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Early vs. Late Surgical Intervention in Cases of Bowel Obstruction

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Abstract: This study aimed to determine when early surgery should be performed and when a waiting period is necessary, as well as the advantages and disadvantages of each option and its relationship to complications, length of hospital stay, relapses, and other factors. A sample of patients who underwent surgery to treat intestinal adhesions was studied and divided into three groups based on the timing of their surgery: the first group underwent surgery within 12 hours, the second group between 12 and 24 hours, and the third group after 24 hours. The results demonstrated the importance of early surgery to avoid complications, achieve better outcomes, shorten hospital stays, and reduce relapses. The study also showed that laparoscopic surgery is preferable to open surgery.

Keywords: Intestinal adhesions, surgery, complications

Introduction

Timely surgical intervention in cases of intestinal adhesions is of paramount importance, as it can prevent the patient from needing to be readmitted to the hospital after surgery, reduce potential complications, and decrease the likelihood of death. Most authoritative studies indicate that the optimal waiting period before surgery is three days [1]. Other studies suggest that there is no fixed timeframe for intervention, and that it depends on each individual case. The three-day period adopted by some studies is only applicable when the condition is not critical, as neglecting the condition in such cases could be fatal [2].

Furthermore, other studies suggest that the patient may need to wait a period to allow the body to heal itself, meaning the body may resolve the adhesions on its own with the help of medication [3]. Still other studies indicate that surgery should be performed quickly, as this would prevent the patient from having to return to the hospital for another operation [4]. Therefore, the debate surrounding this issue is extensive.

This study aimed to determine the effect of surgical timing on clinical outcomes in patients who underwent surgery to release intestinal adhesions. The study was based on the hypothesis that early surgical intervention is more beneficial than delayed intervention.

Research Problem

To date, the optimal time for surgical intervention in the patients in our study sample has not been determined, although guidelines indicate that 72 hours is the best timeframe as long as there are no critical cases. However, other studies have somewhat contradicted this, providing evidence that earlier intervention is preferable. Our study aimed to determine the relationship between early surgical intervention in such cases and clinical outcomes.

Relevance of the Research

The importance of this research stems from the need to determine the optimal timing for surgical intervention in patients with acute small bowel obstruction (ASBO), and its relationship to clinical

outcomes, as well as the extent to which it is affected by gender, age, hospital admission, complications, death, and other parameters that help physicians make the best decision regarding the timing of surgery in such cases.

Research Objectives

This research aims to evaluate the impact of surgical intervention time on the clinical outcomes of the patients in the study sample.

Sub-objectives:

* To determine the relationship between surgical intervention time and length of hospital stay

* To determine the relationship between surgical intervention time and complications

* To determine the relationship between surgical intervention time, the need for repeat surgery, and mortality rates

* To determine the relationship between the type of surgery and complications

Lecture Review

Kanani et al. (2025): conducted a systematic review and meta-analysis to determine whether early surgical intervention improves clinical outcomes and to identify predictors of conservative treatment failure. PubMed, Embase, the Cochrane Library, and Web of Science databases were searched from January 2010 to October 2024 for studies comparing the timing of surgery in adults with small bowel obstruction. Primary outcomes included mortality, bowel resection rates, and complications. Random-effects models were used to calculate pooled risk ratios and odds ratios with 95% confidence intervals. Early surgery was found to reduce the likelihood of death and resection.[5]

The study by Zhou et al. (2020) aimed to determine when patients with adhesions should undergo surgery. Their sample consisted of 108 patients. The study revealed that the need for surgery, and the timing of its necessity, were determined by white blood cell count, body mass index, and protein content [6].

The study (Abrar et al., 2026) aimed to differentiate between early and late surgical intervention in terms of length of hospital stay through a statistical analysis conducted on the sample and concluded that the length of surgical hospital stay was (4.6 ± 1.8 days) for those who delayed compared to the early surgery group (8.1 ± 2.5 days, $P < 0.001$)[7].

The added value of the study:

The research focuses on determining the optimal timing for surgical intervention in patients with acute small bowel obstruction, its relationship to clinical outcomes, and the extent to which it is affected by gender, age, hospital admission, complications, death, and other factors that help physicians make the optimal decision regarding the timing of surgery in such cases.

