

SHORT TECHNIQUE

A Technique to Avoid the Marginal Artery During Divided Colostomy in Neonates

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ABSTRACT:

Colostomy is a frequently performed procedure in neonates presenting with anorectal malformation and Hirschsprungs disease. A divided colostomy is more commonly performed but has a definite risk of injury to the marginal artery during the procedure, leading to stoma necrosis. This is a description of a technique which identifies, displaces and preserves the marginal artery during colostomy construction and therefore ensures a safer colostomy in neonates without the danger of necrosis.

Key words: Technique. Marginal artery, Colostomy

INTRODUCTION

Colostomy is a frequently performed procedure in neonates presenting with anorectal malformation (ARM) and Hirschsprungs disease (HD).^{1,2} A divided colostomy is more commonly performed for patients with high ARM,^{3,4} to allow for a defunctionion distal stoma and stoma prolapse is also uncommon in divided colostomy.

A definite risk in constructing a divided colostomy particularly in neonates, is stoma necrosis with incidence ranging from 2-22% in some series.^{5,6} The necrosis may be due to injury the colon. The marginal artery which lies close and parallel to the intestine on the mesenteric border is an important source of blood supply to the colon and thus the stoma following a colostomy; hence the need to preserve it.

This is a description of the technique to avoid the marginal artery during colostomy in neonates.

TECHNIQUE

Appropriate anaesthesia is given and skin preparation and drapings are done. The abdominal incision is made depending on the type of colostomy to be constructed; a transverse or oblique incision in the left lower quadrant for a sigmoid colostomy and a transverse right upper quadrant incision for a transverse colostomy.

Access is gained into the peritoneal cavity by either splitting or cutting the muscles of the anterior abdominal wall with a fine point diathermy. The colon is identified in the usual way and a loop gently withdrawn through the wound. The marginal artery is identified running parallel and close to the intestine on the mesenteric border (Figure 1 and 2). The marginal artery is gently displaced away (0.5-1cm) from the mesenteric border using a blunt artery forceps. Care is taken to avoid direct contact with the vessel, as it can be easily injured.

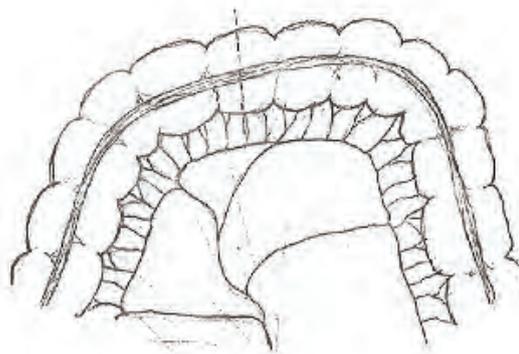


Fig. 1 showing marginal artery

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Fig.2 Dilated colon delivered through the abdominal wound

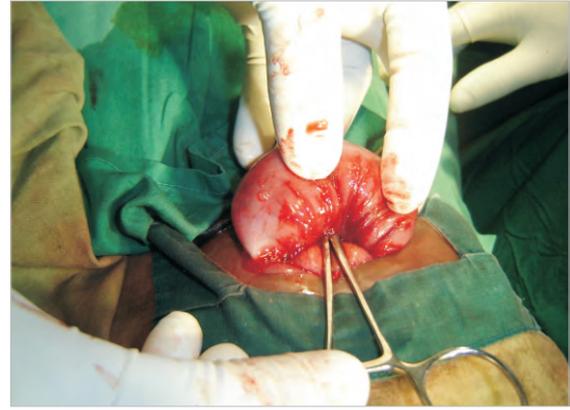


Fig. 3b displacing the marginal artery

Soft clamps are applied and the intestine can now be safely transected without risk of injury to the marginal artery; an artery forceps may be placed between the intestine and the artery for added security during transection (Figure 3a 3b and 4).

