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Comparison of patients with acute Small Bowel Obstruction operated within 24 hours of admission and those operated beyond 24 hours of admission

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ABSTRACT

Background: Small bowel obstruction (SBO) sounds a common emergency presentation but seemingly has a high morbidity, mortality and also its tendency to occur again is high.
Aim: To compare the results of patients treated surgically within and after 24 h of admission.
Methods: A comparative study was done on patients with small bowel obstruction admitted to surgery department of Jinnah post graduate medical center, Karachi Pakistan from 1st January 2017 to 31st December 2018. Of all the admissions, data of SBO patients was collected in detail. Collected data included age, gender, surgical diagnosis, co-morbid conditions, number of admissions, procedure performed, duration of procedure and wither operated in <24h or>24h of admission.
Results: During the study period among 110 patients who got admitted with small bowel obstruction, 100 went through surgery (surgical group) and 10 were kept for conservative treatment. 0ut of 100 patients 52 got operated within 48 h of admission (Surgical Group 1) while 15 were operated after 24h of admission (surgical Group 2). Among gp1 4 patients expired while from Group 2, 9 expired within 1 week of surgery. We kept the same Basic characteristics between the two groups. One-year mortality and recurrence from hospital discharge date was not notably different between the comparison groups (age- and sex-adjusted HR, 1.1; 95 % CI, 0.6–2.1). 80 patients actually reported for follow up and were evaluated.
Conclusions: The immediate mortality of patients operated with in 24 hrs of admission was significantly lower than those operated beyond 24 h. Recurrence of obstructive symptoms, hospitalizations with same symptoms of SBO and one-year survival and mortality was somewhat the same among both groups.
Keywords: Small bowel obstruction, recurrence, appendicectomy, hysterectomy

INTRODUCTION

About 20% of all surgical emergencies are comprised of acute small bowel obstruction (SBO)[1]. The chief reason of Small bowel obstruction is postoperative adhesion (> 75% of all presentations)[2–6]. The common SBO related surgeries are appendectomy, colectomy and hysterectomy[7]. Other causes may include Crohn's disease, neoplasm, hernia or radiation-induced enteritis (7%), (5–10%), (2%), (1%) respectively[2–5]. Reportedly 10% of total patients account for "spontaneous" SBO without any prior history of abdominal surgeries[5], while 34.6% are usually due to postoperative adhesions reported by Ellis et al[8]. The management criteria of SBO depends on clinical assessment, serological tests, x-rays and computed tomography (CT) imaging. A variable proportion of SBO patients respond well to Conservative treatment with fluid resuscitation, nasogastric tube decompression, and bowel rest but at the same time requiring regular monitoring for early recognition of bowel ischemia signs or CT scan indicating strangulated bowel, requiring a surgical intervention[9,10,11]. On the other hand, a significant number of patients do respond only to operative intervention for which time of decision making has a significant role. The choice of the treatment proves to be a common clinical challenge as it mainly depends on the clinician's evaluation[11]. A non-significantly lower rate of recurrence of symptoms, re-hospitalization and almost similar overall mortality, is reported in a study where the patients with obstructive symptoms were operated early i.e., in 24 h of admission then those operated after this time frame[1].

To add on, like any other abdominal surgery successful conservative management as well as surgical treatment both may cause the relapse of symptoms due to formation of adhesions[12,13]. 10yrs recurrence risk of SBO is reported to be 42% in patients treated conservatively while less in surgically treated patients by Landercasper et al[14]. Similar pattern of recurrence is also elicited by one of the retrospective study after one or multiple episodes of small bowel obstruction[15]. In our study, we tried to compare the short and long term outcome of patients treated surgically within 24 h of admission versus those operated after 24 h of admission. The purpose was to contrast the recovery, mortality and recurrence of SBO patients in both groups.

