelvic structures in order to reduce the prolapse. Recently, a new technique was suggested to reduce at the same time any recto-anal intussusception as well as the rectocele cul-de-sac, in patients with obstructed defecation syndrome [2]. The surgical treatment was the circumferential resection of the rectal prolapse and this new technical approach was the double stapled trans anal rectum resection [2]. Although STARR appeared to be a novel approach to the treatment

![Fig. 3. Defecography. Post-operative study. Evidence of residual pseudodiverticular extrusion of the rectal posterior wall among the margins of suture](image)

![Fig. 4. Preoperative examination, anterior rectocele (a) and reduced after intervention (b).](image)
Fig. 5. Preoperative examination, anterior rectocele (a) and reduced after intervention (b).

Fig. 6. Preoperative examination, anterior rectocele (a) and reduced after intervention (b).

Fig. 7. Preoperative examination shows perineal descent in patient with recto-rectal intussusception (a). Post-operative study shows a reduction of the perineal descent, with no evidence of intussusception (b).
of patient affected by ODS, in our experience it was effective in most cases to reduce the pre-operative rectoceles and intussusceptions. In our series no important post-operative complications have been noted, however circumferential single stapled anoplasty procedure that was used as a suitable technique for reduction of mucosal prolapse often associated to hemorrhoids, as attested by several studies [2,4,5], seems to show some post-operative and long-term complications. Some events such as pain, bleeding, perineal ecchymosis, urinary retention, infection to the staple line, recurrence, stenosis due to a residual closed purse-string causing post-operative intestinal obstruction, incontinence, probably related to damage of the internal sphincter due to the large size (37 mm) of the PPH anal dilator [6], fecal urgency as well as anal stricture [4,5,7–14], have been reported in the last years. The paucity of reports of observed complications using this procedure might be related to the recent introduction of the STARR in the treatment of patients affected by ODS, however some data [3] seems to be a good premise for an effective treatment. At our advice, because ODS is a complex entity, it would be more important to note if a surgical intervention would be really effective in long-term follow-up. In our experience, reduction of the symptomatology has been noted in most cases. Radiologic feature of a normal post-operative rectum is important to recognize in order to allow an easier evaluation of minor and major complications. Dynamic study [15] was effective in demonstration of small post-operative pseudodiverticula, remaining rectoceles and intussusceptions, functionality and motions of the structures at rest and during straining and evacuation.

Conclusions

STARR anoplasty seems to be an effective intervention, however more reports from long-term results have to be acquired to assess validity and efficacy of this surgery technique in patients affected by ODS, especially to demonstrate if a rectocele repair really improve evacuation disorders with minimal or absence of recurrence. In our experience, no major complications have been observed in the post-operative period and reduction of the symptomatology has been noted in most cases. To our knowledge, there is no previous report focused on imaging of the pre and post-feature of ODS patients treated with STARR intervention.

References