Published in final edited form as:
Pediatr Surg Int. 2010 April ; 26(4): 427–431. doi:10.1007/s00383-010-2565-x.

Recurrent rectal prolapse following primary surgical treatment

Andrew S. Flum, **Eustace S. Golladay**, and **Daniel H. Teitelbaum**
Section of Pediatric Surgery, CS Mott Children's Hospital, University of Michigan, Mott F3970, Box 5245, Ann Arbor, MI 48109, USA

Abstract

Purpose—The management of recurrent rectal prolapse following initial surgical procedures remains unclear. We present a series of pediatric patients with rectal prolapse and describe their surgical management, and the subsequent care for those children developing recurrence.

Methods—The records of 29 pediatric patients with rectal prolapse refractory to conservative medical management who were managed with primary modified Thiersch procedures over a 14-year period were reviewed. Initial surgical management consisted of a modified version of the Thiersch anal encirclement procedure, which involved a combination of injection sclerotherapy, linear cauterization, and placement of a Thiersch anal encirclement absorbable stitch. Age at initial procedure, predisposing conditions, complications, recurrence, time to recurrence, and subsequent procedures utilized were reviewed.

Results—Of 29 patients, 22 (71%) were male with a mean age at time of first Thiersch procedure of 7.1 years (range 3 months to 19 years). Seven patients were lost to follow-up. Nineteen patients (90%) experienced resolution of their prolapse following one or two modified Thiersch procedures; 14 (67%) following an initial Thiersch and 5 (23%) following a subsequent Thiersch. One additional child experienced recurrence after an initial Thiersch procedure, and underwent a perineal resection of redundant rectum (modified Altemeier procedure). Two patients developed a recurrence after their second Thiersch. These cases both required a modified Altemeier procedure. Mean follow-up for all patients was 1.5 years.

Conclusion—For pediatric rectal prolapse refractory to conservative medical therapy, the modified Thiersch procedure appears reasonable. Initial recurrences are not uncommon, and their incidence increases with the age of the child. Recurrences should be initially managed by a repeat Thiersch procedure. However, subsequent recurrences should be treated with a modified Altemeier.

Keywords

Rectal prolapse; Procedentia; Altemeier procedure; Thiersch procedure

Introduction

Though a long characterized issue, little is actually known about the optimal surgical management for rectal prolapse refractory to conservative medical management in the pediatric population. Injection sclerotherapy is the most popular and well-known minimally invasive procedure for initial management of rectal prolapse in the pediatric population [1–4], while other minimally invasive procedures described in the literature include the Thiersch anal encirclement [5,6], linear cauterization [7], and packing of the presacral space with various

Section of Pediatric Surgery, CS Mott Children's Hospital, University of Michigan, Mott F3970, Box 5245, Ann Arbor, MI 48109, USA
dttlbm@umich.edu.

materials [8]. More invasive options described include: transsacral rectopexy [9,10], transcoccygeal rectopexy [11], posterior sagittal anorectoplasty [12], and perineal proctosigmoidectomy (Altemeier procedure) [13], If little is known about the optimal initial operative management for refractory rectal prolapse, far less is known about the best management approach following failure of the primary operative procedure, with only cases of recurrence following failure of injection sclerotherapy [14] and linear cauterization [7] being reported.

In this report, we present the outcomes of a cohort of children who underwent primary modified Thiersch procedures. We also report our approach in the management of patients who develop recurrent rectal prolapse.

Materials and methods

Records of patients who underwent modified Thiersch procedures for rectal prolapse at the C.S. Mott Children's Hospital during the period from 1996 to 2009 were identified and reviewed retrospectively. Twenty-nine patients were identified. Data collected included date of birth, sex, predisposing past medical history, date of primary procedure, complications, recurrence following each procedure, subsequent procedures performed and complications, length of follow-up, and resolution of rectal prolapse.

Initial management of rectal prolapse involved conservative attempts to correct suspected underlying factors including diarrhea and constipation, and maneuvers to reduce straining with stooling. Only when these conservative measures were seen to fail, did treatment progress to operative management. Of note, prior to surgery, all patients underwent sweat chloride testing for cystic fibrosis (CF).

