



Patients Complaints Associated with Mechanical Bowel Preparation Before Elective Colorectal Surgery: A Quasi-Experimental Hospital-Based Study

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Abstract

Background: Beside changes in blood values and electrolytes, complaints can occur during bowel preparation. Patients general condition should be assessed during bowel preparation.

Objectives: To determine patients complaints associated with mechanical bowel preparation (MBP) before elective colorectal surgery.

Methods: This quasi - experimental, hospital - based study was conducted at the General Surgery Clinic of Adnan Menderes University Hospital, Turkey. The study sample included of 64 elective colorectal surgery patients who were scheduled for a MBP in the preoperative period. The inclusion criteria were as follows: voluntary participation in the study, aged ≥ 18 , conscious and oriented to place, time, and person, mobilized and not global, or receive aphasia. The exclusion criteria were as follows: fever in preoperative period, receive any cardiac agent in preoperative period. Pain, fatigue, and sleep quality were assessed 1 hour before MBP. The fleet enema was applied rectally in the left lateral position. Patients mobilized for bowel contents evacuation after 8 - 10 minutes at the end of MBP and patients were placed in semi-Fowler's position (30°) after taking the bed. Patients were assessed in terms of nausea, vomiting, change of taste in mouth, abdomen cramp, abdomen pain, bloating, stomach ache, sweating, palpitation, dyspnea, and vertige at specified times.

Results: Before MBP, mean pain, fatigue score, and sleep quality were 3.69 ± 3.20 , 4.28 ± 3.6 , and 6.69 ± 3.2 , respectively. The most reported complaints just right after, 20 and 40 min after MBP were stomach ache, sweating, abdomen cramp, bloating, and palpitation, respectively. The most reported complaints 60 minutes after MBP were stomach ache, abdomen cramp, bloating, sweating, and palpitation, respectively. Additionally, an increase in stomach ache, abdomen cramp, bloating, sweating and palpitation were observed related on MBP. The results showed that stomach ache, palpitation, bloating, sweating and abdomen cramp complaints were significantly different over time, from 1 hour before MBP to 60 min after MBP ($P < 0.05$).

Conclusions: Serious complaints such as palpitation, sweating and etc. developed associated with MBP. Study results proved that disadvantage is gained by MBP before elective colorectal surgery. Carefully, patients assessment during and after MBP will be of a benefit to clinicians in terms of quality of care, patients follow-up, and surgical outcomes.

Keywords: Mechanical Bowel Preparation, Colorectal Surgery, Quality of Care

1. Background

Nowadays, mechanical bowel preparation (MBP) is performed routinely in elective colorectal surgeries, minimally invasive surgeries (laparoscopic or robotic), radical cystectomy, and before endoscopical procedures such as a colonoscopy (1-5). The goal of MBP is to clear the large bowel of feces to minimize the rate of infective and anastomotic complications after elective colorectal surgery (6-8). Even though, the recent studies are more in favor of

operating on the gut without MBP, however, controversies still exist (6). The study results showed that there were no differences on postoperative complication rates in patients with MBP versus no MBP in abdominal surgeries (1, 8-14). However, study results showed that to provide better bowel cleansing, effective bowel preparation is required for the patients with diabetes, renal diseases, and chronic obstructive pulmonary disease (15). Moreover, study results showed that MBP has many negative side ef-

fects such as fatigue, dehydration, electrolyte imbalance, cardiac and renal dysfunction and etc. after surgery (8-10, 16-19). Patient's general condition should be monitored during bowel preparation (18). The aim of this study was to investigate patients complaints associated with MBP before elective colorectal surgery in preoperative period. This study findings will be provided evidence-based practice related on MBP.

2. Methods

This quasi - experimental hospital - based study was conducted between March 01 - July 27, 2017 on General Surgery Clinic patients who were scheduled for MBP in preoperative period at Adnan Menderes University Hospital, Turkey. The inclusion criteria were as follows: voluntary participation in the study, aged ≥ 18 , conscious and oriented to place, time, and person, mobilized and not global or received aphasia patients. The exclusion criteria were as follows: fever (body temperature $\geq 38.3^{\circ}\text{C}$) in preoperative period, receive any inotropic or cardiac agent in preoperative period, and transport to operation room during 1 hour following MBP. For sample size, the results of Advanced Repeated Measures ANOVA Power Analysis with power set as 0.85, effect size 0.74 and standard deviation 4.95, a selection of 32 patients were sufficient for this study. The total research sample comprised of 64 patients without the control group.

