Fırat Tıp Derg/Firat Med J 2015; 20(1): 47-50

Clinical Research

Colostomy in Children

Unal BAKAL [a], Mehmet SARAC, Tugay TARTAR, Ahmet KAZEZ

Firat University Faculty of Medicine, Department of Pediatric Surgery, Elazig, Turkey

ABSTRACT

Objective: In this study; the rate of complications and mortality of colostomy procedure were investigated in children.
Material and Method: Ninety six patients who have undergone colostomy procedure in our clinic between 1996 and 2012 due to different reasons were analyzed retrospectively.
Results: Fifty-seven of the patients were male and 39 were female. Their ages ranged from 1 day to 13 (mean 1,1 years) years, and 52 of them were younger than 1 month of age. The most frequent indications for colostomy was anorectal malformations in 57 patients and Hirschsprung's disease in 26 patients. The type of colostomy was separated or modified separated in 53, loop in 27, and Hartmann in 16 patients. There were 36 postoperative complications in 34 cases. Peristomal dermatitis have been detected in 19 (53 %), stomal bleeding in 4 (11%), prolapse in 4 (11%), stomal ischemia in 4 (11%), evisceration in 3 (8%) and stomal stenosis or obstruction in 2 (5.5%) patients. The complications occurred more frequent in the transverse colon and by Hartmann type colostomies. There was a need for a revision by 7 patients. Death occurred by 10 patients but no one was related with colostomy. All deaths were in the neonatal period, and the most frequent cause was associated major congenital abnormality.
Conclusion: The primary pathology is the most important factor in the development of the colostomy complications. Although colostomies' have a high complication rate, the number of patients who need revision is low.

Key Words: *Colostomy, Complications, Hirschsprung's disease, Anorectal malformations.*

ÖZET

Çocuklarda Kolostomi

Amaç: Bu çalışmada kolostomili çocuklarda mortalite, morbidite ve risk faktörleri araştırıldı.
Gereç ve Yöntem: Kliniğimizde 1996-2012 yılları arasında kolostomi yapılan 96 hasta geriye dönük olarak analiz edildi.
Bulgular: Hastaların 57'si (% 60) erkek, 39'u (%40) kız idi Yaşları bir gün ile 13 yaş arasında değişen olguların 52'si (%54) bir aydan küçük, 24'ü (%25) bir ay-bir yaş aralığında, 20'si (%19) ise bir yaşından büyüktü. . Kolostomi endikasyonu en sık anorektal malformasyonlar 51(%53) ve Hirschsprung 23 (%24) hastalıklarıydı. Kolostomi tipleri 53'ünde (%55) separe ve modifiye separe, 27'sinde (%28) olup, 16'sında (%16) ise Hartman şeklindeydi. Kolostominin yeri 61 (%63) olguda sigmoid, 29 (%30) olguda transvers kolon, 6 (%6) olguda çekumda idi. Postop 34 (%35) olguda 36 komplikasyon görüldü. Peristomal dermatit 19 (%53), stomal kanama 4 (%11), prolapsus 4 (%11), stomal beslenme bozukluğu 4 (%11), evisserasyon 3 (%8) ve stomal stenoz veya obstrüksiyon 2 (%5.5) hastada görüldü. Komplikasyonlar en sık transvers kolonda ve Hartman tipi kolostomilerde görüldü. Revizyon 7 (%7) hastaya gerekli oldu. Olguların 10'u exitus oldu, hiç birinde primer neden kolostomi değildi. Ölümlerin hepsi yenidoğan yaş döneminde idi ve en sık nedeni majör konjenital anomalilerdi.
Sonuç: Kolostomi endikasyonunu gerektiren temel patoloji komplikasyonlarının gelişmesinde en önemli faktördür. Kolostomilerin komplikasyon oranı yüksek olmasına rağmen revizyon gerektiren hasta sayısı düşüktür.

Anahtar Kelimeler: *Kolostomi, Komplikasyon, Hirschsprungs hastalığı, Anorektal malformasyon.*

Colostomy is still an important step in the treatment process of congenital abnormalities of the gastrointestinal tract in the newborn and infants as well as in acquired disorders (1, 2). The rate of colostomy complications occuring during the treatment of anorectal malformations (ARM), Hirschsprung's disease (HD) and trauma cases may be high despite the surgical advances (3-5).

In this study, the complications and mortality were investigated in patients who had colostomies due to congenital or acquired disorders.

MATERIAL AND METHOD

The approval was obtained from Firat University Ethics Committee. Ninety six patients who underwent colostomy procedure due to ARM, HD, trauma and miscellaneous diagnoses (ICD codes Q42.3, Q43.1, T79.8, K56.2, P77, K63.1) between 1996 and 2012 were analyzed retrospectively. The patients were analyzed for their ages, gender, colostomy indications, colostomy types, complications and mortality. The data were analyzed using SPSS program and Chi square test.

