



ADMISSION PATTERNS AND OUTCOMES OF OPERATIVE AND NONOPERATIVE MANAGERMENTS
OF POSTOPERATIVE ADHESIVE SMALL BOWEL OBSTRUCTION IN ST. PAUL'S HOSPITAL
MILLENNIUM MEDICAL COLLEGE

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ACRONYMS & ABBREVIATIONS

SPHMMC - Saint Paul's Hospital Millennium Medical College

ASBO – Adhesion small bowel obstruction

UK – United Kingdom

WHO - World Health Organization

NOM - non operative management

AAU – Addis Ababa University

SPHMMC – St. Paul's Hospital millennium medical college

A-Advisor

PI-principal investigator

Gyn/obs – Gynecology and Obstetrics

NA – Not Assessed

Ba – Barium

CBC – Complete blood count

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ABSTRACT

Background: - Intra-abdominal adhesions related to prior abdominal surgery account for up to 75% of cases of small bowel obstruction. It has high morbidity with associated poor quality of life and predisposition to repeated hospitalization. Commonest cause of bowel obstruction in developed countries is postoperative adhesions with extrinsic compression of the intestine. Most of them can be managed conservatively.

Objective: - To determine the admission pattern and treatment outcomes of adhesive bowel obstruction

Methodology: -A retrospective study of patients admitted with the diagnosis of post operative adhesive bowel obstruction in SPHMMC was conducted from September 11, 2013 to January ,2018G. Demographic data, clinical presentation including duration, previous surgical procedures, treatments options received for the condition

Results: postoperative adhesion small obstruction was the commonest cause of small bowel obstruction, making 41.5%. The majority of these patients 68(81.93%) were treated surgically among whom 41(60.29%) patients operated immediately or within 24hrs and 27(39.71%) after trial of conservative management. Among 42(50.60%) patients who had treated conservatively, only 14 (33.33%) of them treated successfully, 27(68.29%) them operated and 1(3.38%) patient died.The most commonly encountered complications are surgical site infection and hypokalemia .There were five(7.35%) deaths from operated patients.Length of hospital stay is comparable between treatment groups.

Conclusion: The most common cause of small bowel obstruction is postoperative adhesion in this study. The patients had been treated both surgically and conservatively with comparable out come in both. Complication was higher in operated patients..Significant number of patients on conservative management were intervened surgically without indication. There is no difference in length of hospital stay.

Recommendations:Proper follow up and handover patients is recommended to avoid unnecessary operative intervention.

Keywords: postoperative adhesion small bowel obstruction, conservative management, operative management

CHAPTER ONE

INTRODUCTION

1.1. Background information:

Intra-abdominal adhesions related to prior abdominal surgery account for up to 75% of cases of small bowel obstruction. Over 300,000 patients are estimated to undergo surgery to treat adhesion induced small bowel obstruction in the United States annually. Adhesive small bowel obstruction requires appropriate management with a proper diagnostic and therapeutic pathway. Indication and length of Non Operative treatment and appropriate timing for surgery may represent an insidious issue. Delay in surgical treatment may cause a substantial increase of morbidity and mortality. However repeated laparotomy and adhesiolysis may worsen the process of adhesion formation and their severity. Furthermore the introduction and widespread of laparoscopy has raised the question of selection of appropriate patients with ASBO good candidate for laparoscopic approach. On the other hand, several adjuncts for improving the success rate of NOM and clarifying indications and timing for surgery are currently available, such as hyperosmolar water soluble contrast medium. No consensus has been reached in diagnosing and managing the patients with ASBO and specific and updated guidelines are lacking

1.2. Statement of the Problem

ASBO is one of the most common causes of intestinal obstruction. The incidence and different treatment outcomes of adhesion obstruction is not well known in SPMMC. The means for determining when a period of observation is warranted versus early surgical intervention continues to be an area of debate. Additionally the optimal length of observation continues to be debated.

1.3. Significance of the study

There is no study done on this topic in SPHMMC as well as in Ethiopia. So in this study I want to know the magnitude, outcomes of both NOM and OM, so that the institution decision makers and physicians can use it for developing treatment guideline on ASBO.

