

Early Postoperative Oral Hydration on Reducing Paralytic Ileus among Abdominal Surgery Patients

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Abstract: Background: postoperative ileus is the most common complication after abdominal surgeries which results in severe patient discomfort, prolonged hospitalization, and enhanced treatment cost. This study aimed to evaluate the effect of early postoperative oral hydration on reducing paralytic ileus among abdominal surgery patients. Setting: postoperative department affiliated at Zagazig University Hospitals. Material and Method: a quasi-experimental study design. A purposive sample of total 222 study participants, 111 in experimental and 111 in control group based on inclusion and exclusion criteria. Data collection questionnaire were prepared with extensive review of previous literatures. Data collection through three tools includes, interviewing questionnaire sheet, Patient assessment check list related to postoperative vital signs and outcomes, digestive outcomes and length of hospital stays in hours. Early postoperative oral hydration was taught and practiced by the patients in experimental group and in control group routine postoperative care was followed. Result: postoperative ileus sign were highly reduced among early oral hydration group. Conclusion: early postoperative oral hydration reducing paralytic ileus among abdominal surgery patients.

Keywords: Early Oral Hydration, Paralytic Ileus, Abdominal Surgery.

Date of Submission: 15-04-2019

Date of acceptance: 27-04-2019

I. Introduction

Early oral feeding is recommended for improving patients' satisfaction, as it helps in early mobilization and results in shortened hospital stay. Cost of oral feeding is much less than the daily cost of intravenous fluids, intravenous sets, cannulas and nursing care. (Kathpalia., 2017).

The logic behind early enteral feeding is that food intake can stimulate a reflex that produces coordinated propulsive activity and elicit the secretion of gastrointestinal hormones, inflicting an overall positive impact on bowel motility. Rather than ready for bowel sounds to return after patients undergo surgery, we can try to get the gut working again sooner (Mohamed and Gudia., 2018).

The path-physiology underlying postoperative ileus is a complex and multi factorial, consisting of endogenous and pharmacological characteristics. It is described into 2 distinct phases in which the first phase, or neural phase, that results from activation of mechanoreceptors and nociceptors by stimuli, such as incision of the skin and, more importantly, by direct manipulation of intestine. Activation of these receptors initiates a neural reflex, which is dependent on release of mediators, such as α calcitonin gene-related peptide and substance P, which prevent gastrointestinal motility and produce generalized intestinal hypo motility. (Kumar., et al., 2018).

In the past, Patients are not given fluids or food after abdominal surgery until bowel functions returns, as by bowel sounds, passage of flatus or stool, or a feeling of hunger, Early postoperative oral hydration have been studied to evaluate prospectively the benefits and safety of early hydration on bowel movement after abdominal surgery (Wahba., et al., 2018).

1.1 Significance of the Study

It is necessary that optimum postoperative care must be provided to postoperative abdominal surgery patient to prevent complications. Most postoperative gastrointestinal complication can be avoided and decreased by nursing interventions. Therefore, it is important for patients to receive professional care to remedy these early postoperative health problems. Several studies in both high and low income countries have assured the importance of early post-operative hydration and feeding to prevent short term or long term morbidity (Mohamed and Gudia., 2018), (Kathpalia., 2017), (Ashour ., et al., 2014), (Adell., et al., 2013). In addition, it might generate an attention and motivation for further researcher into this area. That the importance of early postoperative hydration and feeding to improve patient's outcomes and prevent short term or long term morbidity

and length of hospital stay. Therefore, the current study was conducted to investigate the effect of early postoperative oral hydration on reducing paralytic ileus among abdominal surgery patients at Zagazig University Hospitals.

1.2 Aim of the Study

Evaluate the effect of early postoperative oral hydration on reducing paralytic ileus among abdominal surgery patients.

1.3 Research Hypotheses

Patients who take early postoperative oral hydration will not have paralytic ileus than those who do not.

II. Subjects and Methods

2.1 Research Design

A quasi experimental design was utilized to achieve the aim of the current study.

2.2 Setting

The present study was conducted in the surgical department at Zagazig University Hospitals, Egypt.