The primary management in most cases involved a modified Thiersch procedure, which generally entailed placing the patient in a lithotomy position and sterilely prepping and draping. Allis clamps are then used to prolapse the rectal mucosa out of the anal canal, and linear cauterization is carried out utilizing electrocautery to make five evenly spaced linear burns in a radial fashion in the mucosa and submucosa of the rectum. The rectum is then reduced and sclerotherapy is administered using a spinal needle. The sclerosing agent consisted of either hypertonic saline or $D_{25}W$, and is injected into the space between the muscularis and submucosa in five different locations, avoiding the peri-urethral area. A finger directly palpates to ensure the needle is at the appropriate depth. Following this, the Thiersch stitch is placed. Electrocautery is used to create a small defect at the posterior border of the skin and anal mucosa. We have utilized an absorbable suture in these procedures, as the need for the suture is only until the prolapsed rectal submucosa adheres to adjacent tissue. Thus, a #1 PDS suture is placed submucosally encircling the anal opening, and generally requires the stitch to exit and re-enter via a separate needle hole 180° from its initial entrance. The suture is tied over two Hagar dilators of sizes appropriate for the size of the child. In general, stooling will be impaired without the use of two dilators. For a 10 kg child a combination of an 8 and 10 Hegar dilators are used. Larger caliber dilators are needed for older children; typically a combination of a 12 and 14 dilators in a teenager. The PDS knot is then buried in the subcutaneous tissue in order to close the muco-cutaneous defect. A similar surgical approach was taken if the child required an additional Thiersch following a recurrence.

For those patients with subsequent recurrence, a modified Altemeier procedure was performed. The child is placed in lithotomy, and the prolapse is delivered out of the anal canal with Allis clamps. The redundant mucosa and submucosa are excised by bisecting the redundant tissue to approximately 1.5 cm or more above the Dentate line. The inner and outer layers of rectal

wall are then progressively and circumferentially reapproximated, as redundant tissue is excised with electrocautery, using absorbable fullthickness sutures.

Results

A total of 29 patients underwent a primary modified Thiersch procedure for treatment of rectal prolapse. Of note, two of these patients had previously undergone linear cauterization procedures which subsequently failed. Of these 29 patients, 21 (72%) were male and 8 (28%) female, with a mean age of 6.7 years at time of Thiersch procedure (range 3 months to 19 years). Eleven of these 29 children were found to have a pre-existing condition associated with rectal prolapse, including seven patients with constipation, two with myelomeningocele, one with ulcerative colitis and one with CF. In the other 18 patients, no predisposing conditions were identified. Six children were lost to follow-up after the first Thiersch procedure and were excluded from further analysis.

Following a primary modified Thiersch procedure, six patients developed complications. These included rectal bleeding in three patients, perianal abscess in one patient, fistula-in-ano in one patient, and rectal narrowing requiring rectal dilation in the last. As of last follow-up, 14 of the 23 (61%) children experienced resolution of their rectal prolapse following an initial Thiersch procedure. Nine of the patients (39%) had recurrence of rectal prolapse.

Of the nine patients who suffered a recurrent prolapse, six were male. Mean time to recurrence was 1.2 years. Predisposing conditions among these patients included two with constipation and one with CF. Eight of these nine patients underwent a subsequent second modified Thiersch procedure, while one patient went straight to a perineal proctosigmoidectomy (modified Altemeier procedure). This patient, who notably carried a diagnosis of CF, had a further recurrence of rectal prolapse following this procedure and underwent a second Altemeier procedure, which has so far produced resolution of his rectal prolapse with a follow-up of 7 months.

Five patients who underwent a second modified Thiersch procedure experienced no further significant rectal prolapse, as of last follow-up. Two patients had a recurrence of their rectal prolapse and one patient was subsequently lost to follow-up. Thus 19 of 21 (90%) patients responded to one or two Thiersch procedures. Two patients developed complications following the second Thiersch procedure. One patient developed a fecal impaction requiring manual disimpaction in the operating room under general anesthesia, and the other developed rectal bleeding. This latter patient had also developed rectal bleeding following his initial Thiersch procedure.

