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15-Year experience in the treatment of rectal prolapse in children

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Abstract

Background: Rectal prolapse is a common and usually self-limited condition in children. Several surgical techniques have been advocated for refractory prolapse. We reviewed our experience with treatment and the outcome of refractory rectal prolapse.

Methods: Retrospective review was conducted on patients undergoing surgery for rectal prolapse from January 1993 to March 2009. Patients with imperforate anus/cloacal abnormalities, Hirschsprung disease, spina bifida, or prior pull-through were excluded.

Results: Twenty patients underwent 23 procedures for rectal prolapse. There were 10 posterior sagittal rectopexies, 6 transabdominal rectopexies, 5 laparoscopic rectopexies, 1 hypertonic saline injection, and 1 anal cerclage. The mean duration of symptoms was 1.6 years (range, 1-10 years). The mean age at operation was 6.8 years (range, 4 months-19 years), with a 5:1 male predominance. There was no operative or perioperative mortality. Median length of follow-up was 7.2 months; 2 patients were lost to follow-up.

The overall recurrence rate was 35%. All recurrences followed posterior sagittal rectopexies, which had a 70% recurrence rate. Four patients required reoperation, all done transabdominally (2 open and 2 laparoscopically). None of the 3 remaining patients with mild recurrences required reoperation.

Conclusions: A variety of options for management of refractory rectal prolapse in children exist. Laparoscopic rectopexy seems to be safe and a comparatively successful option in these children.

Rectal prolapse is a relatively common condition in children, with a peak incidence around the time of toilet training. Most cases are mild and may spontaneously resolve. The initial treatment is usually conservative, with stool softeners or laxatives and avoidance of prolonged straining.

The potential for spontaneous resolution of the prolapse complicates the decision-making process because reports of highly effective procedures in a relatively large number of children may be the result of patient selection rather than efficacy of the procedure [1]. Although we have had a longstanding experience with posterior sagittal rectopexy (PSRP), a few recurrences after PSRP combined with advances in minimally invasive surgery have prompted a trend toward laparoscopic rectopexy (LSRP) at our institution [2,3]. We reviewed our experience with refractory rectal prolapse during the past 15 years to evaluate treatment and surgical outcomes, comparing recent minimally invasive approaches to older techniques.

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1. Materials and methods

After obtaining institutional review board approval (#09 03-051X), we retrospectively reviewed the records of all patients who underwent surgical procedures for rectal prolapse from January 1993 to March 2009. All children were initially managed conservatively before surgical referral. Those who failed conservative treatment underwent surgical intervention for their rectal prolapse. Only patients that underwent a surgical procedure were evaluated. The choice of procedure was based solely on the surgeon's experience and preference. Data collected included patient demographics, duration and nature of symptoms, surgical procedure(s), treatment variables, and outcomes. We excluded patients with imperforate anus, Hirschsprung disease, spina bifida, cloacal abnormalities, and prior pull-through operations.

1.1. Technique of LSRP

Laparoscopic rectopexy was performed with a 45-degree camera through a 5-mm umbilical port and two 3-mm stab incisions in the lower lateral flanks. The child was placed in Trendelenberg position to empty the pelvis. A fourth instrument was sometimes added via a midabdominal 3-mm left stab incision, to retract the rectum cephalad during suturing. The redundant sigmoid is delivered from the pelvis and the peritoneal reflection at the sacral promontory was incised. Three silk fixation sutures were placed from the seromuscular rectal wall to the presacral fascia to perform the rectopexy (Fig. 1). No prosthetic material was used.

2. Results

Review of our records identified 20 patients who underwent 23 procedures for rectal prolapse. There were 10 patients that underwent PSRP, 6 underwent an open transabdominal rectopexy, 5 had LSRP, 1 received hypertonic saline injection, and the remaining patient underwent anal cerclage. Mean age at the time of operation was 6.8 years, with a range of 4 months to 19 years and a 5:1 male predominance. The mean duration of symptoms was 1.6 years (range, 1-10 years). The mean length of follow-up (clinic visit or telephone follow-up) was 7.2 months. However, mean time from the date of surgery until the current date is 8.1 years. The latter may be a more accurate follow-up, given the catchment area and referral demographics.

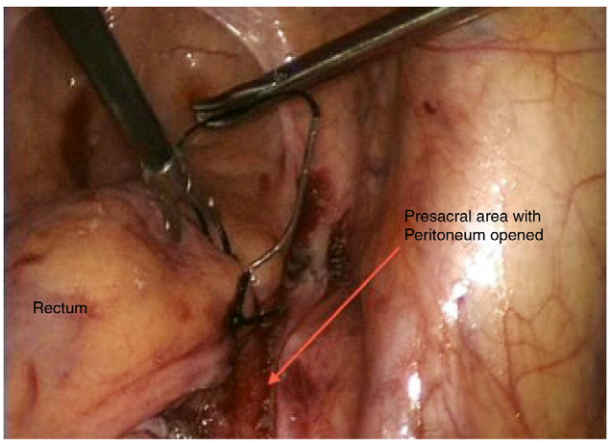

Fig. 1 Laparoscopic view of the right pelvis during suturing of the seromuscular rectum to the presacral fascia.

