

Effect of Early Rectal Tube Application after Colostomy Closure on Intestinal Peristalsis

Kolostomi Kapatılması Sonrası Erken Dönem Rektal Tüp Uygulamanın Barsak Peristaltizmine Etkisi

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Özet

Amaç: Kolostomi kapatılması ameliyatı yapan tüm cerrahlar ameliyat sonrası hastalarında barsak peristaltizminin erken dönemde oluşması için çaba gösterirler. Peristaltizmin oluşması ile hastalarda gaz-gaita çıkışı gerçekleşir. Buna bağlı olarak oral beslenme ve taburculuk erken dönemde olur. Bu çalışma kolostomi kapatılan hastalara uygulanan rektal tüpün barsak peristaltizmine, ilk gaz-gaita çıkış zamanına ve taburculuk süresine etkisini irdelemeyi amaçlamaktadır.

Gereç ve Yöntemler: Çalışmada Eylül 2013-Ekim 2020 tarihleri arasında kolostomisi kapatılan 40 hastanın dosyaları retrospektif olarak incelendi. Hastaların yaşı, cinsiyeti ve kolostomi açılma nedenleri kayıt altına alındı. Hastalar ameliyat sonrası rektal tüp uygulanan ve uygulanmayan olmak üzere iki gruba ayrıldı. Her iki grupta hastaların ilk gaz-gaita çıkış, oral beslenmeye geçiş ve yatış süreleri kayıt altına alındı.

Bulgular: Çalışmaya 26'sı erkek 14'ü kız çocuk olmak üzere 40 hasta dahil edildi. Hastaların ortalama yaşı 3.46±2.11 yıl bulundu. Rektal tüp uygulanan grupta ilk gaz-gaita çıkışları ve taburculuk süreleri diğer gruba göre daha erken bulundu (p=0.001).

Sonuç: Kolostomi kapatılması ameliyatlarından sonra uygulanan rektal tüpler hastalarda erken dönemde barsak peristaltizminin başlamasına, gaz-gaita yapmalarına, erken beslenmelerine ve kısa zamanda taburcu olmalarına neden olabilir

Anahtar kelimeler: Kolostomi, Peristaltizm, Rektal tüp

Abstract

Objective: All surgeons performing colostomy closure strive to achieve early postoperative intestinal peristalsis in their patients. Early peristalsis following abdominal surgery leads to a shorter time to flatulence/defecation, thereby allowing early transition to oral feeding and early hospital discharge. The aim of this study was to investigate the effect of rectal tube applied after colostomy on intestinal peristalsis, time to first flatulence/defecation, and time to hospital discharge.

Material and Methods: This retrospective study included 40 patients that underwent colostomy closure between September 2013 and October 2020. Age, gender, and indications for colostomy were reviewed for each patient. Patients were divided into two groups as patients who underwent and those who did not undergo rectal tube application. In both groups, time to first flatulence/defecation, time to oral feeding, and hospitalization period were recorded.

Results: The 40 patients comprised 26 boys and 14 girls with a mean age of 3.46±2.11 years. Time to first flatulence/defecation and hospitalization periods were significantly shorter in patients that underwent rectal tube placement than in patients that did not undergo rectal tube placement (p=0.001).

Conclusion: Rectal tube application following colostomy leads to early onset of intestinal peristalsis and a shorter time to flatulence/defecation, thereby allowing early transition to oral feeding and early hospital discharge.

Keywords: Colostomy, peristalsis, rectal tube

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INTRODUCTION

Abdominal surgery may lead to a slowdown in intestinal motility (1), thereby resulting in nausea-vomiting, abdominal distention, constipation, and sometimes severe enterocolitis and abdominal adhesions (2). Moreover, the ileus that develops particularly after colon or ileal surgeries leads to poor healing and also increases the complication risk, thus leading to longer recovery times (3).

After abdominal surgeries, the motor and sensory nerves in the anal canal can be stimulated to increase intestinal peristalsis (4). Early peristalsis following abdominal surgery leads to faster flatus and bowel movement hence early feeding, thereby allowing faster recovery and early hospital discharge (5).

In this study, we aimed to contribute to the literature by investigating the effect of rectal tube applied after colostomy on intestinal peristalsis, time to first flatulence/defecation, and time to hospital discharge.

MATERIALS AND METHODS

The retrospective study included patients that underwent colostomy closure in our clinic between September 2013 and October 2020. Age, gender, and indications for colostomy were recorded for each patient. Patients were divided into two groups as patients who underwent (n=20) and those who did not undergo rectal tube application (n=20). In patients that underwent rectal tube placement, a rectal tube was inserted three times a day by an experienced healthcare professional one day after surgery. Prior to insertion, the tube was lubricated with liquid paraffin, inserted in the anal canal 5-8 cm from the anal orifice, and was maintained in the anal canal for 10 sec. Care was taken to avoid straining while inserting or removing the tube from the anus. In both groups, time to first flatulence/defecation, time to oral feeding, and hospitalization period were recorded and evaluated statistically.

Several rules were determined for the reliability of the study. First and foremost, the onset of flatulence was accepted as the prerequisite for transitioning from tube feeding to an oral diet in both groups. The first diet was initiated after the first flatulence, the second diet was initiated following the first defecation, and if no complaint was reported, the third diet was initiated. Additionally, the patients were encouraged to mobilize soon after surgery.

Patients with incomplete clinical records and those who underwent anal surgery in addition to colostomy closure in the same session were excluded from the study.