Of the two patients who suffered a recurrent prolapse following a second Thiersch procedure, both were male. The mean time to recurrence was 7 months. The first patient had rectal prolapse associated with constipation and underwent an unsuccessful laparoscopic Ripstein ileopexy. Her prolapse resolved following a subsequent modified Altemeier procedure. The second patient underwent a modified Altemeier procedure following failure of his second Thiersch procedure. The procedure was successful for 6 months; however, prolapse recurred, and he underwent a repeat Altemeier procedure which has been successful in resolving his prolapse at 5-month follow-up.

Overall, excluding the seven patients lost to follow-up and the patient who went straight from a primary Thiersch to an Altemeier procedure, 19 of 21 (90%) patients experienced resolution of their rectal prolapse with one or two modified Thiersch procedures; 14 (67%) patients following an initial Thiersch and five (23%) following the second Thiersch procedure. Mean age at initial Thiersch was 5.3 years (range 3 months to 15.4 years) for patients without recurrence, 10.1 years (range 2.5 years to 18.8 years) for patients with recurrence following

the initial procedure, and 12.1 years (2 patients, ages 9.3 and 15 years) for those with recurrence following two Thiersch procedures. Mean follow-up for those patients with resolution of rectal prolapse following one or two Thiersch procedures was 1.5 years. Mean duration of follow-up for the two patients with resolution following modified Altemeier procedures was 2 years. Mean duration of follow-up for all patients was 1.5 years. Of note, mild incontinence was noted in two patients with the modified Altemeier in the first week following surgery, with both of these resolving. None of our patients complained of any long-term incontinence issues.

Discussion

Rectal prolapse in the pediatric population is a well-characterized issue with many modes of management described, ranging from conservative medical management to progressively invasive surgical procedures. However, even though many management strategies have been reported, it has yet to be determined which of these strategies is optimal. What is known is that a trial of conservative medical management to correct predisposing conditions such as diarrhea and constipation and to reduce straining at defecation should be attempted prior to considering any surgical options. Operative management, if found to be necessary, should initially consist of a less invasive option, such as injection sclerotherapy or a Thiersch procedure [15]. However, little is known in terms of what the next management step should be if this initial procedure fails.

In the pediatric population, rectal prolapse is most commonly encountered before 4 years of age, with the highest incidence found in the first year of life. In our patient series the mean age at first modified Thiersch procedure was 6.7 years, which suggests that either there were relatively significant attempts at conservative management made prior to proceeding to surgical management, or more than likely this surgical group of patients represents a distinct cohort of children with rectal prolapse. Additionally, these patients all failed non-surgical management and they represent more severe cases of rectal prolapse. Our results also show that those children at an older age with rectal prolapse may be at greater risk for requiring surgical therapies.

Our patient population was affected by a variety of conditions associated with rectal prolapse, including constipation, which was most common, as well as myelomeningocele, ulcerative colitis, and CF. These conditions have all been described in the literature to be associated with rectal prolapse in addition to diarrheal diseases, imperforate anus (post-repair), rectal polyps, and Ehlers–Danlos syndrome, which were not identified in our study population [16–19]. It is interesting to note that only one of the patients included in our study group carried a diagnosis of CF. A prevalence of 11.1% has been reported for CF in children with rectal prolapse, and the prevalence of rectal prolapse in CF patients has been estimated to be 18.5–22.6% [16,20, 21]. The observation that only one of our patients had an established diagnosis of CF, when all of our children with prolapse were screened, suggests that CF in more recent years is better managed, allowing successful treatment with medical therapy alone.

The decision to perform surgery for prolapse is generally based on the duration of conservative management, recurrence of symptoms and the overall severity of symptoms, including pain, rectal bleeding and perianal excoriation [15]. Our specific operative approach is somewhat unique, in that most previously reported series on initial operative management of pediatric rectal prolapse utilized either injection sclerotherapy, linear cauterization or some version of a Thiersch anal encirclement procedure. Our modified Thiersch procedure utilized a combination of these techniques, as described in “Materials and methods”. Interestingly, there have been previous case reports where combinations of procedures have been used with good success. Antao et al. [15] reported complete resolution of prolapse in two patients treated with a combination of injection sclerotherapy and Thiersch stitch. These isolated reports combined

with our results indicate that procedures utilizing combinations of these techniques may be more likely to be an effective and reasonable approach for initial operative management of rectal prolapse.

