Stapled Transanal Rectal Resection (STARR)

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Abstract

Obstructed defaecation syndrome (ODS) is a common cause of constipation. Internal rectal prolapse/rectal intussusception and rectocoeles are often associated with this condition.

A novel technique called stapled transanal rectal resection (STARR) based on the stapled haemorrhoidopexy procedure introduced by Longo has been developed.

This involves a full thickness rectal resection with simultaneous anastomosis to restore rectal wall continuity using two 33 mm circular staplers.

A number of studies have demonstrated good outcomes with this technique, however, in addition to all the usual potential complications associated with anorectal surgery, novel problems have been encountered which may produce treatment dilemmas.

Patients must be assessed and managed by a coloproctologist with a specialist interest in managing disorders of the pelvic floor and who has had specific training in the use of this technique for the management of ODS.

Introduction

Constipation is a common clinical condition and although millions of people suffer with this condition and spend large amounts of money on off the counter laxatives, not many consult their general practitioners (GPs) and even when they do, not many GPs or even specialists know how to investigate and manage this often socially debilitating condition.

There are a number of causes for constipation but a common and previously poorly understood cause is Obstructed Defaecation Syndrome (ODS). ODS is commoner in women and encompasses a number of symptoms and signs. It is characterised by a normal urge to defaecate but an impaired ability to expel the faecal bolus. The symptom complex includes several unsuccessful attempts at defaecation, straining, rectal bleeding, digitation to aid evacuation, laxatives/enema use, perineal and lower abdominal discomfort.

There is often a rectal mucosal prolapse/ rectal intussusception and a rectocoele.

Other associated conditions include urogenital prolapse, enterocoele, sigmoidocoele and anismus.

Conservative treatment such as diet, exercise and biofeedback improves symptoms in the majority of patients with obstructed defaecation.

A careful history needs to be taken, preferably using a proforma and constipation and incontinence scoring sheets. Examination should include digital rectal examination and proctoscopy (with patient at rest and also while straining). This will usually identify rectocoeles, sphincter defects/weakness, abnormal perineal descent, internal mucosal prolapse and complete rectal prolapse.

Investigations should include colonoscopy

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(or some other form of whole-colon test such as barium enema/CT colonography) to ensure that there is no associated colorectal abnormality. A defaecating proctogram is mandatory and provides static and dynamic information on defaecatory function and is invaluable in decision making before recommending the STARR procedure. Dynamic magnetic resonance imaging (MR) has also been used with similar diagnostic capabilities.

Anorectal physiology and endoanal ultrasound are not mandatory in all patients but are indicated in patients with symptoms and examination suggestion of incontinence, abnormal rectal capacity or compliance. Slow transit is another major cause of constipation and may need to be excluded in some cases with colonic transit studies.

STARR

STARR is novel technique which involves a double stapling technique using two 33 mm circular staplers to carry out a full thickness resection of the lower rectum with simultaneous anastomosis to restore bowel continuity.

A number of papers have reported a favourable outcome in patients with ODS having the STARR procedure.[1-6]

Symptoms of ODS have also been shown to improve with a single stapled haemorrhoidopexy performed primarily for patients with haemorrhoidal prolapse.[7]

Primary indication for the STARR procedure is ODS with internal rectal prolapse and/or rectocoele. It has also been used in patients with solitary rectal ulcer with good results.[8]

Technique

It is a relatively minimally invasive technique which is performed transanally under general anaesthesia or using regional anaesthetic techniques, with the patient in the lithotomy position.

It can be performed as a daycase and patients can expect to go back to work in less than two weeks at which time most patients are pain free.

Full bowel preparation can be used but equally effective preparation of the rectum can be achieved with an enema 30-60 minutes prior to the procedure.

Intravenous antibiotics at induction with possible oral therapy for a further 5 days is advisable but there is no evidence to support this.

Laxatives may be required for a few days after the operation.

Usually only simple analgesia is required for a few days after the operation.

A well lubricated circular anal dilator (CAD) is placed into the anal canal and secured to the skin with sutures. Full thickness sutures (2/0 prolene or 2/0 monocryl) are placed at the apex of the prolapsing tissue in the anterior rectal wall at the 10 and 2 o'clock with a 3rd suture at the 12 o'clock position. A spatula is then inserted through the posterior aperture of the CAD for a distance of 8 -10 cm to protect the posterior wall from getting caught in the anterior staple line. The well lubricated 33 mm circular stapler is then introduced into the anal canal and the sutures pulled through the ports of the head of the gun to allow traction on the tissue as the stapler is closed. It is important to check that the vagina slides freely over the stapler before it is fired to avoid incorporation of the vaginal wall in the staple line. The posterior wall is then resected using the same technique.

