

Surgical treatment of the rectal prolapse in children: A review

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ABSTRACT

Rectal prolapse, defined as protrusion of the rectal mucosa from the anus, usually responds to conservative treatment in the first 4 years of life. In rectal prolapses that cannot be treated conservatively, the prolapse will turn into a chronic process unless the causes are eliminated. Rectal prolapse is usually a chronic condition in children over the age of four. This article aims to review the surgical treatment of rectal prolapse in children who do not respond to conservative treatment or with recurrent rectal prolapse.

Keywords: Ekehorn's rectopexy, rectal prolapse, rectopexy, sclerotherapy, thiersch encirclement.

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INTRODUCTION

Rectal prolapse is the protrusion of a part or all of the rectal mucosa out of the anus through the external anal sphincter. Known since ancient times, rectal prolapse is a disease described in the Ebers Papyrus in 1500 BC.^[1] Rectal prolapse can occur at any age. In children, it is most commonly seen at the age of 3, with an equal gender distribution in boys and girls.^[1] Rectal prolapse in children under 5 years of age usually resolves with conservative treatment. However, rectal prolapse usually turns into a chronic condition in children older than 4 years.^[2] Surgical intervention is required in chronic and complicated rectal prolapse.^[3,4]

ETIOLOGY

The incidence of rectal prolapse in early childhood is higher than in adolescents and adults. This is due to the difference in the anatomical structure of the pelvis and rectum in children and adults. The rectum of children is parallel to the sacrococcygeal vertebra and in a vertical position, also lower than other pelvic organs. There is loosely adherence between the rectal mucosa and the underlying muscularis layer in their rectal wall layers. In addition, in contrast to adults, the rectosigmoid colon of children is very mobile and the levator ani muscle of the pelvic floor provides less support for the rectum. Houston valves are not fully developed in infants.^[1]

Increased bowel movements, increased intra-abdominal pressure, and some congenital anomalies can cause rectal prolapse. Infectious diarrheas, ulcerative colitis, or misuse of laxatives increase bowel movements.^[5] Straining due to chronic constipation, prolonged coughing, excessive vomiting, or urinary outflow obstruction leads to increased intra-abdominal pressure. The possibility of rectal prolapse increases in congenital diseases such as cystic fibrosis, myelomeningocele, and congenital hypothyroidism. Prolapse may also develop due to malnutrition, mucosal polyps or tumors, and after repair of anal atresia.^[1,5] Congenital defects in pelvic connective tissues or sphincter muscles can cause prolapse in children.^[2] Perineal trauma or sexual abuse can also lead to rectal prolapses.^[2]

Chronic constipation in childhood results as rectal prolapse in 15% to 65% of patients.^[2] While rectal prolapse due to parasitic disease, malnutrition and diarrhea is much more common in underdeveloped countries, chronic constipation is the most common cause of prolapse in developed countries.^[1]

MEDICAL TREATMENT

Conservative management of rectal prolapse includes diet regulation and the use of some stool softeners and/or enemas to prevent constipation, and not straining for long periods of time during defecation. In addition, it is necessary to eliminate the factors that cause rectal prolapse or to treat the underlying diseases, if any. When rectal prolapse occurs for the 1st time, compliance with the regulatory regimen so that the bowel contents are of normal consistency is important because patients with recurrent rectal prolapse are less likely to respond to medical therapy. In the first prolapse attack, approximately 90% of children under 3 years of age respond in favor of recovery with the measures taken and medical treatment.^[1]

Surgery is indicated in patients with prolonged symptoms such as pain, bleeding, mucosal ulcer, or inability to push of the prolapsed rectum and if the rectal prolapse does not improve despite treatment of the underlying cause and conservative treatment.^[4,5] Rectal prolapse is usually a benign condition, although strangulation can be potentially life-threatening when occurs.