Little has been reported on management of recurrences of rectal prolapse in the pediatric population following an operative procedure. In fact, the only reports have been series utilizing sclerotherapy or linear cauterization, in which the initial procedure was repeated one to two times as necessary for treatment of recurrences [3]. There have been no reports, to our knowledge, on the management of recurrences following a Thiersch procedure. In our series, 67% of patients had no further recurrence of their prolapse following the initial Thiersch procedure. Seven patients who suffered a recurrence underwent a subsequent Thiersch procedure, which produced resolution in five more patients, bringing the total success rate to 90% following these Thiersch procedures. The mean age at initial Thiersch was 5.3 years in the group without recurrence and 10.1 years in the group with recurrence following primary Thiersch. This may suggest that younger children may be more responsive to a Thiersch procedure than their older counterparts, which may reflect a different pathogenesis for the older child with rectal prolapse.

Three of our patients underwent a modified Altemeier procedure. As this only involved resection of the redundant mucosa and submucosa, one might also refer to this surgical approach as a Delorme technique [22]. However, current descriptions of the Delorme approach generally involve an incision and careful dissection of the mucosal and submucosal tissues off the muscularis; an approach not taken here. The modified Altemeier approach has been performed with a hand-sewn approach, as in our report, or via a stapled technique, as previously described [13]; both with good results. In our experience, the stapling of very thick layers of tissue may be challenging, and failed in our hands due to the staple line pulling apart. Clearly, the stapling technique may not be amenable in some patients, and extra long staples may be required. In our modified Altemeier procedure group, the mean age at initial Thiersch placement was 12.1 years, again suggesting that primary Thiersch may be much more successful for younger children. One patient had recurrence after a laparoscopic Ripstein procedure, which was followed by a modified Altemeier perineal proctosigmoidectomy. The other patient underwent an Altemeier, which was successful for 1 year, and has now undergone a second Altemeier procedure. That these two patients will have required at least two subsequent invasive surgical procedures each prior to resolution of their prolapse, suggests that their rectal prolapse may have been too severe to be treated with a Thiersch procedure. It may also suggest that these children may have other causative factors including an abnormal defecatory pattern that may require further investigation with defecography and behavioral therapy [23]. Given that this was the case for only 2 of the 21 patients in the series, we believe it is reasonable to attempt a modified Thiersch, possibly followed by a repeat Thiersch, if necessary, before proceeding to more invasive surgical alternatives. As far as which procedures to utilize, the modified Altemeier perineal proctosigmoidectomy seems to be a prudent choice based on our experience and other reports [13].

The main limitations of this study include the relatively substantial number of patients lost to follow-up (7 of 29, 24%) and the short overall duration of follow-up of 1.5 years. The number of patients lost to follow-up is likely to have skewed our data regarding the proportion of patients with recurrence following the primary/secondary modified Thiersch procedure. However, the fact that they did not follow up would likely favor resolution over recurrence. The relatively short duration of follow-up is also a concern and subsequent studies with a longer duration of follow-up would be of much use to further assess the efficacy of the modified Thiersch procedure in the treatment of children with recurrent rectal prolapse.

In conclusion, for pediatric rectal prolapse refractory to conservative medical therapy, the modified Thiersch procedure we describe is a reasonable option for initial surgical management. If the rectal prolapse recurs following an initial Thiersch, we advocate performing a repeat Thiersch procedure, as most cases of prolapse will resolve. If the rectal prolapse recurs after two Thiersch procedures, it is reasonable to perform a modified Altemeier procedure.

