

Management of Rectal Prolapse in Children

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PURPOSE: Rectal prolapse in children is not uncommon and usually is a self-limiting condition in infancy. Most cases respond to conservative management; however, surgery is occasionally required in cases that are intractable to conservative treatment. This study was designed to analyze the outcomes of rectal prolapse in children and to propose a pathway for the management of these cases in children. **METHODS:** A retrospective analysis of all cases of rectal prolapse referred to our surgical unit during a period of five years was performed. End point was recurrence of prolapse requiring manual reduction under sedation or an anesthetic. Results are presented as median (range) and statistical analysis was performed using chi-squared test; $P < 0.05$ was considered significant. **RESULTS:** A total of 49 children (25 males) presented with symptoms of rectal prolapse at a median age of 2.6 years (range, 4 months -10.6 years). All children received an initial period of conservative treatment with watchful expectancy and/or laxatives. Twenty-five patients were managed conservatively without any additional procedures (Group A), and 24 patients had one or more interventions, such as injection sclerotherapy, Thiersch procedure, anal stretch, banding of prolapse, and rectopexy (Group B). Management of rectal prolapse was successful with no recurrences in 24 patients (96 percent) in Group A *vs.* 15 patients (63 percent) in Group B at a median follow-up period of 14 (range, 2-96) months. An underlying condition was found in 84 percent of patients in Group A *vs.* 54 percent in Group B ($P = 0.024$). The age at presentation was younger than four years in 88 percent of patients in Group A *vs.* 58 percent in Group B ($P = 0.019$). **CONCLUSIONS:** Rectal prolapse in children does respond to conservative management. A decision to operate is based on age of patient, duration of conservative management, and frequency of recurrent prolapse (>2 episodes requiring manual reduction) along with symptoms of pain, rectal bleeding, and

perianal excoriation because of recurrent prolapse. Those cases presenting younger than four years of age and with an associated condition have a better prognosis. The authors propose an algorithm for the management of rectal prolapse in children. [Key words: Rectal prolapse; Cystic fibrosis; Children; Recurrence]

Rectal prolapse in children is not uncommon, and usually presents as a self-limiting disorder in children younger than aged four years.^{1,2} Most cases respond to conservative treatment within one year³; however the prolapse may persist indefinitely in some children, requiring surgical intervention. A wide variety of operations have been described for rectal prolapse, which is a reflection of the lack of satisfaction with any single technique and lack of complete understanding of the pathophysiology of this condition in children. The various operative procedures for the management of rectal prolapse can be broadly classified as abdominal⁴⁻⁹ or perineal,¹⁰⁻¹⁸ according to the operative approach. Other less invasive surgical options include injection sclerotherapy^{3,19,20} and encircling of the anus.^{1,21} With such a wide variety of treatment options for rectal prolapse and a variable success rate, the optimum treatment of this condition in children is still debated. This study was designed to analyze the clinical outcomes of rectal prolapse and to provide a pathway for a systematic management of this condition in children.

METHODS

Between January 1999 and April 2004, 49 children with complaints of rectal prolapse were referred to our surgical unit. The case notes of these children

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Table 1.
Presenting Symptoms in Children With Rectal Prolapse

Presenting Complaints	Group A	Group B	Total
Protrusion of a mass from rectum	15 (31)	19 (38)	34 (69)
Protrusion of a mass from rectum with bleeding per rectum	8 (16)	4 (9)	12 (25)
Protrusion of a mass from rectum with bleeding per rectum and tenesmus	1 (2)	0 (0)	1 (2)
Protrusion of a mass from rectum and tenesmus	1 (2)	0 (0)	1 (2)
Bleeding per rectum	0 (0)	1 (2)	1 (2)

Data are number of children with percentages in parentheses.

were reviewed retrospectively. The variables assessed were age at presentation, gender of the patient, family history of rectal prolapse, presenting complaints, associated conditions, investigations undertaken, management of these cases, and time to follow-up. End point was recurrence of prolapse requiring manual reduction under sedation or anesthetic.

All children received an initial period of conservative treatment with watchful expectancy and/or laxatives before referral by the physicians/general practitioners or subsequently. These children were divided into two groups: Group A, cases managed conservatively; and Group B, cases that failed conservative treatment and required further intervention, such as submucosal rectal injection with 5 percent phenol in oil, anal stretch, banding of the prolapse, Thiersch stitch with 5-0 polydioxanone sutures, and laparoscopic or open rectopexy. Those cases that presented acutely had a gentle reduction of the prolapse with strapping of the buttocks.