SURGICAL TREATMENT

More than a hundred different procedures have been described for the surgical treatment of rectal prolapse, and the treatment of rectal prolapse remains controversial.^[2] The principles of surgical treatment of rectal prolapse are to minimize operative risk, eliminate rectal prolapse, improve continence and bowel function, and reduce or prevent the risk of recurrence.^[3,4] Therefore, in cases with rectal prolapse unresponsive to medical and conservative measures, the choice of operation method is usually made from simple to more complicated methods. Injection sclerotherapy is usually the first-choice intervention in the treatment of rectal prolapse, followed by Thiersch encirclement and finally rectopexy surgeries.^[1]

The aim of injection sclerotherapy is the expectation that the scar tissue created can prevent the downward movement of the rectum. It is a suitable choice for the treatment of rectal prolapse in children with malnutrition, and sclerosing agents containing 30% saline or 70% alcohol are preferred.^[4–7] Temporary measures other than sclerotherapy, such as rubber band ligation or infrared coagulation, may be used when surgical repair is contraindicated or if parents refuse surgery. However, although these methods can alleviate some symptoms, they do not provide a definitive treatment for prolapse.

The Thiersch encirclement and constriction method acts as a physical barrier to rectal prolapse but does not correct rectal prolapse, so the recurrence rate is very high (33–44%).^[4,5] In the ischiorectal fossa, to wrap a material around the anal canal with the knot posteriorly is the principle of the method. Many materials can be used such as nylon, mersilene, dacron, marlex, teflon, fascia lata, silicone rubber, silastic, and impregnated silastic mesh. In addition to the high recurrence rate, many complications are seen in the Thiersch procedure.^[5–7] The main ones are erosion, wound infection, sepsis, and fecal impaction. In recurrent prolapse after Thiersch's surgery, incarceration and subsequent strangulation are major risks.

The most common perineal approaches in the treatment of rectal prolapse are perineal rectosigmoidectomy (Altemeier procedure), perineal rectosigmoidectomy with levatorplasty, and the Delorme procedure.^[8] Because of the higher incidence of prolapse recurrence in these methods, they are generally used in elderly and high-risk patients. Similar recurrence rates have been reported when perineal approaches, such as perineal rectosigmoidectomy and levatorplasty, are compared with abdominal approaches.^[6,7] Because of the extensive pelvic dissections, the incidence of nerve damage related erectile dysfunction in young men is more in abdominal approaches than in perineal ones. Perineal approaches help to preserve fertility potential, especially in young women, due to the absence of abdominal dissection.

The Ekehorn procedure, which was first described for the treatment of rectal prolapse in children, is actually a very old technique. It is based on the principle that the “U” suture placed between the rectal

ampulla and the skin at the lower level of the sacrum causes local inflammation and infection, and thus the posterior wall of the rectum adheres to the perirectal tissue.^[9,10] The suture left in place for 10 days creates tight adhesions between the rectal wall and the perirectal tissue, causes the anorectal wall to adhere to the periphery, and this results in sacral rectopexy. No recurrence or major morbidity has been reported.^[9,10]

In the suture rectopexy method with abdominal approach, after intense mobilization of the posterior rectum from the presacral region to the level of the anorectal junction, the posterior wall of the rectum is fixed to the upper sacrum with direct sutures, thus completing the posterior rectopexy.^[11] When the same method is performed as a prosthesis or mesh rectopexy, it is generally assumed that the placed material produces more fibrous tissue than the normal suture rectopexy method.^[11] Two types of mesh methods are used, posterior mesh rectopexy, and anterior sling rectopexy (Ripstein procedure).^[12] In the mesh method, non-absorbable synthetic or absorbable nets are used.^[8,11–14] Abdominal rectopexy is an ideal treatment for healthy patients with rectal prolapse because of its low recurrence rate, but almost half of patients undergoing this method complain of severe constipation.^[12] Dilated and elongated sigmoid colon resection can be performed in addition to the abdominal rectopexy procedure.^[2,11–14] Sigmoid resection alleviates constipation complaints, but pelvic anastomoses carry the risk of associated complications.^[13]