METHOD

This is a comparative study conducted in surgical ward of JPMC, Karachi in patients with acute SBO presented from January 2017 to December 2018. The permission by ethics committee was taken through a proper channel. All the patients admitted during study period with symptoms of small bowel obstruction were included in the study. We explained SBO on clinical assessment (tachycardia, low blood pressure, generalized abdominal pain, vomiting, abdominal distention and absolute constipation) supported

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by the laboratory investigations (complete blood count, liver functions, renal functions, electrolytes, Arterial blood gases) abdominal and chest x-rays C.T scan in some specified cases (not all). The first admission of the patient to hospital with obstructive symptoms of small bowel within the study duration is referred as index date /index episode of SBO / index hospitalization or index surgery in this study. Conventional conservative management with I.V fluid infusion, pain killers and nasogastric tube decompression, ICU monitoring and surgical management including exploratory laparotomy, adhesiolysis which sometime also included resection of small bowel was taken as slandered management. Complicated hernias, large bowel obstruction, peritoneal carcinomatosis, early postoperative small bowel obstruction (within a month of operation), inflammatory bowel disease (IBD) and radiation chemotherapy induced intestinal fibrosis.

The records of the patients regarding their prior surgeries and clinical information about the index obstructive episode were collected from the hospital files at the time of admission and in few cases from the hospital record room. Severity score for small SBO was calculated as narrated by Schwenter et al[16]. The nature of management (surgical OR conservative), operated with in or after 24 h of admission were retrieved from hospital record room for every patient. The patients who did not require readmission were contacted through phone for data obtaining purpose for any recurrent episode of SBO symptoms. Patients were followed up until December 2019.

For the continuous variables we used the t test and difference analysis between the study groups was calculated. Similarly the Chi square test was used for binary and categorical parameters. Kaplan–Meier and the log rank test is used for analyzing the survival. Ninety-five percent confidence intervals (95% CI) were reported. A statistically significant two-sided p value <0.05 was considered.

RESULTS

From 1st January 2017- 31st December 2018 among 110 patients admitted with diagnosis of SBO, 100 patients went through a surgery and 10 were treated conservatively. 0ut of 100 surgically managed patients 52 were taken under knife within 24 h of presentation (surgical gp1) while 48 were operated after 24h of admission (surgical gp2 Baseline characteristics were similar between treatment groups. The mean age of patients was 65 (±18) years, and there were 49 women and 51 men. Both groups had equal distribution of Age and sex. 20 patients (22%) from the surgical group1 and 18patients (19.8%) from surgical group2 had one/ multiple prior abdominal surgeries (p=0.234). However equal distribution of type and number of surgeries between the two groups was taken care of. The following clinical severity scoring at index presentation was done i.e., (one point was given for each present item): pain duration ≥4 days, abdominal guarding, leukocyte ≥10×109/l, C-reactive protein ≥75mg/l, free fluid ≥500ml on CT scan, reduced contrast enhancement on CT scan; (min–max: 0–6)[16]. According to our expectations, the clinical severity parameters were more on upper side of the bar in the surgical group1 than in group2 (p<0.001). 25 patients had a score of ≥4 in group1. Out of the ten patients who underwent exploratory laparotomy with a severity parameters of 0, seven patients showed a transition zone on computerized tomography scan. Clinical deterioration of the two patients took them to theater for surgery, and one patient showed small bowel dilatation of more than 4.5 cm over a CT scan. In group 2, which is after 24 h of hospitalization 23 patients needed the resection of bowel and had a notably longer stay at the hospital comparative to group 1 {12.0 (±8.5) versus 6.6 (±3.6) days}, respectively (p<0.001) to sum up 13 patients expired, 4 patients expired from gp 1 while 9 from group 2 within a week of operation during same hospital admission showing the mean age was 65 (±18) years. The rate of one-year mortality and recurrence of obstruction from the discharge was not notably different as to speak for both groups (age- and sex-adjusted HR, 1.1; 95% CI, 0.6–2.1). 80 patients reported for follow up and were evaluated.

