Posterior sagittal rectopexy in the management of persistent and recurrent complete rectal prolapse in children

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Aim
The aim of this study was to evaluate the clinical and functional results of posterior sagittal rectopexy (PSR) in children with persistent and recurrent rectal prolapse.
Patients and methods
All patients with recurrent rectal prolapse after injection sclerotherapy or previous anal cerclage and patients with prolonged persistent prolapse needing surgery were subjected to PSR. Follow-up extended in the outpatient clinic for 6 months, and the patients were observed for any change in bowel habits, continence, and postoperative complication (incontinence and bleeding).
Results
This study included 12 patients with persistent rectal prolapse not responding to conservative treatment for 1 year and eight patients with recurrent rectal prolapse. Their ages at the operation ranged from 3 to 10 years. The mean operative time was 60 min (range, 40–80 min). Early postoperative complications include wound infection in four cases, which responded to antibiotics and daily dressings, and four patients with temporary constipation responding to laxatives and regulation of diet habits. Recurrence occurred in one patient in the form of partial mucosal prolapse.
Conclusion
PSR is a safe and effective procedure for persistent and recurrent rectal prolapse in children with excellent clinical and functional results.

Keywords:
children, prolapse, rectopexy

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Introduction

Rectal prolapse is usually a self-limiting disease in the pediatric age group [1,2]. Treatment options that have been tried in recurrent cases [3] include regulation of defecation habits by stool softener and rectal submucosal sclerosant injections [4]. Surgical procedures are limited to recurrent and persistent cases, and they included Thiersch cerclage, posterior sagittal rectopexy (PSR) [5], open or laparoscopic abdominal rectopexy [5,6] and Ekehorn's rectosacropexy [7]. Each one of these techniques has its advantages and restrictions. The aim of this study was to evaluate the clinical and functional results of PSR in children with persistent and recurrent rectal prolapse.

Patients and methods

This was a prospective study conducted on patients with recurrent rectal prolapse admitted to the Pediatric Surgery Unit, Tanta University Hospitals, Egypt, during the period spanning from March 2017 to February 2019. The study was approved by the ethical committee of Faculty of Medicine, Tanta University, and informed consent was obtained from the patient's guardians. All patients with recurrent rectal prolapse after injection sclerotherapy or previous anal cerclage and patients with prolonged persistent prolapse needing reduction were included in the study. Exclusion criteria included patients with rectal polyposis and patients with intractable constipation. All patients were subjected to thorough history taking with a focus on age at initial presentation of prolapse and age at previous surgery; complications such as rectal bleeding, ulceration, and strangulation; nature and duration of treatment received and its success; operative notes; and postoperative management and complications. Investigations carried out for all patients included routine laboratory investigations and stool analysis for parasitic infestation. Follow-up extended in the outpatient clinic for 6 months, and the patients were observed for any change in bowel habits, continence, and postoperative complication (incontinence and bleeding).

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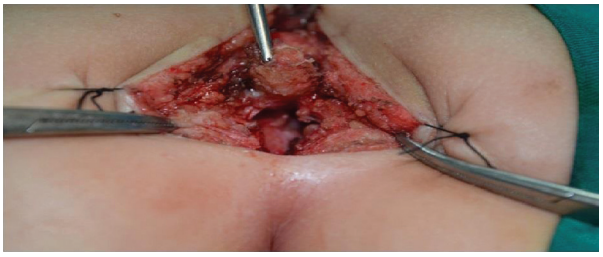
Figure 1

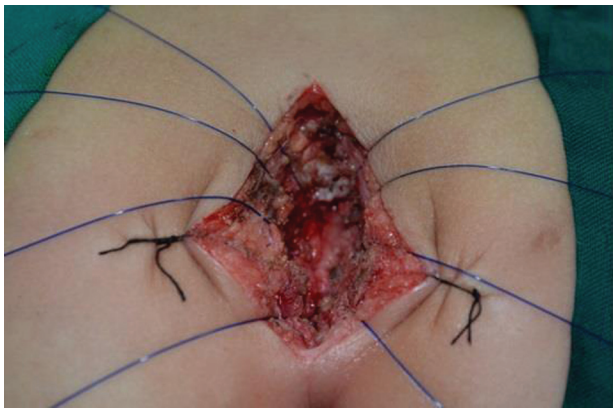
Incision starting above the coccyx at the natal cleft down to just above the external sphincter.