Laparoscopic surgical techniques and repair methods of rectal prolapse include suture rectopexy, stapled rectopexy, posterior mesh rectopexy with artificial materials, and sigmoid colon resection with or without rectopexy. Almost all open transabdominal surgical operations described for the treatment of rectal prolapse have also been performed laparoscopically.^[8,11–14] It has been reported that rectal prolapse repairs performed with the laparoscopic methods have similar morbidity and recurrence rates compared to open surgery; however, laparoscopic surgery has advantages such as shorter hospital stay, better post-operative pain management, and fewer wound complications.^[4] The laparoscopic surgical techniques are reliable methods in the treatment of rectal prolapse, with the lower recurrence rates and better functional outcomes in patients with severe rectal prolapse.^[8,11] It has been reported that the laparoscopic approach provides low morbidity and short hospital stay, even in patients over 80 years of age, where the perineal approach is generally preferred for safety.^[14]

As a conclusion, effective medical and behavioral treatment should be applied primarily for the underlying causes of rectal prolapse in children. The choice of the most appropriate method in the surgical treatment of rectal prolapse should be made according to many factors such as the patient's age, gender, the underlying cause of the prolapse or results of the medical treatment, and accompanying comorbidities. The Ekehorn procedure and/or ventral abdominal rectosigmoidopexy methods can be performed safely in children for recurrent prolapses. The results of surgery are satisfactory in children.

Statement

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REFERENCES

- Marderstein EL, Delaney CP. Surgical management of rectal prolapse. *Nat Clin Pract Gastroenterol Hepatol* 2007;4:552–61.
- Madden MV, Kamm MA, Nicholls RJ, Santhanam AN, Cabot R, Speakman CT. Abdominal rectopexy for complete prolapse: Prospective study evaluating changes in symptoms and anorectal function. *Dis Colon Rectum* 1992;35:48–55.
- Senagore AJ. Management of rectal prolapse: The role of laparoscopic approaches. *Semin Laparosc Surg* 2003;10:197–202.
- Saadai P, Trappey AF, Langer JL. Surgical management of rectal prolapse in infants and children. *Eur J Pediatr Surg* 2020;30:401–5.
- Madiba TE, Baig MK, Wexner SD. Surgical management of rectal prolapse. *Arch Surg* 2005;140:63–73.
- Takesue Y, Yokoyama T, Murakami Y, Akagi S, Ohge H, Yokoyama Y, et al. The effectiveness of perineal rectosigmoidectomy for the treatment of rectal prolapse in elderly and high-risk patients. *Surg Today* 1999;29:290–3.
- Khanna AK, Misra MK, Kumar K. Simplified sutured sacral rectopexy for complete rectal prolapse in adults. *Eur J Surg* 1996;162:143–6.
- Heah SM, Hartley JE, Hurley J, Duthie GS, Monson JR. Laparoscopic suture rectopexy without resection is effective treatment for full-thickness rectal prolapse. *Dis Colon Rectum* 2000;43:638–43.
- Sander S, Vural O, Unal M. Management of rectal prolapse in children: Ekehorn's rectosacropexy. *Pediatr Surg Int* 1999;15:111–4.
- Schepens MA, Verhelst AA. Reappraisal of Ekehorn's rectopexy in the management of rectal prolapse in children. *J Pediatr Surg* 1993;28:1494–7.
- Boons P, Collinson R, Cunningham C, Lindsey I. Laparoscopic ventral rectopexy for external rectal prolapse improves constipation and avoids de novo constipation. *Colorectal Dis* 2010;12:526–32.
- Novell JR, Osborne MJ, Winslet MC, Lewis AA. Prospective randomized trial of Ivalon sponge versus sutured rectopexy for full-thickness rectal prolapse. *Br J Surg* 1994;81:904–6.
- Frykman HM. Abdominal proctopexy and primary sigmoid resection for rectal procidentia. *Am J Surg* 1955;90:780–9.
- Kuijpers HC. Treatment of complete rectal prolapse: To narrow, to wrap, to suspend, to fix, to encircle, to plicate or to resect? *World J Surg* 1992;16:826–30.