Rectopexy was performed laparoscopically by using one umbilical port and three other working ports in the right and left iliac fossa, whereas the open procedure was performed *via* a Pfannenstiel's incision. The peritoneal reflection was divided and the anterior and posterior rectum was mobilized. Two interrupted 2-0 Prolene sutures were placed between the posterior lateral aspect of the rectum and fascia over the sacral promontory on either side. The patients were maintained on laxatives postoperatively. Results are presented as median (range) and statistical analysis was performed by using chi-squared test in which $P < 0.05$ was considered significant.

RESULTS

During the last five years, 49 children (25 males) presented with symptoms of rectal prolapse at a median age of 2.6 years (range, 4 months–10.6 years). Twenty-five patients were managed conservatively (Group A) and 24 cases required further intervention

(Group B). There was a family history of rectal prolapse in three patients and three children had neurologic impairment (2 with autism, and 1 with developmental delay). The presenting complaints in these children are shown in Table 1. Investigations performed included a cystic fibrosis screen in 16 patients, rectal biopsy in 1 patient, and colonoscopy in another case. In 15 patients (31 percent), the condition was considered idiopathic because no underlying cause was established. Cystic fibrosis screen was abnormal in one patient. The associated diagnoses in these children are shown in Table 2.

In Group A, the median age at presentation was 2.6 years (range, 10 months–10.6 years). Twenty-one patients were managed with laxatives, and reassurance with no treatment was given in four patients. In this group, five cases had one or more recurrence of rectal prolapse requiring manual reduction, four of which eventually resolved, and in one case the parents declined any further intervention at a median follow-up period of 12 (range, 6–36) months since presentation.

In Group B, the median age at presentation was 3.3 years (range, 4 months–10 years). Twenty-four children who failed conservative management underwent a total of 50 additional procedures. Six children had more than one procedure, and the same procedure was performed on two or more occasions. All these cases initially had a conservative management for a median of 6 (range, 2–36) months and developed two or more recurrences of the rectal prolapse requiring manual reduction under sedation or an anesthetic while on conservative treatment. Of the 50 procedures performed in 24 children, it was successful in only 15 cases (63 percent) in the management of rectal prolapse. There was one death unrelated to the surgical procedure. Three cases that had a Thiersch stitch inserted developed complications. The suture cut through in two cases and one case developed infection around the site. There were four cases of rectopexy (2 open, 2 laparoscopic), of which one was

Table 2.
Associated Diagnosis in Children With Rectal Prolapse

Diagnosis	Group A	Group B	Total
Chronic constipation	8 (16)	18 (37)	26 (53)
Constipation and diarrhea	3 (6)	0 (0)	3 (6)
Acute diarrheal disease	1 (2)	0 (0)	1 (2)
Cystic fibrosis	1 (2)	0 (0)	1 (2)
Ulcerative colitis	1 (2)	0 (0)	1 (2)
Recurrent chest infection	0 (0)	1 (2)	1 (2)
Imperforate anus (post repair)	1 (2)	0 (0)	1 (2)
No known cause	10 (20)	5 (11)	15 (31)

Data are number of children with percentages in parentheses.

a redo open procedure because of recurrence after a laparoscopic rectopexy. The median follow-up period since the last procedure was 17 (range, 2–96) months. Table 3 summarizes the various treatments offered and their outcome.

Management of rectal prolapse was successful in 24 patients (96 percent) in Group A *vs.* 15 patients (63 percent) in Group B. Of the three patients who had a neurologic impairment, two were managed conservatively and one patient required more than one procedure (injection with 5 percent phenol in oil, banding of the prolapse, Thiersch stitch, and laparoscopic rectopexy; $P = 0.576$). An underlying condition was found in 84 percent of patients in Group A *vs.* 54 percent in Group B ($P = 0.024$), and the age at presentation was younger than four years in 88 percent of patients in Group A *vs.* 58 percent in Group B ($P = 0.019$). The clinical parameters of these two age groups (≤ 4 years and > 4 years) are shown in Table 4.