Many of our patients had extensive evaluations before surgical referral. Ten patients had been evaluated by a gastroenterologist and 7 patients had sweat chloride testing (all normal). None of our patients had cystic fibrosis. Ten patients underwent a diagnostic colonoscopy/sigmoidoscopy (all normal). Barium enemas and upper gastrointestinal imaging series were also obtained in a few patients. No patient was found to have other pathology. Two patients had autism, a known association.

The overall recurrence rate was 35% (7 recurrences). All recurrences followed PSRP, which had a 70% recurrence rate. Reoperation was performed in 4 of the 7 patients and all were approached transabdominally, with 2 open and 2 laparoscopic rectopexies. Of the 3 remaining patients with recurrences, 1 had persistent but limited anterior prolapse and elected to not to have another procedure. The remaining 2 patients had minor recurrences, felt not significant enough to require reoperation: 1 had minimal mucosal prolapse occurring two to three times daily and the remaining patient had minor persistent prolapse.

3. Discussion

Rectal prolapse is a common condition in children younger than 5 years of age. Spontaneous resolution of rectal prolapse in children is common, and medical management with stool softeners/laxatives and avoidance of prolonged straining are sufficient treatment for most of the remainder. Indications for operation are imprecise but include longstanding symptoms, rectal pain/bleeding/ulceration, and prolapse that requires frequent manual reductions or is difficult to reduce. Predisposing conditions (see below) and older age (>4-5 years) may influence an earlier progression to operative repair. Some authors recommend a more aggressive approach in children older than 4 years, because they may have a higher failure rate when nonoperatively managed [4,5].

Children are predisposed to this condition caused by anatomic considerations. They have a more vertical course of the rectum, flatter coccyx, poor levator support, and a relatively low position of the rectum in the pelvis [1]. Prolapse has been associated with many underlying diseases, and the incidence varies with geographic and socioeconomic factors. It is much more common in underdeveloped

countries, where parasitic disease, malnutrition, and diarrheal illness are rife. Contributing factors in the industrialized world include constipation, pertussis, cystic fibrosis, and polyps. In this country, constipation is the most common association. Cystic fibrosis (CF) is associated with nearly a 20% incidence of prolapse in some reports, but most children with prolapse do not have undiagnosed CF, particularly in the absence of symptoms [6,7]. None of the children in our series had CF. Most pediatric series include a few children with autism spectrum disorders, and we had 2 such patients [8]. Despite these associated conditions, most children have no predisposing factors.

Evaluation of children with prolapse is fairly straightforward. The physical examination is often normal because the prolapse cannot be evoked in the clinic, and the diagnosis must be based on the history. Many of our patients had gastrointestinal consultation, sweat chloride studies, barium enemas, and colonoscopies. However, an extensive evaluation is not necessary in most uncomplicated cases, particularly in the absence of a history of rectal bleeding, constipation/diarrhea, or associated abnormalities.

When patients fail conservative therapy, a multitude of surgical options are available. Unfortunately, much of the surgical literature on rectal prolapse refers solely to adults. A recent Cochrane database review of the surgical management of rectal prolapse in adults concluded that: "Laparoscopic rectopexy was associated with fewer post-operative complications and shorter hospital stay than open rectopexy" [9]. The disease is very different in children, and many adult techniques (such as prosthetic sling suspensions) are not applicable. The pediatric surgeon is faced with a "paradox of choice," and the selection of procedures depends largely on the individual surgeon's experience and cohort case controlled or case series data (level 4 data).

A report nearly 20 years ago from our own institution advocated the use of PSRP for rectal prolapse [3]. This study included some patients with associated anomalies, but reported 1 death (unrelated to the operation) in 46 children and a recurrence rate of 9% (4 of the 45 patients), with minor recurrences in another 3 of the 45 patients (7%). Most of the patients with major recurrence had associated anomalies (3 of 4), which were excluded from the current analysis, potentially coloring our conclusions. The current series found a high recurrence after PSRP (70%); some of these were minor, but 4 of the 7 patients required another procedure. The higher failure rate with PSRP may relate to the anatomic origin of the prolapse, because anal and perineal procedures only secure the distal rectum. One manometric study found normal anorectal reflexes and manometry in 36 children with complete rectal prolapse compared with 45 age- and sex-matched controls [10]. The authors felt that defecography and ultrasound examinations indicated that "prolapse starts initially as an intussusception of the rectum, then fully develops." This would argue against PSRP and in favor of LSRP. Laparoscopic rectopexy not only corrects prolapse originating from the lower rectum and sigmoid but also avoids the morbidity of a large perineal or abdominal incision. Prosthetic materials are not necessary, and the procedure is technically simple (Fig. 1), requiring at most an overnight stay. Adult (n = 25) and pediatric (n = 8) series have shown excellent results, with no recurrences [11,12].

This is a retrospective analysis of a relatively small number of children. Nevertheless, laparoscopic rectopexy is a technically simple procedure for refractory rectal prolapse which has been demonstrated to have a successful outcome in most cases.

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