2.3 Sample

A purposive sample size was calculated using a simplified formula: $n = \frac{N}{1 + N(e)^2}$ total sample = $\frac{600}{1 + (0.05)^2} = 222$ providing direct which provided by Yamane (1997) to be care to surgical patient at the above mentioned setting, it was equally divided into two groups each has (111) patients, inclusion criteria adult patients free from medical disorders as (diabetes, heart disease, hypertension, etc....), admitted for abdominal surgery.

Tools of Data Collection: three tools used to collect data in order to achieve the aim of the study. The researcher developed three tools after reviewing the related literature.

Tool I- Interviewing questionnaire sheet:

It included two parts:

Part 1: Indicated to patient's demographic data such as age, educational level, occupation, residence, and gender.

Part 2: Patient assessment check list related to operational history: Include the following (Fasting hours and Times of operation).

Tool II: Patient assessment related to

Part1: postoperative vital signs and Physical examination measures

Include the following: temperature, pulse, Systolic and diastolic blood pressure

Part 2: Postoperative ileus assessment tool, including:

Headache, abdominal distension, drowsiness, Nausea, Both nausea and vomiting.

Tool III: included two parts

First part: patient digestive outcomes including:

- Time of bowel sound
- Time to passage flatus
- Time to the first solid diet
- Time to the first stool passage

Second part: concerning the length of hospital stays in hours.

Pilot study: A pilot study was carried out on 10% of the total study sample to test the clarity, feasibility and applicability of the tools of the study. Pilot subjects were later included in the study as there was no radical modifications in the study tools.

Administrative and ethical considerations: The researcher explained the purposed of the study and their rights as a study participant, including anonymity and confidentiality, their rights to withdraw from the study at any time. Informed consent was obtained from the patients participated in the current study.

Field work

The study was implemented from the period of the first February 2017 to the end of July 2017. The study tools were adapted and designed by the researcher after reviewing the relevant recent literatures. The

researcher visited the study setting three days per week, for both intervention and control groups post-operative. In clinical practice, patients often take early postoperative oral hydration with supervision; however, supervised postoperative early oral hydration may be more effective than self-directed late one. It is worth noting the patient's impression of comfort and benefit of the early postoperative oral hydration. The 'early feeding' study group was offered oral fluids in 2, 4, and 6 hours post operation. For both intervention and control groups, patients were evaluated for ileus symptoms included symptoms of nausea and vomiting as well as mild abdominal distension on physical examination (**Kumar., et al., 2018**).

III. Results

Table (1), presents personnel characteristics of the studied participant in both intervention and control group, it is seen that there was no statistical significant between study and control regarding their age, gender, educational qualification, residence and occupational status ($p>0.05$).

Table (2): indicates of mean score of operational history of the studied participants in both study and control group, it is seen that there was no statistical significant between study and control regarding their fasting hours and times of operation.

Table (3): shows mean score of vital signs measures of the studied participants at the first two hours after delivery in both intervention and control group, it is seen that there was no statistical significant between intervention and control regarding their vital signs measures including (systolic and diastolic blood pressure, temperature and pulse).

Table (4): reveals postoperative outcomes among the studied participants in both intervention and control group, it is seen that there was a highly statistical significance difference between both groups regarding postoperative abdominal distension, drowsiness, and nausea ($p<0.001^{**}$).

Table (5): presents postoperative digestive outcomes among the studied participants in both intervention and control group, it is seen that there was a highly statistical significance difference between both groups regarding postoperative times of bowel sound, time to pass flatus, first solid diet and first stool passage ($p<0.001^{**}$).

Table (6): indicates duration of hospital stay among the studied participants in both intervention and control group, it is seen that there was a highly statistical significance difference between both groups regarding their duration of hospital stay.

IV. Discussion

Postoperative ileus is the highest complication after abdominal surgery, that results in patient discomfort, prolonged hospital stays, and increased cost of treatment. The exact mechanism that produces postoperative ileus is unknown, but possible causes include gastrointestinal inflammatory response, stimulation of the mesenteric plexus, anesthesia, and use of opioid analgesics (**Kumar., et al., 2018**).

