Case Report

Management of Stoma Prolapse Using Polypropylene Mesh Strip: A Novel and Easy Technique

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Abstract

Stomal prolapse is one of the most common complications of enterostoma. Stoma if persistent and significant often requires revision of stoma. The techniques described often require laparotomy with resection or internal fixation of the bowel. Such procedures may make further laparotomy more difficult. We herein describe the use of a relatively simple procedure for the correction of stomal prolapse.

Keywords: Colostomy, stoma revision, stomal prolapse

Introduction

Enterostomas play a major role in the management of a wide variety of surgical and non-surgical pathological conditions in the paediatric age group. However, there are numerous complications of enterostomas, and complication rates as high as 68% have been reported.[1] Stomal prolapse is one of the most common and more serious complications with a reported incidence of 11.3%.[2]

Treatment of prolapse is either non-surgical or minor prolapse, which is aimed at decreasing bowel oedema and permitting manual reduction. Surgical correction is reserved for major and persistent prolapse. Many techniques have been described ranging from tightening of the abdominal wall defect,[3] internal fixation of the bowel[2,4] or resection of the prolapsed bowel.[5-7] A novel surgical technique was described by Sobrado Junior *et al*.[8] in Brazil to correct stomal prolapse in adults with permanent stoma using a polypropylene mesh strip. We describe the successful use of this new technique for the treatment of stoma prolapse in an extremely low birth weight baby and a 5-year-old child with few modifications for paediatric patients.

Materials and Methods

Case 1

An extremely pre-term (born at 28 weeks of gestation) and extremely low birth weight (900 g) baby presented with non-passage of meconium and increasing abdominal distension. On examination, a single common cloacal opening was seen in the vestibule. A right-transverse colostomy was created. Stoma started functioning normally since post-operative day 3. However, 60 days' post-operation, there was prolapse of both limbs of the stoma [Figure 1a]. Since the baby had recently started gaining weight and was still on oxygen, a trial of bedside treatment was planned.

Case 2

A 5-year-old female with a cloacal anomaly, who had undergone diversion colostomy elsewhere, presented with an acute complaint of prolapse of both the limbs of the stoma [Figure 1b]. She had also undergone drainage of pyometrocolpos and suprapubic cystolitholapaxy for bladder calculi previously.

In both these cases, the management of the stomal prolapse was done using polypropylene mesh strip as described subsequently. The procedure was done bedside under sedation

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Received: 12-08-2022 **Revised:** 17-10-2022 **Accepted:** 31-10-2022 **Available Online:** 19-01-2023

Access this article online

Quick Response Code:

Website: https://journals.lww.com/AJPS

DOI: 10.4103/ajps.ajps_113_22

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How to cite this article: Jain V, Krishnan N, Goel P. Management of stoma prolapse using polypropylene mesh strip: A novel and easy technique. Afr J Paediatr Surg 2024;21:53-5.

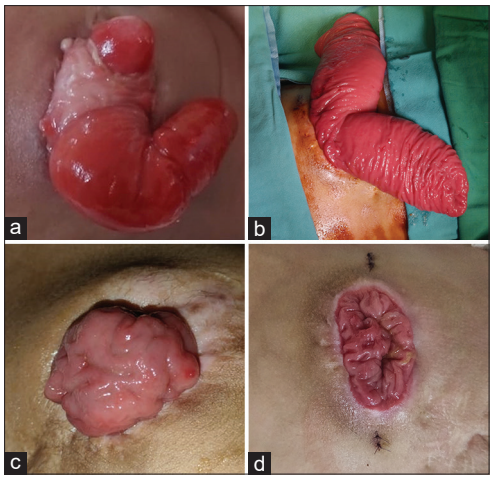


Figure 1: (a) Prolapsed proximal and distal limbs after a right transverse colostomy in the pre-term infant, (b) prolapsed stoma after a left transverse colostomy in a 5-year-old girl, (c) image of the stoma in the infant, 1 year after the procedure showing a normal stoma and (d) image of the stoma in the older child, 1 week after the procedure showing a normal stoma

in Case 1 and in the operating room under general anaesthesia in Case 2.

The stoma was reduced and packed and the peristomal area was cleaned. Local anaesthesia (2% lidocaine without vasoconstrictor) was infiltrated into the peristomal region. Then, two diametrically opposite incisions of approximately 1 cm each were made in the skin at 3'o clock and 6'o clock positions, approximately 1 cm away from the stoma [Figure 2a]. The incision was deepened through the subcutaneous layer to the abdominal fascia. A fine haemostat was used to create a tunnel deep to the subcutaneous layer, just superficial to the abdominal fascia, connecting the two incisions. The tunnel was made approximately 1 cm away from the stoma. The tunnel was created both superior and inferior to the stoma. A polypropylene mesh was fashioned into a rectangular strip 1 cm in width and 15 cm in length. The haemostat was passed in the tunnel 9'o clock to 3'o clock position on one side of the stoma and one end of the mesh strip was held and pulled through the 9'o clock incision [Figure 2b and c]. The other end was also pulled to the 9'o clock position through the tunnel from the other side of the stoma [Figure 2d]. Both ends of the strip were then joined together, with an interrupted non-absorbable suture (4-0 Prolene). While tightening the suture, we ensured that the mesh strip snugly encircles the stoma without compromising the vascular supply and patency of the bowel [Figure 2e]. This was ensured by subjective tightness of the finger inserted in the stoma lumen while tightening and the minimal congestion of the bowel. The excess mesh strip was then cut off and the skin and subcutaneous tissue were closed. The prolapse was corrected and the stoma appeared normal [Figure 2f].