Complications

A number of papers have been published specifically looking at the complications associated with this STARR procedure.[9-11]

- Urgency is a common post-operative complaint and is reported by about a third of patients who have this procedure. Patients need to be warned about this so that they do not get alarmed because the majority improve after a few weeks.
- Bleeding is one of the commonest complications which may result in prolonged hospital stay, blood transfusions, re-operations, rectovaginal wall haematoma, staple line disruption and temporary stomas.
- Pain is not a common complaint but some patients have reported intractable pain without any obvious cause and which can be difficult to treat.
- Urinary retention
- Infection
- Infection can be devastating and may require temporary/permanent stomas and even death from pelvic necrotising fasciitis
- Incontinence (this is usually of flatus and mostly resolves in the first few postoperative weeks)
- Dyspareunia
- Staple line dehiscence
- Rectovaginal fistula [12,13]
- Anorectal stenosis
- Rectal diverticulum have been reported at the site of the stapled anastomosis and can be symptomatic and require further complex surgery [14]
- Retained staples; Symptomatic retained staples have also been reported which require agrapphectomy (removal of staples). [15]

Contraindications

- Anismus
- Perineal or anorectal infection or inflammation disease
- Incontinence
- Enterocoele: There is potential for damaging a loop of bowel within an enterocoele. However, Peterson *et al* described a technique using concomitant laparoscopy to avoid bowel injury. [16]
- Anorectal stenosis
- Significant psychiatric illness
- Previous mesh repair of rectocoele

Discussion

ODS is a common cause of constipation. Primary treatment is conservative with techniques such as diet, exercise and biofeedback, although a recent study has shown that STARR may have a better outcome than biofeedback. [17]

STARR was found to be a preferable procedure in a randomised controlled trial comparing it to another surgical STAPL in patients with ODS due to less pain, no dyspareunia and better outcome of rectocoele repair. [1]

A consensus conference convened in Rome to try to set out the indications for the use of the STARR procedure in the treatment of ODS. [18]

The so called STARR pioneers of Europe have also recently published a useful algorithm that provides some guidelines for the management of ODS with a particular reference to the role of the STARR procedure. [19]

Modifications of the STARR procedure using the specially designed stapler which allows more tissue to be resected has been described with some good results [20] but it also brings with its own novel complications. [21] This stapler has also been used for treatment of complete rectal prolapse in a modification of the perineal Altemeier procedure. [22]

Conclusion

The STARR is an effective procedure for patients with obstructed defaecation. However, patients must be assessed and managed by a coloproctologist with a specialist interest in managing disorders of the pelvic floor, and has access to a specialist multidisciplinary team that includes radiologist, urogynaecologist, gastro-enterologist, physiotherapist, urologist and psychologist.

It is imperative that all patients being considered for this procedure are properly assessed to ensure that it used appropriately in order to avoid significant complications that can occur.

References

1. Boccasanta P, Venturi M, Salamina G, Cesana BM, Bernasconi F, Roviaro G. New trends in the surgical treatment of outlet obstruction: clinical and functional results of two novel transanal stapled techniques from a randomised controlled trial. *Int J Colorectal Dis* 2004; 19 (4) : 359-69.
2. Boccasanta P, Venturi M, Stuto A, Bottini C, Caviglia A, Carriero A, *et al.* Stapled transanal rectal resection for outlet obstruction: a prospective, multicenter trial. *Dis Colon Rectum* 2004; 47 (8) : 1285-96.
3. Pechlivanides G, Tsiaoussis J, Athanasakis E, Zervakis N, Gouvas N, Zacharioudakis G, *et al.* Stapled transanal rectal resection (STARR) to reverse the anatomic disorders of pelvic floor dyssynergia. *World J Surg* 2007; 31 (6) : 1329-35.
4. Frascio M, Stabilini C, Ricci B, Marino P, Fornaro R, De Salvo L, *et al*. Stapled transanal rectal resection for outlet obstruction syndrome: results and follow-up. *World J Surg* 2008; 32 (6) : 1110-5.
5. Arroyo A, Pérez-Vicente F, Serrano P, Sánchez A, Miranda E, Navarro JM, *et al*. Evaluation of the stapled transanal rectal resection technique with two staplers in the treatment of obstructive defecation syndrome. *J Am Coll Surg* 2007; 204 (1) : 56-63.
6. Ommer A, Albrecht K, Wenger F, Walz MK. Stapled transanal rectal resection (STARR): a new option in the treatment of obstructive defecation syndrome. *Langenbecks Arch Surg* 2006; 391 (1) : 32-7.
7. Bona S, Battafarano F, Romario UF, Zago M, Rosati R. Stapled Anopexy: Postoperative Course and Functional Outcome in 400 Patients. *Dis Colon Rectum* 2008; 51 (6) : 950-55.
8. Boccasanta P, Venturi M, Calabro G, Maciocco M, Roviaro GC. Stapled transanal rectal resection in solitary rectal ulcer associated with prolapse of the rectum: a prospective study. *Dis Colon Rectum* 2008; 51 (3) : 348-54.
9. Dodi G, Pietroletti R, Milito G, *et al*. Bleeding, incontinence, pain and constipation after STARR transanal double stapling rectotomy for obstructed defecation. *Tech Coloproctol* 2003; 7 : 148–53.
10. Gagliardi G, Pescatori M, Altomare DF, Binda GA, Bottini C, Dodi G, *et al.* Italian Society of Colo-Rectal Surgery (SICCR). Results, outcome predictors, and complications after stapled transanal rectal resection for obstructed defecation. *Dis Colon Rectum* 2008; 51 (2) : 186-95.
11. Pescatori M, Gagliardi G. Postoperative complications after procedure for prolapsed hemorrhoids (PPH) and stapled transanal rectal resection (STARR) procedures. *Tech Coloproctol* 2008; 12 (1) : 7-19.
12. Pescatori M, Dodi G, Salafia C, Zbar AP. Rectovaginal fistula after double-stapled transanal rectotomy (STARR) for obstructed defaecation. *Int J Colorectal Dis* 2005; 20 (1) : 83-5.
13. Bassi R, Rademacher J, Savoia A. Rectovaginal fistula after STARR procedure complicated by haematoma of the posterior vaginal wall: report of a case. *Tech Coloproctol* 2006; 10 (4) : 361-3.
14. Sciaudone G, Di Stazio C, Guadagni I, Selvaggi F. Rectal diverticulum: a new complication of STARR procedure for obstructed defecation. *Tech Coloproctol* 2008; 12 (1) : 61-3.
15. De Nardi P, Bottini C, Faticanti Scucchi L, Palazzi A, Pescatori M. Proctalgia in a patient with staples retained in the puborectalis muscle after STARR operation. *Tech Coloproctol* 2007; 11 (4) : 353-6.
16. Petersen S, Hellmich G, Schuster A, Lehmann D, Albert W, Ludwig K. Stapled transanal rectal resection under laparoscopic surveillance for rectocele and concomitant enterocele. *Dis Colon Rectum* 2006; 49 (5) : 685-9.