Materials and Methodology:

The study was conducted on a sample of patients who underwent surgery to treat intestinal adhesions at a medical center between 2000 and 2026, as shown in Figure 1. The selected sample was divided into three groups according to the time of surgery: the first group underwent surgery only 12 hours after the onset of the obstruction; the second group underwent surgery after a period ranging from 12 to 24 hours; and the third group waited longer than 24 hours.

A set of criteria was established for patient acceptance or exclusion from the sample, including age under 18 years, the presence of other diseases such as cancers and malignant tumors, intestinal obstruction caused by a strangulated hernia, whether the hernia was internal, or the presence of any inflammatory condition or chronic disease. In short, the current study focused solely on obstruction caused by adhesions, as this would have influenced the study's results. Participants were admitted who were over 18 years of age and had type ICD-10 obstruction.

Information was collected on each patient in the selected sample through their medical records. The number of deaths occurring within two months of surgery was also recorded.

Complications studied included infection at the surgical site or in any other part of the body, cardiovascular complications, renal relapses, kidney disease, and wound perforation.

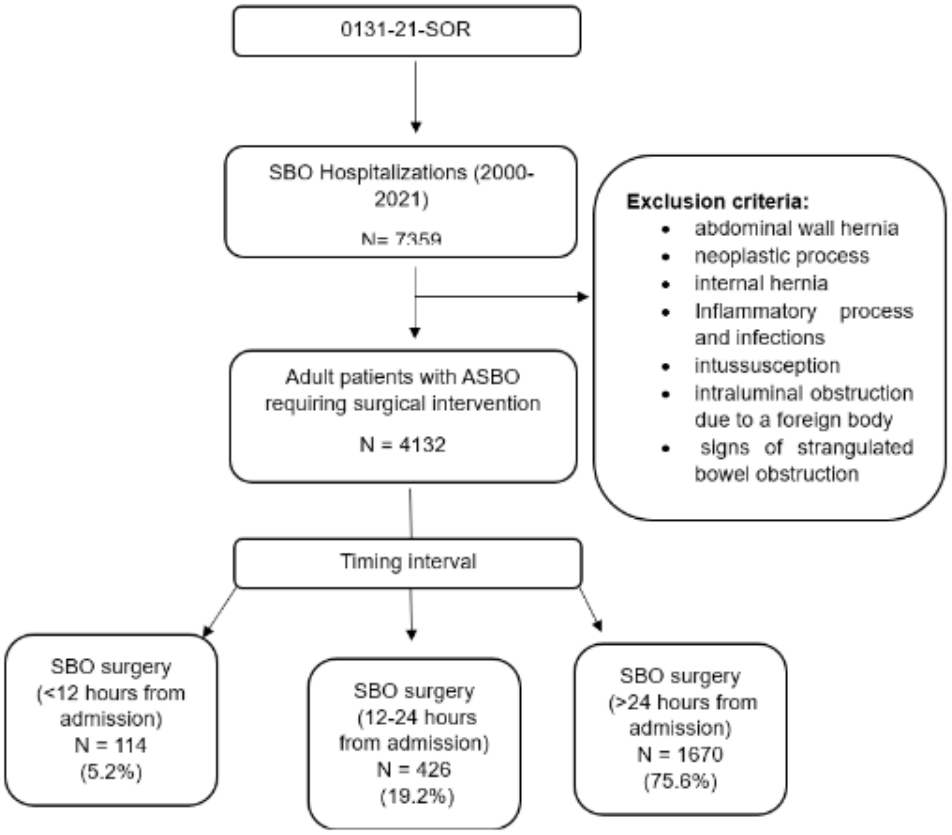

Figure 1. Patient Selection Criteria

Statistical analysis of the data was performed to determine the median, mean, deviations, first and third quartiles, percentage frequencies, and comparative statistical methods with a 95% confidence level. The Mann-Whitney U test was used to test non-normally distributed variables. For variables that were categorically distributed, the chi-square test was used. A regression level was constructed for each dependent parameter. Some of the dependent variables are the need for a second surgical procedure and the complications resulting from the surgery, such as thrombosis and infection. The independent variables are the patient's sex, age, time elapsed before the surgery was scheduled, and the extent of surgical intervention required.

Results

A sample of 2210 individuals who met the criteria was included in the study and distributed according to the time elapsed before surgery, as shown in Table 1 and Figure 2.

