

Closure of the Colostomy

Su Ho Cha, M.D., Byung Seok Kim, M.D., Duk Jin Moon, M.D.
and Ju Sub Park, M.D.

Department of Surgery, Kwangju Christian Hospital, Kang-Ju, Korea

Purpose: To investigate the timing of colostomy closure and the associated risk factors that affect the development of complication after colostomy closure. **Methods:** We have reviewed and analyzed the results of 28 patients with colostomy closure at the Kwangju Christian Hospital from January 1993 to December 1997. We investigated to associated literatures on this subject for timing of colostomy closure, preparing a patient for colostomy closure, suture technique, wound management, underlying disease process related to the incidence of complication and experience of surgeons. **Result:** Wound infection developed in 4 patients (14.4%). Anastomotic leakage occurred in one patient (3.6%). Small bowel obstruction developed in two patients (7.2%). Overall incidence of complication was 25%. The incidence of complications in patients with trauma who underwent colostomy was 44.4% and patients without trauma, 15.8%. Complication rate was 16.6% for loop colostomies and 40% for end colostomies. The morbidity was 40% for colostomies on the left side, 18.7% for transverse colostomies, and 0% for colostomies (2 ileostomies) on the right side. The morbidity rate for closures within 6 weeks for the initial operation was 50%; for those within 6 to 12 weeks, 8.3%; and for those after 12 weeks, 16.6%. **Conclusion:** The optimal timing of closure varies from patient to patient, but closure within 6 weeks of the initial operation significantly increased the morbidity. Colostomies on the left side are associated with a higher morbidity rate than transverse colostomies or colostomies on the right side. (JKSCP 2000;16:429-435)

Key Words: Colostomy closure, Complication, Timing of colostomy closure

가
,
,
가
,
,
(Table 1)

: , 264
(: 503-715)
(Tel: 062-650-5646(), 062-650-5036() 1993 1 1997 12 5

Table 1. Factors that affect the development of complication after colostomy closure

Timing of colostomy closure
Preparing a patient for colostomy closure
Site and type of colostomy
Suture technique and wound management
Underlying disease process related to the incidence of complications
Experience of surgeon

Table 2. Distribution of age and sex

Age	Male	Female	Total	Percent
0 10	2	1	3	10.7
11 20	1		1	3.6
21 30	4		4	14.3
31 40		1	1	3.6
41 50	4	1	5	17.8
51 60	3	4	7	25.0
61 70	4	1	5	17.8
71	2		2	7.2
Total	20	8	28	100

Table 3. Underlying disease of colostomy closure

Disease	No. of patients (%)	Mean age
Malignancy	4 (14.3)	67.0
Perforation	9 (32.14)	61.5
Obstruction	9 (32.14)	40.5
Trauma	6 (21.42)	11.0
Congenital megacolon		
Total	28 (100)	44.5

Table 4. Mean interval for repair by underlying disease

Disease	Weeks
Malignancy	9
Trauma	7
Congenital megacolon	33

121

, 32

. 4

25

1)

1 71

44.5

. 50 가 7 (25.0%) 가 , 40 60 가
5 (17.8%) , 40

가 8 2.5 : 1 가 (Table 2).

2)

13 (46.4%) 가
4 , 9
, 9 (32.2%),
가 6
(21.4%) (Table 3).

(End colostomy) 10 (35.7%)
, (Loop colostomy)
18 (64.3%) . 16
(57.1%) 가 , S 10 (35.7%),
2 (7.2%) .
7 33 (Table 4).

3)

28 7 (25.2%)
4 (57.1%) 가
2 1

(Table 5).

9 4

44.4%

Table 5. Complications in relation to underlying disease

Complications	Underlying disease			Total (overall %)
	Malignancy	Trauma	Cong. megacolon	
Wound infection	—	4	—	4 (14.4)
Anastomotic leakage	1	—	—	1 (3.6)
Small bowel obstruction	1	—	1	2 (7.2)
Total (%)	2 (14.4)	4 (44.4)	1 (16.6)	7 (25.2)

Table 6. Relationship of time interval by complications

Interval (patients)	Anastomotic leakage	Wound infection	Small bowel obstruction
< 6 weeks (10)	1	3	1
6 - 12 weeks (12)	—	1	—
> 12 weeks (6)	—	—	1

가 , .
 6 1 16.7%
 , 13 2
 15.4% (Table 5).
 6
 5 (50%) 가 , 6 12
 12 1 (8.3%, 16.6%) , 6
 가 ,
 6
 (Table 6). S
 (8 , 2) 40% (4/10) ,
 (16) 18.7% (3/16) ,
 .
 16.6% (3/18) ,
 40% (4/10) .
 3
 ,
 25 7
 .

Table 7. Morbidity and mortality of colostomy closure

Author	Patients	Morbidity	Mortality
Barnett et al (1974)	110	43.6	4.5
Adeyemo et al (1974)	43	15.4	0
Wheeler (1976)	73	37.8	2.7
Mitchell et al (1978) ²¹	89	23.5	2.2
Lewis and Weedon (1982)	60	16.7	1.0
Oluwole et al (1982) ²⁴	86	10.5	1.1
Parks and Hasting (1985) ²⁵	83	43.0	0
Pittman and Smith (1985)	126	22.9	0
Irvin (1987)	98	3.0	0
Demetriades et al (1988)	110	14.5	0
Livingstone et al (1989)	121	9.9	0
Mosdel et al (1991)	89	25.5	0
(1986)	50	36.0	0
(1987)	45	46.6	2.2
(1994) ²⁶	38	31.6	0

, 가 .
 가 ,
 Table 7 .
 .
 (timing of colostomy clo-
 sure) ,
 (diversion
 of fecal stream) 가
 가
 ,
 2
 . Aston Everett,¹ Barnett

