

PREVALENCE AND TREATMENT OUTCOME OF ADHESIVE  
SMALL BOWEL OBSTRUCTION AMONG PATIENTS  
PRESENTED TO JIMMA UNIVERSITY MEDICAL CENTER



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BY FETENE TILAHUN (MD, SURGERY RESIDENT)

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FUCALTY OF MEDICAL SCIENCES SCHOOL  
OF MEDICINE, DEPARTEMENT OFSURGERY

PREVALENCE AND TREATEMENT OUTCOME OF ADHESIVE SMALL  
BOWEL OBSTRUCTION IN JIMMA UNIVERSITY MEDICAL CENTER  
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BY: FETENE TILAHUN  
ADVISOR: YADANI MICHA'EL (MD, ASSISTANT PROFESSOR)

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JIMMA, ETHIOPIA

## Abstract

**BACKGROUND:** Intra-abdominal adhesions after abdominal surgery are a significant unsolved issue. They are the most common cause of intestinal blockage in the small intestine. Clinical assessment, water-soluble contrast follow-up, and computed tomography scans are used to make the diagnosis. There is good evidence to support non-operative therapy for individuals with no indications of strangulation, peritonitis, or significant intestinal damage. In cases of suspected strangulation or after failed conservative management, open surgery is the preferred option for surgical treatment of sticky small intestinal obstruction. The primary contemporary notions of adhesion prevention are "good" surgical technique and anti-adhesive barriers. Because there are few studies in our country and in the study area, this study will aid in establishing an understanding of the prevalence and treatment outcome of adhesive small bowel obstruction at JUMC, as well as benefit future researchers as a reference and guide for those who have undergone similar studies.

**Objective:** To assess prevalence and treatment outcome of adhesive small bowel obstruction admitted to the JUMC from January 1 to December 31, 2021.

**Methodology:** A cross-sectional study was conducted at JUMC on all patients with the diagnosis of adhesive small bowel obstruction from January 1 to December 31, 2021. Data was collected by using structured questionnaire from the patients and their chart. Data was entered to SPSS updated version 26. Descriptive and analytic studies were performed. P value  $\leq 0.05$  with 95% confidence interval (CI) was used to interpret the findings.

**Result:** A Total of 117 patients were included in this study with male to female ratio of 2:1. The age ranges from 18 to 88, majority of patients were in their 3<sup>rd</sup> and 4<sup>th</sup> decade of life. The leading cause of small bowel obstruction was adhesion 52(44.5%) followed by small bowel volvulus 46(39.4%). Of Adhesive Small Bowel Obstruction, 69.6% were managed surgically and 30.4% were treated conservatively. Surgical site infections were the most common post-operative complications (7.7%) and mortality rates was 5.7%.

**Conclusion:** Adhesion was found to be the most common cause of small bowel obstruction in surgical patients presenting JUMC. Most of patients with Adhesive Small Bowel Obstruction were surgically managed. Surgical site infection is the most common post-operative complications and mortality rate of 5.7%. All surgeons and residents operating abdomen and pelvic should try to minimize known risks of adhesions.

**Key words:** small bowel obstruction; adhesive small bowel obstruction; management of adhesive small bowel obstruction.

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Abstract.....	III
Acknowledgement.....	IV
List of Tables and figures.....	VII
CHAPTER ONE: INTRODUCTION.....	1
1.2 statement of the problem.....	4
1.3 significance of the study.....	5
CHAPTER TWO: LITERATURE REVIEW.....	6
2.1 Prevalence of Adhesive Small Bowel Obstruction.....	6
2.2 Treatment Outcome of Adhesive Small Bowel Obstruction in JUMC.....	8
Chapter Three: Objectives.....	11
General objective.....	11
Specific objectives.....	11
CHAPTER FOUR: METHOD AND MATERIALS.....	12
4.1. Study area and setting.....	12
4.2. Study design.....	12
4.3. Population.....	12
4.3.1. Source population.....	12
4.3.2. Study populations.....	12
4.3.3. Inclusion Criteria.....	12
4.3.4. Exclusion Criteria.....	12
4.4 .Sampling technique and sample size.....	13
4.5. Study variables.....	13
4.5.1. Dependent variables.....	13
4.5.2 Independent variables.....	13
4.6. Data collection instrument and methods.....	14
4.7. Data processing and analysis.....	14
4.8. Ethical consideration.....	15
4.9. Possible Limitation of the study.....	15
4.10. Dissemination of Results.....	15
4.11. Operational Definitions.....	16
CHAPTER FIVE: RESULT AND DISCUSSION.....	17

5.1 Result .....	17
5.1.1 Socio demographic characteristics .....	17
5.2 Discussion.....	25
CHAPTER SIX: CONCLUSION AND RECOMMENDATION .....	27
Limitation study.....	27
Reference .....	28
Annex: Questionnaires/Check list .....	30

## List of Tables and figures

### List of Tables

Table 1 Socio-demographic characteristics.....	17
Table 2 clinical presentation of patients.....	18
Table 3 risk factors and chronic medical illness.....	19
Table 4 conservative management.....	22
Table 5 surgical treatment.....	22
Table 6 post operative complications.....	23
Table 7 outcome of patient.....	23
Table 8 correlation table.....	24

### List of figures

Figure 1 conceptual framework .....	10
Figure 2 cause of small bowel obstructions.....	20
Figure 3 diagnosis of Adhesive Small Bowel Obstruction.....	21