The study was conducted in accordance with the Helsinki Declaration and the study protocol was approved by the Van Yuzuncu Yil University ethics committee. (Approval Date: 04.12.2020, No: 09). In addition, permission was obtained from the parents of all patients for this study.

Statistical analysis

Descriptive statistics for the studied variables (characteristics) were presented as median, mean, standard deviation, minimum and maximum values. Mann-Whitney U test was performed to compare groups. Statistical significance level was considered as 5% and SPSS (version: 13) statistical program was used for all statistical computations.

RESULTS

Of the 56 patients that were operated on during the study period, 40 patients that fulfilled the inclusion criteria were included in the study. The 40 patients comprised 26 (65%) boys and 14 (35%) girls with a mean age of 3.46 ± 2.11 years. Both groups were similar with regard to age distribution ($p=0.640$) (**Table 1**).

Table 1. Effect of rectal tube application on time to flatulence/defecation and hospitalization period

	Rectal tube applied (n=20)				No rectal tube applied (n=20)				P
	Median	Mean	Min	Max	Median	Mean	Min	Max	
Time to first flatulence (days)	2.00	1.70±0.47	1.00	2.00	4.00	4.00±0.65	3.00	5.00	0.001
Time to first defecation (days)	2.50	2.50±0.51	2.00	3.00	5.00	5.45±0.51	5.00	6.00	0.001
Hospitalization period (days)	5.00	5.30±0.57	4.00	6.00	7.00	7.20±0.62	6.00	8.00	0.001
Age (years)	3.00	3.40±1.10	2.00	5.00	3.50	3.55±0.89	2.00	5.00	0.640

Min: Minimum Max: Maximum

However, time to first flatulence/defecation and hospitalization periods were significantly shorter in the patients that underwent rectal tube placement ($p=0.001$). Anal atresia was the most common indication for colostomy (**Table 2**). In patients that underwent colostomy due to trauma, the trauma had resulted from motor vehicle accident ($n=3$) and shotgun injury ($n=1$). Of the seven patients with bowel perforation, five patients had necrotizing enterocolitis and two patients had perforation secondary to surgical procedures.

DISCUSSION

Opening the visceral peritoneum in abdominal surgeries stimulates the sympathetic nervous system and suppresses the parasympathetic nervous system, thereby leading to a reduction and sometimes a stoppage of bowel motility. Additionally, manual handling of intestines during the surgery is an important contributor to inflammatory response to surgery, which in turn may lead to macrophage activation and neutrophil infiltration. This interaction of the immune system with the smooth muscles in the intestines may also cause a reduction and sometimes a stoppage of bowel motility (1).

Early peristalsis following abdominal surgery is a significant indicator of flatulence/defecation and also promotes a psychological sense of healing. Especially after major abdominal surgeries, the time to first flatulence/defecation is prolonged, thereby leading to delayed transition to oral feeding (6). In our study, all the patients underwent major abdominal surgeries since they had intestinal perforation, anal-intestinal atresia, and trauma.

Normally, oral feeding is initiated slowly after bowel sounds return and is increased gradually following the first flatulence or defecation (5). Early initiation of oral feeding leads to lower morbidity, mortality, and hospitalization periods (3,6). Additionally, the initiation of oral feeding in the early postoperative period has been shown to accelerate the recovery of intestinal motility, thereby decreasing the time to first flatulence/defecation as well as hospitalization period (3,7). In our study,

the patients that underwent rectal tube placement had a shorter time to first flatulence/defecation and also started oral feeding within a shorter period and were discharged at an earlier date compared to patients that did not undergo rectal tube placement. These findings indicate the beneficial effects of rectal tube placement in our patients.

Delayed peristalsis, on the other hand, may lead to abdominal pain. To relieve this pain and reduce abdominal distension, applications such as enema or rectal tube placement can be performed instead of analgesic medication (8). Rectal tube placement stimulates the motor and sensory nerves in the anal area, thereby triggering intestinal peristalsis (4). In our study, analgesic drugs were administered only on the first day after surgery in the group that underwent rectal tube placement and were administered for four days after surgery in the group that did not undergo rectal tube placement.

Rectal tube placement is contraindicated in anal mucosal diseases and in patients with compromised immune system since it may lead to a number of complications such as necrosis, perforation, and anal sphincter damage (4). Moreover, maintaining the tube in the rectum for more than 20 min may damage both the rectum and the anal sphincter (9). In our study, no damage occurred in the anal area since the tube was maintained in the rectum for a maximum period of 10 second and all the procedures were performed by experienced health-care professionals.

Rectal applications are commonly used for the treatment of Hirschsprung disease, meconium diseases, constipation, fecal incontinence and for preoperative bowel preparation (10). Karaca *et al.* recommended rectal tube application six times a day to prevent bacterial translocation and abdominal distension (11). In our study, although we performed rectal tube application in diseases with a similar diagnosis to those reported in the literature, the frequency of rectal tube application, unlike the literature, was limited to three times per day to minimize the risk of damage in the anal area and rectal mucosa.

Table 2. Indications for colostomy

	Anal atresia	Intestinal atresia	Intestinal perforation	Hirschsprung disease	Trauma
Rectal tube applied ($n=20$)	12	1	3	2	2
No rectal tube applied ($n=20$)	10	1	4	3	2

The study was limited since it had a small patient population. Nevertheless, selection of the patients with similar ages and diagnoses was a strength of our study.

In conclusion, rectal tube application following colostomy leads to early onset of intestinal peristalsis and a shorter time to flatulence/defecation, thereby allowing early transition to oral feeding and early hospital discharge, ultimately reducing treatment costs and promoting a psychological sense of healing both in the patient and the family.

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