2) 가 . 3) (drain) (primary closure) (delayed primary closure) 가

가 (loop) (end) ,¹³

가 ,^{3,8,13} 18.7%, S 40%, 0% S ,^{14,15}

40% 16.6%, ,¹⁰

가 ,^{14,15} 가 가 ,⁸

Table 10 (fecal fistu-

la) ,^{6,14,15} 가 가

1) , 2) , 3)

Table 10. Incidence of fecal fistula after colostomy closure in relation to colostomy site

Author	No. of patients	Transverse colostomy	Sigmoid colostomy
Finch	114	13/92 (14.1%)	7/22 (31.8%)
Knox et al	179	19/99 (19.1%)	23/80 (28.7%)
Wheeler & Barker	74	11/69 (15.9%)	2/5 (40.0%)
Total	367	43/260 (11.9%)	32/107 (29.9%)
Moon	50	13/33 (39.0%)	6/17 (35.0%)
Hwang	38	7/18 (38.8%)	5/20 (25.0%)

Table 11. Underlying disease process related to the incidence of complications

Author	No. of patients	Inflammation (%)	Neoplasm (%)	Trauma (%)
Barnett	110	6/49 (12.2)	2/42 (4.6)	0/18 (0)
Knox	179	26/86 (30.2)	13/76 (17.1)	3/17 (17.6)
Wheeler & Barker	74	4/25 (16.0)	8/43 (18.6)	1/6 (16.7)
Sarah ²¹	83	3/14 (21.4)	2/1 (50.0)	27/63 (40.0)
Moon	50	2/5 (40.0)	1/8 (12.5)	14/25 (56.0)

16 56%,

40%

가 44.4%

가

가

가

Table 11

Finch ³

가

REFERENCES

가

2

가 ,¹⁷

가 가

가

가

가

0% 18%

가 가

¹⁶

1 (3.5%)

Tilson ¹⁸

(experience of the surgeon)

Henry Everett¹⁹

가

, Demetros ⁷

senior surgeon 9.3%

junior surgeon

23.2% junior surgeon

30%(6/20), 25%(2/8)

6

3

S-

1. Aston C, Everett WG. Comparison of early and late closure of transverse loop colostomies. *Ann R Coll Surg Engl* 1984;66:331-3.
2. Barnett JE, Endrey Walder P, Rheils MJ. Closure of colostomy. *Aust NZ J Surg* 1976;46:131-3.
3. Finch DR. The results of colostomy closure. *Br J Surg* 1976;25:397-9.
4. Anderson E, Carey LC, Cooperman M. Colostomy closure: a simple procedure? *Dis Colon Rectum* 1979;22:466-8.
5. Mirelman D, Corman ML, Veidenheimer MC, Collier JA. *Dis Colon Rectum* 1978;21:172.
6. Livingston DH, Richardson JD, FB Miller. Are the risk after colostomy closure exaggerated? *Am J Surg* 1989; 158:17-20.
7. Demetriades D, Pezikis A, Melissas J, Parekh D, FCSSA, Pickles G. Factors influencing the morbidity of colostomy closure. *Am J Surg* 1988;155:594-6.
8. Freund H, Raniel J, Maggia-Sulaw M. Factors affecting the morbidity of colostomy closure. *Dis Colon Rectum* 1982;25:712-5.
9. Forrester DW, Spence VA, Walker WF. Colonic mucosal-submucosal blood flow and the incidence of fecal fistula formation following colostomy closure. *Br J Surg* 1981; 68:541-4.
10. Dolan P, Caldwell F, Thompson C, Westbrook K. Problems of colostomy closure. *Am J Surg* 1979;137:188-91.
11. Keighley M, Arabi Y, Alexander Williams J. Comparison between systemic and oral antimicrobial prophylaxis in colorectal surgery. *Lancet* 1979;1:894-7.
12. Thal E, Yeary E. Morbidity of colostomy closure following trauma. *J Trauma* 1980;20:287-91.
13. Knox A, Birkett F, Collins C. Closure of colostomy. *Br J Surg* 1971;58:669-72.
14. Adeyemo A, Gaillard WE Jr, Subhi D Ali, Calhoun T, Kurtz LH. Colostomy: intraperitoneal or extraperitoneal closure? *Am J Surg* 1975;130:273-4.

15. Barron J, Fallis LS. Colostomy closure by the intraperitoneal method. *Dis Colon Rectum* 1958;1:466-70.
 16. , , . 1986;30:618-24.
 17. , , , , . 1987;33:372-80.
 18. Tilson MD, Fellner JB, Wright HK. A possible explanation for postoperative diarrhea after colostomy closure. *Am J Surg* 1976;131:94-8.
 19. Henry MM, Everett WG. Loop colostomy closure. *Br J Surg* 1979;66:275-7.
 20. Wheeler MH, Barker J. Closure of colostomy: A safe procedure? *Dis Colon Rectum* 1977;20:29-32.
 21. Mitchell WH, Kovalcik PJ, Cross GH. Complications of colostomy closure. *Dis Colon Rectum* 1978;21:180-2.
 22. Sarah EP, Paul RH. Complication of colostomy closure. *Am J Surg* 1985;149:672-5.
 23. Mosdel DM, Raymond CD. Morbidity and mortality of ostomy closure. *Am J Surg* 1991;162:633-7.
 24. Oluwole SF, Freeman HP, Davis K. Morbidity of closure of colostomy. *Dis Colon Rectum* 1982;25:422-6.
 25. Parks S, Hastings P. Complications of colostomy closure. *Am J Surg* 1985;149: 672-75.
 26. , , . 1994;46:250-7.
-