Written approvals were obtained from the Ethics Board of a University Faculty of Medicine E.124125, University Hospital Chief Physician, General Surgery Head of Department and Directorate of Nursing Services of the University Hospital. Informed consent was obtained from all patients after explaining the objectives of the research in preoperative period. For the collection of data, a modified socio - demographic, patients follow-up, and patients complaints associated with MBP forms were used. The forms were developed based on the literature. For mechanical bowel preparation fleet enema 133 solution (Monobasic Sodium Phosphate 19 g, Dibasic Sodium Phosphate 7 g) was used. Additionally, for pain NRS-V (20), Visual Analogue Scale for Fatigue was used for fatigue (21) and Pittsburgh Sleep Quality Index (PSQI) for sleep quality (22, 23) were used. Patients socio - demographic data and nutrition risk score were assessed after patients admission. Patients were assessed for pain, fatigue, and sleep quality 1 hour before MBP. After preparing of MBP devices and providing of patients privacy, anal region were assessed in terms of irritation, wound, infection or etc. Patients were placed in the left- lateral position and fleet enema applied slowly for 2-3 minutes, then, patients were placed in semi-Fowler's position. Patients mobilized for bowel contents evacuation

after 8-10 minutes at the end of the procedure. Then, patients were placed in semi-Fowler's position after taking the bed. Patients were assessed in terms of nausea, vomiting, change of taste in mouth, abdomen cramp, abdomen pain, bloating, stomach ache, sweating, palpitation, dyspnea, and vertige 1 hour before, just before, right after, at the end of 20, 40, and 60 minutes after MBP.

For statistical analysis, SPSS version 21 (SPSS Inc., Chicago, IL, USA) was used. The Shapiro - Wilk test was employed to test the normality of the distribution of data. The descriptive characteristics were expressed as percentages in the categorical variables and as means, standard deviation and medians. The Friedman's Test was used to compare patients complaints in different periods. Statistical significance was set at $P < 0.05$, as appropriate.

3. Results

The mean age of patients was 64.12 ± 11.48 and 65.6% of the patients were men. Regarding disease diagnosis, 25.0% of the patients had colon cancer and 32.8% had diabetes mellitus; the nutrition risk screening-2002 score in 70.3% was 1. Before MBP, 62.5% of patients had pain and in 71.9% of patients, PSQI score were > 5 . Mean (median) pain, mean (median) fatigue, and PSQI scores were 3.69 ± 3.20 (4.0), 4.28 ± 3.6 (4.0), 6.69 ± 3.2 , respectively.

The study results showed that the most reported complaints just before MBP were stomach ache, dry mouth, burping, bad taste in the mouth, bloating, and nausea, respectively. The most reported complaints just right after, 20 and 40 min after MBP were stomach ache, sweating, abdomen cramp, bloating, and palpitation, respectively. The most reported complaints 60 minutes after MBP were stomach ache, abdomen cramp, bloating, sweating and palpitation, respectively. Additionally, an increase in stomach ache, abdomen cramp, bloating, sweating, and palpitation were observed related on MBP. Friedman Test results showed that stomach ache, palpitation, bloating, sweating, and abdomen cramp complaints were significantly difference over time, from 1 hour before MBP to 60 min after MBP ($P < 0.05$) (Table 1).

4. Discussion

The ideal MBP should be safe, cost-effective and easy to administer, and have minimal acceptable side effects. The goal of MBP before elective colorectal surgery is to clear the large bowel of feces and therefore reduce the number of bacteria in the lumen of the bowel to minimize the rate of infective and anastomotic complications (8). Although the MBP facilitate the achievement of the surgical technique,

Table 1. Distribution of Patients Complaints Associated with MBP at Specified Times

