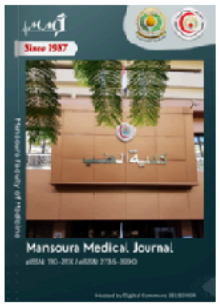
MANSOURA MEDICAL JOURNAL

ISSN - Print: 1110-211X - Online: 2735-3990

journal homepage: mmj.mans.edu.eg



Volume 29 | Issue 2 Article 10

LOW DESCENDING COLOSTOMY WITH STOMAS SEPARATED BY INTACT SKIN: A MORE SIMPLE, SAFE AND COMPLETELY DIVERTING COLO- STOMY FOR PATIENTS WITH ANORECTAL MALFORMATIONS

Khalid Kandeel

Pediatric Surgery Unit' and Department of General Surgery'. Mansoura Faculty of Medicine. Mansoura Universiy.*

Tarek Badrway

Pediatric Surgery Unit' and Department of General Surgery'. Mansoura Faculty of Medicine. Mansoura Universiy.*

Ahmed Setiet

Pediatric Surgery Unit' and Department of General Surgery'. Mansoura Faculty of Medicine. Mansoura Universiy.*

LOW DESCENDING COLOSTOMY WITH STOMAS SEPARATED BY INTACT SKIN: A MORE SIMPLE, SAFE AND COMPLETELY DIVERTING COLOSTOMY FOR PATIENTS WITH ANORECTAL MALFORMATIONS

By

Khalid Kandeel (M.D. *), Tarek Badrway (M.D. *) and Ahmed Setiet **

From

Pediatric Surgery Unit and Department of General Surgery**, Mansoura Faculty of Medicine, Mansoura Universiy.*

ABSTRACT

Colostomy construction is a common surgical procedure in infants with anorectal malformations. There is a general agreement that the best one for these cases is a completely diverting left lower quadarnt colostomy. Although low descending colostomy with stomas separated by a suture line has many advantages, it is accompanied by may complications which are mainly related to the presence of such a suture line adjacent to the stomas. We present the low descending colostomy with stomas separated by intact skin as a new modification to overcome such complications. Over a period of 20 months 47 infants with anorectal malformations were initially managed by low descending colostomy. In 24 the stomas were separated by a suture line, while in 23 the stomas were separated by intact skin. Both groups were compared to each other. The results of the second group as regards the operaive time for construcion, early and late complications and operative time for closure proved to be more superior than the first group. We conclude that the low descending colostomy with stomas separated by intact skin is simple, easy and safe for cases with anorectal malformations.

Key words: Colostomy-anorectal malformations.

INTRODUCTION

The optimal surgical care of pa-

tients with imperforate anus begins with the appropriate decision making in the critical neonatal period with many cases are initially managed with colostomy (Endo et al., 1999). For many decades right transverse loop colostomy used to be the standard initial procedure for patients with imperforate anus (Borkowski, 1998). Although this colostomy is easy and simple, it has many disadvantages and high complication rates especially the non-adequate diversion of fecal matter and colostomy prolapse (Nour et al., 1996).

There is a general agreement that the best colostomy for neonates with imperforate anus is a completly diverting left lower quadrant colostomy between the descending and sigmoid colons. The advantages of this colostomy are complete stool diversion, easier mechanical preparation of the distal colon, easier distal loopogram, minimal incidence of metabolic hyperchloremic acidosis (in incidence of large recto-vescial fistula) and low tendency for skin excoriation and dehydraton. Also the portion of the distal colon which will undergo disuse atrophy will be relatively short and lastly, the epigastrium is left without scars (Shaul and Harrison, 1997).

Many modification were introduced to avoid the drawbacks of the right transverse loop colostomy. In 1984, Prasade and his associates developed the end-loop colostomy where the distal limb of the colon was narrowed to a small mucous fistula which came adjacent to the proximal limb of the colon. They reported, together with other series, that this type is simple, safe and carries a low incidence of complications. However, both stomas are close together so it is not completely diverting (Unti et al., 1991); Also, in 1984, Ein developed a modification of the right transverse loop colostomy where the distal limb of the colostomy was pulled through a subcutaneous tunnel to come several centimeters away from the proximal limb and he reported minimal incidence of complications combined with the advantage of complete diversion. In 1988, Wilkins and Pena developed the low descending colostomy with separated stomas where a long incision was performed in all layers of the abdominal wall and the colon was divided so that each limb was sutured at one end of the incision and the abdominal wall layers were sutured between the two limbs. This colostomy was especially developed for patients with anorectal malformations. In his

experience Pena (1995) and Pena et al., (1998) reported that this colostomy carries low incidence of complications. Gauderer (1998) on the other hand, showed that this technique has some disadvantages which include long incision, great potential for wound problems and greater difficulty in applying stoma device.