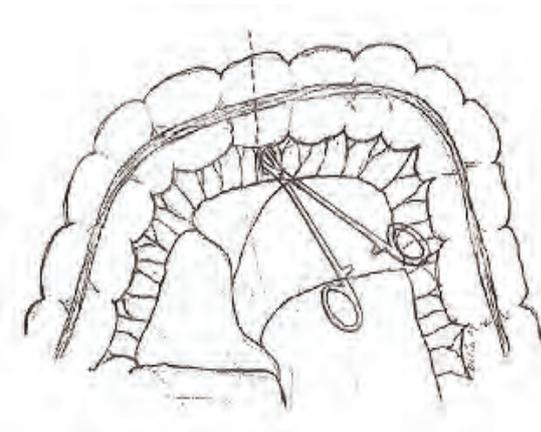


Fig.3a displacing the marginal artery

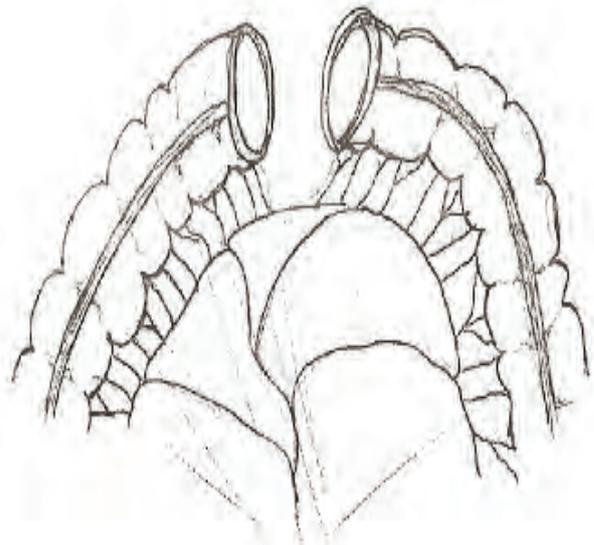


Fig. 4 colon transected with marginal artery preserved

The colostomy is then created in a divided fashion with a skin bridge in between the proximal and distal

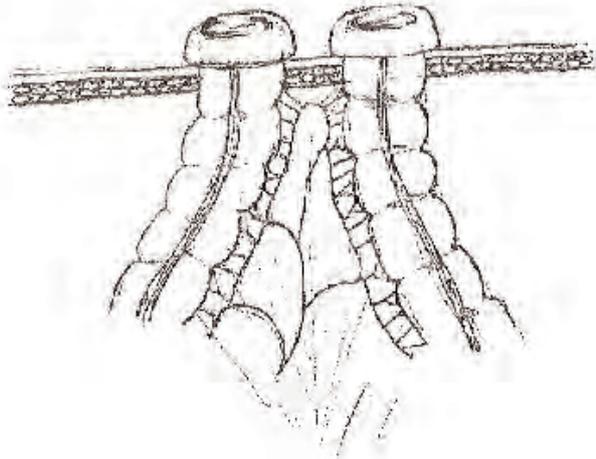


Fig.5 diagrammatic representation of completed stoma

stoma with the marginal artery safe and intact beneath the anterior abdominal wall bridge (figure 5).

This method has been used in the 6 year period (November 2002- October 2008) in 77 neonates (74, 96% had ARM and 3 4% had HD).

There was no unusual bleeding from the cut edge of the colon during surgery and the operation time was not prolonged. No stoma necrosis occurred in any patient.

DISCUSSION

Colostomy in neonates presenting with lower gastrointestinal obstruction is indeed a life saving procedure³ and various techniques are available to the surgeon treating such babies. The commonest being the loop or the divided colostomy. Each of these has their advantages and are not without risks or complications.⁷ The loop colostomy though easier and quicker to perform is notorious for prolapse and may allow faeces into the distal rectum causing rectal dilation and ectasia.^{4,8}

The divided colostomy is thus an attractive alternative. However, injury to the marginal artery leading to stoma necrosis is a recognized complication with may necessitate stoma refashioning with attendant morbidity. The technique identifies, displaces and preserves the marginal artery during divided colostomy and eliminates this risk and also potentially reduces the amount of blood loss, since the vessel is not transected.

REFERENCE

1. Chowdhary SK, Chalapathi G, Narasimhan KL, Samujh R, Mahajan JK, Menon P, Rao KL. An audit of neonatal colostomy for high anorectal malformation: the developing world perspective. *Pediatr Surg Int* 2004; 20:111-130
2. Chirdan LB, Uba FA, Ameh EA, Mshelbwala PM. Colostomy for high anorectal malformation: an evaluation of morbidity and mortality in a developing country. *Pediatr Surg Int* 2008; 24 4: 407-410
3. Wilkin S and Pena A. The role of colostomy in the management of anorectal malformations. *Pediatr Surg Int* 1988; 3: 105-109
4. Pena A, Migotto-Krieger M, Levitt M. Colostomy in anorectal malformations: A procedure with serious but preventable complications. *J Pediatr Surg* 2006; 41:748-756
5. Wydra D, Emerich J, Sawicki S, Ciach K, Marciniak A. A major complications following exenteration in cases of pelvic malignancy: A 10-year experience. *World J Gastroenterol* 2006; 12:1115-1119
6. Jane Ellen Barr, Part 1: Assessment and Management of Stomal Complications: A Framework for Clinical Decision Making 2004; 50:9
7. Mollit DL, Malangoni MA, BallantineTVN, JGrosfeld JL. Colostomy Complications in Children: An Analysis of 146 Cases *Arch Surg* 1980; 115:455-458