References

1. Malyshev YI, Gulin VA. Our experience with the treatment of rectal prolapse in infants and children. Am J Proctol 1973;24:470–472. [PubMed: 4770681]
2. Kay NR, Zachary RB. The treatment of rectal prolapse in children with injections of 30 per cent saline solutions. J Pediatr Surg 1970;5:334–337. [PubMed: 5423064]
3. Chan WK, Kay SM, Laberge JM, et al. Injection sclerotherapy in the treatment of rectal prolapse in infants and children. J Pediatr Surg 1998;33:255–258. [PubMed: 9498396]
4. Wyllie GG. The injection treatment of rectal prolapse. J Pediatr Surg 1979;14:62–64. [PubMed: 423067]
5. Gabriel WB. Thiersch's operation for anal incontinence and minor degrees of rectal prolapse. Am J Surg 1953;86:583–590. [PubMed: 13104757]
6. Oeconomopoulos CT, Swenson O. Thiersch's operation for rectal prolapse in infants and children. Am J Surg 1960;100:457–461. [PubMed: 14428306]
7. Hight DW, Hertzler JH, Philippart AI, et al. Linear cauterization for the treatment of rectal prolapse in infants and children. Surg Gynecol Obstet 1982;154:400–402. [PubMed: 7064077]
8. Nwako F. Rectal prolapse in Nigerian children. Int Surg 1975;60:284–285. [PubMed: 1126814]
9. Chino ES, Thomas CG. Transsacral approach to repair of rectal prolapse in children. Am Surg 1984;50:70–75. [PubMed: 6703518]
10. Schepens MA, Verhelst AA. Reappraisal of Ekehorn's rectopexy in the management of rectal prolapse in children. J Pediatr Surg 1993;28:1494–1497. [PubMed: 8301467]
11. Ashcraft KW, Amoury RA, Holder TM. Levator repair and posterior suspension for rectal prolapse. J Pediatr Surg 1977;12:241–245. [PubMed: 845769]
12. Pearl RH, Ein SH, Churchill B. Posterior sagittal anorectoplasty for pediatric recurrent rectal prolapse. J Pediatr Surg 1989;24:1100–1102. [PubMed: 2809960]
13. Lee JI, Vogel AM, Suchar AM, et al. Sequential linear stapling technique for perineal resection of intractable pediatric rectal prolapse. Am Surg 2006;72:1212–1215. [PubMed: 17216821]
14. Shah A, Parikh D, Jawaheer G, et al. Persistent rectal prolapse in children: sclerotherapy and surgical management. Pediatr Surg Int 2005;21:270–273. [PubMed: 15761711]
15. Antao B, Bradley V, Roberts JP, et al. Management of rectal prolapse in children. Dis Colon Rectum 2005;48:1620–1625. [PubMed: 15981062]
16. Zempsky WT, Rosenstein BJ. The cause of rectal prolapse in children. Am J Dis Child 1988;142:338–339. [PubMed: 3344723]
17. Douglas BS, Douglas HM. Rectal prolapse in the Ehlers-Danlos syndrome. Aust Paediatr J 1973;9:109–110. [PubMed: 4718798]
18. Traisman E, Conlon D, Sherman JO, et al. Rectal prolapse in two neonates with Hirschsprung's disease. Am J Dis Child 1983;137:1126–1127. [PubMed: 6637922]
19. Traynor LA, Michener WM. Rectal procidentia—a rare complication of ulcerative colitis. Report of two cases in children. Clevel Clin Q 1966;33:115–117.
20. Kulczycki LL, Shwachman H. Studies in cystic fibrosis of the pancreas; occurrence of rectal prolapse. N Engl J Med 1958;259:409–412. [PubMed: 13578072]
21. Stern RC, Izant RJ, Boat TF, et al. Treatment and prognosis of rectal prolapse in cystic fibrosis. Gastroenterology 1982;82:707–710. [PubMed: 7060889]
22. Watkins B, Landercasper J, Belzer G, et al. Long-term follow-up of the modified Delorme procedure for rectal prolapse. Arch Surg 2003;138:498–503. [PubMed: 12742952]

23. Morio O, Meurette G, Desfourneaux V, et al. Anorectal physiology in solitary ulcer syndrome: a case-matched series. Dis Colon Rectum 2005;48:1917–1922. [PubMed: 16132482]