CHAPTER TWO

LITERATURE REVIEW

According to retrospective study in Tribhuvan University Teaching Hospital, Kathmandu, Nepal, The Pelvic surgeries and gynecological surgeries (26%) were found to be the most common cause of adhesive bowel obstruction followed by appendectomy (16%). More than one third of the patients (76.7%) developed it within two years of the initial surgery. Twenty six patients (86%) presented after 24 hours of initial symptoms. Patients who presented after 48hrs of symptoms had a noted high incidence of operative treatment. Eight patients also gave history of previous similar attack, and were managed conservatively.

Other study shows that Successful conservative treatment was noted in 22 patients (73.3%) with discontinuation of naso-gastric decompression within an average period of 2 days followed by discharge on fourth day of admission. Eight patients (26.6%) underwent surgery due to acute intestinal obstruction. Five of them developed post-operative complications, burst abdomen (n=2) and wound infection (n=3). In all operated cases, the finding was adhesions and bands. They all underwent adhesiolysis and had good outcome.

According to the research done in Adama hospital, Ethiopia, 262 patients were admitted with intestinal obstruction. The prevalence of intestinal obstruction was 21.8 % and 4.8 % among patients admitted for acute abdomen surgery and total surgical admissions, respectively. The mortality rate was 2.5 % (6 of 262). The most common cause of small bowel obstruction was intussusceptions in 48 patients (30.9 %), followed by small bowel volvulus in 47 patients (30.3 %). Large bowel obstruction was caused by sigmoid volvulus in 60 patients (69.0 %) followed by colonic tumor in 12 patients (13.8 %). After controlling for possible confounding factors, the major predictors of management outcome of intestinal obstruction were: duration of illness before surgical intervention (adjusted odds ratio (AOR) = 0.49, 95 % CI: 0.25–0.97); intra-operative findings [Viable small bowel volvulus (SBV) (AOR = 0.08, 95 % CI: 0.01–0.95) and viable (AOR = 0.17, 95 % CI: 0.03–0.88)]; completion of intra-operative procedures (bowel resection & anastomosis (AOR = 3.05, 95 % CI: 1.04–8.94); and length of hospital stay (AOR = 0.05, 95 % CI: 0.01–0.16).

According to the prospective done in Kenyatta National Hospital, Kenya, During the period of the study there were 50 ASBO cases in a total population of 354 patients undergoing intestinal surgery. This yielded an incidence of 14.1 (95 % CI 10.7 to 18.2) for ASBO in KNH. The etiologies of ASBO were colorectal surgery 28 (48%),

upper GIT 10 (20%), small bowel 8 (16%) and pelvic 8 (16%) surgeries. ASBO etiology was not significantly associated with ASBO presentation or its management.

According to east Africa journal, 93 patients were managed for adhesive intestinal obstruction. 42(45%) patients were operated on, 25(59%) of them being operated on more than 72 hours after the start of the symptoms. 8(9%) patients had ischemic gut injury by the time of operations. Fluid therapy was inadequately administered in 86(92%) patients, and their charts were not completely filled.

Different studies, one RCT, two prospective and three retrospective observational studies, enrolling a total of 876 patients. The analyses showed that operative management of adhesive SBO was associated with a lower risk of future recurrence [odds ratio (OR) 0.54, 95% confidence interval (CI) 0.38-0.76, $P = 0.0005$] but a higher risk of mortality [risk difference (RD) 0.03, 95% CI 0.01-0.06, $P = 0.01$] and complications (OR 5.39, 95% CI 2.97-9.78, $P < 0.00001$). There was no difference in need for surgical re-intervention rate (OR 0.72, 95% CI 0.35-1.47, $P = 0.36$) and length of stay [mean difference (MD) 5.07, 95% CI -2.36-12.49, $P = 1.0$] between operative and non-operative managements. The baseline suspicion of strangulation was a major confounding factor. When the baseline suspicion of strangulation was higher in the operative group, the risk of mortality (RD 0.04, 95% CI 0.02-0.07, $P = 0.0006$) and complications (OR 8.14, 95% CI 4.16-15.94, $P = 0.00001$) were higher in the operative group but the risk of recurrence was lower (OR 0.62, 95% CI 0.43-0.90, $P = 0.01$). When the baseline suspicion of strangulation was low in both groups, there was no difference in any of the outcomes except recurrence (OR 0.09, 95% CI 0.02-0.37, $P = 0.0009$) which was lower in the operative group.

