

TOTAL FEKAL DİVERSİYONDA  
LOOP KOLOSTOMİNİN ETKİNLİĞİTHE EFFICACY OF LOOP COLOSTOMY  
IN MAINTAINING TOTAL FECAL DIVERSIONMustafa ALİ KORKUT MD\*, Yamaç ERHAN MD\*\*, Eray KARA MD\*, Sinan ERSİN MD\*,  
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**ÖZET:** Bu çalışmada, 1992-1997 yılları arasında Ege Üniversitesi Tıp Fakültesi Genel Cerrahi Kliniği, Kolorektal Cerrahi Bölümünde acil ya da elektiv olarak opere edilerek loop kolostomi uygulanan 56 olgu, loop kolostominin total fekal diversiyonusağlama yönündeki etkinliğinin değerlendirilmesi amacıyla prospektif olarak incelendi. Kadın - erkek oranının 14/42 olarak belirlenen olguların yaş ortalaması 56.8 idi. 49 hastaya transvers loop kolostomi uygulanırken, 7 hastaya sigmoid loop kolostomi uygulandı. Etiyolojik faktörler olarak olguların 22'inde rektovajinal fistül, birinde anorektal kanser, 16'ında travma, 4'ünde benign rektal darlık, 9'unda Fournier gangreni, 2'inde rektovajinal fistül, birinde anorektal kanser, birinde kistoenterik fistül ve bir olguda da divertikülite bağlı abse söz konusu idi. Olgular, postoperatif 7. gün ve 12. ay arasındaki zamanda oral baryum içirilmek suretiyle radyolojik olarak tetkik edildi. Baryum alımından 24 saat sonra çekilen filmlerde kolonun distaline geçiş geçmediği araştırıldı. Dört olguda baryumun distaline geçişi gözlemlendi. Sonuç olarak, loop kolostominin fekal diversiyonda etkin olduğu ve daimi diversiyon amacıyla kullanılabileceği kanısındayız.

**Anahtar Kelimeler:** Loop kolostomi, fekal diversiyon

**SUMMARY:** In the study, 56 patients to whom emergency or elective loop colostomies were performed at the Colorectal Surgical Unit of General Surgery Department of Ege University Medical School Hospital between February 1992 and May 1998, were studied prospectively to evaluate the efficacy of loop colostomy in maintaining total fecal diversion. The female/male ratio of the patients was 14/42 with mean age of 56.8. While transverse loop colostomy was performed in 49 patients, seven patients underwent sigmoid loop colostomy. The etiologic factors included colorectal cancer in 22 patients, colonic trauma in 16, benign rectal stricture in four, Fournier's gangrene in nine, rectovaginal fistula in two, anorectal cancer in one patient, cystoenteric fistula in one patient and diverticulitis with abscess in one patient. The patients were evaluated radiologically after barium meal was given orally between the seventh day and twelfth month postoperatively. The passage of barium into the distal limb of the colon was detected in the last x-rays of the 56 patients 24 hours passed from the time of barium intake. However, only four patients showed passage of barium into the distal colon in the x-ray. As a result, we consider that loop colostomy is efficacious in diverting fecal stream and can be used for permanent diversion.

**Key words:** Loop colostomy, fecal diversion

Currently temporary loop colostomy is a mainstay in the treatment of patients with colon injuries and besides pathologic entities involving the colon and rectum such as diverticulitis and obstructive lesions<sup>1</sup>. The basic intent for performing temporary colostomy is for total diversion of the fecal stream. However, the suspicion has been commonly held that loop colostomy does not totally divert fecal stream; hence, Hartmann procedure, Mikulicz colostomy and end colostomy are still preferred.

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Nevertheless, various methods of closing the distal have been improved for loop colostomy<sup>2,3,4</sup>.

Loop colostomy was initially devised by Maydl in 1888 and has gradually introduced from the beginning of the 20<sup>th</sup> century. It became popularly used during World War I and II because of the reason that being easily performed and more effective in the management of patients<sup>3,4</sup>.