[a] Corresponding Adress: BAKAL Unal, Firat University Faculty of Medicine, Department of Pediatric Surgery, Elazig, Turkey
Phone: +90 424 2333555 e-mail: ubakal@firat.edu.tr
Received/Geliş Tarihi:24.09.2014 Accepted/Kabul Tarihi: 20.10.2014
** This study was presented orally in 30th National Congress of Pediatric Surgery, Ankara.*

RESULTS

A total of 96 patients had colostomies, 57 of them were male and 39 female. The ages of the patients ranged from 1 day to 13 years (mean age 1.1 years); 52 of them were younger than 1 month of age, 24 were representing the group of the age period from 1 month to 1 year and 20 patients were older than 1 year of age (Table 1). The colostomy indications were ARM in 57, HD in 26, trauma in 9, and midgut volvulus by 4 patients (Table 2). The location and the type of colostomy were determined by considering the primer pathology. The colostomy was separated or modified separated in 53, loop in 27, and Hartmann colostomy in 16 patients. The colostomy localisations varied as follows: 61 of them were located in the sigmoid colon 29 in the transverse colon and 6 patients had the colostomy in the cecum. There were 36 postoperative complications in 34 (35%) cases. Peristomal dermatitis was seen in 19 (53 %), stomal bleeding in 4 (11%), prolapse in 4 (11%), stomal ischemia in 4 (11%), evisceration in 3 (8%) and stomal stenosis or obstruction in 2 (5.5%) patients. Complications occured in 14 of the patients with ARM (27%), 13 patients with HD (57%) and 7 (32%) patients with miscellaneous diagnoses. Location related analysis of the colostomy complications revealed that the highest complication rate was seen in the transverse colon (Table 3). However, the difference among the sites was not statistically significant for the complication rates ($p>0.05$). A revision was needed in 7 patients. Among those patients, the colostomy site was sigmoid colon in 4 and transverse colon in 3 patients, and the type of colostomy was separated colostomy in 4 and loop colostomy in 3 patients. Four of the patients who underwent revision had ARM, were younger than 1 month of age, had transverse colostomies and were of male gender.

Death occurred in 10 of the colostomised patients, but the primary cause of death was not related with colostomy in any of them. All deaths were in the neonatal period, and the most frequent cause was major congenital abnormality. Most of these patients had ARM, were younger than 1 month of age, had sigmoid colostomies and were males.

Table 1. *Age and sex distribution of complications*

		Number of patients	Uncomplicated	Peristomal dermatitis	Stomal bleeding	Prolapse	Stomal ischemia	Evisceration	Stomal stenosis/ obstruction	Revision	Exitus	p- statistically value
Age	<1 month	52	37	9	2	1	1	1	1	4	9	Accrding to age complication p>0.05
	1 month-1 year	24	14	5	2	0	1	2	0	1		
	>1 year	20	11	4	0	3	1	0	1	2	1	
Gender	Male	57	38	9	2	2	3	1	2	4	8	Accrding to gender complication p>0.05
	Female	39	24	9	2	2	0	2	0	3	2	
Total		96	62	18	4	4	3	3	2	7	10	96

Table 2. *Primary disease distribution of complications in colostomy*

		n	Uncomplicated	Peristomal dermatitis	Stomal bleeding	Prolapse	Stomal ischemia	Evisceration	Stomal stenosis/ obstruction	Revision	Exitus	p- statistically value
Primary disease	ARM	57	43	10	2	1	1	1	1	5	8	According to primary disease complication p>0.05
	HH	26	13	4	2	3	2	2	0	2	2	
	Trauma	9	4	3	0	0	1	0	1			
	Volvulus	4	2	2	0	0	0	0	0			
Total		96	62	19	4	4	4	3	2	7	10	96

ARM: Anorectal malformation, HH: Hirschsprung's disease.

Table 3. *Location and type of colostomy distribution of complications*

		n	Uncomplicated	Peristomal dermatitis	Stomal bleeding	Prolapse	Stomal ischemia	Evisceration	Stomal stenosis/ obstruction	Revision	Exitus	p- statistically value
Colostomy place	Sigmoid	61	41	12	3	1	2	1	2	3	8	According to colostomy place complication p>o.05
	Transverse	29	17	6	1	3	1	1	0	4	1	
	Caecum	6	4	1	0	0	0	1	0		1	
Colostomy type	Separated	53	33	14	2	1	1	1	2	3	5	According to Colostomy type complication p>o.05
	Loop	27	20	2	0	2	1	2	0	2	5	
	Hartmann	16	9	3	2	1	1	0	0	2		
Total		96	62	19	4	4	3	3	2	7	10	96

DISCUSSION

Colostomy procedure is very commonly needed in the neonatal period. Congenital abnormalities were the most frequent reasons for the need of a colostomy in this age group. Although ARM and HD have been treated without colostomy in the recent years, and we also perform this approach in our clinic, the number of patients needing colostomy is quite high (6, 7). The literature indicates that colostomies are most frequently performed in the neonatal period and in the cases with ARM (4, 8).

The rate of colostomy complications were reported between 30-74% in the literature (3, 5, 8-10). This rate was 36% in our study. The complications most frequently occurred in patients with ARM and HD. This may be related to similar diagnoses in patients who had colostomies. Cigdem et al have shown that the site of colostomy is not correlated with the development of complications (4). In our study, the site of colostomy was not considered as statistically significant to be correlated with the complications, in accordance with the literature ($p>0.05$).

