ORIGINAL ARTICLE

Perineal Stapled Prolapse Resection

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Abstract Perineal stapled prolapse resection is a new technique for external rectal prolapse introduced in 2007. We have done stapled perineal resection for 12 patients with full thickness rectal prolapse between January 2010 and April 2012. Elderly patients with comorbidities and young patients who want to avoid risk of nerve damage, with rectal prolapse up to 8–10 cms were included prospectively for perineal stapled rectal prolapse resection. Functional outcome, complications, operating time, and hospital stay were assessed in all patients. Perineal stapled prolapse resection was performed without major complications in a median operating time of 45 (range, 40–90) min and median Hospital stay was 3 days (3 to 11 days). Preoperative severe fecal incontinence and constipation improved postoperatively in 90 and 66 % of the patients, respectively, and there was no incidence of de novo onset or worsening of constipation in any of the patient. One patient developed small extra peritoneal collection which was managed by conservative treatment. No other complications occurred. At median follow-up of 36 months, all patients were well and showed no early recurrence of prolapse.

Perineal stapled rectal prolapse resection is a new surgical procedure for external rectal prolapse, which is safe, easy, and quick to perform.

Keywords Rectal prolapse · Perineal · Stapled · Resection · Prolapse

Introduction

Perineal procedures like Delorme's procedure and the Altemeier operation are the most popular techniques for rectal prolapse in patients who are not suitable candidates for abdominal procedures. A new surgical technique called perineal stapled prolapse resection (PSPR) for external prolapse was described by Roland et al. in 2007 and showed good functional results [1, 2]. PSPR is being carried out in our department since 2010.

Materials and Methods

From January 2010 to April 2012, all patients presenting to outpatient department with an external rectal prolapse were examined thoroughly and after confirming the diagnosis and extent of prolapse, they were evaluated thoroughly for surgery. All the patients were counseled preoperatively and advantages and disadvantages of PSPR or rectopexy were explained. PSPR was advised to elderly patients with comorbidities and to young patients who wants to avoid complications secondary to nerve damage, with rectal prolapse up to 8–10 cms. During this period, 32 patients with complete rectal prolapse presented to our OPD, of these, 12 patients underwent PSPR as per our selection criteria and the remaining 20 underwent rectopexy by other technique. All patients underwent detailed history, complete physical examination, electrocardiogram, chest x-ray, viral markers, blood sugar, and complete hemogram. Bowel preparation was given to all patients, and colonoscopy was performed for all. Preoperative anesthesia fitness was taken for all the patients. Magnetic resonance defecography was done for all the patients to rule out cystocoele or enterocoele, and all the patients were routinely catheterized preoperatively to empty the bladder.

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All the patients were interviewed preoperatively for bowel function, i.e., incontinence (according to Wexner Score) and constipation (according to Rome II criteria) [3]. A significant postoperative improvement was arbitrary, defined as a postoperative reduction of Wexner score by 50 % and improvement of constipation. Preoperatively, 10 patients complained of incontinence and 3 complained of constipation.

Thirty minutes before start of operation, a prophylaxis with a combination of cephalosporin and metronidazole was administered intravenously to all patients. The same surgical team performed all surgeries. All complications were recorded prospectively during hospital stay and follow-up. Follow-up visits were performed 1 month after the operation on OPD basis (n-12), and a telephonic interview for the functional outcome after 2 months (n-12) and for assessment of recurrence and functional outcome later on at an interval of every 6 months, i.e.,6 (n-12), 12 (n-12),18 (n-12), 24 (n-12), 30 (n-9),36 (n-7), 42 (n-3), and 48 (n-1) months. Written informed consent was taken from all the patients for surgery, collection of data, and its publication.

Clearance was taken from institution ethical committee for carrying out this study.