Figure 2



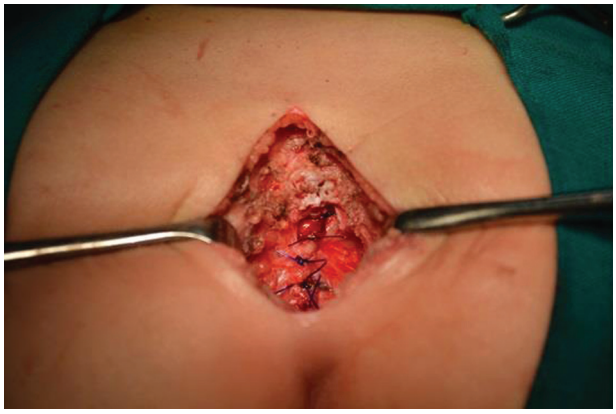
Levator ani muscles and the parasagittal fibers were divided in the midline, and the coccyx was excised.

Figure 3



Rectum was plicated transversally and fixed to the posterior wall of the sacrum.

Figure 4



Sutures were tied.

Figure 5

Skin incision was closed using interrupted sutures.

Technique

Preoperative preparation included bowel enemas the night before the operation. Under general anesthesia, the patient was operated upon in prone Jackknife position. The perineal area including the buttocks and sacral region were sterilized with antiseptic solution (povidone–iodine). Incision starting above the coccyx at the natal cleft down to just above the external sphincter was made (Fig. 1). Using the monopolar diathermy, the levator ani muscles and the parasagittal fibers were divided in the midline (Fig. 2). At this step, the coccyx was excised to facilitate dissection and exposure. Blunt dissection of the lateral and posterior walls of the rectum for a length of 10–15 cm was performed. The rectum was plicated transversally using 3/0 or 4/0 polyprolene sutures. The sutures were started from the right side of the rectum including the seromuscular layer of it then involving the back of the rectum to the left side then the suture was repeated to include all the dissected length (Fig. 3).

Two or three sutures were used to fix the rectum to the posterior wall of the sacrum; thereafter, the sutures were tied on proper size hegar dilator to avoid tightening of the anus (Fig. 4). The incised levator and parasagittal muscles were repaired in the midline using nonabsorbable sutures. Finally, the skin incision was closed using interrupted sutures without a subcutaneous drain (Fig. 5). Soft diet and laxatives were used to avoid postoperative straining and constipation. All patients were discharged home a day after the operation. Broad-spectrum antibiotics and analgesics were used for 3–5 days after discharge.

Results

This prospective study included 20 patients, 12 (60%) patients with persistent rectal prolapse not responding to conservative treatment for 1 year and eight (40%) patients with recurrent rectal prolapse (three after injection sclerotherapy and five after anal cerclage). Conservative treatment included bowel habit training, stool softeners, plenty of fluid intake, soft rich fiber diet devoid of seeds, and treatment of parasitic infestation and dysentery.

All the 20 patients involved in the study were treated with PSR. Their ages at the operation ranged from 3 to 10 years [13 (65%) male individuals and seven (35%) female individuals]. The mean operative time was 60 min (range, 40–80 min). Early postoperative complications included wound infection in four (20%) cases, which responded to antibiotics and daily dressings, and temporary constipation responding to laxatives and regulation of diet habits in four (20%) patients. Recurrence occurred in one (5%) patient in the form of partial mucosal prolapse, which was treated by trimming of the prolapsed mucosa under general anesthesia. Anal continence was maintained in all patients (Table 1). All patients were followed-up for at least 6 months. The early postoperative course was uneventful in these cases.