Retrospective study done at Mount Sinai Hospital shows ASBO is a common complication of abdominopelvic surgery. Although patients may respond to nonoperative management, many require surgery. The retrospectively studied patients admitted to Mount Sinai Hospital with a diagnosis of complete ASBO to determine outcomes of nonoperative management. Patients admitted with complete ASBO from 2001 to 2011 were included. Patients with no previous abdominopelvic surgery, surgery within the six weeks preceding admission and obstruction due to other identifiable causes, such as incarcerated hernia, were excluded. Complication rates and outcomes were compared between patients managed with immediate surgery and those managed initially with nonoperative strategies. Of 460 patients admitted with complete ASBO, 106 (23.0%) had surgery within 24 hours of admission. At surgery, 20 (18.9%) had ischemic bowel and 8 (7.5%) had perforations. The remaining 354 patients had a trial of non-operative management lasting at least 24 hours. Of 354 patients managed initially without surgery, 100 (28.2%) patients were discharged without operative intervention during their index admissions. Among the patients having surgery more than 24 hours after admission, indications for surgery were

generally failure to resolve, worsening clinical status, and change in imaging findings. Of those patients observed for at least 24 hours, 40 (15.7%) were found to have ischemic bowel and 5 (2.0%) had perforation at surgery. Rates of bowel resection, stoma creation and postoperative complications were similar for the immediate and delayed surgery groups. Among the delayed surgery group, 71 (28.0%) required a bowel resection and 11 (4.3%) stoma creation. Twenty one per cent had postoperative complications, most commonly ileus. There were no statistically significant differences in the outcomes between immediate and delayed groups regardless of duration of delay. Among patients observed with complete ASBO, 24.6 per cent of patients with adhesive obstruction resolved without surgery or readmission. Delaying operative management did not affect surgical findings or complication rates.

According to the retrospective study done at Sir Mortimer B. Davis-Jewish General Hospital, a university-affiliated teaching hospital in Montreal, Of the 1001 cases of SBO, 30 (3%) occurred in patients readmitted within 50 days of a previous laparotomy. This was the first episode of SBO for 19 (63%) patients. The laparotomy directly preceding the obstruction was the patient's only previous abdominal operation in 12 (40%) cases. The most frequent index procedure was a small-bowel operation (13), usually related to a previous SBO. The median interval between the index operation and SBO was 24 days the majority of cases, adhesions were the cause of obstruction (24 cases). Of the 30 cases of SBO, 7 (23%) were treated operatively. The median Interval between presentation with obstructive symptoms and operation was 18 hours (range from 5–96 h). The corrective operations included lyses of adhesions (5 cases), smallbowel resection (1) and herniorrhaphy (1). There was 1 episode of strangulated bowel attributed to a loop of “volvulized” jejunum associated with dense adhesions. Of the 5 patients with adhesions treated by operation, 4 were found to have multiple matted adhesions, and 1 had a single obstructive band. Because of the small numbers, no definitive conclusions can be made. However, patients with more signs and symptoms had a greater tendency to be treated operative. In the long term, the crude recurrence rate was 71%.

CHAPTER THREE: OBJECTIVE

2.1 General Objective: To determine the prevalence of adhesive small bowel obstruction and treatment outcomes in St.paul's Hospital Millennium Medical College.

2.2 Specific Objectives:

- ✓ To determine the prevalence of postoperative adhesive small bowel obstruction in St.paul's Hospital Millennium Medical College.
- ✓ To determine the treatment outcomes of postoperative adhesive small bowel obstruction in St.paul's Hospital Millennium Medical College.
- ✓ To compare OM & NOM outcomes of postoperative adhesive small bowel obstruction in St.paul's Hospital Millennium Medical College.

CHAPTER FOUR

METHODS AND MATERIALS

4.1 Study area and period

The study was conducted at SPHMMC department of Surgery which is found in Addis Ababa the capital city of Ethiopia. The hospital is founded in 1959 EC. In 2000 E.C the hospital transformed itself into a medical college. It is one of the referral hospitals in the country and has more than 380 inpatient beds of which more than 100 beds are in surgical wards.

4.2. Study design

A retrospective study design

4.3. Population

4.3.1 Source population: All patients admitted to General Surgery ward of SPHMMC from September 11, 2013 to January 1, 2018 G.C

4.3.2. Study population: All ASBO patients admitted and managed in SPHMMC to the surgical ward during the study period.

4.4. Sampling and sampling technique

No sampling technique was used.