Surgical Technique

PSPR was performed under spinal anesthesia in a lithotomy position. A slight Trendelenburg position was chosen to free the pouch of Douglas from any deep enterocele. The prolapse was completely pulled out and fixed by Allis clamps. A careful bi-manual examination was performed, to exclude the entrapment of any intraperitoneal organ in the prolapse. Then, the prolapse was axially cut open at 12 (Fig. 1) and 6 o' clock (Fig. 2) with a linear stapler green cartridge (Ethicon Endo-Surgery). In female patients, the stapler was fired after

Fig. 2 Firing stapler at 6 o'clock

the digital exploration of the back wall of the vagina to exclude its entrapment. Left and right lateral wall of the prolapse gets separated after second firing at 6 o'clock. The prolapse was then resected continuously by linear stapler parallel to the dentate line, first on the right starting at the 12 o'clock position (Fig. 3), and then on the left beginning at 12 o'clock. The stapled resection line was inspected using a transparent speculum and oversewn with absorbable vicryl sutures to ensure hemostasis and to strengthen the anastomosis.

Results

Twelve consecutive patients with an external rectal prolapse were evaluated for surgical treatment. The PSPR was performed on 12 patients, with a median age of 59 years (range 17–70). Seven patients were male. Eleven patients had rectal prolapse for the first time while one patient had undergone

Fig. 1 Firing stapler at 12 o'clock

Fig. 3 Firing of lateral stapler

laparoscopic rectopexy in the past. All patients were operated under spinal anesthesia. In all 12 patients, the PSPR was successfully completed with no major intraoperative complications. The median operation time was 45 min (range 40–90) and 6 cartridges (range 4–7) were used for the resection. The median weight of the specimen was 60 g (range 18–190). The number of cartridges used increased with the weight of the specimen. Minor complication occurred in one patient (8.33 %). That patient developed small extra peritoneal collection which was managed by conservative treatment. The median postoperative hospitalization was 3 days (range 3–11 days). The median Wexner incontinence score before PSPR and after PSPR was 16 (4–20) and 1 (0–14), respectively. No sexual dysfunction or micturating difficulties occurred in any of the patients. Before surgery, three (25 %) patients complained of constipation, of them, one patient (33 %) reported a continuation of symptom of constipation after surgery, though with some improvement. The median follow-up was 36 months (24–48).

Discussion

"When an internal organ persists in an endeavor to become an external organ, it generally causes a great deal of trouble. The rectum is occasionally an offender in this respect [4]."
W. Ernest Miles, 1993.

Complete rectal prolapse or procidentia is a distressing and demoralizing condition. Patients are troubled by a protrusion beyond the anal verge which secretes mucus and may bleed. It is frequently associated with incontinence either because there is an underlying weakness in the sphincter mechanism which allows the prolapse to occur, or because of the presence of the prolapse protruding through the anal canal leads to poor sphincter function [5, 6].

Full thickness rectal prolapse is the complete eversion of the rectum through the anal canal. Although complete rectal prolapse occur at any age, the mean age of incidence was in the fourth to seventh decades. The sex distribution ranges from 10 to 6:1, women to men in West. In Asia, slightly increased incidence in males is seen [5, 7]. Complete rectal prolapse is such a problematic condition for which in the past century at least 100 operations have been advocated for its correction [6, 8].

Complete prolapse of the rectum enjoys an enviable reputation for intractability to treatment and additional evidence to this effect is provided by the multitude of methods that have been devised for its relief. Another cause of disappointment is the persistently poor state of rectal function of many of these patients, even after successful cure of the actual prolapse. Unfortunately there has been little if any advance in this respect with newer methods of treatment [5, 7, 9].

The most common procedures are performed either transabdominally (laparotomy or laparoscopically) or by transperineal approach. Among abdominal procedures of rectopexy, the most frequently used is some form of posterior rectopexy which involves mobilization of the rectum from the sacrum and fixation either directly or by the use of an artificial material such as Marlex mesh, Ivalon sponge (Well's operation) or an absorbable mesh such as vicryl.

Until recently abdominal rectopexy has been advocated as treatment of choice for complete rectal prolapse, recurrence rate are low and continence improved in majority of patients (50–88 %) as most of patients are elderly and not always fit for abdominal procedures, various perineal approaches are preferred; they have recurrence rates ranging from 0 to 38 % depending upon type and extent of operation. A possible alternative is perineal stapled prolapse.

A new surgical technique for external rectal prolapse, the perineal stapled prolapse resection (PSPR), was introduced in 2007 [1, 2]. The PSPR is completed in 12 patients with no major intraoperative complications in our department. Apart from one patient who developed small extra peritoneal collection which was managed by conservative treatment, no other severe complications occurred.