Table 1. Sample Distribution According to Preoperative Period

Time period from hospital admission	Number of patients	Percentage (%)
Within the first 12 hours	114	5.2
Between 12 and 24 hours	426	19.2
After 24 hours	1670	75.6

Time period from hospital admission	Number of patients	Percentage (%)
Total	2210	100

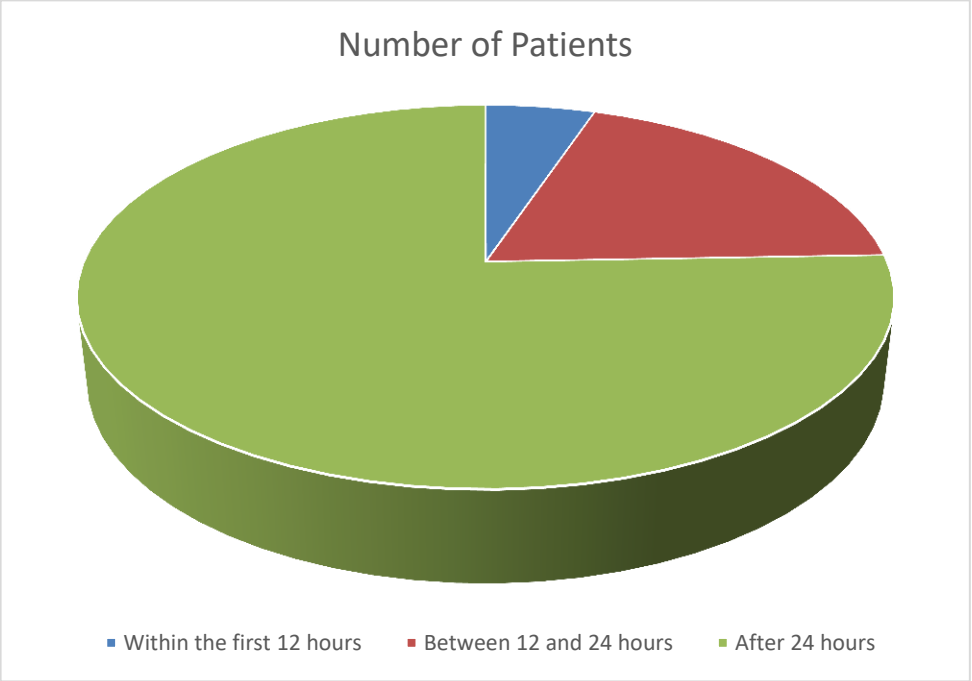

Figure 1. Sample distribution according to preoperative period.

They were also distributed by sex according to Table 2 and Figure 3.

Table 2. Sample distribution by sex.

Gender	**Number of Individuals**	**Percentage (%)**
Males	814	36.8
Females	1396	63.2
Total	**2210**	**100**

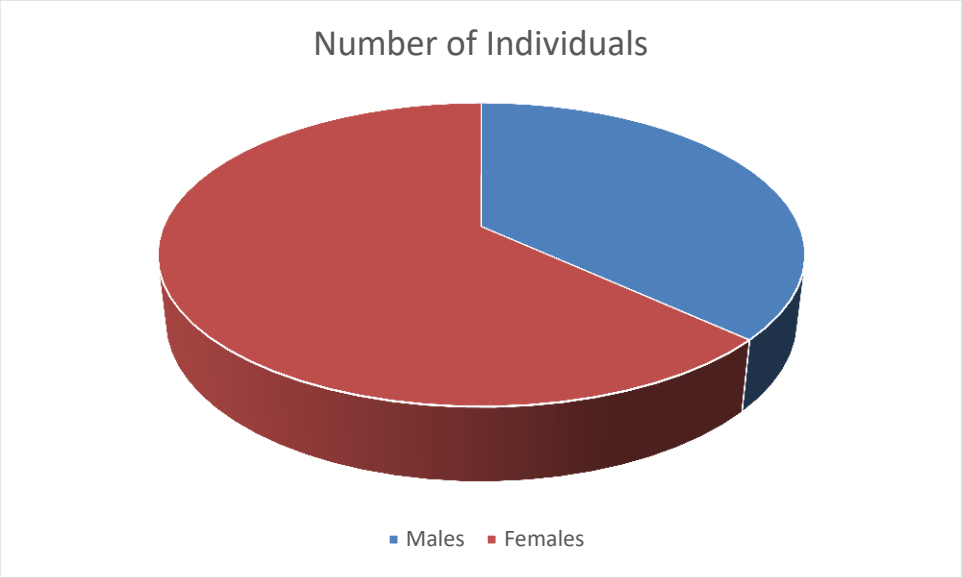

Figure 3: Sample Distribution by Sex

Statistically significant differences were observed with respect to sex, with females comprising the larger percentage of the sample. For patients who underwent surgery within 12 hours, 33.3% were male, and the remainder were female. Patients who underwent surgery between 12 and 24 hours comprised 43.7% of the sample. In the final group, 35.3% were male, and the remainder were female, with a p-value of 0.0046.