All charts of patients that fulfil inclusion criteria admitted and managed for postoperative adhesive small bowel obstruction at SPHMMC during the study period were included in the study.

4.5. Inclusion and Exclusion criteria

Inclusion criteria:

All adult patients above 15 years with laparotomy or abdominal surgical scar admitted to SPHMMC surgical ward and diagnosed by the attending clinician to have ASBO.

Exclusion criteria:

1. less than 15 years.
2. Patients with non-postoperative ASBO.

4.6. Variables

Dependent variables – magnitude of ASBO, options of management, duration of NOM, length of hospital stay, common complications, mortality, intraoperative bowel status, outcomes of immediate operation and delayed operation , operation, correlating outcomes of both treatment

Independent variable – Age, sex, address, duration of illness

4.7. Data collection techniques

three medical interns were briefed on aim of the study and explanation to each question in data collecting format were given and joined the researcher on data collection. Data was collected from hospital admission/discharge records, patient cards and operation log books.

4.8. Quality assurance

Data was checked for completeness and cross checked for accuracy. Defective questioner containing inadequate data was rejected and all the questionnaire and document were kept properly for possible checking

4.9. Data analysis and interpretation

Data analyzed using SPSS software. The analyzed data presented using charts, tables, and graphs and described .

. 4.10. Ethical clearance

Ethical clearance was obtained from SPHMMC ethical review board and written permission was obtained from SPH administrator. The data was kept confidential and used for research purpose only.

4.11. Limitations of this study: Incomplete information on charts was drawback.

4.12. Operational definitions

Postoperative adhesive obstruction: an obstruction that happens as a result of bands or adhesions after abdominal surgery

Early postoperative ASBO: adhesion obstruction that happens within the first 6 week postoperative period

Hyperosmolar: higher concentration than serum concentration

Non operative management: is conservative management without surgical intervention

4.13. Plan for dissemination of findings

The research report will be submitted to supervisors, SPHMMC, SPH, SPHMMC library and other concerned bodies.

CHAPTER FIVE:RESULTS

A total of 83 (41.5%) patients were diagnosed to have acute small bowel obstruction due to postoperative adhesions, out of a total of 200 patients with acute small bowel obstruction seen during the study period. Postoperative adhesions have been the leading cause of small bowel obstruction followed by volvulus in adults.

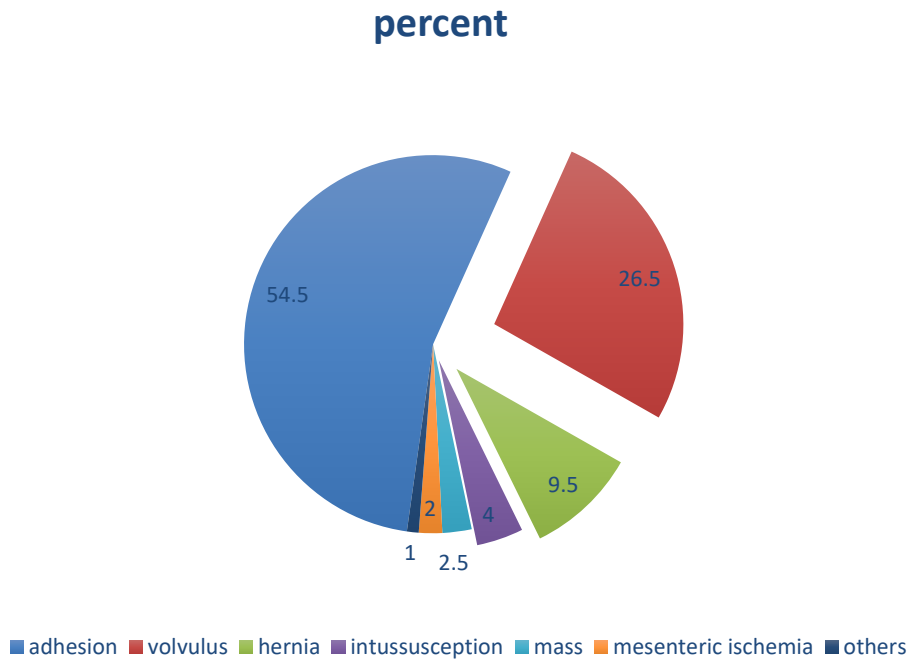


Figure 1causes of small bowel obstruction

Socio-demographic characteristics of study subjects.