## List of abbreviations

A.A	Addis Ababa
AIO	adhesive intestinal obstruction
ASA	American Society of Anesthesiology
JUMC	Jimma university medical centre
USA	United State of America
IO	Intestinal obstruction
UK	United Kingdom
ATT	Anti tuberculosis treatment
SD	standard deviation
COPD	Chronic Obstructive Pulmonary Diseases



## CHAPTER ONE: INTRODUCTION

Abdominal adhesions are abnormal intra peritoneal fibrous bands connecting surfaces (which usually are separated) to each other. The small bowel is a few meters long, intra-peritoneal, free, mobile, and pan-quadratic viscous. As a result, it is at the greatest risk of developing adhesions to itself or the abdominal wall. Adhesive Small Bowel Obstruction is diagnosed in patients who have had any type of abdominal intervention in the past and are currently experiencing cardinal signs of intestinal obstruction such as abdominal pain, nausea or vomiting, abdominal distension, and extreme constipation. Adhesive Small Bowel Obstruction is a serious illness. Clinical judgment is aided by serum biochemistry and imaging(1).

Intra -abdominal adhesions can be congenital or acquired, incomplete or complete, and single or matted. Congenital adhesions form de novo during organogenesis, are uncommon (3%), often asymptomatic, and can present as an incidental finding in all ages. Local inflammation in reaction to peritoneal injury, such as abdomino-pelvic surgery (85%), peritonitis, and endometriosis, and radiotherapy, causes acquired intra-abdominal adhesions to form. Intestines can kink or twist at adhesion sites, resulting in incomplete or complete mechanical SBO. Some fluid or gas can still pass through an incomplete (partial or low grade) blockage, but no fluid or gas can pass through a complete (high grade) obstruction(1).

Single-band or matted abdominal adhesions are both possible. Small Bowel Obstruction is caused by single-band adhesions that are less than one centimeter long and more than one centimeter in diameter. In single-band Small Bowel Obstruction, bowel ischemia and high-grade blockages are more common. Matted adhesions are multiple, dense, and tangled, and they produce Small Bowel Obstruction via kinking (a sudden turn of the bowel's long axis) or torsion (rotation of the bowel about its axis). Matted adhesions had a higher risk of bowel perforation, a higher probability of readmission after surgery (49 percent versus 25 percent for single-band adhesions), and a higher risk of recurrence. Closed-loop obstruction is a type of adhesion that occurs when two sites along a bowel segment are obstructed at the same time, isolating the obstructed section. This type of obstruction is linked to a higher risk of strangulation and infarction, as well as a 10–35 percent mortality rate(1).

The most common site of adhesion formation is between the larger omentum and the midline closure, although unless the gut wall is implicated, these adhesions rarely result in bowel obstructions. The number of previous interventions, a history of peritonitis, and being under 60 years old are all risk factors for the formation of symptomatic adhesion(1).

Adhesions cause both direct (acute intestinal obstruction, chronic abdominal pain, infertility) and indirect (difficult dissection, prolonged operating duration, intra- and post-operative complication) difficulties during surgical re-interventions(2).

Peritoneal adhesions are the cause of 32% of acute intestinal blockages and 65-75 percent of small bowel obstructions. This complication is responsible for 2.6—3.3 percent of all laparotomy indications. Peritoneal adhesions were more likely to occur as a result of previous abdominal procedures. The time between the initial abdominal surgery and the first episode of acute small intestinal blockage varies greatly, ranging from eight days to 60 years on average. During re-intervention for small intestinal blockage, the requirement to resect the intestine ranges from 5.7 to 23.2 percent. This complication appears to be more common following previous colorectal surgery, which carries the risk of more complex adhesion formation (2).

Surgery to treat adhesion-related acute small intestine blockage was projected to have a post-operative death rate of less than 10%. The presence of dyspnea at rest, renal insufficiency, hem concentration/dehydration, the type of obstruction (mechanical + strangulation), intraoperative complications (intestinal spillage with peritoneal contamination), and post-operative medical complications were all identified as pre- and post-operative risk factors for mortality. Surprisingly, the requirement for excision of the intestine did not appear to be a risk factor for death(2).

Unless there is evidence of peritonitis, strangulation, or intestinal ischemia, non-operative therapy should always be considered in patients with adhesive small bowel obstruction. Although there is a modest reduction in the likelihood of recurrence after operative treatment, this is not a justification to choose a primary surgical strategy. Emergency surgical exploration has a high morbidity rate; there is a major danger of bowel injury, and surgical therapy may have a significant negative impact on post-operative life quality(3).

When adhesive small bowel obstructions are treated, delaying surgery for longer can worsen postoperative outcomes in patients who ultimately require surgery. For those patients who require surgery after attempting nonsurgical treatment, each additional day from admission to surgery increases the rate of bowel resection and major complications. Clinical practice guidelines should highlight strategies that identify patients who ultimately need surgery and ensure that they undergo surgical treatment in a timely manner(4).

## 1.2 statement of the problem

In industrialized areas, adhesive small bowel obstruction is the most common cause of intestinal obstruction, surpassing strangulated hernia as the most common cause of IO in undeveloped countries. Intra-abdominal adhesions after abdominal surgery are a major unsolved problem; Adhesive Small Bowel Obstruction is a common source of abdominal pain in patients, accounting for 4% of all emergency department admissions and 20% of emergency surgeries performed(5).

Fibrous bands are expected to occur in up to 93 percent of people who have abdominal surgery, and they can make subsequent surgery much more difficult. However, in a long-term follow-up study examining the rate of hospitalization due to Adhesive Small Bowel Obstruction for patients operated on due to suspected appendicitis, the laparoscopic approach resulted in significantly lower rates compared to open surgery. However, frequency of Adhesive Small Bowel Obstruction after the index surgery was low in both groups(5).