At a follow-up of 1 year, there is no stomal prolapse or extrusion of mesh [Figure 1c and 2d].

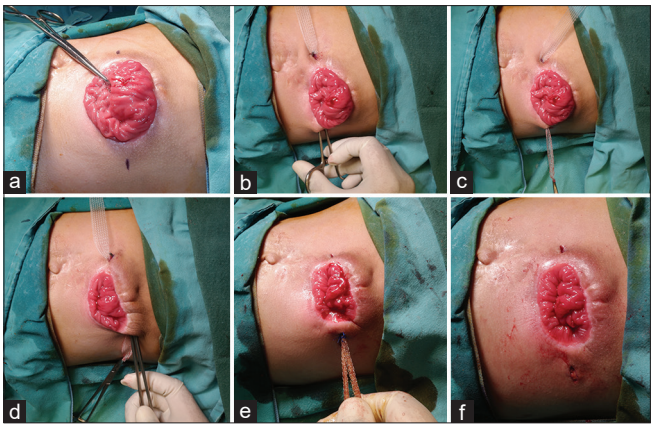


Figure 2: (a) Marking of incision on either side of the stoma 1 cm away from the edge, (b) Creation of a tunnel superior to the stoma with a haemostat, (c) pulling of the strip of mesh through the tunnel, (d) pulling of the other limb of mesh strip through the tunnel inferior to the stoma, (e) tightening of the stoma by pulling both limbs of the mesh strip and fixing with prolene suture and (f) appearance of the stoma after completion of the procedure

Discussion

Colostomies are performed in children for a wide range of conditions such as anorectal malformations, Hirschsprung's disease, colonic atresias, severe colonic, anorectal or perineal trauma, complex pelvic malformations and malignant conditions. Stoma prolapse is a late complication, which occurs quite frequently in children. Contributory factors are the shrinkage of the dilated obstructed bowel after stoma formation and the marked mobility of the transverse and sigmoid colon.

Many techniques which do not require a stoma revision have been described previously to deal with this complication.[2-7] These skin-level procedures prevent the morbidity associated with laparotomy. Some techniques for temporary control of prolapse in children like U-shaped stitches from the lumen of the reduced intestine through the abdominal wall have been described.[2] Although this technique avoids laparotomy, the danger of injuring an adjacent loop of the bowel and the formation of an enterocutaneous fistula exists. Other techniques which do not require laparotomy include a simple purse-string technique,[3] button-pexy fixation,[4] Delorme repair,[5] Altemeier's procedure[6] and local resection with a linear cutting stapler.[7] These techniques often require bowel resection which may complicate future surgery, especially in children with anorectal malformation or Hirschsprung's disease. Another non-operative method to treat prolapsed colostomy has been described using a tracheostomy tube introduced through the stoma.[9] However, the duration for which the tubes were kept was very long with an average of 4-month duration.

The technique described using polypropylene mesh strip is a simple and cost-efficient procedure which can be performed bedside under local anaesthesia. The polypropylene mesh insert

reduces the risk of recurrence because it stimulates fibroblasts, leading to the formation of strong scar tissue. This technique has been described in a case series of 10 adults with colostomy without any complications such as relapse, mesh strip extrusion or granuloma formation.[8] We have used the same technique in the extreme of age in an extremely low birth weight baby and in a 5-year-old child. A few points merit mention while performing this procedure. In the index cases, precaution was taken to make a tunnel deep and far enough from the stoma to prevent any erosion into the stoma or extrusion of the mesh through the skin. The children still have a stoma due to pandemic-related delay in follow-up and work up for definitive surgery. This window has also provided adequate follow-up to confirm the success of this stomal prolapse repair for the usual duration of diversion in children. A disadvantage of this procedure can be peristomal adhesions in the subcutaneous plane during the colostomy closure. We plan to also remove the mesh strip at the time of closure.

The morbidity and cost associated with surgical treatment for stoma prolapse can be avoided using this simple technique to treat prolapse. Although this technique was used in the treatment of colostomy prolapse, it can be used in the treatment of prolapse of any enterostoma.

Highlights

- Stomal prolapse is a complication which often needs stoma revision which often needs laparotomy and internal fixation or resection of bowel
- The described procedure of mesh wrap and tightening can be an alternative to stoma revision in the management of stomal prolapse
- The procedure avoids laparotomy and can be performed expeditiously either bedside sedation or under general anaesthesia.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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