Complaints	1 Hour Before MBP, No. (%)	Just Before MBP, No. (%)	Right After MBP, No. (%)	20 Min After MBP, No. (%)	40 Min After MBP, No. (%)	60 Min After MBP, No. (%)	P Value Friedman Test
Stomach ache	34 (53.1)	35 (54.7)	41 (64.1)	46 (71.9)	45 (70.3)	37 (57.8)	< 0.001*
Palpitation	3 (4.7)	7 (10.9)	14 (21.9)	12 (18.8)	9 (14.1)	4 (6.3)	< 0.001*
Bloating	21 (32.8)	20 (31.3)	27 (42.2)	34 (53.1)	30 (46.9)	24 (37.5)	< 0.001*
Sweating	12 (18.8)	15 (23.4)	32 (50.0)	41 (64.1)	35 (54.7)	20 (31.3)	< 0.001*
Abdomen cramp	17 (26.6)	18 (28.1)	27 (42.2)	31 (48.4)	30 (46.9)	27 (42.2)	< 0.001*
Bad taste in mouth	31 (48.4)	32 (50.0)	34 (53.1)	36 (56.3)	36 (56.3)	35 (54.7)	0.059
Nausea	25 (39.1)	26 (40.6)	27 (42.2)	26 (40.6)	25 (39.1)	22 (34.4)	0.456
Dry mouth, burping	34 (53.1)	31 (48.4)	25 (39.1)	22 (34.4)	24 (37.5)	29 (45.3)	0.361
Vomiting	9 (14.1)	9 (14.1)	7 (10.9)	9 (14.1)	7 (10.9)	4 (6.3)	0.384
Vertigo	2 (3.1)	1 (1.6)	2 (3.1)	4 (6.3)	3 (4.7)	0 (0.0)	0.116
Dyspnea	6 (9.4)	6 (9.4)	7 (10.9)	6 (9.4)	5 (7.8)	5 (7.8)	0.824

there is evidence of gastrointestinal discomfort and systemic consequences such as diarrhea, bloating, and hydro-electrolytic disturbances of cardiac risk in cardiac patients (1, 24, 25).

Studies results regarding MBP prior to elective colorectal surgery showed no significant differences in surgical site infection (7, 8, 10-12), length of stay in hospital (12, 26), anastomotic leakage (12, 14), fascia layer evisceration, and time beginning of oral feeding (12). The results of a study showed that bowel anastomosis can be applied safely without MBP. Multidisciplinary studies are needed to support the changes in the application (13). Study results could not find statistically significant differences between patients with MBP versus no MBP, in terms of anastomotic leakage, mortality rates, need for reoperation, and wound infections (25). Rollins et al. meta-analysis study results showed that the use of MBP does not affect the incidence of postoperative complications when compared with no preparation. Hence, MBP should not be administered routinely prior to elective colorectal surgery (6). Guenaga et al. systematic review study results showed no significant evidence that patients benefited from bowel preparation prior to surgery (27).

In the Fa-Si-Oen et al. study, MBP did not reduce microbial contamination of the peritoneal cavity during surgery and MBP did not alter the correlation between bacteria cultured from the colonic anastomosis and those cultured from the subcutis after closure of the abdomen (28).

The results of a study showed the hazardous physiological effects such as dehydration associated with MBP (29). In the Sevrge randomized prospective study to compare the effects of sodium fosfat and senna sorbitol on colon

cleaning before colonoscopy, no important difference in vital parameters was observed, however, senna sorbitol provides better colon cleaning especially in the left colon and changes in the electrolytes were less (17). In the Askarpour et al. study to compare bowel preparation for colorectal surgery with and without mannitol, leucocytosis, hypernatremia, hypokalemia, and increase of bowel sounds were observed (19). Cohen reported that nausea, vomiting, abdomen cramp and bloating, general discomfort are associated with MBP preparates (18). In Sevrge (17) and Beyaz (30) studies, most complaints were nausea and stomach ache. Matsou et al. reported serious complications associated with MBP in cardiac or renal patients (31).

This study results have demonstrated that serious complaints such as stomach ache, palpitation, sweating, etc. were associated with MBP. Additionally, an increase in these complaints were observed related to MBP. This study proved that a disadvantage is gained by MBP before elective colorectal surgery. Patients pain, fatigue and poor sleep quality before MBP can affect the results of the study. Consequently, careful assessment of patients general condition and patients consequences before, during, and after MBP will be of a benefit to clinicians in terms of quality of care and patients follow-up. Study results will be provided in developing evidence - base practice in preoperative period and patients outcomes.

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Footnotes

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