17. Lehur PA, Stuto A, Fantoli M, Villani RD, Queralto M, Lazorthes F, *et al.* For the ODS II Study Group. Outcomes of Stapled Transanal Rectal Resection vs. Biofeedback for the Treatment of Outlet Obstruction Associated with Rectal Intussusception and Rectocele: A Multicenter, Randomized, Controlled Trial. *Dis Colon Rectum* 2008; doi: 10.1007/s10350-0089378-1.
18. Corman ML, Carriero A, Hager T, Herold A, Jayne DG, Lehur PA, *et al.* Consensus conference on the stapled transanal rectal resection (STARR) for disordered defaecation. *Colorectal Dis* 2006; 8 (2) : 98-101.
19. Schwandner O, Stuto A, Jayne D, Lenisa L, Pigot F, Tuech JJ, *et al.* Decision-making algorithm for the STARR procedure in obstructed defecation syndrome: position statement of the group of STARR Pioneers. *Surg Innov* 2008; 15 (2) : 105-9.
20. Renzi A, Talento P, Giardiello C, Angelone G, Izzo D, Di Sarno G. Stapled trans-anal rectal resection (STARR) by a new dedicated device for the surgical treatment of obstructed defaecation syndrome caused by rectal intussusception and rectocele: early results of a multicenter prospective study. *Int J Colorectal Dis* 2008; doi 10.1007/s00384-008-0522-0.
21. Schulte T, Bokelmann F, Jongen J, Peleikis HG, Fändrich F, Kahlke V. Mediastinal and retro-/ intraperitoneal emphysema after stapled transanal rectal resection (STARR-operation) using the Contour Transtar(R) stapler in obstructive defaecation syndrome. *Int J Colorectal Dis* 2008 Jul 2.
22. Scherer R, Marti L, Hetzer FH. Perineal Stapled Prolapse Resection: A New Procedure for External Rectal Prolapse. *Dis Colon Rectum* 2008; doi: 10.1007/s10350-008-9423-0.

XDR-TB IN INDIA : WHEN WILL WE HEED THE ALARM?

XDR-TB is now defined as resistance to INH and Rifampicin along with further resistance to any fluoroquinolone and at least one injectable 2nd line drug (amikacin, kanamycin, capreomycin).

A study from the Hinduja Hospital and Research Centre in Mumbai revealed that of 1354 samples reaching the laboratory (a reference lab by default for the city of Mumbai) 724 were culture positive and 45% of these were MDR. 9% and 11% of the MDR samples were XDR by the old and new definitions respectively. These figures ***do not*** of course represent data from the community as only non-responders have samples sent for culture.

XDR-TB is even more difficult to treat than MDR-TB. Treatment is often destined to fail because, by definition, there are very few categories of drugs left to which these patients will still respond.

Of our 33 XDR-TB patients, 12 were alive and 8 of these had been declared cured after 2 years of extensive and complicated medical and surgical therapy.

Ciprofloxacin and ofloxacin were by far the 2 commonest drugs prescribed. This pivotal group of 2nd line drugs should be not squandered away as general antibiotics.

Thus it is not surprising that quinolone resistance in TB is a global phenomenon and a pivotal group of 2nd line drugs is being rendered worthless.

MDR-TB, are then subjected to Category 2 treatment (2HREZS/1HREZ/5HRE). This is a regimen destined to fail; a poor way to treat MDR-TB, and a colossal waste of resources which serves only to amplify resistance.

ZF Udwadia, J Assoc Physicians India, 2008; 56 : 409-10.