

Original Research Article

Management of staple line stricture with new laser four quadrant stricturoplasty: a case series

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ABSTRACT

Background: To assess the outcomes of Laser Four Quadrant stricturoplasty surgery in patients with staple line anal stricture post MIPH and STARR surgery.

Methods: A prospective observational study was planned with purposive sampling. Cases with staple line stricture during the period February 2014 to July 2015 were included. There were 30 patients included in the study after informed consent and ethical clearance from hospital ethical committee. The data collected was background data, history of previous surgery, duration of Laser Four Quadrant stricturoplasty and Hospital stay, post-operative relief of symptoms and any complications, assessment of pain on VAS up to one year follow up period, overall patients' satisfaction.

Results: Out of 30 patients, 22 anal stricture patients were post STARR surgery and 8 were post MIPH surgery. The mean surgery and hospitalization duration were 24.48 ± 6.31 minutes and 13.72 ± 4.30 hours respectively. Symptoms reported were Obstructed defecation (n=30), painful evacuation (n=30) and episodes of minor rectal bleeding (n=9). There was significant ($p < 0.0001$) reduction in pain from preoperative 7.13 ± 1.04 to 1.13 ± 0.54 , 0.27 ± 0.45 , 0.16 ± 0.38 and 0.06 ± 0.25 at baseline (post-operative), day 7, month 1 and month 3 respectively. At the end of one year, 86.67% patient were highly satisfied, 13.33 % were not satisfied. Recurrence was reported by 3 patients within 6 to 10 weeks post-surgery.

Conclusions: Laser Four Quadrant Stricturoplasty is an easy and effective surgery for the treatment of staple line stricture with a low recurrence rate.

Keywords: Agraphectomy, Anal stricture, Complications of stapler Surgery for hemorrhoids and prolapse, PPH, Postoperative complications, STARR, Stapled hemorrhoidopexy, Stapled rectal resection, Staple line stricture

INTRODUCTION

The stapled transanal rectal resection (STARR) procedure is a surgical technique introduced to treat ODS due to rectocele and rectal intussusceptions and it has been demonstrated to be safe and effective.^{1,2} This technique was later proposed by A. Longo for the treatment of hemorrhoids.³ Afterward known as stapled hemorrhoidopexy or a procedure for prolapsed

hemorrhoids (PPH) or MIPH (minimally invasive procedure for prolapse and hemorrhoids). The technique gained a wide popularity due to the low postoperative pain.^{4,5} STARR for obstructed defecation minimally invasive procedure for hemorrhoid (MIPH) for hemorrhoids carry low postoperative pain, but may be followed by unusual and severe postoperative complications, such as bleeding, strictures and fecal incontinence.⁶ Anorectal stricture is an uncommon

complication after STARR surgery occurring in 3 to 3.5 % operated cases in two series and after PPH is 2.6%.⁷⁻⁹ Laser Four Quadrant Strictureplasty is a newly described surgical method for correcting anorectal stricture. Present study was conducted to assess the clinical outcomes of Strictureplasty and its effectiveness in managing staple line stricture.

METHODS

A prospective observational study was planned with purposive sampling at Healing Hands Clinic, Pune. After ethical clearance from hospital ethical committee, cases with staple line stricture reported during the period January 2010 to October 2014 were included. There were 30 patients included in the study after informed consent.

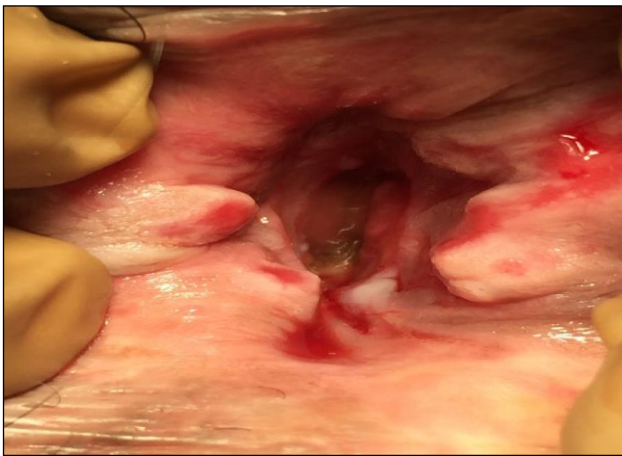


Figure 1: Staple line stricture after surgery.

A pre-tested semi structured preformed was used to collect information from patients. All patients underwent strictureplasty after thorough evaluation and follow up was done up to one year.

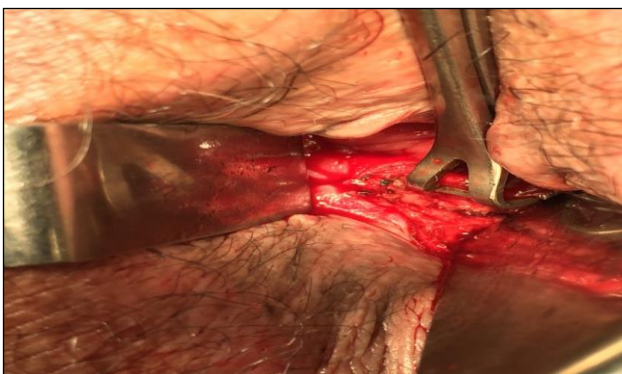


Figure 2: Mucosal flap being raised.