Following colorectal, oncologic gynecological, or pediatric surgery, the risk of Adhesive Small bowel Bowel Obstruction is highest. Within three years post colostomy, one out of every ten patients will experience at least one episode of Small Bowel Obstruction. After pediatric surgery, Adhesive Small Bowel Obstruction reoperations occur in 4.2 to 12.6 percent of patients and 3.2 percent of colorectal surgery patients. Adhesive Small Bowel Obstruction recurrence is also common; 13% of non-operatively treated patients are readmitted after one year, rising to 20% after five years. With operative treatment, the probability of recurrence is modestly reduced: after one year, the rate is 8%, and five years, the rate is 16% (3).

### **1.3 significance of the study**

This study will help to establish an understanding on the prevalence and treatment outcome of adhesive small bowel obstruction at JUMC, because there are limited studies in our country and in study area. The study will also benefit future researchers as an input for their subsequent reference and serve as guide who undergone similar studies.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Prevalence of Adhesive Small Bowel Obstruction

Adhesive small bowel obstruction continues to be one of the most common emergency surgical conditions in both the developed and developing countries. Disease burden and respective treatment remain as a problem worldwide(5)

A retrospective study done on adhesive small bowel obstruction, department of digestive, oncology, university Hospital of Tours, France showed Median age was 74 (16–104) years and there were 85 males (55).<sup>2</sup> All of the patients had previously undergone open abdominal surgery. Abdominal pain, both spontaneous and prompted, was substantially more common in the (95 percent). There was considerably higher intraperitoneal fluid, feces sign, and devascularized intestine in patients who needed surgery(6).

Cross sectional study which was performed at Tripati Hospital, department of surgery, Andhra Pradesh, India showed that mean age at presentation was  $48 \pm 16$  years. It showed the most age with diagnosis of AIO was between 31-40 years (24%), followed by age of 21-30 years (17%) with male to female ratio of 2.2:1. The most common symptoms were abdominal pain and vomiting (90% and 80% respectively) whereas the frequent signs were abdominal scars and visible peristalsis 48% and 30% respectively. The most common cause of intestinal obstruction was post operative adhesions(48%) followed by obstructed hernia(20%)(7).

A six-year assessment of patients diagnosed with intestinal obstruction at the Federal Medical Centre in Owo, southwestern Nigeria, revealed that 61 males (64.2 percent) and 34 females (64.2 percent) died (35.8 percent). The male-to-female ratio was 1.8 to 1. The most prevalent diagnosis was adherent intestinal obstruction, which occurred in 42 (44.2%) of patients(8).

A 3 year retrospective descriptive study was carried out in Moi Teaching and Referral Hospital, Kenya. A total of 93 patients with adhesive intestinal obstructions were analyzed. Of these 57 were male and 36 were female giving male to female ratio of 1.6:1. median age range was 30-39 years. Abdominal pain was present in 85%, vomiting was present in 75%, constipation was present in 73% and abdominal distention was present in 50%. 77% of patients had history abdominal surgery which include appendicitis and in 23% of patient had gynecologic/obstetric operations(9).

The Tikur Ambessa Teaching Hospital in Addis Ababa, Ethiopia, undertook a one-year retrospective analysis. A total of 276 patients were admitted with an acute abdominal diagnosis, with the data of 235 patients serving as the study's foundation. The ratio of males to females was 2:1. The participants' ages range from 14 to 84, with a median of 30.7+-14.99. The mean duration of patient presentation was 8 days. 33 patients were diagnosed with small bowel obstruction, twenty-four were male and fifteen were female with the mean age of 33.5 years. Adhesions was the most common cause of small bowel obstruction (17/33), Nine were males and eight were females. 12 had previous abdominal surgery and ten patients were from outside of A.A. Abdominal pain and vomiting were the most frequent symptoms (100% and 79% respectively) whereas tenderness and guarding were the most frequent signs found (83% and 61% respectively)(10).

A 3 year retrospective cross-sectional study done at Mizan General Hospital, Ethiopia. 157 patients were diagnosed with small bowel obstruction with male to female ratio of 2.15:1 majority of patients were from rural. The leading cause of small bowel obstruction was adhesion 48(47%) followed by small bowel volvulus 34(33.3%)(11).

## 2.2 Treatment Outcome of Adhesive Small Bowel Obstruction in JUMC

A review of treatment pattern and associated effect of cost due to adhesive small bowel obstruction done over two years at two district general hospital in Joyce Green Hospital and Colchester ,UK, Of the 110 admissions detailed, 41 (37%) were treated surgically and 69 (63%) conservatively. Mean length of stay was 16.3 days (11.0 days) for surgical treatment and 7.0 days (4.6 days) for conservative treatment. In-patient mortality was 9.8% for the surgical group and 7.2% for the conservative group(12).

A retrospective cohort population based study done using National inpatient sample under federal health centre done on management of adhesive small bowel obstruction for 10 years in USA, a total of 1,930,289 patients, 863,465 patients (44.73%) underwent surgical procedures for ASBO. Patients who received surgical management were found to be significantly younger (62.97 vs. 63.94 years,) and predominantly female (61.99% vs. 57.31%).Patients in the operative group were found to have increased lengths of stay compared with the nonoperative group (7.34 vs. 12.80 days)(13).