There were charts of 49(59.0%) males and 34(41.0%) females with the male to female ratio of 1.4:1. Majority of patients were between the ages of 15-35 (54.2%) (see table 1)

Table-1 Socio-demographic characteristics of subjects with postoperative adhesion obstructions at SPMMC from September 11,2013 to janaury1, 2018 G.C (N=83)

		Frequency	Percent
Age(years)	15-25	23	27.7
	26-35	22	26.5
	36-45	11	13.3
	46-55	12	14.5
	56-65	10	12.0
	>65	5	6.0
	Total	83	100.0
Sex	Male	49	59.0
	Female	34	41.0
	Total	83	100.0

The previous index operation in 53 (63.5%) patients had previous laparotomy, 16 (19.3%) had previous gynecological, and 14 (16.9%) had appendectomy operations. Majority of the patient index operations 64 (77.1%) have been done within five years prior to obstruction.

Table-2 index operation and interval from operation to obstruction at SPMMC September 11, 2013 to January1, 2018 G.C

		Frequency	Percent
Index operation	Laparotomy	53	63.9
	Gynecology	16	19.3
	Appendectomy	14	16.9
	Total	83	100.0
Interval	Less than 5 years	64	77.1
	5-10 years	9	10.8
	11-15 years	8	9.6
	16-20years	2	2.4
	Total	83	100

The majority of these patients 68(81.93%) were treated surgically among whom 41(60.29%) patients operated immediately or within 24hrs and 27(39.71%) after trial of conservative management while among 42(50.60%)

patients who had treated conservatively, only 14 (33.33%) of them treated successfully, 27 (68.29%) failed and operated and 1 (3.38%) patient died while on management.

Table 3 operative and NOM management at SPMMC from September 11, 2013 to January 1, 2018 G.C

management		Frequency	Percent
operative	Immediately	41	60.29
	after trial NOM	27	39.71
	Total	68	100.0
Failed	28	66.67	
NOM Successful	14	33.33	
Total	42	100	

Length of hospital stay for those managed conservatively, 8 (57.14%) patients stayed 4-7 days, 4 (28.57%) patients more than 7 days and 2 (14.29%) patients 2-3 days. A length of hospital stay for the operated, 39 (57.35%) patients stayed 4-7 days (28 (71.79%) patients operated immediately, 11 (28.21%) patients after trial), 28 (41.18%) patients stayed more than 7 days (12 (42.86%) patients operated immediately, 16 (57.14%) patients operated after trial) and only 1 (1.47%) patients stayed 2-3 days. The common complications after adhesion obstruction managements occurred in 24 (28.92%), 14 (16.87%) immediately operated & 10 (12.05%) after trial), patients are surgical site infection 8 (11.76%), hypokalemia 11 (13.25%), ileus 5 (6.02%), Death 6 (7.3%), 5 (6.02%) patients, 2 immediately operate and 3 after trial of conservative, died after surgery, 1 (1.02%) died while on conservative management and others wound dehiscence (1), Enterocutaneous Fistula and collection.

Table-4 length of hospital stay in conservatively managed patients at SPMMC from September 11, 2013 to January 1, 2018 G.C

Length of hospital stay	Operative management		Conservative(NOM)
	Immediate	after trial NOM	
2-3 days	1	0	12
4-7days	28	11	39 8
More than 7days	12	16	284
Total	41	27	6814

Table- 5 complications in operated patients at SPMMC from September 11, 2013 to January 1, 2018

Complications	Operative management		Total	percent
	immediate	after trial NOM		
SSI	5	2	7	
wound dehiscence	1	0	1	
septic shock & death	1	2	3	
hypokalemia	3	2	5	
hypokalemia + septic shock + death	0	2	2	
SSI + ECF + Collection	0	1	1	
prolonged post op ileus	1	0	1	
Ileus + Hypokalemia	3	1	4	
Total	14	10	24	

CHAPTER 6: DISCUSSION

Abdominal adhesions, which can begin forming within a few hours after an operation, represent the most common cause of intestinal obstruction being responsible for 75% of SBO in westerns. In case of this study, out of 200 patients with SBO, 83 (41.5%) were due to postoperative adhesion which was the commonest cause in adult. According to the prospective done in Kenyatta National Hospital, Kenya, There were an incidence of 14.1% for ASBO in KNH. In Nigeria it is 23.9% of small bowel obstructions¹⁰.