Most important advantage of PSPR in comparison to established perineal techniques like Delorme's procedure, perineal rectosigmoidectomy, or perineal rectosigmoidectomy with levatorplasty is short operating time, short hospital stay, and early recovery and equal cost as compared to open surgery [1, 2]. The cost of staplers used in PSPR (Rs 20,000–35,000) turns out to be equivalent to cost of mesh (Rs 3000), tackers (Rs 18,000), anesthesia charges (higher for GA) and operative charges (higher for laparoscopic procedures) in abdominal surgery for rectal prolapse, though cost involved in abdominal rectopexy is slightly less if suture rectopexy is done.

The procedure of PSPR is easy and fast and can be performed without major complications. There is significant improvement in bowel function post procedure. Severe fecal incontinence disappeared in 90 % of our patients after PSPR. And there was improvement in constipation in 66 % of patients, no de novo constipation occurred in any of the patient.

Abdominal operations generally have superior overall results and have become the preferred treatment for younger and healthier patients. However, in elderly, morbidity and mortality is slightly higher with an abdominal approach, making the consideration of patient comorbidities essential in deciding the appropriate repair [10, 11]. Perineal approach results in less perioperative morbidity and pain, and a reduced length of hospital stay, though recurrence rates that are slightly higher than those for abdominal operations and functional outcome are comparatively poor [11–13].

For elderly and frail patients with comorbidities, the perineal procedures such as the Delorme operation and the Altemeier's are associated with low-risk but with slight high recurrence rates. Kimmins et al. in 2001 published a series of 63 patients undergoing Altemeier's procedure and found anastomotic leak, stenosis, and rectovaginal fistula and bleeding as postoperative complications in 11 % [14]. PSPR is advocated for frail patients with severe comorbidities and short life expectancy [15, 16]. PSPR is also a good choice for young patients who want to avoid even minimal risk of nerve injury and its associated complications.

We recommend a careful over-suturing of the stapler line to prevent postoperative bleeding and to minimize anastomosis dehiscence. Fortunately, we had no mortality in our study of PSPR though other perineal procedures such as the Delorme operation and Altemeier's rectosigmoidectomy are associated with 4–38 and 0–16 % mortality, respectively [11–13].

In our experience, the ideal patients for PSPR are those with a rectal prolapse, maximum length of 8–10 cms. Large prolapse are technically more demanding, increasing the use of cartridges and the duration of the operation.

In order to study the effectiveness of procedure in terms of functional outcome, the three most important determinants are incontinence, constipation, and the consequences of nerve damage and adhesions.

Incontinence

Incontinence of various grades reported in different studies in the West range from 30 to 100 % [17]. In our study, varying degree of incontinence was seen in 10 (83 %) of the 12 patients of complete prolapsed rectum. After PSPR, incontinence improved significantly in 6 patients and disappeared in 3 patients, i.e., incontinence improved in 90 % of the patients (Table 1). One patient continues to have severe incontinence that was managed conservatively with bulk forming agents. The improvement in continence after PSPR is in accordance with the PSPR study done by Hetzer et al. (Table 2); in his study, severe fecal incontinence disappeared postoperatively in 90 % of patients [1, 2]. Demibras et al. [18] (2005) in their series of 40 cases of laparoscopic rectopexy reported improved continence in 71 % of patients. Q. E. J. Eijsbouts [19] reported improved continence in 76.19 % of 21 patients having preoperative incontinence in their series of 28 cases. Launer et al. in 1982 [20] (retrospective study with 54 patients) and Schultz et al. in 2000 [21] (prospective study with 69 patients in 2000) with the Ripstein procedure both determined a 10 % worsening of the preoperative incontinence after rectopexy. However, we were fortunate not to have any worsening of continence.