A cross sectional study done at south India on adhesive small bowel obstruction shows surgical management of adhesions was done by release of adhesions (48%), constriction release and anatomical repair in obstructed/strangulated hernia (20%), resection and end to end anastomosis for volvulus (15%) and Hartman's procedure for malignancies four percent. Patients diagnosed with AIO secondary to tuberculosis abdomen were managed conservatively with Anti Tuberculosis Treatment (ATT) (12%) (7).

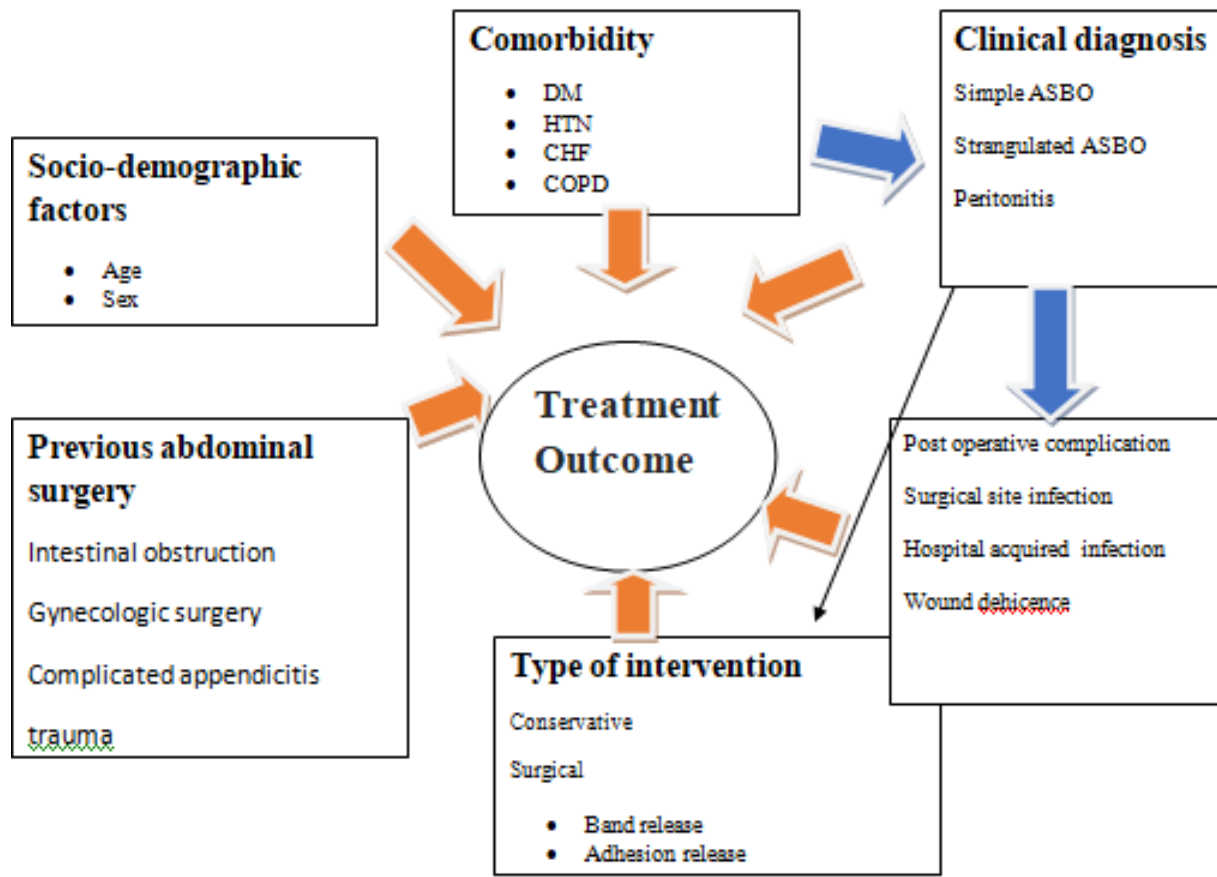
A 4 year retrospective descriptive study was carried out in Moi Teaching and Referral Hospital, Kenya. A total of 93 patients with adhesive intestinal obstructions were analyzed.57% of patients were surgically managed,36% of operated patients had band and 45% had matted adhesions(9).



For one year, the pattern of acute abdominal pain in adult patients at Tikur Anbessa Teaching Hospital in Addis Ababa, Ethiopia. The most common cause of small intestine obstruction (17/33) was adhesions. There were nine males and eight females. Ten of the participants were from outside of A.A., and 12 had already undergone surgery. Four were managed conservatively, and thirteen were operated on, four of whom died(10).

A 3 year retrospective cross-sectional study done at Mizan General Hospital, Ethiopia. Adhesive Small Bowel Obstruction 48(47%) was the leading cause Small Bowel Obstruction. Out of these 18 cases (36%) were managed conservatively. The most common procedure done was resection and anastomosis, followed by adhesion release. Thirty eight cases(37.3)were developed post operative complications .The most common complications were surgical site infections in 57.5% and mortality rate of 9.5% (11).

## Conceptual Framework



## **Chapter Three: Objectives**

### **General objective**

To assess the prevalence and treatment outcome of adhesive small bowel obstruction admitted to JUMC from January 1 to December 31/2021

### **Specific objectives**

1. To assess prevalence of adhesive small bowel obstruction in JUMC from January 1 to December 31, 2021.
2. To assess treatment outcome of adhesive small bowel obstruction in JUMC from January 1 to December 31, 2021

## **CHAPTER FOUR: METHOD AND MATERIALS**

### **4.1. Study area and setting**

The study was conducted in JUMC, surgical wards from January 1 to december 31, 2021.JUMC is found in Jimma town, which is located 350km southwest of Addis Ababa and It is the only teaching and referral hospital in the southwestern part of the country with 800 bed capacity and catchment population of over 15 million people.