The most frequently encountered complication reported in the literature is peristomal dermatitis which was seen in 30.5% of all complications (5). In our study, peristomal dermatitis comprised 53% of all complications. We suppose that peristomal dermatitis develops due to inadequate colostomy care and irritation of the insufficiently absorbed bile salts. Peristomal dermatitis does not have an effect on mortality, but it has a negative effect on the quality of life.

The primary disease is important for determining the site and the type of the colostomy. In our study, sigmoid separated colostomy was observed as the most frequent site and type of colostomy. However, loop colostomy was reported as the most frequent colostomy type in the past wheras the sigmoid and transverse colons revealed as the most frequent colostomy sites (1, 8).

Mucosal bleeding was reported in 0-10.3% of the patients in the literature (5, 8). It was the second most frequent complication detected in our study with a rate of 11%. All patients who had mucosal bleeding were under the 1 year of age. This may be related to non-use of the colostomy bags in this age group.

Prolapse is a complication that occurs after colostomy, and sometimes needs a revision. It's rate was 11% in our study. This complication can usually be treated conservatively, but sometimes surgery could be required. Prolapse rate was reported as high as 23.3% in the literature (5), however this rate was relatively low in or study. Three of these 4 cases needed a revision. In cases with the prolapse of distal stoma opening, a purse string suture was used at the level of the fascia (8-11).

The literature indicates stomal stenosis rates between 0.7 and 6.3% (8-10). In our study, the rate of stomal stenosis was found as 5.5%, in accordance with the literature. We have the opinion that stomal stenosis or obstruction could be related to the surgical technique. All stenosis cases were operated in the education period of the surgeons.

The revision rate reported in the literature is as high as 16.7% (8). Our revision rate was 7%. Revisions were due to prolapse in 3, obstruction in 2, and ischemia in 2 patients. Four patients who had revisions had ARM, were younger than 1 year of age, had transverse colostomies and were males. These variables represent the most frequently seen pathology, age and gender in our patient group, and we consider that these findings occur due to the frequency of these variables. Our revision rate was found to be in accordance with the literature.

The mortality rate has been reported between 2,7-9.5 % in the literature (4, 5, 8, 9, 12). In this study, death occurred in 10% of the patients. Colostomy was not the primary reason of death in any of these patients. All patients were in the neonatal period and 8 of them were patients who underwent colostomy procedure due to ARM. Mortalities were related to additional congenital abnormalities, notably to cardiovascular ones.

Congenital abnormalities are the most common disorders necessitating colostomies in children, and additional abnormalities are the most important factors determining mortality. The primary pathology is the most important factor in the development of the colostomy complications. Dermatitis, one of the most frequently seen complications, was found in girls with ARM who were older than one month of age and had transverse separated colostomy. Although colostomies' have high complication rate, the number of patient who need revision is low.

REFERENCES

1. Pathwardan N, Kiely EM, Drake DP, Spitz L, Pierro A. Colostomy for anorectal anomalies. High incidence of complications. J Pediatr Surg 2001; 36: 795-8.

2. Onen A, Oztürk H, Yayla M, Basugay E, Gedik S. Genital trauma in children: classification and management. Urology 2005; 65: 986-9.

3. Millar JW, Lakhoo K, Rode H, Ferreira MW, Brown RA, Cywes S. Bowel stomas in infants and children. A 5-year audit of 203 patients. S Afr J Surg 1993; 31: 110-3.

4. Ciğdem MK, Onen A, Duran H, Ozturk H, Otcu S. The mechanical complications of colostomy in infants and children: analysis of 473 cases of a single center. Pediatr Surg Int 2006; 22: 671-6.

5. Chandramouli B, Srinivasan K, Jagdish S, Ananthakrishnan N. Morbidity and mortality of colostomy and its closure in children. J Pediatr Surg 2004; 39: 596-9.

6. Teeraratkul S. Transanal one-stage endorectal pull-through for Hirschsprung's disease in infants and children. J Pediatr Surg 2003; 38: 184-7.

7. Kazez A, Ozel SK, Bakal U, Saraç M. Abdominotransanal approach to pouch colon associated with rectal atresia. J Pediatr Surg 2009; 44: 19-21.

8. Nour S, Stringer MD, Beck J. Colostomy complications in infants and children. Ann R Coll Surg Engl 1996; 78: 526-30.

9. Al Salem AH, Grant C, Khawaja S. Colostomy complications in infants and children. Int Surg 1999; 77: 164-6.

10. Mollitt DL, Malangoni MA, Ballantine TV, Grosfeld JL. Colostomy complications in children. Arch Surg 1980; 115: 455-8.

11. Golladay ES, Bernay F, Wagner C. Prevention of prolapse in pediatric enterostomas with purse string technique. J Pediatr Surg 1990; 25: 990-1.

12. Lister J, Webster PJ, Mirza S. Colostomy complication in children. Practitioner 1983; 227: 229-37.