In the present series a prospective randomized comparative study is done between the low descending colostomy with stomas separated by a suture line as described by Wilkins and Pena, (1988) and the low descending colostomy with stomas separated by intact skin which is a modification of the divided loop colostomy developed by Ein (1984).

PATIENTS AND METHODS

From September 1998 to July 2000, 86 infants presenting with anorectal malformations were admitted at Pediatric Surgery Unit, Mansoura University Hospital. The initial management in 47 infants was a left lower quadrant colostomy at the end the descending colon. The ages of these patients ranged from 1 day to 6 months and 27 were males while 20 were females. Patients were randomly divided into 2 groups, the first group included 24 infants who were managed by low descending colostomy with separated stomas as described by Wilkins and Pena, (1988). The second group included 23 infants who were managed by low descending colostomy with stomas separated by intact skin.

Technique of the low descending colosomy with stomas separated by intact skin (Figure 1).

The technique was performed under general anaesthesia where two small incisions (1-1.5 cm) were performed in the left lower quadrant of the abdomen (3-4 cm apart), the upper one lies midway between the umblicus and the anterior superior iliac spine. The subcutaneous tissue was dissected between the two incisions. The upper incision was deepened with division of all layers of the abdomen. The lower end of the descending colon was delivered through this incision and the bowel was divided. The distal limb was pulled through the subcutaneous tunnel to come out of the lower incision. The upper stoma was fixed to the layers of the abdominal wall with few interrupted 4/0 vicryl sutures while the distal stoma was fixed only to skin. The bowel was sutured flush with the abdominal wall (Figure 2).

19 colostomies of the first group and 17 of the second group have been closed so fare. Colostomies of the first group were closed as described by Wilkins and Pena, (1988). Colostomies of the second group were all closed under general anaesthesia where the two limbs were freed up by an elliptical oblique incision. the skin ellipse and the attached ends of the bowel were excised and an intraperitoneal end to end anastomosis was performed with 4/0 vicryl sutures followed by Colsure of the abdominal wall with a drain. Stoma related complication during construction, follow-up and closure were recorded and assessd and both groups were compared to each other.

RESULTS

Table (1) shows that the operative time for colostomy construction in the first group was longer than that for the second group. The return of intestinal sounds, the start of colostomy function and the return to oral feeding was quicker in the second group. The postoperative hospital stay was longer in the first group.

The incidence of early and late postoperative complications were high where the stomas were separated by a suture line (Table 2).

Cases complicated by wound infection, wound dehisance (Figure 3), colostomy prolapse (Figure 4), ischemia or skin excoriation were managed conservatively. Cases complicated by burst abdomen needed operative closure. Cases complicated by stomal stenosis responded to diltation in 2 cases while one case needed refashioning.

The Fesability for fitting colostomy appliance was better and earlier in the second group. (Nine cases were compliant with colostomy appliance in the first group vs 21 cases in the second group).

The operative time for colostomy closure was longer in the first group (Table 3). No complications related to colostomy closure have been recoded in both groups apart from 5 cases of wound infection (2 in the first group Vs 3 in the second group) and they were managed conservatively.

Data was analysed using SPSS Package System under Windows. Tests used included calculation of mean, standard deviation and independent sample T test.

Table (1) : Comparison between the two groups as regards operative time, return to oral feeding and postoperative hospital stay*.

	First group (24 cases)	Second group (23 cases)	T	P
Operative time of colostomy construction:				
Less than 30 min	3	15		
30 - 45 min	10	6		
45- 60 min	7	2		
> 60 min	4	-		
(mean in min.)	(43.9±14.8)	(27.6±9)	4.5	0.000
Return to oral feeding				
<24 h	6	20		
24-48 h	11	3		
> 48 h	7	-		
(mean in h.)	(39.8±17)	(21.5±4)	4.9	0.001
Post operative hospital stay				
<24 h	4	20		
24-48 h	8	3		
> 48 h	12	-		
(mean in h.)	(48±18.9)	(21.5±4.6)	6.5	0.01

* Using independent sample t test .

Table (2) : Early and late postoperative complications.