The mean age increases with the earlier the surgery is performed. For example, the mean ages of patients in the three groups are shown in Table 3 and Figure 4. The p-value was <0.001.

Table 3: Mean Age

Surgery delay time	**Average life expectancy (years)**
Less than 12 hours	34.9
12-24 hours	40.3
More than 24 hours	50.3
p value	**0.001 >**

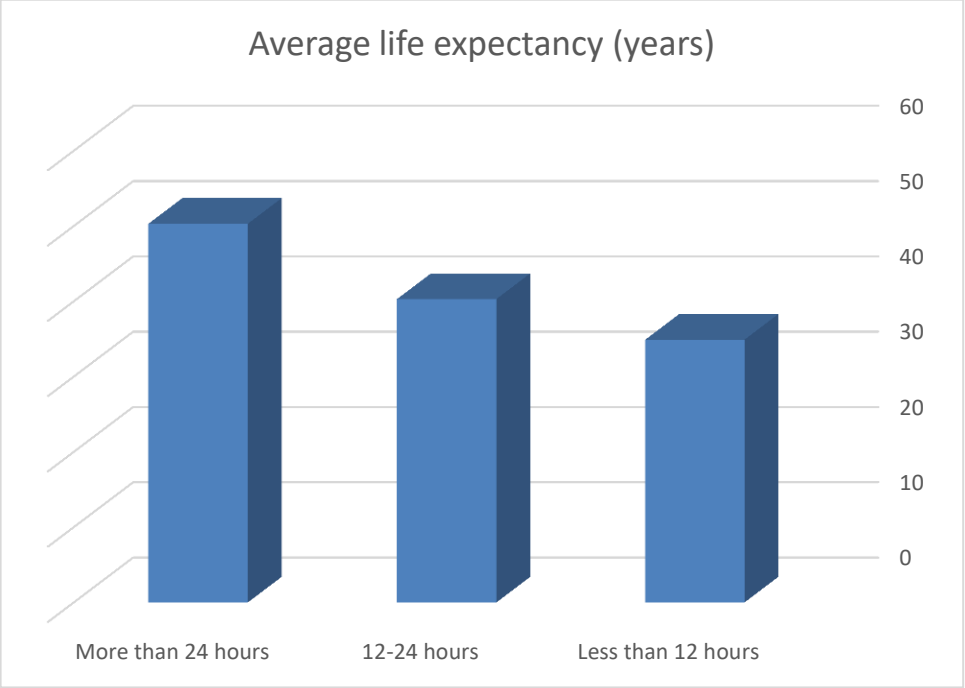

Figure 4. Average Age

Regarding the issue of relapses after surgery and the need for further surgery, it was observed that the rate is low, but it increases when surgical intervention is delayed, as illustrated in Table 4 and Figure 5.

Table 4. Relapses After Surgery

Surgery delay time	**Re-surgery rate (%)**
Less than 12 hours	%0
12-24 hours	%5.6
More than 24 hours	%2.4
p value	**0.001 >**