Today, temporary loop colostomy is being used in a large spectrum such as traumatic colon injuries, colorectal cancer with mechanical obstruction, perforation due to tumour and diverticulitis, anastomotic leakage as a protective procedure for anastomosis and prior to repair of fecal incontinence in congenital anomalies or perianal fasciitis<sup>4</sup>.

**PATIENTS AND METHODS**

Fifty-six adult patients who underwent loop colostomy for various reasons at Colorectal Surgery Unit of Ege University Medical School Hospital, were prospectively examined between February 1992 and May 1998.

All colostomies were functioning well at the time when the patients presented for barium meal test. The patients were given standard mechanical bowel preparation with antibiotic prophylaxis and oral castroil for colostomy closure for three days. However, standard wound healing criteria were used for the colostomies, gas and fecal discharge with no retraction in the colostomy had been accepted for well functioning.

Prior to surgery, the barium meal test was performed and scout films of the abdomen were obtained to demonstrate the passage of barium in the patients. For the meal test, the patients were given 240 gram of barium meal at 8 a.m and serial abdominal x-rays were taken at the 2nd, 5th, 7th and 24th hours after barium ingestion.

**RESULTS**

The mean age of the patients was  $56.8 \pm 4.2$  (range: 18 to 78) years, consisting of 42 males and 14 females. While 49 (87%) patients had transverse loop colostomies, seven (13%) patients had sigmoid loop colostomies. The most frequent causes of performing loop colostomy were colorectal cancer and traumatic injuries (Table 1).

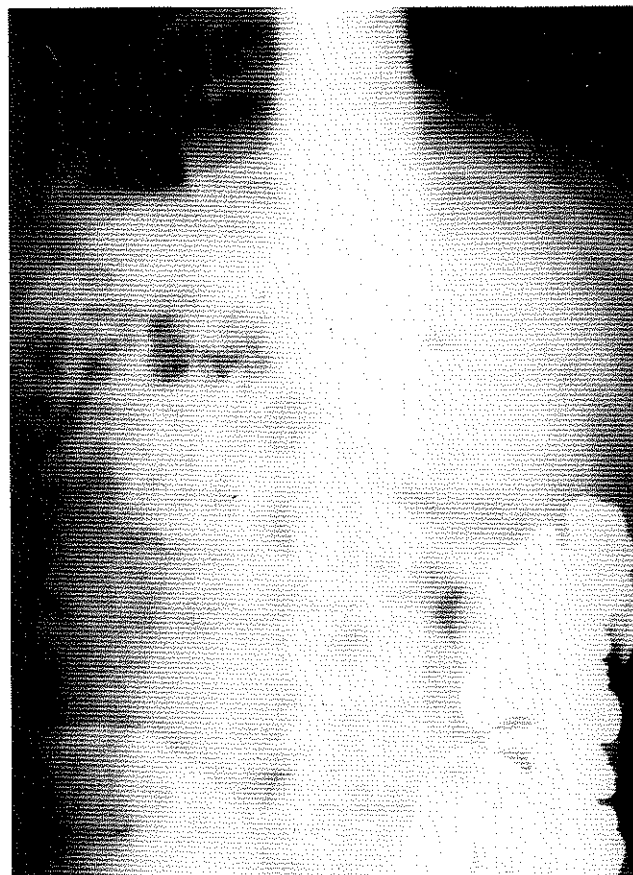
Table 1. Causes of loop colostomies

Disease	Emergency	Elective	Patient
Colorectal cancer	17	5	22
Benign rectal and rectosigmoid stricture	3	1	4
Traumatic injuries	16	-	16
Fournier's gangrene	9	-	9
Perforating diverticulitis	1	-	1
Rectovaginal fistula	-	2	2
Cystocolic fistula (As a complication of pancreatitis)	-	1	1
Marginal ulcer of anus	-	1	1
<b>Total</b>	<b>46</b>	<b>10</b>	<b>56</b>

The duration from colostomy formation to barium meal test varied from seven days to 12 months (median 13.5 weeks) depending upon the factor that the patients did not attend the hospital in the follow-up period.