DISCUSSION

Unlike adults, in whom rectal prolapse is primarily the result of pelvic muscular weakness related to injury from childbirth and advancing age, the exact etiology of rectal prolapse in children is unknown.²² It is thought to be related to several anatomic considerations, such as the vertical configuration of the sacrum, great mobility of the sigmoid colon, a loosely attached rectal mucosa to the underlying muscularis, and the absence of Houston's valves in approximately 75 percent of infants younger than one year of age.²² This could be the reason for the highest incidence in the first year of life. The gender incidence is almost equal in children compared with adults among whom females are six times more susceptible.^{2,23}

Rectal prolapse in children is associated with many conditions, such as chronic constipation, diarrheal

disease, ulcerative colitis, malnutrition, Hirschsprung's disease, Ehlers-Danlos syndrome, meningo-myelocoele, pertussis, rectal polyps, parasitic, and neoplastic diseases of the rectum and after surgical repair of anorectal anomaly.^{22,24} The most common underlying condition is chronic constipation,^{22,24} which has been the case in our study, in which 53 percent of children had an underlying diagnosis of chronic constipation.

Rectal prolapse is commonly associated in children with cystic fibrosis occurring in approximately 20 percent of cases usually between six months and three years of age and often preceding the diagnosis of cystic fibrosis.²⁵ In children with cystic fibrosis, the prolapse often is recurrent and is probably related to malnutrition, poor muscle tone, and passage of voluminous stools.²⁶ In our study, of 16 cases that had a cystic fibrosis screen, a positive result was found in only one patient (6 percent). Some authors recommend a sweat test for all cases of rectal prolapse^{24,25}; however, we think that this should be reserved for cases that have no underlying diagnosis and have recurrent rectal prolapse refractory to conservative treatment. Rectal prolapse has been shown to occur more frequently in neurologically impaired children, most cases requiring surgical intervention.²⁷ In our study, there were three patients with neurologic impairment, two of which were managed nonoperatively.

Rectal prolapse in children can be managed conservatively in most cases. Nonoperative management attempts to avoid straining and alter the stool disorder that led to prolapse. Our conservative approach attempts to identify any underlying condition, which is constipation in most cases, and minimize straining at defecation, which is a common precipitating factor for rectal prolapse. It is important to achieve this from the outset because the more the episodes of rectal pro-

Table 3.
Outcome of Various Treatments for Rectal Prolapse in Children

Management of Rectal Prolapse	No. of Patients	Complications	Recurrences of Prolapse	Success Rate (%)
No treatment	4	0	3 ^b	25
Conservative approach ^a	45	0	26 ^c	42
Injection sclerotherapy	24	0	17	29
Thiersch stitch	15	3	12	20
Rectopexy	4	0	2	50
Anal stretch	3	0	2	33
Injection sclerotherapy and Thiersch stitch	2	0	0	100
Banding of prolapse	2	0	2	0

^aHigh-fiber diet, stool softeners, and laxatives.

^bIncluding three patients who developed recurrence, which resolved spontaneously.

^cIncluding two patients who developed recurrence: one resolved spontaneously and one declined further intervention.

Table 4.
Clinical Characteristics in Relation to Age

Variables	≤4 Years (n = 36)	>4 Years (n = 13)
Male/female ratio of children	19/17	6/7
Family history of rectal prolapse	2	1
Associated conditions	26	8
Abnormal neurology	1	2
Recurrences of prolapse		
0	18	2
1	4	0
>1	14	11
Management		
Conservative	22	3
Additional procedures	14	10

lapse, especially the cases that do not reduce spontaneously and have a difficult reduction, the less responsive they are to conservative management. We try to achieve this by encouraging a high-fiber diet and use of stool softeners and laxatives and regular follow-up of these cases. It is well known that after the first episode of prolapse, many children may present with several episodes of the rectal mucosa.¹ However, it is those cases that have more frequent episodes of rectal prolapse requiring manual reduction and have other symptoms as a result of it that have a less favorable outcome.

Children with recurrent rectal prolapse who do not respond to conservative measures may require further intervention. In our series, 49 percent of patients required an operation, which is within the range of other series in which 9 to 70 percent of children underwent surgical intervention.^{1,25,28} However, because this was a retrospective study, it is not known whether rectal prolapse in these patients would have resolved spontaneously without any further interventions, as seen in four patients who were treated con-

servatively. The decision about when to operate is usually a difficult one. Rectal prolapse in children younger than four years of age is usually a self-limiting disorder, and most patients respond to conservative management within one year.¹⁻³ This was the rationale for choosing a period of one year of conservative management in children older than four years. Both length of follow-up and number of recurrent prolapse play an important role in the assessment of in these children. Our decision to operate was based on age of patient, duration of conservative management, and frequency of recurrent prolapse (>2 episodes requiring manual reduction) along with symptoms of pain, rectal bleeding, and perianal excoriation because of recurrent prolapse. Those cases that had early surgical intervention were those that had more frequent prolapses with difficult manual reduction along with distressing symptoms as a result of it.