All patients were investigated for routine investigations, including Blood Sugar, HIV, HBsAg, X-Ray Chest and ECG. Per rectal digital examination done for anal sphincter tone, pain, any rectal growth, prolapse, bleeding, and discharge. The procedure of strictureplasty

was same for all study subjects. Bowel preparation was given for colonoscopy on the day of surgery. After giving regional block (spinal / epidural block) patient were placed in lithotomy position. Stricture evaluated with finger.

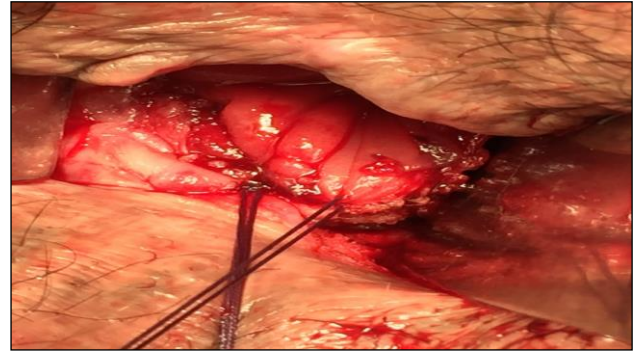


Figure 3: Flap being fixed to anoderm.

Diode laser with bare tip fiber used to take a vertical incision 1.5 cm over the stricture. Roughly 0.75cm proximal and 0.75 cm distal to stricture at 6 o'clock position. Visualised staplers excised.

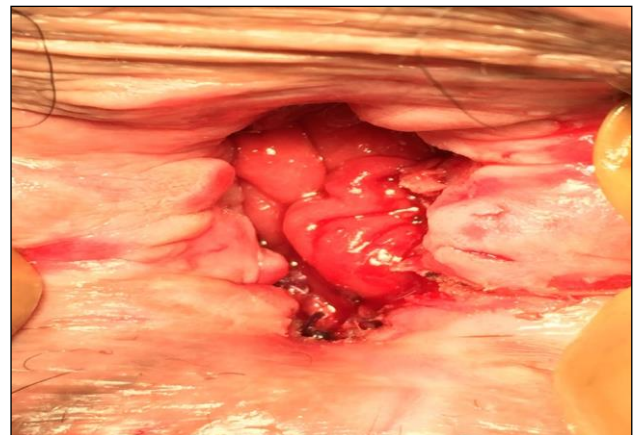


Figure 4: After four Quadrant Strictureplasty.

Mucosal flap was raised up to 2cm proximal to staple line stricture and sutured by 3-0 monocryl to raw area distal to staple line stricture. Easy passage of 3cm diameter dialator was confirmed. Hemostasis achieved. Dressing with povidone iodine ointment done and patient shifted to ward. Patients were observed for the outcome of the procedure.

Follow up was done once in a week for first 8 weeks, then at end of 3months, 6 months and one year. After that once a year, with long term follow up plan for 5 years post procedure. Patients were assessed for any symptoms, complications such as recurrence and overall satisfaction and pain on VAS.

The data collected was background data, history of previous surgery, duration of strictureplasty and Hospital

stay, post-operative relief of symptoms and any complications, overall patients' satisfaction and assessment of pain on VAS up to one year follow up period. The data analysed using statistical package SPSS (version 21).

RESULTS

Total 30 patients of staple line stricture were managed with stricturoplasty and followed for one year. Out of 30 patients, 22 patients had an anal stricture post STARR surgery and 8 were post Stapled hemorrhoidopexy surgery. The mean age was 46.9 (± 11.86) and only one female patient reported in study group. The common complaints reported by all patients (100%) were obstructed defecation and painful evacuation. Minor rectal bleeding was reported in 9 (30%) patients. The mean surgery duration was 24.48 ± 6.31 minutes, the longest duration was 38 minutes and shortest was 20 minutes. The mean duration of hospitalization was 13.72 ± 4.30 hours (Table 1).

Table 1: Patient characteristics.

