CASE REPORT

Successful treatment of recurrent rectal prolapse using three Thiersch sutures in children

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SUMMARY

Many techniques are described to manage recurrent rectal prolapse in children, including repeated Thiersch stitch, phenol injections, Delorme and Altemeier procedures, and rectopexy. We describe a case of successful treatment of rectal prolapse by placing three Thiersch sutures circumferentially along the anal canal—a simple and novel modification of a well-known procedure. An 8-year-old boy with full-thickness rectal prolapse was treated with laxatives to no avail. He was subsequently treated with phenol-in-almond-oil injection and insertion of a 1/0PDS Thiersch suture. The effects were temporary with recurrence 3 months later. A further phenol-in-almond-oil injection was given and a 1/0PDS Thiersch suture placed, and the patient was discharged on laxatives. Recurrence occurred again at 3 months. This was treated with three circumferential Thiersch sutures along the anal canal—one Prolene 2/0 and two 1/0PDS. There has been no recurrence at follow-up. Placement of three sequential Thiersch sutures along the rectum is effective in treating recurrent rectal prolapse and a good alternative to major rectopexy.

BACKGROUND

Rectal prolapse is a very common condition in children. Most of these can be managed conservatively, however, a significant number do require surgical intervention. Sclerotherapy and Thiersch suture alone or in combination are the commonest first-line treatments. Recurrence is a known complication following these procedures. These recurrences (first recurrence) are treated with further Thiersch suture or sclerotherapy injection, a combination of injection and Thiersch, or sometimes with more radical measures such as Altemeier or Delorme procedures, or rectopexy. But what is the best treatment after second recurrence following injection and/or Thiersch suture? The commonest approach is to go for radical procedures.

We describe the use of three Thiersch sutures to address the problem of second prolapse following sclerotherapy injection and Thiersch suture. Thiersch is a simple procedure that most surgeons the world over are familiar with. Performing a modified Thiersch procedure with three sutures can be an alternative to radical procedures.

It is safe, effective, minimally invasive and simple. It is less invasive with excellent results, avoiding a major surgical procedure such as Altemeier, Delorme or rectopexy.

To the best of our knowledge, this is the first documented case of such an approach to persistent rectal prolapse, with excellent results in a child.

CASE PRESENTATION

An 8-year-old boy with a history of possible Rasmussen's syndrome (a rare inflammatory neurological disease, characterised by frequent and severe seizures, loss of motor skills and speech, hemiparesis and paralysis on one side of the body), white matter abnormality in his right cerebral hemisphere, left hemiplegia and bilateral third cranial nerve palsy (oculomotor nerve). His mother reported blood in the boy's stool, with some constipation and rectal prolapse.

He was managed on laxatives, but the problem persisted and he was referred to the surgical department for further management. He was seen in the outpatient clinic, with significant history of full-thickness rectal prolapse on defaecation, which could be reduced easily. There was no previous history of cystic fibrosis or child abuse. He was examined in detail and booked for surgical intervention.

TREATMENT

The patient had an injection of 5 mL 5% phenol-in-almond-oil injection and insertion of a 1/0PDS Thiersch suture. The suture was circumferential and allowed an index finger to pass through. He was discharged home on the same day on laxatives—movicol one sachet once daily. Follow-up in the outpatient department at 1 month showed a good result with bowels opening 1–2 times a day; the patient was still taking one sachet of movicol every day. Another outpatient appointment in 6 months was made. However, he re-presented early, after 3 months, with a recurrent full-thickness rectal prolapse. A further phenol-in-almond-oil injection along with insertion of a 1/0PDS Thiersch suture was performed and the patient was discharged on laxatives. He was again seen in the outpatient department 3 months later post second repair with recurrence of rectal prolapse for a third time; he was again booked for a re-do phenol-in-almond-oil injection and Thiersch stitch. At the third operation, the anal canal and mucosa were very lax with no fissures. Injection of phenol and almond oil was again performed and this time the decision was made to use three Thiersch sutures (one Prolene 2/0 and two 1/0PDS) (figure 1). The consultant-operating surgeon explained the procedure with its related complications in detail and took informed consent.