With more than 130 surgical procedures to choose from, the optimal surgical procedure for rectal prolapse is still debated.²⁹ The rate of recurrences after various surgical procedures ranges from 0 to 60 percent.²⁹⁻³¹ Several extensive operative procedures have been successful in the management of rectal prolapse in adults.^{32,33} However, such extensive procedures in children are not justified, because the underlying pathophysiologic mechanism of rectal prolapse in children are partially unknown and differ from adults. In children, less invasive procedures, such as injection sclerotherapy with various types of sclerosing agents and encircling of the anus, are preferred.²² The success rate of injection sclerotherapy is reported to be 90 to 100 percent and 90 percent with Thiersch procedure.²² Abdominal rectopexy has a success rate of 75 percent, whereas a 100 percent

success rate has been reported with Ekehorn's rectosacropexy.¹⁸ The prognosis is worse when the presentation occurs after the age of four years.²² In our series, the overall success rate after surgery was 63 percent. Our results with the use of injection sclerotherapy and Thiersch procedure have been associated with a high recurrence rate of rectal prolapse. However, the use of both injection sclerotherapy along with a Thiersch procedure has been more effective than both procedures on its own. The possible reason for a less favorable outcome in our operative group could be because of the fact that most children presented after the age of four years, and in most of them no underlying cause was found. Some authors have advocated more than one injection of sclerosing agent in cases of recurrent rectal prolapse.^{3,20} However, in our study, in patients who developed recurrent rectal prolapse after injection sclerotherapy and Thiersch procedure, the use of the same procedure on more than one occasion was ineffective in preventing further recurrences.

CONCLUSIONS

Rectal prolapse in children does respond to conservative management. A close monitoring and aggressive treatment of underlying disorders as well as avoiding straining at defecation are key factors in the management of rectal prolapse. It is recommended that all cases of rectal prolapse are given a period of watchful expectancy and conservative management. A decision to operate is based on age of patient, duration of conservative management, and frequency of recurrent prolapse (>2 episodes requiring manual reduction) along with symptoms of pain, rectal bleeding, and perianal excoriation because of recurrent prolapse. Younger patients are offered conservative management until four years of age and for at least one year in those patients presenting after four years of age. However, it may be necessary to intervene earlier in those patients with difficult prolapses requiring manual reduction and presenting with distressing symptoms as a result of it. No single procedure is effective in all cases of rectal prolapse in children. The outcome is better in those presenting younger than four years of age and those with underlying disorders, such as constipation. We propose a simple and systematic algorithm, which can be used for the management of rectal prolapse in children (Fig. 1).

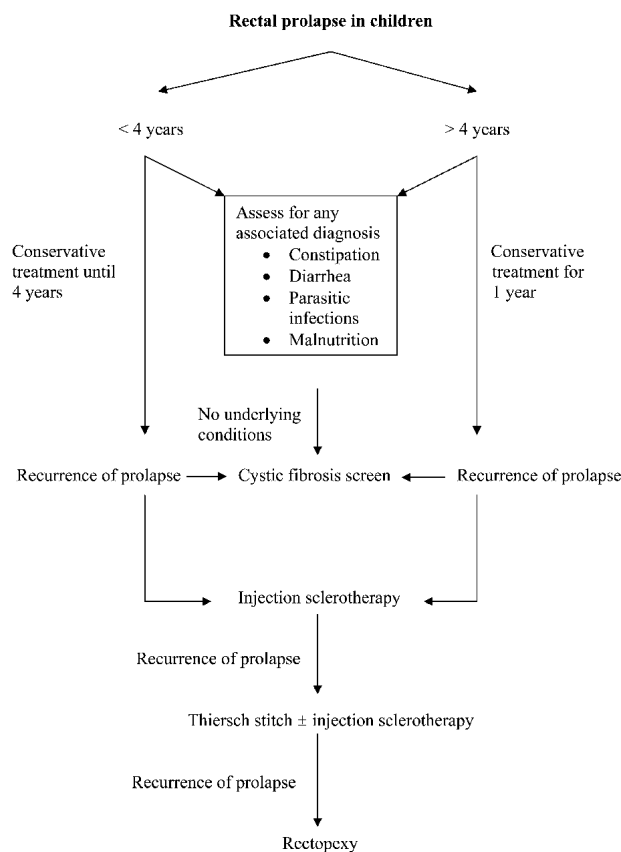


Figure 1. Algorithm for the management of rectal prolapse in children.

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