### **4.2. Study design**

An institutional based cross-sectional study design was employed.

### **4.3. Population**

#### **4.3.1. Source population**

All patients admitted to JUMC surgical ward

#### **4.3.2. Study populations**

All patients with the diagnosis of small bowel obstruction admitted to JUMC during the study period.

#### **4.3.3. Inclusion Criteria**

All patients admitted with the diagnosis small bowel obstruction to JUMC.

#### **4.3.4. Exclusion Criteria**

Those patients who were unwilling to participate, whose data were incomplete and those who defaulted from treatment after being admitted and transferred to another center

#### **4.4 .Sampling technique and sample size**

The sample was all patients admitted for small bowel obstruction during the study period.

#### **4.5. Study variables**

##### **4.5.1. Dependent variables**

Treatment Outcome

##### **4.5.2 Independent variables**

- Age
- Sex
- Address
- Clinical presentation
- previous abdominal surgery
- chronic medical illness
- Type of surgical intervention
- Type of intervention
- postoperative complications

#### **4.6. Data collection instrument and methods**

The questionnaire /check list paper encompassing socio-demographic status and clinical parts were prepared using the commonest factors affecting the patient surgical disease. Then data was collected by filling the structured questionnaire and records of cases were revised for follow up during the hospital stay. Data was filled by a principal investigator using the structured questionnaire attached to patient's chart. The data collection was started on admission and completed up on discharge.

#### **4.7. Data processing and analysis**

The collected data was first checked for its completeness and the data was coded, entered and analyzed using SPSS version 26. Finally, data was presented in ratio, tables and graphs as necessary and statistical test for association was done with cross tabulation.

#### **4.8. Ethical consideration**

Prior to data collection a formal letter of permission was collected from JU student research program office and forwarded to JUMC administrative office to get permission for the study. The ethical clearance was obtained from ethical committee Jimma University. Informed consent was also obtained from each client and introduced the objective of the study that it contributes to set interventions and strategies to improve services. Purpose and procedure of the study was explained to Jimma University administrative Office and other concerned body to avoid ambiguity. Patients' records were kept confidential.

#### **4.9. Possible Limitation of the study**

Since duration of study was short, sample size may be small to generalize.

#### **4.10. Dissemination of Results**

After data analyzed conclusion and recommendation was made the result will be submitted to surgery department, JUMC with hard copy. Attempts will be made to publish the finding on peer review journals.

## 4.11. Operational Definitions

Outcome of patients - Condition of patient at discharge

Died – patient who was passed away at discharge

Improved –patient condition who resolved from symptoms of obstruction and able to pass feces and flatus and no other illness

Post- operative complication-newly acquired illness after surgical treatment

Conservative treatment - nonsurgical management of adhesive small bowel obstruction with intra venous fluids, naso-gastric tube and keeping NPO.

Failed conservative treatment- unsuccessful medical management of adhesive small bowel obstruction



## CHAPTER FIVE: RESULT AND DISCUSSION

### 5.1 Result

#### 5.1.1 Socio demographic characteristics

There were a total of 117 patients admitted to JUMC for small bowel obstruction included in the study. From these, 52 patients were diagnosed with adhesive small bowel obstruction. Of which, (67.3%) males with male to female ratio of 2:1. Most of study participants 36.5% were in the age group of 18-30 years and age ranges from 18 to 88 years. 28(53.8) were from urban and 24(46.2) were from rural. Table1. Age has an association to mortality of patient with confidence interval of 95 (p-value 0.025). Tables8. Sex has no association with the outcome of patient (p-value 0.23).

**Table 1 socio demographic characteristic**

		Frequency	Percent
Age	18-30	19	36.5
	31-40	16	30.8
	41-50	9	17.3
	51-70	6	11.5
	>70	2	3.8
Sex	Female	17	32.7
	Male	35	67.3
Residence	Urban	28	53.8
	Rural	24	46.2
	Total	52	100.0

The patients had multiple symptoms and signs but the most common symptoms were abdominal pain 52(100%) cases, followed by vomiting 49(94.2%), constipation 41(78.8%) and abdominal distention 34(65.4%). The most common sign at presentation were abdominal distention 40(93%), followed by tachycardia 28(65.1%). Around 22(42.4%) of cases were presented after 72 hours and 13(25%) cases were presented within 24 hours of illness. Table 2.

**Table 2 clinical presentations**

Clinical presentations		Frequency	Percent
Duration of illness	<24 hrs	13	25.0%
	24-72hrs	17	32.6%
	>72hrs	22	42.4%
Symptoms	Abdominal pain	52	100.0%
	Vomiting	49	94.2%
	Constipation	41	78.8%
	abdominal distention	34	65.4%
Signs	Abdominal tenderness	17	39.5%
	Guarding	5	11.6%
	Tachycardia	28	65.1%
	Distended abdomen	40	93.0%

Forty eight (92.3%) cases of Adhesive Small Bowel Obstructions had previous history of abdominal surgery, 4(7.7) had primary adhesive obstructions but has no significant association with treatment outcome (p value 0.9). Twenty eight patients (48.1%) were operated for intestinal obstructions and eight patients (15.4%) were operated for gynecologic cases followed by complicated appendicitis 5(9.6%) and trauma 4(7.7%). Four patients (7.6%) had concomitant chronic medial illness. Table 3. In the present study previous gynecology surgery had significant association with mortality of patients (p value 0.011). Table 8.