Operative procedure: The patient was placed in a lithotomy position. After draping of the patient, a per rectal examination was carried out to assess sphincter tone, fissures and constipation. Two small

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Figure 1 Postoperative picture after placing three circumferential Thiersch sutures.

retractors applied on either side of the anal canal and dentate line were identified. One PDS 1/0 (absorbable) Thiersch suture was placed just above the anal canal and below the dentate line, a second 1/0 Prolene (non-absorbable) Thiersch suture was inserted above the dentate line and a third 1/0PDS (absorbable) Thiersch suture was placed about 3 cm above the dentate line (figure 2). At the end of the procedure, a soft jelonet dressing was left in the rectum, which self-ejects.

Postoperatively, the patient was on analgesia and fed a few hours after the procedure with no postoperative complication. He was discharged home on the second day on regular laxatives and requiring minimum analgesia, and was advised to take calpol or ibuprofen if needed. Before he went home the pain had significantly reduced and he was subsequently back to his normal activities. He was prescribed two sachets of movicol laxatives twice a day for 3 months, and advised a high fibre diet. He has been successfully followed in outpatient clinic for a period of 12 months. There has been no further recurrence.

Figure 2 Diagram showing site of placement of three Thiersch sutures in treating rectal prolapse.

OUTCOME AND FOLLOW-UP

The child was followed up 6 months after the third operation. There was no recurrence of prolapse. He had regular bowel movements without any laxatives. The anal region looked normal (figure 3). There was no rectal prolapse at subsequent review at 12 months postprocedure.

DISCUSSION

Rectal prolapse is the protrusion of the rectum through the anus. This involves full thickness of the rectal wall. Its aetiology can be grouped into five broad categories, increased abdominal pressure, diarrhoeal illness, parasitic infection or neoplasm providing a leading point for prolapse, malnutrition causing lack of ischioanal fat, which supports the rectum and pelvic floor weakness.¹ There are several reports of rectal prolapse caused by inadvertent suction by swimming pool suction drains.¹ It is associated with a host of conditions that bring about the aforementioned pathophysiology, including chronic constipation, illnesses causing diarrhoea, cystic fibrosis, Hirschsprung's disease, Ehlers-Danlos syndrome, anorectal malformation, rectal polyps and ulcerative colitis.²⁻³ It affects both genders equally and has the highest incidence in the first year of life.⁴ It is more common in tropical and developing countries.⁴ In this setting, it is largely due to diarrhoeal illnesses and parasites.⁵

The initial treatment is conservative, involving a high-fibre diet, laxatives and advice on defaecation postures. Failure of medical treatment or a full-thickness rectal prolapse with associated difficulty in reduction warrants surgical treatment; this involves injection sclerotherapy and/or Thiersch suture. With more than 130 surgical procedures to choose from, the optimal surgical procedure for rectal prolapse is still debateable. Use of both injection sclerotherapy and Thiersch procedure has been more effective than either procedure on its own, but if that fails, we recommend using the modified three-suture Thiersch technique.

Injection sclerotherapy is a common, minimally invasive procedure used to treat rectal prolapse. There are several different sclerosants used, most of which have shown to be successful.⁶ Some of the substances used include alcohol, phenol and deflux.⁵ Sclerotherapy using phenol-in-almond-oil injection has been reported to yield favourable results.⁷ Although safe, simple and effective, phenol injection carries the risk of several possible

Figure 3 Condition of anus 6 months postsurgery using three Thiersch sutures.

complications including bleeding, perirectal inflammation, urinary retention, ischiorectal abscess and necrosis of rectal mucosa. If sclerotherapy fails, then the Thiersch procedure is recommended. Injection sclerotherapy is said to yield a success rate between 90 and 100%.² The Thiersch procedure has a reported outcome of 90% success rate.² The two procedures combined have a higher success rate than when performed separately.² Success depends on many factors, including cause, type of prolapse and patient's general condition.⁸