	First group (24 cases)	Second group (23 cases)
Wound infection	6 (25%)	None
Wound dehisance	5 (21%)	None
Burst abdomen	2 (8%)	None
Stomal stenosis or retraction	3 (12.5%)	None
Colostomy prolapse	1 (4%)	1 (4.3%)
Ischemia of the stoma	1 (4%)	None
Para-stomal herniation	None	None
Obstruction	None	None
Haemorrhage	None	None
Skin excoriation	3 (12.5%)	3 (13%)
Mortality	None	None
Total	21 (88%)	4 (17%)

Table (3) : Operative time for colostomy closure*.

	First group	Second group	T	P
45- 60 min	4	14		
60-90 min	8	7		
> 90 min	12	2		
(mean in min.)	(86.5±25.2)	(59.5±17.5)	4.1	0.005

* Using independent sample t test .

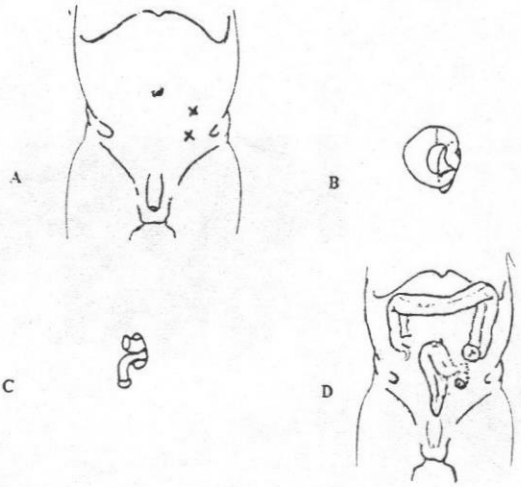


Figure (1) : Operative technique of the low descending colostomy with stomas separated by intact skin:

a) Two small incisions the upper one lies midway between the umbilicus and the anterior superior iliac spine and the lower is three to four centimeters below. The subcutaneous tissue is dissected between the two incisions.
b) The lower point of the descending colon is delivered from the upper incision.
c) The colon is divided leaving more colon distally.
d) The longer distal limb of colon is pulled through the subcutaneous tunnel and both stomas are fiexed.

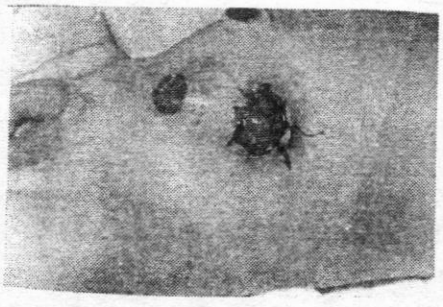


Figure (2) : Low descending colostomy with stomas separated by intact skin. (the fullness caused by the subcutaneous colon disappears by time)

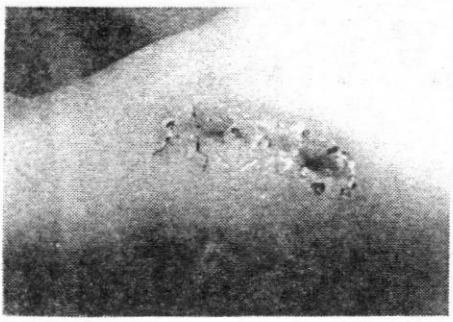


Figure (3) : Low descending colostomy with stomas separated by a suture line complicated by wound infection and dehisance.

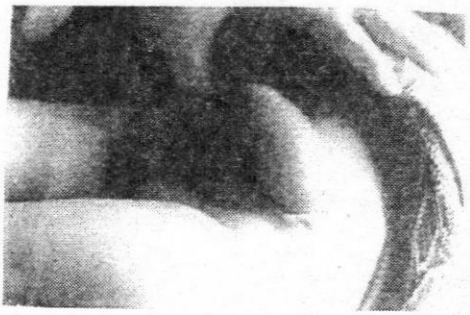


Figure (4) : Low descending colostomy with stomas separated by a suture line complicated by prolapse of distal stoma .

DISCUSSION

By the end of the 19th centery, right transverse loop colostomy became the well established initial treatment for cases with imperforate anus. However, due to its associated significant problems, many attempts were made to modify this type of colostomy (Al-Salem et al., 1992).

In the present series the technique of divided loop colostomy developed by Ein (1984) was applied in the lower end of the descending colon and the results were compared with those obtaiend from a comparative group managed by the low descending colostomy with separated stomas as described by Wilkins and Pena (1988).