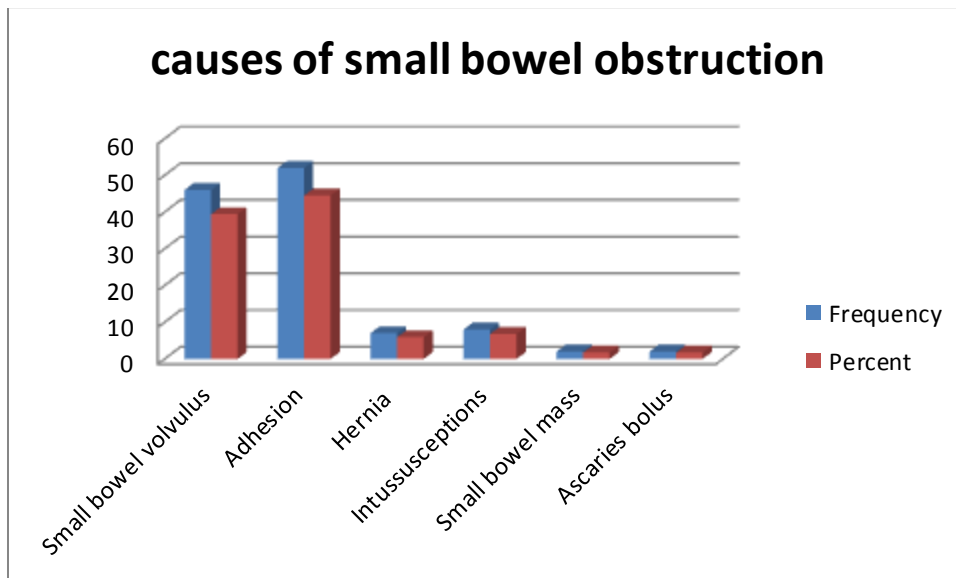
**Table 3 risk factors for adhesion and chronic medical illness**

<b>Previous surgery</b>	<b>Frequency</b>	<b>Percent</b>
Yes	48	92.3
No	4	7.7
Total	52	100.0
<b>Indication for previous surgery</b>		
intestinal obstruction	25	48.1
Trauma	4	7.7
gastrointestinal tumor	2	3.8
complicated appendicitis	5	9.6
gynecologic cases	8	15.4
Others	4	7.7
no surgery	4	7.7
Total	52	100.0
<b>Chronic medical illness</b>		
Hypertension	1	1.9
Diabetic and hypertension	1	1.9
DM	1	1.9
Others	1	1.9
Total	4	7.6

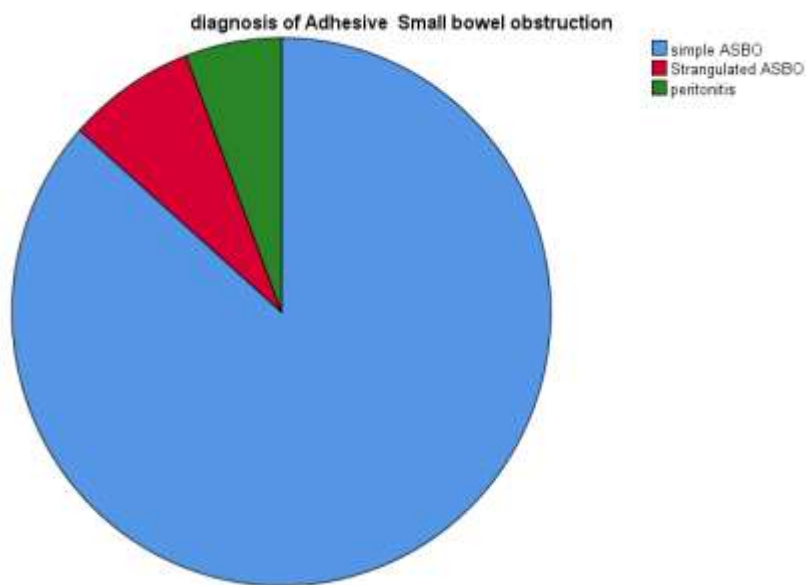
### Prevalence of adhesive small bowel obstruction

In this study period Adhesion was found to be the most common cause of small bowel obstructions 52(44.5%) followed by small bowel volvulus 46(39.4%), intussusceptions 8 (6.8%), hernia 7(5.9%). Small intestine mass and Ascaries bolus were the least cause of small intestinal obstruction accounting for two cases (1.7%) each. Figure1. Forty five patients (86.5%) were diagnosed with simple Adhesive Small Bowel Obstruction followed with strangulated Adhesive Small Bowel Obstruction four patients (7.7%) and gangrenous Adhesive Small Bowel Obstruction three patients (5.8). Figure2. In this study patients presented with peritonitis have significant association with patient mortality (p value 0.004) .Table 8.

Figure 1 causes of small bowel obstruction



**Figure 2 diagnosis of adhesive small bowel obstruction**



For Sixteen patients (30.8%) conservative treatment was successful. In thirty six cases (69.2%) were treated surgically .Table 6. Band release was the most common surgical procedure done for 17 patients (48.5%) followed by adhesionolysis done for nine cases (25.7%) and adhesionolysis and band release & band release and resection and anastomosis were done for four patients (11.4%) each. Band release and stoma was the least surgical procedure done for one case .Table 7.