The Thiersch procedure is a minimally invasive procedure that involves placing a suture encircling the anal canal under the skin. It is used in the treatment of rectal prolapse and faecal incontinence.⁹ It was first described in 1891 by the German surgeon, Karl Thiersch.¹⁰ He surrounded the anus with a ring of silver wire. He believed that mechanical support given by the ring resulted in fibrous tissue deposit locally as a reaction to the ring; the wire could be removed after 3 months. Since the first description of this method, numerous modifications have been made, such as using silk, strips of fascia lata, tendons and rubber. Platt modified the Thiersch operation in 1896, making four small incisions through the skin with a knife, 1 cm from the mucocutaneous junction laterally, and using a Nylon No. 1 stitch to pass around the perianal space cutaneously, utilising the four incisions to insure proper placement of the sutures, and then tightening the two ends of suture making sure that the ring is not tight. Postoperatively, the anus is constricted to a size that allows a soft stool to pass, but that will not allow the rectum to prolapse. This aims to narrow the relaxed anal sphincter and cause proliferation to form adhesions with the surrounding tissues. In England, the Thiersch method was first used by Bell in 1910. The success of the operation is probably due to the fact that rings bring the sphincter and pelvic floor higher, giving the sphincter a chance to contract normally.

There have also been studies suggesting the Altemeier procedure, in which the rectum is withdrawn to expose the rectovaginal peritoneal pouch, the sigmoid colon is pulled down, the anterior aspect of the sigmoid colon is opened and an anterior anastomotic suture can be placed. The lateral aspect of the sigmoid colon is opened and colo-anal anastomosis is done.⁴ Sequential linear stapling has also been said to produce successful results.¹¹

In the Delorme procedure stripping of the mucosa from the prolapsed rectum and sutured plication of the bare muscle remnant, which collapses the wall like an accordion. The mucosa is then re-approximated to seal the anastomosis.

Rectopexy is another procedure described to treat recurrent rectal prolapse.¹² In this procedure, the rectum is mobilised, and the mesorectum is sutured to the sacral promontory and presacral fascia. In resection rectopexy, a sigmoid colectomy is also performed. Complications of rectopexy include wound infections, bowel obstruction and faecal impaction.¹²

Reports say that if the rectal prolapse recurs after two Thiersch procedures, it is reasonable to perform a major surgical procedure, but we recommend that instead of performing the major surgical procedures described above, the simplest option is the modified Thiersch procedure using three stitches, as we have described. It is obvious that every paediatric surgeon has his or her own favourite technique for any surgical lesion, however, the ideal procedure should be easily performed with an acceptable postoperative complication rate and good long-term results. Thiersch is the one procedure that most surgeons are familiar

and comfortable performing, and our described modification is easy to carry out in patients with repeated rectal prolapse.

There have, however, been no reports of use of three sequential Thiersch sutures along the anal canal. Our novel procedure to treat recurrent rectal prolapse is a simpler technique than rectopexy. It is less invasive and has given excellent results in our patient, avoiding a major surgical procedure such as Altemeier, Delorme or rectopexy.¹³

Learning points

- ▶ Treatment of recurrent rectal prolapse after injection sclerotherapy and Thiersch suture can be a challenging issue.
- ▶ There is a lack of consensus on the best management of recurrent rectal prolapse in children. Rectopexy of some sort is performed to address this challenging issue. However, rectopexy is a major operation with short-term and long-term morbidity.
- ▶ We propose the placement of three sequential Thiersch sutures along the rectum to treat recurrent rectal prolapse following injection sclerotherapy and simple Thiersch suture. This novel technique is safe, effective and a good alternative to rectopexy.

Contributors KC and RWCG researched the content and prepared the manuscript. SS supervised the process, reviewed the manuscript and edited and made additions accordingly.

Competing interests None declared.

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