



# The effect of using an abdominal binder on postoperative gastrointestinal function, mobilization, pulmonary function, and pain in patients undergoing major abdominal surgery: A randomized controlled trial



Emine Arici, RN MSc.<sup>a,\*</sup>, Sevinc Tastan, RN PhD Associate Professor<sup>b</sup>,  
Mehmet Fatih Can, MD Associate Professor<sup>a</sup>

<sup>a</sup> Gulhane Military Medical Academy, Department of General Surgery, Ankara, Turkey

<sup>b</sup> Gulhane Military Medical Academy, School of Nursing, Ankara, Turkey

## ARTICLE INFO

### Article history:

Received 23 June 2015

Received in revised form 15 July 2016

Accepted 15 July 2016

### Keywords:

Abdominal binder  
Abdominal surgery  
Mobilization  
Nursing  
Postoperative pain  
Pulmonary function

## ABSTRACT

**Background:** Evidence on the effectiveness of using a binder following abdominal surgery and its effect on gastrointestinal function, mobilization, pulmonary function, and pain is currently unclear.

**Objective:** The purpose of this study is to determine the effect of abdominal binder usage on gastrointestinal function, mobilization, pulmonary function, and postoperative pain in patients undergoing major abdominal surgery.

**Design:** This research was conducted as a randomized controlled trial.

**Settings:** The study was conducted at the Department of General Surgery at a military education and research hospital in Ankara, Turkey, between September 2013 and April 2014.

**Participants:** 104 patients were assessed for eligibility. The study was conducted on 84 eligible patients.

**Methods:** The study sample consisted of 84 patients who underwent effective major abdominal surgery. The patients were randomized into two groups, the intervention group, which used an abdominal binder and the control group, which did not. Gastrointestinal function, mobilization, pulmonary function, and the pain status of both groups were evaluated on the first, fourth, and seventh days before and after surgery, and the intergroup results were compared.

**Results:** No significant difference was found between the two groups in terms of gastrointestinal and pulmonary function on the first, fourth, and seventh days following surgery ( $p > 0.05$ ). A comparative assessment of mobility by walking distance showed that patients in the intervention group were able to walk further on the fourth [mean (SD); 221.19 (69.08) m] and seventh [227.85 (60.02) m] days after surgery ( $p = 0.003$ ,  $p < 0.001$ ). There were differences in the acute pain status between patients in both groups ( $p < 0.05$ ). On the first [mean (SD); 8.80 (5.03)], fourth [4.83 (2.78)], and seventh [3.09 (3.17)] days after surgery, the sensory sub-scale pain scores were higher in the control group ( $p < 0.001$ ). On the first [mean (SD); 10.16 (6.14)], fourth [5.28 (3.52)], and seventh [3.30 (3.51)] days after surgery the total pain scores were higher in the control group ( $p < 0.001$ ). The visual analogue scale scores were also higher in the control group on the first [mean (SD) 6.26 (1.86)], fourth [4.50 (2.10)], and seventh [3.04 (2.43)] days after surgery ( $p < 0.001$ ).

**Conclusion:** The study's findings reveal that the use of an abdominal binder does not have any effect on postoperative gastrointestinal and pulmonary function. However, an abdominal binder increases patient mobility soon after surgery. There was also a measurable effect on pain, with lower scores reported by patients who used an abdominal binder after any exercise or activity. These results indicate that the use of a routine abdominal binder is helpful for patients undergoing major abdominal surgery.

© 2016 Elsevier Ltd. All rights reserved.

## What is already known about the topic?

- Patients who undergo major abdominal surgery have a higher risk of developing postoperative complications.

\* Corresponding author.

E-mail addresses: [eminee.arc@gmail.com](mailto:eminee.arc@gmail.com) (E. Arici), [stastan@gata.edu.tr](mailto:stastan@gata.edu.tr) (S. Tastan), [mfcandmd@gmail.com](mailto:mfcandmd@gmail.com) (M.F. Can).

- An abdominal binder is commonly used to support the surgical area during postoperative mobilization and exercise.
- Some clinicians are concerned about the adverse effects of abdominal binders.

### What this paper adds

- No adverse effects were found as a result of using an abdominal binder.
- The study found that an abdominal binder decreases pain and improves mobilization.
- The study also provides evidence that an abdominal binder can safely be incorporated into treatment and care protocols to prevent complications after major abdominal surgery.

## 1. Introduction

Patients who undergo major abdominal surgery may suffer from complications due to the inherent risks of surgery (including the level of tissue damage, depending on the type of surgery) or due to particular patient risk factors (Diaz and Newman, 2015). Complications related to major abdominal surgery include atelectasis, pneumonitis, nausea and vomiting, paralytic ileus, abdominal distension, surgical site infection, anastomotic leakage, urinary infection, and pain (Izveren and Dal, 2011; Havey et al., 2013; Smeltzer et al., 2010). Complications that can occur following abdominal surgery increase the length of hospitalization, reduce the patient's quality of life, and may lead to permanent or chronic problems and mortality (Izveren and Dal, 2011; Havey et al., 2013). Facilitating early mobilization after surgery, efficient pain control, performing deep breathing exercise, and educating patients about self-care are the main goals of patient care (Havey et al., 2013; Cheifetz et al., 2010). Despite evidence indicating that mobilization and deep breathing exercises after surgery are helpful, most patients are unwilling to undertake postoperative deep breathing and movement because they are concerned about pain or damaging the incision area (Havey et al., 2013).