**Table 4 conservative treatment**

Conservative treatment	Frequency	Percent
Successful	16	30.8
Failed	15	28.8
not tried	21	40.4
Total	52	

**Table 5 surgical treatment**

Surgical treatment	Frequency	Percent
Adhesionolysis	9	25.7
Band release	17	48.5
adhesionolysis and band release	4	11.4
band release and stoma	1	2.8
band release , resection and anastomosis	4	11.4
Total	35	100.0

In the study period Surgical site infections were the most common post-operative complications occurred in four patients (7.7%) followed by hospital acquired infection /sepsis accounted for three cases (5.8%) and complete wound dehiscence that happened in two patients (3.8%).Table 6. Post-operative complications had a significant correlation with mortality of the patient with (p value 0.01) .Table 8. Most of patients were improved and discharged forty nine patients (94.2%) and few patients died three (5.8%).Table7.

**Table 6 post operative complications**

<b>Complications</b>	<b>Frequency</b>	<b>Percent</b>
complete wound dehiscence	2	3.8
surgical site infection	4	7.7
hospital acquired infection/sepsis	3	5.8
Total	9	15.0

**Table 7 Outcome of patients at discharge**

<b>Outcome at discharge</b>		<b>Frequency</b>	<b>Percent</b>
Outcome	improved and discharged	49	94.2
	Died	3	5.8
	Total	52	100.0

Table 8 correlation of variables and outcome of patients

Variables		Outcome			P value
		Improved	Died	Total	
Age in years	41-50	8	1	9	0.025
	51-70	5	1	6	
	>70	2	1	3	
Gynecologic surgery		6	2	8	0.01
Peritonitis		1	2	3	0.004
Post- operative complications		6	3	9	0.001



## 5.2 Discussion

Adhesive small bowel obstructions were one of the common diagnoses that need emergency medical and surgical treatment. There are very few studies done on the adhesive SBO in Africa including Ethiopia. In this study majority of patients were in their 3<sup>rd</sup> and 4<sup>th</sup> decade of life, peak in age group of 18-30 years. Males 35(67.3%) were more affected than females 17(32.7%) with male to female ratio of 2:1, which is in agreement with previously done researches in Kenya 57 were males and 36 were females with median age range was 30-39 years, male to female ratio of 1.6:1(7), study in Tikur Ambessa Teaching Hospital 155 were males and 86 were females with mean age of 30.7<sub>+14</sub>, male to female ratio 2:1(10) but contradicts with other study France 85 were males and 69 were females with median age of 74, male to female ratio 1.2:1 (6).

In the present study abdominal pain was the most common presentation in 100% cases followed by vomiting 94.2%, constipation 78.8% and distension 65.4% which was similar to other studies (7)(9)(6). In this study the most common risk factor for adhesion was previous abdominal surgery, (92.3%) but has no significant association with treatment outcome (p value 0.9). This was like other studies done In France all patients had previous abdominal surgery(6), in Kenya 77% had previous abdominal surgery(9), in Ethiopia, mizan hospital 38% had previous abdominal surgery(11).

Adhesions have overtaken other causes of intestinal obstructions like hernia noted in most underdeveloped countries(9). Adhesion was the most common cause of small bowel obstructions 52(44.5%) followed by small bowel volvulus 46(39.4%) which higher than studies performed, India 70(48%) over 3 years (7), Nigeria 42(48%) over 6 years (8), Ethiopia mizan hospital 48(47%) over 3 years(11) the reason may be almost all of our patients had previous surgery which was higher than others.

Among 52 cases studied under the present study, various modalities of management have been applied depending upon the respective diagnosis. In this study 30.8% of patients were conservatively managed. The result is in agreement with studies done in African countries, Moi Referral and Teaching Hospital, Kenya 23%(9), Tikur Ambesa Referral Hospital, 23.5%(14) and Mizan general hospital 19%(11). But result is lower than researches done in UK which shows 63% (12) and France 67% conservative management successful.

Of adhesive obstructions 69% of patients were treated surgically. Band release was the most common 48.5% surgical procedure done for patients followed by adhesion release done for 25.7% cases table 6. The result was similar to researches done Kenya 57% (9) and Tikur Ambesa Hospital 74%(10) , but result is higher than results from America which shows 44% (13) and UK 37%(12) the reason may be patient presentation is late in our case.

There was observation of decreased incidence of post operative complications in patients managed immediately after confirmation of diagnosis adhesive obstruction in study done USA not mentioned number (13). Most patients had improved and discharged without complications. Surgical site infections were the most common post operative complications occurred in 7.7% patients followed by hospital acquired infection /sepsis accounted for 5.8% cases and complete wound dehiscence that happened in 3.8% patients. The results of present study are in accordance with earlier studies (7)and(11).

Out of fifty two patients forty nine patients were improved and discharged and three(5.7%) patients died which was similar study done in the USA 7% (13).

## **CHAPTER SIX: CONCLUSION AND RECOMMENDATION**

Adhesion was the most common cause of small bowel obstruction in surgical patients presenting JUMC. Abdominal pain and vomiting were the main presenting symptom and tachycardia and abdominal distension were the signs that detected. Most of adhesive Small Bowel Obstructions have previous abdominal surgery. Most of Adhesive Small Bowel Obstructions were managed surgically. Surgical site infection is the most common postoperative complications and Adhesive Small Bowel Obstructions had mortality rate of 5.7%. All surgeons and residents operating abdomen and pelvic should try to minimize known risks of adhesions. Postoperative complications should be prevented, diagnosed and treated early. Preoperative adequate resuscitation should be done.