We managed to close 50 colostomies. Four patients had undergone a permanent colostomy due to an irresectable rectal cancer. They were included in the study for the aim

Figure 1. The roentgenogram of the abdomen demonstrating no passage of barium into the distal bowel 24 hours after barium ingestion.



of evaluating the functions of the colostomy at the early postoperative period. Their barium meal tests and abdominal x-rays were taken at the early postoperative period (7-10 days) while the other patients were taken at various times after the first two months of operation when their colostomy had healed.

Two of the patients had previously undergone gynaecologic operations for ovarian malignancy and developed invasive adhesions in the abdomen while undergoing treatment with radiation. They developed stenosis of rectosigmoid region and failed to close their colostomy after one year. Both of them had permanent loop colostomies for the rest of their lives.

All except four patients showed no barium meal passage into the distal limb of the colon (93 %) (Figure 1,2). Moreover, no mortal cases were seen in the present study but morbidity rate was 8.9% (n=5). There were two cases with soft tissue infection, two with atelectasis and one with subcutaneous hematoma reasoned for morbidity.

**DISCUSSION**

An ideal colostomy diversion meet the following criteria: it (a) should provide a complete and immediate diversion of the fecal stream, (b) is so constructed as to permit easy

Figure 2. The roentgenogram of the abdomen demonstrating the passage of barium into the distal bowel 24 hours after barium ingestion.



closure, (c) has minimal morbidity after construction and closure, and (d) is aesthetically acceptable and manageable for the patient 5,6,7,8.

Although some authors do not support that loop colostomy could totally divert fecal stream, others have based their belief on this view 7,8,9,10,11,12,13,14. However, it is possible that the passage of barium could flow into the distal limb of the colostomy, there was no evidence of such passage from our serial abdominal x-rays 8. We observed the passage of mucous and feces into the rectum only in one patient but there was no barium.

As for six patients with an irresectable cancer, although barium was spilled into their distal colon, the spillage could nevertheless be prevented by excessive wall edema in the early postoperative period.

Despite it was reported 14,15 that loop colostomies failed to divert fecal stream in 15% of patients of whose colostomies were created under emergency conditions, forty-six patients whose colostomies were created under urgent conditions, were operated for colostomy closure and only two (4%) of them showed passage of barium into the distal limb, in our series.

A properly constructed loop colostomy is a fully diverting stoma. Unless the proximal limb retracts, it is

impossible for the stool to pass into the distal limb 16. Rombeau and colleagues performed a barium enema in 25 patients following loop transverse colostomy 16,17. Follow-up films were obtained up to four days later; barium was not visible in the distal colon in any of the patients. This same study performed four weeks following diverting colostomy failed to show barium in the distal colon segment. However, while intraabdominal or skin-level colostomies without a bridge, rod, drain or tube may succeed inverting the colon adequately, they are not truly diverting 17,18,19,20. But it is unnecessary to use the classical glass rod with rubber hose to accomplish this.

Fontes et al have identified three factors as retraction, reduction of a prolapsed loop colostomy, improper technique for diverting which are usually responsible for the failure of loop colostomies to be fully diverting 20,21. In another study, it has also been reported that retraction of loop colostomy could not prevent passage of fecal stream into the distal bowel 14. However, we did not meet this kind of failure. All of our patients had healthy, well-functioning colostomies at the time of study. It is also possible that the use of the rubber tube which passes through the mesentery under the colon has helped to decrease the incidence of problems. In addition, vigorous bowel preparation would not cause barium to flow into the distal colon and the risk of stool entering the distal limb is not as great as was once thought 8.

One recent retrospective study has questioned the need for divided colostomies in patients with traumatic rectal injuries and we think that loop colostomy would be a good choice of procedure in these patients 15.

Finally, we suggest that the creation and closure of a loop colostomy is easier and quicker than other colostomy techniques and can be used for permanent diversion. It is in our opinion that a loop colostomy fulfills the criteria for an ideal fecal diversion. A sufficient diversion of fecal stream can be achieved totally by a rubber tube or a rod and matured immediately. It's obvious that creation of a colostomy is not an aesthetical procedure, in case of need, loop colostomy should be considered to be a better choice from an aesthetical point of view, comparing with devine colostomy and also has a better scar.

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