After surgery, patients should support the incision area with a pillow or their hands during mobilization or while performing deep breathing exercises (Havey et al., 2013). However, it is impossible to provide constant support this way, so using an abdominal binder is a practical and common application that facilitates mobility and recovery (Havey et al., 2013). An abdominal binder covers the incision area and the entire abdomen and helps prevent the wound opening. It also helps prevent an incisional hernia and alleviates pain by supporting the abdominal wall muscles during the recovery period, especially during mobilization and deep breathing exercises (Cheifetz et al., 2010; Olsen et al., 2009). Several studies have examined the use and efficiency of different binders for similar purposes, including cesarean deliveries, cardiac surgery, and patients who have spinal cord damage (Boaventura et al., 2003; Bodin et al., 2005; Ceresa et al., 2010; Myers et al., 2014). Moreover, it has been reported that using an abdominal binder might decrease the risk of complications after surgery by offering patient comfort (Havey et al., 2013; Olsen et al., 2009). However, some clinicians are reluctant to recommend an abdominal binder as they believe it might decrease pulmonary function (Havey et al., 2013).

Any method or application used to prevent postoperative complications should be safe, efficient, easy to use and control, affordable, and acceptable to patients and health care professionals (Cheifetz et al., 2010; Olsen et al., 2009; Larson et al., 2009; Hall and Northern, 2012). Few studies have evaluated the efficiency of abdominal binders, which are commonly used after abdominal

surgery (Cheifetz et al., 2010; Olsen et al., 2009; Larson et al., 2009; Hall and Northern, 2012). Previous research has found conflicting findings on the effects of abdominal binders on pulmonary function, pain, and mobilization. A study by Larson et al. (2009) on patients who underwent midline laparotomy incision found that an abdominal binder had no effect on pulmonary function. Two other studies examined the effect of an abdominal binder on pulmonary function, mobilization, and pain status for the first five days following surgery (Cheifetz et al., 2010; Olsen et al., 2009). Olsen et al. (2009) found no difference in terms of pulmonary function, mobilization, and pain status. The authors related this finding to three factors: participants were given epidural anesthesia (and thus experienced very little pain); power analysis indicated that the number of patients was insufficient; and the mobilization scale used in the research had validity and reliability problems (Olsen et al., 2009). On the other hand, in a study by Cheifetz et al. (2010), forced expiratory volume (FEV<sub>1</sub>), and forced vital capacity (FVC) values were similar in the groups with and without a binder. However, in the group that used a binder the rate of FEV<sub>1</sub>/FVC increased significantly on the third day. The group that used a binder could walk a longer distance on the fifth day after surgery and this difference was statistically significant. It was also reported that the group that did not use a binder reported more pain on the first day after surgery (Cheifetz et al., 2010).

To date, there has been no study in the relevant literature that examines the effect of abdominal binders on the gastrointestinal system. To address this, the current study evaluates the effect of using an abdominal binder during the first seven days after surgery and focuses on its effect on some gastrointestinal system functions such as nausea and vomiting, time of first flatus and time of first stool, mobilization status, pulmonary function and pain status.

The study hypotheses were:

H<sub>0</sub>. The use of an abdominal binder after major abdominal surgery has no impact on patients' gastrointestinal function, mobilization, pulmonary function, and pain.

H<sub>1</sub>. The use of an abdominal binder after major abdominal surgery affects patients' gastrointestinal function, mobilization, pulmonary function, and pain.

## 2. Methods

### 2.1. Study design

This research was conducted as a randomized controlled trial. The primary outcome measures were the effects of abdominal binder usage on mobilization, pulmonary function, and postoperative pain in patients undergoing major abdominal surgery. Secondary outcome measures were the effects of abdominal binder usage on gastrointestinal function and degree of comfort.

### 2.2. Study setting

This study was conducted at the Department of General Surgery at a military education and research hospital in Ankara, Turkey, between September 2013 and April 2014.

### 2.3. Participants

The population consisted of patients who underwent planned major abdominal surgery in the General Surgery Department Clinic between September 2013 and April 2014. The study sample comprised patients who underwent major abdominal surgery due to diseases related to the colon, stomach, rectum, pancreas, liver, esophagus, and intestines. Although a number of studies in the literature on recovery after surgery have used the term "major abdominal surgery" to establish homogenous patient subsets,

Download English Version:

<https://daneshyari.com/en/article/7515304>

Download Persian Version:

<https://daneshyari.com/article/7515304>

[Daneshyari.com](https://daneshyari.com)