Discussion

There are several factors responsible for rectal prolapse in children; abnormalities in the sacral bone curvature, sacral innervation disorders, congenital flat coccyx, abnormality of the rectum (vertical course, a low site in the pelvic cavity, poor retrorectal fat support due to straining at defecation or malnutrition), and poor pelvic floor muscle support. Rectal prolapse may be partial or complete, with extensive herniation leading to rectal wall incarceration [5]. Rectal prolapse in children may be successfully managed by treating the predisposing factors such as straining and squatting at defecation, by the avoidance of constipating diet, and by the use of laxatives [1]. However, the prolapse may be resistant to this conservative treatment in some children, requiring surgical intervention.

Table 1 Patients' demographics and operative and postoperative data

Demographics and postoperative data	*N*=20
Age	3–10 years
Sex	
Male	13 (65)
Female	7 (35)
Mean operative time	60 min
Anal continence	20 (100)
Postoperative complications	
Infection	4 (20)
Constipation	4 (20)
Recurrence	1 (5) (partial mucosal prolapse)

Many procedures have been reported for the management of rectal prolapse in children, with the success rate reaching 90% in the PSR [5]. The other procedures were Delorme operation [8], injections of sclerosant materials [4], Ekehorn's rectosacropexy [7], resection rectopexy with or without mesh fixation, and levatorplasty procedure [7]. The description of the different procedures in the literature for the management of rectal prolapse denotes that there is no great superiority of one technique over another with the absence of ideal effective treatment.

Thiersch perianal cerclage is a simple procedure that can be performed by pediatric and general surgeons, but it carries a lot of hazards such as infection, erosion of the sutures in the rectal wall, anal stricture, and painful defecation in addition to the high recurrence rate [9]. Injection of sclerosant materials is another simple maneuver, but it carries the risk of a high recurrence rate. Its recurrence rate was reported to be 36% after one dose of injection and 16% after three injections [10].

Flum *et al.* [11] reported effective management with a combination of Thiersch stitch and injection sclerotherapy; he indicated these combinations as the first line of treatment in rectal prolapse. Abdominal rectopexy was reported in many studies but carried the hazards of impotence and vesical dysfunction, and its recurrence rate reached 25% [7].

Recently, with the advances of pediatric minimal invasive surgery, many studies reported the success of laparoscopic operations for rectal prolapse, such as laparoscopic mesh rectopexy and laparoscopic suture rectopexy, with all advantages of minimal access surgery, such as rapid return of peristalsis, short time of hospital stay, low rate of recurrence, and better cosmetic appearance [12,13]. However, these laparoscopic procedures require special training programs and come at a higher cost, which is not available in all institutions. Posterior sagittal repair combined the benefits of the anatomical repair by fixing the rectum to the sacrum posterior to the pelvic floor muscles and maintaining the functional part by plicating the lateral and posterior walls of the dilated redundant rectum [14].

The reports of recurrence rates for pediatric persistent rectal prolapse are as much as 6.9% at 5 years and 10.8% at 10 years [15]. As regards the recurrence rate after PSR, only one patient had mucosal prolapse after surgery in this study. Hashish [9] in her study reported three cases with partial recurrence. Saleh [16] also reported no recurrence rate in his series, which included 20 patients. Tsugawa *et al.* [17] also had no recurrence in their study; however, Laituri *et al.* [18] reported a high rate of recurrence in their series, reaching upto 70%, but they explained this recurrence rate by the anatomical origin of the pediatric rectal prolapse, as the posterior sagittal approach only secured the lower rectum. In this study, incontinence was not reported in any case, as the surgeon followed the principles of posterior sagittal incision, by keeping it in the midline and away from the external anal sphincter, and hence avoided the damage of pelvic floor muscles and pelvic autonomic innervations, and also by the meticulous repair of the levator ani at the end of the procedure.

Conclusion

PSR is a safe and effective procedure for persistent and recurrent rectal prolapse in children, with excellent clinical and functional results. Measures must be taken to reduce surgical wound infection.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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