Out of 83 patients admitted with ASBO, majority of them, 68(81.93%) were treated surgically among whom 41(60.29%) patients operated immediately or within 24hrs and 27(39.71%) after trial of conservative management. Among 42(50.60%) patients on conservative management, only 14 (33.33%) treated successfully, 27(68.29%) operated and 1(3.38%) patient died but the success rate of non-operative management of ASBO was about 70-90% according to Bologna guideline⁴. Increased number of operated patients on conservative management in this study might be due inappropriate patient selection and early surgical intervention without indication. Out of 41 patients operated within 24 hours, 6(14.63 %) patients had ischemia and 11(26.83%) patients had gangrenous bowel intraoperatively while out of operated patients after trial of conservative management 3(11.11%) and 3(11.11%) patients had bowel ischemia and gangrene respectively. Bowel resection has been done in 17(42.5%) patients operated immediately and 8(29.6%) patients operated after trial of conservative management. Retrospective study done at Mount Sinai Hospital shows, Of 460 patients admitted with ASBO, 106 (23.0%) had surgery within 24 hours of admission. At surgery, 20 (18.9%) had ischemic bowel and 8 (7.5%) had perforations. The remaining 354 patients had a trial of non-operative management lasting at least 24 hours. Of 354 patients managed initially without surgery, 100 (28.2%) patients were discharged without operative intervention during their index admissions. Of those patients observed for at least 24 hours, 40 (15.7%) were found to have ischemic bowel and 5 (2.0%) had perforation at surgery. Rates of bowel resection, stoma creation and postoperative complications were similar for the immediate and delayed surgery groups. Among the delayed surgery group, 71 (28.0%) required a bowel resection. 21% had postoperative complications, most commonly ileus. There were no statistically significant differences in the outcomes between immediate and delayed groups regardless of duration of delay¹¹. According to the retrospective study done at Sir Mortimer B. Davis-Jewish General Hospital, Of the 30 cases of SBO, 7 (23%) were treated operatively with one strangulation. According to east Africa journal, 42(45%) patients were operated on, 25(59%) of them being operated on more than 72 hours after the start of the symptoms. 8(9%) patients had Ischaemic gut injury by the time of operations⁴.

Length of hospital stay for those managed conservatively and operatively are comparable with 8(57.14%) patients and 39(57.35%) patients stayed 4-7 days respectively. majority of them are patients with immediate operation, majority of patients, 16 (66.7%) who stayed more than 7 days are patients operated after failed conservative trial and it is 4-8 days and 9-28 days for conservative and operative respectively in Nigerian study¹⁰.

The common complications after adhesion obstruction managements occurred in 24 (28.92%) patients

CHAPTER 7:CONCLUSION and RECOMMONDATIONS.

7.1 CONCLUSION

Postoperative adhesion obstruction is the most common cause of small bowel obstruction which accounts about 41.5% of all SBO in SPHMMC. About three fourth of the patients who have been admitted with ASBO was managed operatively and about two third of them operated within 24 hours and the rest after failed conservative trial. An average duration of conservative management was 48 hours with range of 24-48hrs. Out of patients assigned to conservative management initially on admission, only one third was treated successfully and two thirds was operated after trial due to different reasons. 28.92% of the patients was developed complications and the most complications were surgical site infection, hypokalemia and ileus. Length of hospital stay was 4-7 days in majority of both operative and conservatively managed patients, and most of the patients who had stayed more than 7 days were patients operated after failed conservative management. Mortality rate was 7.3% attributed to operated patient except one patient died while conservative management

Limitation: poor documentation on chart of the patient on diagnosis, during course of conservative management.

- small sample size , and lack of long term follow up to see the recurrence in both operated and non-operated patients.

7.2 RECOMMONDSTIONS

Surgery department and SPMMC should have management guideline for postoperative adhesive small bowel obstruction management. The patient should be selected properly for either conservative management or operative management based on clinical and radiological evidence. The indication for surgical intervention while the patient is on conservative management should be clearly set because in this study, majority of the patients operated after conservative management had no clear indication for early intervention and majority of those who were operated had no intraoperative bowel ischemia and gangrene as well no increased postoperative complications. It also suggests that a patient with postoperative small bowel obstruction can be followed for 72 hours without any increased risk intraoperative ischemia and postoperative complications. Proper follow up and handover patients is recommended to avoid unnecessary operative intervention.

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