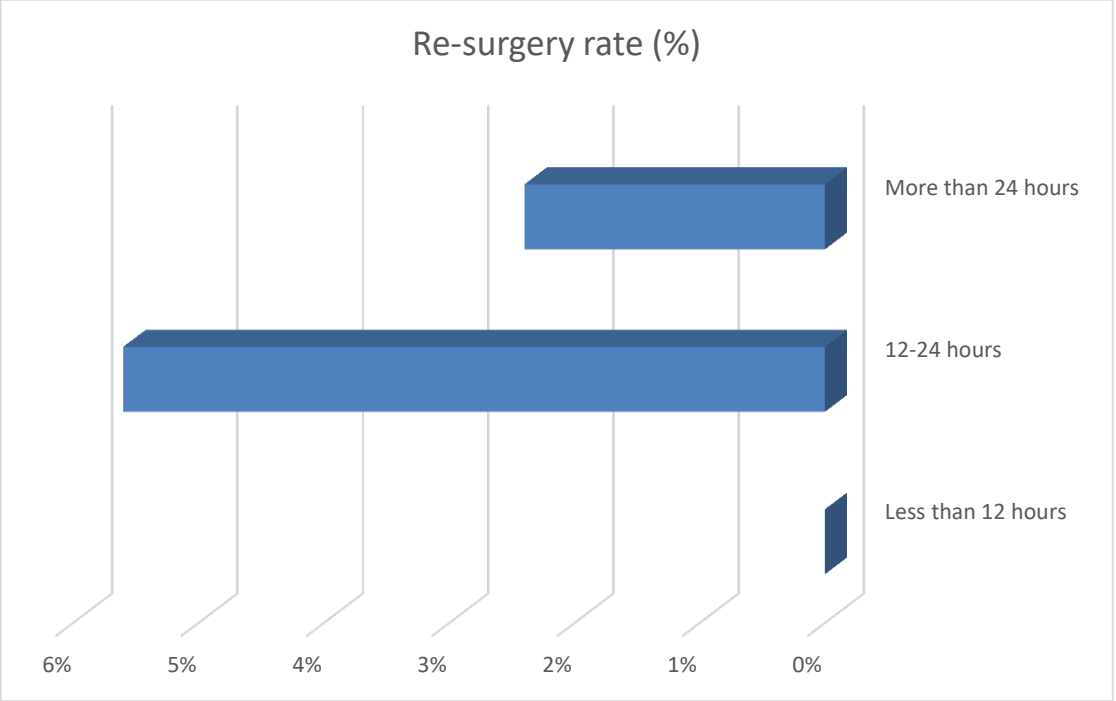

Figure 5. Postoperative Relapses

Regarding the admission of patients to intensive care after surgery, the rate was 29.1%, with no statistically significant differences across the sample groups.

Regarding deaths less than two months after surgery, the rate was very low, limited to only one case. Therefore, the mean mortality rate was not statistically significant (p=1.000).

The duration of the surgical procedure ranged between 1 hour and 20 minutes and 1 hour and 1.5 hours, with a p-value of 0.211. It was also found that delaying surgery increases the length of hospital stay, as specified in Table 5 and Figure 6.

Table 5. Length of Hospital Stay After Surgery

Time to Surgery	Mean Hospital Stay (days)
Within 12 hours	0.95
12-24 hours	1.25
>24 hours	4.48

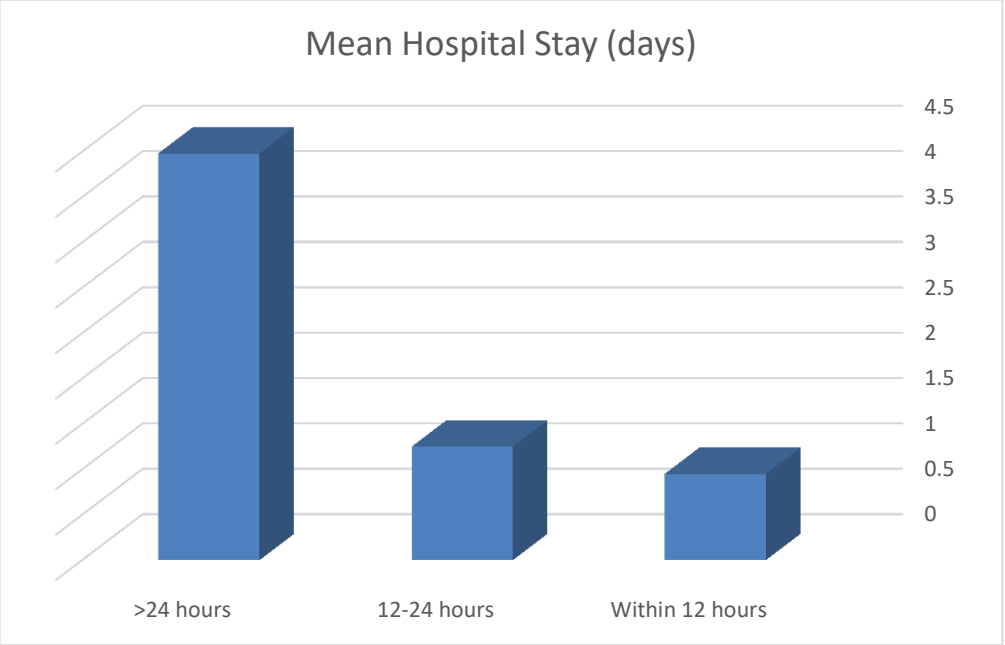

Figure 6. Length of hospital stay after surgery

The relationship between the type of surgical procedure and the duration of the surgery is shown in Table 6 and Figure 7.