The result of the current study supported the stated hypothesis, that early postoperative oral hydration had significantly reduce signs of paralytic ileus than compared with control group. These findings may be due to that early oral hydration activate of mechanoreceptors, such activation of these receptors initiates a neural reflex, which is dependent on release of mediators. These findings are in the same line with (**Mohammed, et al., 2016**), who concluded that early initiation of oral feeding is positively affecting postoperative patients outcomes, and improve return of bowel function rapidly and hospitalized shorter.

As regarding personal characteristics of the studied patient at both intervention and control groups, the present study findings indicated that no statistical significant between intervention and control regarding their age, educational qualification, residence and occupational status. These finding supported by (**Mohamed and Gudia., 2018**), in the study to assess "the effect of early versus delayed oral hydration on post cesarean maternal outcome and satisfaction", it was illustrated that there was no statistical significant between study and control regarding their age, educational qualification, residence.

As regarding the mean score of operational history among the studied patients at both study and control groups, it was indicated that there was no statistical significant difference regarding their fasting hours and times of operation. These findings agreed with (**Hussien & Taha, 2018**), in the study to " Effect Of Breathing Exercises On Quality Of Recovery Among Postoperative Patients ", it was indicated that there was no statistical significant difference regarding their fasting hours and times of operation.

In relation to the mean scores of vital signs among the studied patients, it was indicated that there was no statistical significant difference regarding their pulse, temperature, systolic and diastolic blood pressure. These finding are agreed with (**Hussein & Taha (2018) and Shashi and Rakesh, (2017)**), who included that there was no statistical significant difference between both study and control group regarding their respiratory rate according to vital signs.

As regards postoperative GIT outcomes findings among the studied groups such as postoperative anorexia, nausea and vomiting, they were non statistically significant more frequent among early hydration

group than among control group. Postoperative abdominal distension was statistically significant less frequent among study group than control group (34.5% in comparison to 55.9%, respectively), p -value = $<0.001^{**}$. More over the postoperative nausea and vomiting the current study indicated that patient in oral hydration group had less nausea and vomiting than patients in the control group. These findings agreed with (Devi et al., 2015) in a comparative study to assess "effect of Early versus Conventional delay in Postoperative oral intake", it was indicated that there was a highly statistically significant difference regarding nausea and vomiting as a signs of postoperative ileus.

That explained the positive effect of early oral hydration on the gastrointestinal tract, where such early intervention may decrease the length of postoperative ileus. This finding was in line with many similar studies as Al Ghareeb., et al., 2013 which were conducted upon 40 participants in King Fahd University Hospital at Al Khobar Saudi Arabia. Al Ghareeb., et al., 2013 defined study group as participants who received oral hydration after 2 hours postoperatively and the control group are those who initiated oral hydration 8 hours postoperatively and mentioned that the women in early hydration group had more rapid return of bowel sounds than the delayed hydration group.

The current study demonstrated that patients in the early oral hydration group had a more rapid return of bowel function including bowel sounds, with a substantially significant shorter mean postoperative time interval to the first bowel sounds (3.9099 ± 1.05787) compared to (6.1622 ± 2.63729) for the traditional hydration group. The difference between both groups regarding bowel sounds showed a statistically significant difference (p -value = < 0.001).

Regarding length of hospital stay, differences observed were a highly statistically significant ($p < 0.001$) among both groups, where the intervention group discharged earlier than the control group. Such finding is in accordance with other studies [14&15], reported that early feeding led to a reduced hospital stay. Similarly, a recent study (Masood., et al., 2014), who found a significant difference between the previously described groups in service to the early oral intake group ($p = 0.006$). Such agreement between the current study and the other studies finding may be related to the early removal of the urinary catheter, ambulation, initiation of the breast feeding, and the other benefits of early feeding specifically rapid return to the bowel movement.

V. Conclusion

Based on the finding of the present study, it can be concluded that early postoperative oral hydration is positively affecting postoperative outcomes. It resulted in several advantages for the abdominal surgery patient that had benefits on return of bowel sounds and motility, early resuming to regular diet, decreasing the duration of intravenous fluid administration, early ambulation, decreasing the paralytic ileus and it shortened the length of hospital stay.