Table 1 Follow-up and clinical outcome of the patients

Sr no	Date of surgery	Age	Sex	P	I	C	No. of staplers used	Post op stay (days)	Incontinence score Pre op	6	12	18	24	30	36	42	48	Constipation Pre op	6	12	18	24	30	36	42	48
1	Jan 2010	54	M	+	+	−	6	3	12	1	1	1	1	1	1	1	1	−	−	−	−	−	−	−	−	−
2	July 2010	52	F	+	+	+	4	3	16	3	2	2	2	2	2	2	nf	+	imp	imp	imp	imp	imp	imp	imp	nf
3	Oct 2010	48	M	+	+	−	6	3	8	0	0	0	0	0	0	0	nf	−	−	−	−	−	−	−	−	nf
4	Feb 2011	59	M	+	+	−	6	3	18	1	1	1	1	1	1	nf	nf	−	−	−	−	−	−	−	nf	nf
5	Apr 2011	62	F	+	−	+	5	3	−	−	−	−	−	−	−	nf	nf	+	imp	imp	imp	imp	imp	imp	nf	nf
6	June 2011	21	M	+	+	−	4	3	4	2	2	1	1	1	1	nf	nf	−	−	−	−	−	−	−	nf	nf
7	June 2011	59	F	+	+	−	6	11	16	0	0	0	0	0	0	nf	nf	−	−	−	−	−	−	−	nf	nf
8	Sep 2011	65	M	+	+	−	6	3	10	2	1	1	1	1	nf	nf	nf	−	−	−	−	−	−	nf	nf	nf
9	Nov 2011	60	F	+	+	−	5	3	18	0	0	0	0	0	nf	nf	nf	−	−	−	−	−	−	nf	nf	nf
10	Jan 2012	17	M	+	−	+	7	3	−	−	−	−	−	nf	nf	nf	nf	+	per	per	per	per	nf	nf	nf	nf
11	Mar 2012	70	M	+	+	−	6	3	20	14	14	14	14	nf	nf	nf	nf	−	−	−	−	−	nf	nf	nf	nf
12	Apr 2012	64	F	+	+	−	4	3	18	4	3	2	2	nf	nf	nf	nf	−	−	−	−	−	nf	nf	nf	nf

P prolapse, *I* incontinence, *C* constipation, *M* male, *F* female, *Op* operative, + present, − absent, *nf* no follow-up, *imp* improved, *per* persistent

Table 2 Comparison with other study

	Post op improvement in incontinence	Post op improvement in constipation	De novo constipation	Median hospital stay	Complication
Present study	90 %	66 %	None	3 days (3–11 days)	8.3 %
Hetzer et al.	90 %	16.6 %	None	5 days (2–19 days)	6.3 %

Constipation

In our present study, 3(25 %) patients complained of constipation with straining preoperatively. Two out of three patients (66 %) improved as regards constipation after surgery and none developed de novo constipation (Table 1). This is in accordance with the PSPR study done by Hetzer et al. (Table 2), who also found no new de novo constipation in any of the patients though constipation improved in 16.6 % of patients postoperatively [1, 2]. The symptom of constipation continued in one patient postoperatively with some symptomatic improvement. The patient who had continued constipation postoperatively was treated with bulk laxatives and was satisfied with the treatment. Rectopexy is known to cause de novo constipation and also worsen the existing constipation in some patients. Fifteen percent of patients experience constipation for the first time following rectopexy, and at least 50 % of those who are constipated preoperatively are made worse [22]. The addition of sigmoidectomy to the operation was felt to be associated with a lower recurrence rate and improved functional outcome with a minimal increase in morbidity [23, 24]. It seems to reduce constipation significantly in those who report this symptom preoperatively in some studies [23, 25, 26]. However, in our study, none of the patient had worsening or new onset of constipation in the postoperative period.

Nerve Damage and Adhesion

Micturating difficulty and sexual dysfunction in men after transabdominal rectopexy is caused by nerve damage. In 1998, Yakut et al. found the risk for impotence in men after transabdominal rectopexy with dorsal mobilization is 17 % [27]. However, there is no risk for micturating dysfunction or sexual dysfunction after PSPR and we have not found any such complication in any of our patients, which is in accordance with the PSPR study done by Hetzer et al. [1, 2].

In the follow-up interview, we asked every patient about his/her satisfaction with the result after the surgical intervention. Eleven (91 %) were satisfied with the surgery.

Conclusion

The functional results and the recurrence rate following PSPR in our study with mid-term follow-up are comparable or even superior to those of current perineal or abdominal procedures and encourage taking the indication of PSPR beyond the elderly and frail patient. However, long-term follow-up and further studies are required.

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