### **Limitation study**

Since duration of study was short, sample size may be small to generalize.

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## Annex: Questionnaires/Check list

Date: dd \_\_\_\_ mm \_\_\_\_ yy \_\_\_\_\_

My name is FeteneTilahun and I'm surgery resident from jimma university medical college. I intend to conduct a research on prevalence and treatment outcome of adhesive small bowel obstruction in JUMC. I want to enroll and interview eligible study participants, and fill in questionnaire forms. I am delighted to tell you that I really value your participation as your individual contribution to the study output will definitely be very significant. I am glad to inform you that, you are one of the eligible study participants and you are welcome to take part in this study. But you can freely decide whether to participate in this study or not. I will admire and respect what so ever your decision is. I would also like to inform you that your name will not be written anywhere in this paper. Would you like to participate in this study?

1. Yes \_\_\_\_\_ 2. No \_\_\_\_\_

Ani maqaan koo Faxxanaa Xilaahunin jedhaama giddu gala fayyaa Jimmaati reesiidentii ispeeshalistii baqaqsaani yaaluuti. Giddu gala fayyaa Jimmaa keessatti qorannoo cuffamuu marimaan qal'aa fi bu'aa yaalii isa irratti gochaan jira. Qoranno kana irratti yoon isin/si hirmaachisuu gammachuudhani. Hirmaannan keessan baay'ee barbaachisaa fi qorannof waan filaatameef feedhi keessan/kee irratti hundaa'un , hirmaachuuf yaada keessan bilisaan murteessu dandeessu/sa. Qoranna kana keessatti maqaan keessan/kee kan hin barreefamne fi icittin kan eegamee ta'u isinif/sif ibsun barbaada. Irratti hirmaachuuf feedhi qabduu?

1. Eeyyee \_\_\_\_\_ 2. Lakki \_\_\_\_\_

ስሜፈጠኔ ጥላሁን እባላለሁ ከጀማዩኒቨርሲቲ የህክምና ኮሌጅ የቀዶ ህክምና ሬዝደንት ነኝ። በ JUMC ወስጥ በሚገባበቅ አነስተኛ የአንጀት መዘጋት ስርጭት እና ህክምና ወጠኑ ላይ ምርምር ለማካሄድ አስባለሁ። ብቁ የሆኑ የጥናት ተሳታፊዎችን መመዘገብ እና ቃለ መጠይቅ ማድረግ እና መጠይቅ ቅጾችን መሙላት እፈልጋለሁ። ለጥናቱ ወጠኑ የግለሰብ አስተዋፅኦ በጣም አስፈላጊ ስለሆነ ለእርስዎ ተሳትፎዎ በጣም ዋጋ አሰጣለሁ በማለቱ ደስ ብሎኛል። እርስዎ ብቁ ከሆኑ የጥናት ተሳታፊዎች መካከል አንዱ ስለሆኑ እና እርስዎ እንዲሳተፉ እንኳን በደህና መጡ ደስ ብሎኛል። በዚህ ጥናት ወስጥ። ግን በዚህ ጥናት ለመሳተፍ ወይም ላለመሳተፍ በነፃነት መወሰን ይችላሉ። ወሳኔዎ ምን እንደ ሆነ ሁል ጊዜ አደንቃለሁ እና አከብራለሁ። እንዲሁም በዚህ ወረቀት ወስጥ ስምዎ በየትኛውም ቦታ እንደማይጻፍ ለማሳወቅ እወዳለሁ። በዚህ ጥናት ወስጥ መሳተፍ ይፈልጋሉ?

1. አዎ \_\_\_\_\_ 2. አይደለም \_\_\_\_\_

Part 1 socio-demographic variables

s.n	Questions	Response	Remark
1	MRN		
2	Age at presentation in years	A. 18-30 B. 31- 40 C. 41 - 5 0 D. 51 - 70 E. >70 +	
3	Sex	Male  Female	
4	Residence	Urban  Rural	
5	Occupation	1. Farmers 2. Merchant 3. government employee 4.other	
6	Marital status	A. Married  B. Single  C. Divorced	
7	Religion	A. Orthodox  B. Muslim  C. Protestant  D. Others	

S.n	Questions	Response	Remark
1	Duration of illness	A.<24HRS B.24-48hrs C.48-72hrs D.>72hrs	
2	Symptoms	A. Abdominal Pain B. Vomiting C. constipation D. Distention	
3	Signs	A. Tenderness B. Guarding C. Tachycardia D. Abdominal distension	
4	Previous abdominal surgery	Yes No	
5.	Indications for previous surgery	A. intestinal obstruction B. Trauma C. Complicated appendicitis D. Gastrointestinal tumor E. Gynecologic cases F. others	
6.	Chronic medical illness	A .Diabetic mellitus B. Hypertensions C,CHF, D.COPD E. Others	



Part 3. Diagnosis of adhesive small bowel obstructions

S.N	Diagnosis	Response	Remark
1.	Simple		
2.	Strangulated		
3	Peritonitis		

Part 4. Treatment of adhesive small bowel obstructions

S,n	Treatment	Response	Remark
1	conservative	A.Successful B. failed C. Not tried	
2	Surgery	A. Adhesionolysis B. Band release C. resection and anastomosis	
3	Complications	A. Complete wound dehiscence B. surgical site infection C. HAI/sepsis D. Anastomotic leak E .Others	
4.	Out come at discharge	A. Improved discharge B. Died C. Leave Against medical treatment D. Disappeared	