Variable	No. of %
Age	
41-45	03 (10)
46-50	05 (16.66)
51-55	12 (40)
>55	10 (33.34)
History of surgery	
Starr surgery	22 (73.33)
Stapled haemorrhoidopexy	08 (26.66)
Associated symptoms	
Obstructed defecation	30 (100)
Painful evacuation	30(100)
Minor rectal bleeding	09 (30)
Mean surgery duration	24.48 ± 6.31 minutes
Mean hospitalization duration	13.72 ± 4.30 hours

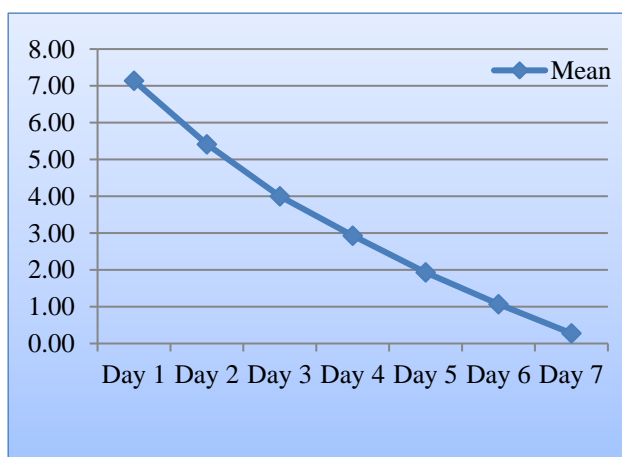


Figure 5: Pain assessment on vas scale (n=30).

There was significant ($p < 0.0001$) reduction in pain on VAS score from preoperative 7.13 ± 1.04 to 1.13 ± 0.54 , 0.27 ± 0.45 , 0.16 ± 0.38 and 0.06 ± 0.25 at baseline (post-operative), day 7, month 1 and month 3 respectively (Figure 5).

Recurrence was reported by three patients at the end of three months. They were subjected to stricturoplasty with wide bore proctoscopy on a weekly basis for 6-8 week to prevent future recurrence. All were managed by revision stricturoplasty, out of which one reported with mild stricture at 6weeks. This re recurrence stricture was managed by use of anal dilator for three months. At the end of year, 86.67% ($n=26$) patient were highly satisfied with treatment, 13.33 % ($n=4$) were not satisfied.

DISCUSSION

The management of hemorrhoids and anorectal disorders has become relatively painless after the introduction of Stapled Hemorrhoidopexy (PPH/MIPH) and STARR surgery. Due to the advantages associated with it like less postoperative pain and time to resume work, they are gaining popularity and globally used in practice. However, some studies have documented unique and unusual adverse effects with these procedures.⁹⁻¹¹ Complications that are particular to these stapled procedures are bleeding, strictures and fecal incontinence.⁶ The staple line stricture is a narrowing of the anal canal due to previous STARR and PPH surgery and is one of the most common complications reported. In our study, most of the patients were post STARR surgery (66.8%) and post PPH (26.6%).

Many innovations and breakthroughs were suggested to overcome the limitations of stapled procedures. The Contour Tran star stapler™ (Ethicon Endo-Surgery; Cincinnati) is designed to allow tailored modulation of the amount of rectal wall to be respected and to improve open visualization of the procedure.¹²

STARR expert's extensive research helped to identify precise contraindications, selection of patient and meticulous technique.^{6,13} Some studies concluded that those who perform these operations have to be colorectal surgeons trained in transanal stapling.^{13,14,6}

The study conducted by Porwal A, et al stated that certain key steps are critical for a better clinical outcome of STARR surgery and the surgeon should be very selective in applying stay sutures for lateral wall (9 o'clock and 3 o'clock positions).¹⁵ Staple line should be placed 3cm above the dentate line in males and up to 4 cm above dentate line in females.¹⁵ Apart from all these possibilities, some studies have stated that psychological disorders negatively affect outcome of procedure and significantly contribute recurrence.¹⁶ The psychosocial aspects have not been studied thoroughly till date.

In this view, our study is an attempt to assess the efficacy of management of one of these complications, that is, staple line stricture. The mean surgery and hospitalization duration were 24.48 ± 6.31 minutes and 13.72 ± 4.30 hours respectively in our study.

Also, post-operative pain significantly reduced. Recurrence was observed in only in 3 patients. Based on our results we believe that stricturoplasty is satisfactory in treating anorectal stricture due to SH and STARR surgery.

CONCLUSION

Stapled procedures found to be effective in managing anorectal conditions in any age or sex group even with the post-operative complications associated with it. Although prevention is the most economical and best strategy, careful selection of patients, adequately trained surgeon and scrupulous technique can help to reduce prevalence of complications. Apart from this, to manage complications effectively, alternate mode of management should be evaluated. With our experience, we conclude here that Laser Four Quadrant Stricturoplasty is an easy and effective surgery for the treatment of staple line stricture with a low recurrence rate.

Recommendations

Being an observational study conducted at a single center with smaller sample size and with no comparison group the results cannot be generalized.

As the success of Stapled Procedures depends upon the careful selection of patients and skilled technique, we recommend that proper training should be given to colorectal surgeons in this regard. Selection of male patients is crucial in prevention of staple line stricture. In hemorrhoids with no internal mucosal prolapse stapler hemorrhoidopexy should be avoided. In ODS cases if the rectocele is minimal avoid using stapler in male patients. A methodical training and use of evidenced based information will definitely help to manage complications.

Author is currently working on modified technique of STARR and MIPH to minimize the staple line stricture.

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