Table 6. Type of surgical procedure

Time to Surgery	Laparoscopic Surgery (%)
Within 12 hours	60.5
12-24 hours	58.5
>24 hours	64.6

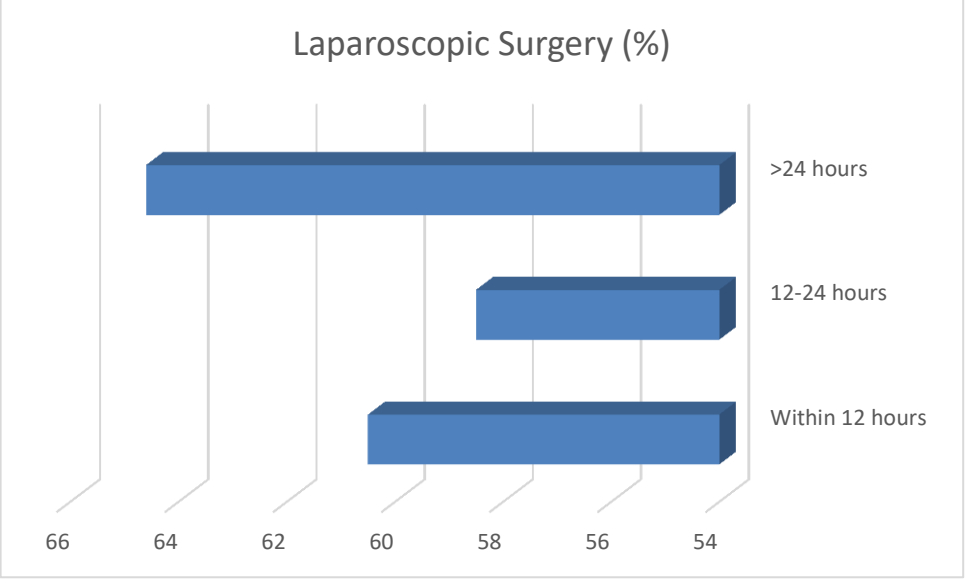

Figure 7. Type of Surgical Procedure

The results showed that post-operative complications increase with delays in the surgical procedure. These results are shown in Table 7 and Figure 8.

Table 7. Post-Operative Complications

Time to Surgery	Complication Rate (%)
Within 12 hours	11.4
12-24 hours	24.6
>24 hours	20.1