DISCUSSION

In this study the patients with small bowel obstruction being operated with in 24 h and after 24 hrs of admission were compared. According to various previously done researches it is observed that early surgical intervention for SBO with in 24 h lessens the early morbidity and mortality[20,23], but no effect is being observed in the late outcome of patients treated surgically within (<24h) or >24h of admission. However, the results of this study are also compatible with previous researches. Conservative management should only be attempted in young patients not showing any sever signs of obstruction, previously operated patients, keeping under strict ICU monitoring and an immediate surgical intervention would be recommended if bowel function recovery does not occur within 24 h after an oral water-soluble contrast agent test (gastrograffin challenge)[24].

We came to know that the patients who went through surgery irrespective to the time frame from admission are 50% less likely to require rehospitalization and 60% less on and off episodes of SBO symptoms compared to those managed conservatively. However, no significant rate modification was observed in subsequent SBO operation in surgically treated patients.

As reported by Landercasper et al., there is significant difference in rate of re-hospitalization between surgically treated patients (<24 h) (21%) and those treated conservatively (38%) (p=0.001) and overall 10% and 17% rate of operation for new SBO episode in surgically treated and conservatively managed patient respectively (p = 0.08)[14]. According to Fevang et al there is 45% less chance of recurrent obstructive episodes in surgically treated patients then the ones managed conservatively (relative risk, 0.55; 95% CI, 0.35–0.86)[15]. We have observed in our study that the morbidity of patients with SBO is almost similar to some previous studies[14,17-20]. However in our study we observed that rate of re-hospitalization, new episodes of small bowel obstruction is even lesser i.e., (2%) and (3.4%) in the patients who went through surgery with in 24 hrs of admission and those operated after 24 h of admission, respectively , but we did not get any notable statistical difference in rate of recurrence or long term

survival (1 year survival) rate in patients operated with in or beyond 24 hrs of admission (1%) overall postoperative mortality was reported in our study as(2.5%) in surgical group 1 and (5.2%) in group 2 so, lesser mortality rate was observed within 72 hrs and within 30 days of admission in group 1 then group 2 respectively, which is almost similar to some earlier reports[4,18,19]. In total more mortality was observed in surgical group 2 than in group1. Indeed, younger patients (mean age of 40±3) irrespective to gender were more likely to survive in both the groups. In general, the mortality was also influenced by older age, severity of symptoms and delayed presentation of patient to the hospital collectively.

The telephonic contact with the patients for assessment of SBO symptoms reoccurrence, morbidity, general health showed no statistical significance in both the groups, but immediate survival rate in group 1 was (%) and (%) making this result highly important in further decision making for better management.

However, the decision making should be individualized considering each patient separately taking small bowel obstruction severity scoring[16] and a medical condition scoring system (APACHE II score[22]) into account along with risk versus benefits of early and delayed surgery in mind. Moreover, laparoscopic adhesiolysis is preferred and effective over open laparotomy for chronic abdominal pain[21].

CONCLUSION

We conclude our study on the note that the patients who get operated with 24 hrs of admission have less rate of recurrent SBO symptoms and immediate mortality, hence there is no significant effect on the long term (1 year) mortality rate. We also concluded that, the patients who went through knife irrespective to time frame showed less risk of re-hospitalization for obstructive symptoms in comparison to those treated conservatively. On the Basis of these findings, we recommend that the patients with SBO having three or more of the following parameters i.e (abdominal pain for more than 3 days, abdominal guarding ,TLC ≥11 × 109/l, CRP ≥80 mg/l, free fluid ≥500 ml on abdominal ultrasound /CT scan, or reduced contrast enhancement on CT scan) should be surgically intervened immediatly as it decreases the rate of immediate mortality and recurrent episodes of SBO . The timely decision based on the above mentioned parameters and co-morbidities can save more lives and also helps in providing better quality in later life.

Limitations: Inspite of equally distributing the patients in terms of age, gender and type of previous surgeries (i.e., hysterectomy, colectomy and appendectomy, as compared to prior studies[7] the selection bias occurred due to severity of symptoms, co-morbidities, delayed presentation to the hospital and inability of confidently determining the bowel strangulation in both groups. Fortunately, this bias did not affect the long term outcome but it definitely had a sound impact on immediate outcome in both groups. Also in-availability of equal ICU care post operatively in few cases did affect the results to minimum extent.

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