In the present series, the complication rate in the group managed by the descending colostomy with stomas separated by a suture line was high as compared to the other group and most of the complications were related to the presence of a long suture line just beside the colostomy stomas which predispose to wound infection and its sequela. The complication rate is also high than reported by Wilkins and Pena, (1988). The

simplicity of the technique in the second group (the shorter operative time and the direct approach to the descending colon) explains the smoother postoperative course and the shorter postoperative hopsitalization time. The absence of a wound beside the colostomy stomas in the second group gives the chance for earleir and easier fitting of a colostomy appliance. The very low incidence of colostomy prolapse in both groups goes well with the results obtained by Ein, (1984), Wilkins & Pena (1988) and Pena et al. (1998). The incidence of stoma stenosis, retraction or ischemia in the first group may be related to technical errors as it occured in the first cases and disappeared with the improvement in the learning curve.

The shorter operative time for colostomy closure in the second group is related to the close approximation of the two colostomy limbs with the presence of minimal intraabdominal adhesions.

Another advantage of our modification is that both stomas are away from the mid line of the abdomen which facilitates abdominal exploration, if needed, during the time for definitive correction of the anorectal malformation.

From the present series it can be concluded that the low descending colostomy with stomas separated by intact skin offers all the requirements for ideal colostomy for patients with anorectal malformations, moreover it is easy, simple and associated with minimal incidence of complications.

REFERENCES

1. **Al-Salem, A.H.; Grant, C and Khawaja, S. (1992) :** Colostomy complications in infants and children. Int. Surg. 77: 164.

2. **Borkowski, S. (1998) :** Pediatric stomas, tubes and appliances. Pedia. Clin. N. An. 45: 6,1419.

3. **Ein, S.H.. (1984) :** Divided loop colostomy that does not prolapse. Am. J. Surg. 147: 250.

4. **Endo, M.; Hayashia, A.; Ishihara, M. et al. (1999) :** Analysis of 1992 patients with anorectal malformations over the past two decades in Japan. J. Pedia. Surg. 34, 3: 435.

5. **Gauderer, M.L. (1998) :** Stomas of the small and large intestine. in pediatric Surgery Vol. 2, 5th Ed. P: O'Neill JA et al. (9ed) Mosby.

6. **Nour, S.; Beck, J. and Stringer (1996) :** Colostomy complications in infants and children. Ann. R. Coll. Surg. Engl. 78, 6: 526.

7. **Pena, A. (1995) :** Semin. Pedia. Surg. 4: 35.

8. **Pena, A.; Guardino, K; Tovilla, J.M. et al. (1998) :** Bowel management for fecal incontinence in patients with anorectal malformations. J. Pedia. Surg, 33: 1: 133.

9. **Prasad, M.L.; Pearl, R.K and Abacrian, H. (1984) :** End loop colostomy. Surg. Gynecol, Ob. 158: 380.

10. **Shaul, D.B. and Harrison, E.A. (1997) :** *Classification of an*orectal malformations, initial approach, diagnostic tests and colostomy (Abstract). Semin. Pedia. Surg, 6; 4: 187.

11. **Unti, J.A.; Abarian, H.; Pearl, R.K et al. (1991) :** Rodless end-loop stomas. Seven year experience. Dis. Colon. rectum, 34: 999.

12. **Wilkins, 5. and Pena, A. (1988) :** The role of colostomy in the management of anorectal malformations. Pedia. Surg. Int. 3: 105.

الكلوستومى ذو الفتحتين المنفصلتين بجلد سليم فى أسفل القولون النازل وسيلة أسهل وأبسط وأكثر أماناً للأطفال المصابين بالإنسداد الشرجى

ان كثير من الأطفال المصابين بإنسداد الشرج بحاجة الى كولوستومى. يوجد إتفاق عام على أن أفضل كولوستومى لتلك الحالات هو أن يكون تام التحويل وفى الجهة اليسرى السفلى من البطن. وعلى الرغم من تميز كلوستومى القولون النازل ذو الفتحتين المنفصلين بجرح خطى فأن له العديد من المشاكل الناتجة من وجود جرح بين الفتحتين .

يهدف هذا البحث إلى تقديم كلوستومى ذو فتحتين منفصلتين بجلد سليم أسفل القولون النازل كطريقة أسهل وأكثر أماناً. تم عمل هذا البحث فى ٢٠ شهراً على ٤٧ طفل مصابين بإنسداد شرجى حيث تم عمل كلوستومى القولون النازل ذو الفتحتين المنفصلتين بحيث كانت الفتحتين منفصلتين بجرح خطى فى ٢٤ طفلاً وكانتا منفصلتين بجلد سليم فى ٢٣ طفل وقد تم عمل مقارنة بين المجموعتين وقد تبين من البحث أن فصل الفتحتين بجلد سليم أسهل وأبسط وأكثر أماناً .