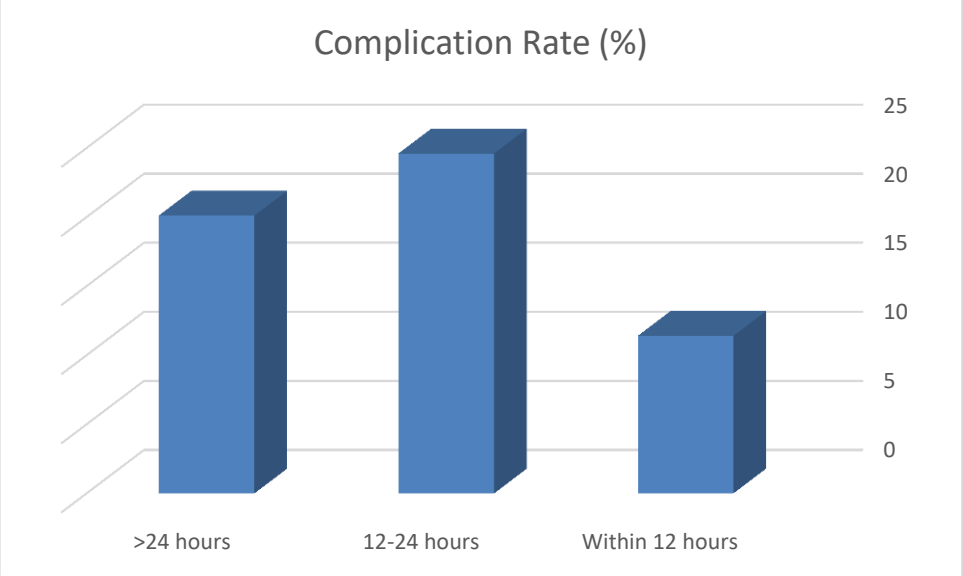

Figure 8. Postoperative Complications

The results also showed that the likelihood of re-operative surgery increases with the number of years that have passed since the initial surgery. This finding is statistically significant and strongly correlated with patient age (odds ratio 1.02; 95% confidence interval 1.00-1.03; p = 0.007). For every additional year after surgery, the probability of complications increases by 2%, and the severity of these complications increases by 1% each year (odds ratio 1.01; 95% confidence interval 1.00-1.01; p = 0.005). The results also showed that surgical interventions are highly dependent on the delay in surgery and increase with the duration of the procedure. Complications were lower with laparoscopic surgery compared to traditional open surgery. Patients requiring re-operative surgery are at a higher risk of complications. Table 8 shows these values.

Table 8. Surgical Complications Analysis

Factor	Odds Ratio (OR)	95% CI	p-value
Surgery >12 hours (vs ≤12h)	2.48	1.38-4.82	0.004
Surgery >24 hours (vs ≤12h)	1.82	1.04-3.45	0.049
Laparoscopic (vs open)	0.69	0.56-0.86	0.001
Reoperation	1.9	1.09-3.60	0.033
DVT (>12h vs ≤12h, multivariate)	0.27	0.08-1.19	0.044

Factor	Odds Ratio (OR)	95% CI	p-value
UTI (per year age increase)	1.02	1.00-1.03	0.005

The table details the types of complications that can occur as a result of surgery. These complications include cardiovascular complications and their relationship to the timing of the surgery. Performing surgery earlier reduces the likelihood of such complications. The table also addresses complications related to the urinary and excretory systems, but these latter complications are associated with the patient's age at a rate of 2%. The respiratory system was found to be unaffected and its involvement was not statistically significant as a complication of surgery.

Discussion

Many studies have addressed the topic of the current study, and the subject remains under discussion, as none of the studies have established the optimal timeframe for deciding on surgery for a patient. Some studies have indicated that the optimal timeframe is 72 hours [1], while others have suggested that monitoring the patient for 5 days before surgery is better [9][8], and that waiting 48 hours allows the patient to treat themselves without surgical intervention [10]. The current study, however, has demonstrated that early surgical intervention is better in terms of outcomes and reducing postoperative complications. The average age of the study sample was 47 years, and the younger the patient, the earlier the surgery should be performed. The patient's gender also plays a role, as surgery can be delayed for females. It was also observed that earlier surgery prevents readmission to the hospital, as also demonstrated in the study [11]. Delaying the procedure leads to resection [12], which is similar to the results of our study, as complications and readmission are a consequence of delay, also confirmed by the study [13]. The study also demonstrated that endoscopy is superior to surgery in terms of recovery and complications, as also found in studies [15] and [14]. Similarly, the current study concluded that earlier surgery reduces the length of hospital stay [8], [5], and [2].

Conclusion:

In conclusion, these data contribute significant confirmation that early surgical intervention for adhesive small bowel obstruction is associated with much better clinical outcomes than delayed surgery. Main finding Patients who underwent surgery within the first 12 hours had decreased postoperative complications (11.4%), shortened hospitalization (mean 0.95 days) and no re-surgeries recorded against deceleration of intervention (particularly over 24 hours) leading to greater complications, lengthier hospitalization (mean 4·48 days) and higher odds of adverse operating results. In multivariate analysis, performing surgery more than 12 hours after the initial presentation was a significant predictor of complication (OR 2.48, p=0.004), and laparoscopic surgery was independently associated with a lower complication rate compared with open procedures (OR 0.69; p=0.001). Our findings emphasize the need for early operative intervention in selected patients and suggest that laparoscopy should be the surgical approach of choice when it can be accomplished. Strong implications for clinical practice include early triaging leading to reduced morbidity, cost reduction through shortened admissions, and an improved prognosis in general. However, the retrospective nature and single center nature of the study means these findings should be interpreted with caution. Prospective multicenter randomized studies are warranted to determine timing thresholds, identify predictive biomarkers that may predict the best window of intervention, and compare long-term recurrence rates to justify evidence based guidelines for the management of adhesive small bowel obstruction.

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