VI. Recommendations

Early oral hydration can be conducted safely after abdominal surgery. More population should be investigated for more global evaluation. Training programs are recommended for nurses in order to enhance their knowledge and skills involving Early postoperative oral hydration in order to be capable to educate and counsel patient about such evidence based practice.

VII. Limitation

There was rarely studies evaluate effect of early postoperative oral hydration on reducing paralytic ileus among abdominal surgery patients in medical surgical nursing branch.

Table (1): Distribution of personnel characteristics of the studied participants (n=222).

personnel characteristics	Intervention group N=111		Control group N=111		X ²	P value
	No	%	No	%		
Age in years					1.01	>0.05
20-<25	44	39.6%	39	35.1%		
25-<30	34	30.6%	41	36.9%		
30-35	33	29.7%	31	27.9%		
Mean ±SD	29.9189±7.21883		31.8468±7.83721			
Gender					0.189	>0.05
Male	33	29.7%	36	32.4%		
Female	78	70.3%	75	67.6%		
Educational level					2.006	>0.05
Illiterate	29	26.1%	22	19.8%		
Primary	48	43.2%	55	49.5%		
Secondary education	20	18.0%	23	20.7%		
University	14	12.6%	11	9.9%		
Occupation					0.024	>0.05
Yes	84	75.7%	83	74.8%		
No	27	24.3%	28	25.2%		
Residence					0.890	>0.05
Rural	57	51.4%	64	57.7%		
Urban	54	48.6%	47	42.3%		

Table (2): Distribution of operational history of the studied participants.

Variable	Intervention group N=111		Control group N=111		Independent t test	P value
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD		
Fasting hours	7.4054±.82438		7.2613±1.09305		1.10	>0.05
Times of operation	42.6306±4.39199		42.8919±4.26476		0.450	>0.05

Table (3): Distribution of mean score of postoperative vital signs measures of the studied participants at the first two hours after surgery.

Vital signs	Intervention group N=111		Control group N=111		Independent t test	P value
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD		
Systolic blood pressure	113.6937±7.58922		114.5045±7.13363		0.820	>0.05
Diastolic blood pressure	73.9189±6.98718		72.1261±11.70712		1.38	>0.05
Temperature	74.0500±6.91562		75.0541±6.02093		1.11	>0.05
Pulse	37.1650±.35573		36.6667±3.22655		1.61	>0.05

Table (4): Distribution of postoperative outcomes among the studied participants.

Variables	Study group				Control group				X ²	P value
	Yes		No		Yes		No			
	No	%	No	%	No	%	No	%		
Headache	30	27.0%	81	73.0%	49	44.1	62	55.9	7.09	<0.05*
Abdominal distension	38	34.2%	73	65.8%	62	55.9	49	44.1	10.48	<0.001**
Nausea	28	25.2%	83	74.8%	55	49.5	56	50.5	14.02	<0.001**
Both nausea and vomiting	14	12.6%	97	87.4%	29	26.1	82	73.9	6.49	<0.05*

Table (5): Distribution of digestive outcomes among the studied participants.

Variable	Intervention group		Control group		Independent t test	P value
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD		
Time of bowel sound	3.9099±1.05787		6.1622±2.63729		8.35	<0.001**
Time to passage flatus	4.4414±.94084		6.6757±2.14121		10.06	<0.001**
Time to the first solid diet	4.3694±.98098		6.4144±2.42138		8.24	<0.001**
Time to the first stool passage	4.2613±1.31917		6.6306±2.21535		9.68	<0.001**

Table (6): Distribution duration of hospital stay among the studied participants.

Variable	Intervention group N=111		Control group N=111		X ²	P value
	No	%	No	%		
Hospital stay in hours					52.64	<0.001**
24-48	97	87.4%	47	42.3%		
48-72	14	12.6%	45	40.5%		
>72 hours	0	0.0%	19	17.1%		

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Eman Elsayed Hussein Mohammad. "Early Postoperative Oral Hydration on Reducing Paralytic Ileus among Abdominal Surgery Patients" .IOSR Journal of Nursing and Health Science (IOSR-JNHS), vol. 8, no.02 , 2019, pp. 52-57.