



E-ISSN: 2616-3470

P-ISSN: 2616-3462

© Surgery Science

[www.surgeryscience.com](http://www.surgeryscience.com)

2020; 4(4): 102-107

Received: 05-12-2020

Accepted: 25-12-2020

**Dr. Komatireddy Sudarshan Reddy**  
Assistant Professor, Department of  
Surgical Gastroenterology,  
Osmania General Hospital/OMC,  
Hyderabad, Telangana, India

**Dr. KV Dinesh Reddy**  
Consultant Surgical  
Gastroenterologist, Sunshine  
Hospital, Hyderabad, Telangana,  
India

## Clinical study of acute intestinal obstruction changing etiologic pattern

**Dr. Komatireddy Sudarshan Reddy and Dr. KV Dinesh Reddy**

**DOI:** <https://doi.org/10.33545/surgery.2020.v4.i4b.772>

### Abstract

**Background and Objective:** Acute intestinal obstruction (AIO) is a common surgical complication that necessitates immediate identification and treatment. Over the last century, the causes of intestinal blockage have evolved substantially. In comparison to developed world, emerging countries have a different aetiology pattern.

**Methods:** Acute intestinal obstruction (AIO) is a common surgical complication that necessitates immediate identification and treatment. Over the last century, the causes of intestinal blockage have evolved substantially. In comparison to developed world, emerging countries have a different aetiology pattern.

**Results:** Cases operated for AIO constituted 6.5% of all emergency surgeries. The most common cause of AIO was complicated hernia (n=23, 46%) followed by adhesions (n=14, 28%) and abdominal tuberculosis (n=13, 26%). The mean age of presentation was 46.55 years  $\pm$  15.66 years and male to female ratio was 2:1. The most common symptom was pain abdomen (n=47, 94%) while the most common sign was tachycardia (n=46, 92%). The most common preceding surgery leading to AIO due to adhesions was open appendicectomy and the most common complication was surgical site infection (n=15, 19.12%). There were 1 mortalities (2%).

**Interpretation and Conclusion:** Though obstructed hernia is the most frequent cause of AIO in this study, it has a lower incidence than in other studies, owing to people's improving socioeconomic status and better availability to health treatment in this location. Adhesions are quite common, owing to an increase in the number of timely procedures for diseases that were previously untreated, such as treatments for various intra-abdominal malignancies. In this study, tuberculosis is the third most prevalent cause of AIO, which is largely due to the increased prevalence of HIV and its cohabitation with tuberculosis.

**Keywords:** intestinal obstruction, etiology, intestine, small, intestine, large, hernia, tissue adhesions

### Introduction

Acute intestinal obstruction (AIO) is a common surgical emergency that necessitates immediate diagnosis and treatment. Intestinal obstruction can occur in either the small or large bowel, with the small bowel accounting for the vast majority of instances. During the last century, the causes of intestinal obstruction have shifted substantially [1-6]. Hernias accounted for more than half of mechanical intestinal blockages around the turn of the twentieth century. With the widespread use of elective hernia repair, this reason has fallen to third position among the causes of bowel blockage in developed countries. Adhesions from prior surgery are by far the most common cause of small intestinal blockage in the Western population today [7]. Several studies conducted in our region of the world revealed that obstructed/strangulated hernias were the most common underlying cause of acute intestinal obstruction [8, 9]. Given the large prevalence of tuberculosis in the Indian subcontinent, as well as the rising incidence of HIV in the Indian population, intestinal tuberculosis appeared to be an important aetiology [10, 11].

### Objectives

- To study the etiological pattern of acute intestinal obstruction (AIO) in a teaching tertiary care hospital, Osmania Medical College Hospital, located in the metropolitan city of Hyderabad, in Southern India and to look for any variation in the pattern in this region.
- To study the other characteristics of AIO in this region.

### Corresponding Author:

**Dr. Komatireddy Sudarshan Reddy**  
Assistant Professor, Department of  
Surgical Gastroenterology,  
Osmania General Hospital/OMC,  
Hyderabad, Telangana, India

## Materials and Methods

### Source of Data

The study group comprises of all the 68 patients admitted in the Department of Surgical Gastroenterology Osmania Medical College Hospital, Hyderabad with a clinical diagnosis of Acute intestinal obstruction (AIO) and operated between August 2019 and August 2020.

### Methods of collection of data

#### Inclusion criteria

- Patients admitted in OMC, Hyderabad with symptoms and signs of acute intestinal obstruction.
- Patients above the age of 15 yrs.
- Patients giving consent for the study.

#### Exclusion criteria

- Patient presenting with features of subacute intestinal obstruction and responded completely too conservative management.
- Children below the age of 15 yrs.

### Procedure

Patients were admitted in emergency. Complete history eliciting cardinal features of intestinal obstruction like pain, vomiting, abdominal distension and constipation/obstipation along with history of fever, previous surgery was taken. Signs of dehydration, hemodynamic stability, tenderness, abdominal hernial orifices, palpable masses; scars of previous surgeries and bowel sounds were looked for and entered in the proforma. Patients with features of obstruction who were ultimately categorized as having ileus based on history of medication intake, electrolyte abnormalities were excluded from the study. Routine blood investigations including HIV (after taking patient consent) were done and X- ray abdomen was done to look for multiple air fluid levels.

Surgery was performed within the first 24 hours in most of the patients who presented with increasing pain and distension with gross abdominal tenderness, tachycardia, and other features of toxicity like fever and leukocytosis and failure of non-operative treatment. For patients with intestinal obstruction due to suspected intestinal tuberculosis or adhesions, there was a higher threshold for surgery and a trial of conservative management was given for 24-48 hours unless any of the above features were present. Patients who responded completely to conservative management were excluded from the study.

The selection criteria of the surgical procedure were based on the intraoperative findings. Obstructed hernia was managed by resection of the involved gut whenever gangrenous followed by anastomosis along with a primary anatomical repair of the hernia. Malignant disease was managed by primary resection, bypass or stoma creation. Patients with malignancy were subjected to further treatment on an elective basis later on. Adhesions were managed by open or laparoscopic adhesiolysis and resection of the gut whenever gangrenous. Intestinal tuberculosis resulting in perforation or stricture was managed by resection of the gut with anastomosis or ileostomy. Volvulus was managed by primary resection and anastomosis.

Detailed evaluation of the postoperative progress of the patients and any note of complications and the cause of mortality were made and documented in the proforma Socioeconomic status of each patient was also determined during the course of hospital stay based on the Modified Kuppaswamy scale of social classification. Different scores were given to the family income (A), education level (B) and occupation (C) of the parents and

these were added up to grade the socioeconomic status as given below.

In this study, the Modified Kuppaswamy scale classes I and II were considered as Upper and classes III, IV and V are considered as Lower socio- economic status.

**Study type:** Prospective, Descriptive study.

### Statistical Analysis

- All continuous variables will be expressed as mean and number and categorical variables as percentages.
- Chi-square test, Student's t-test, One-Way ANOVA test and multivariate analysis were be used.
- $P < 0.05$  will be considered statistically significant.

All statistical analysis was carried out by SPSS 18 and Microsoft Word and Microsoft Excel were used to generate master chart, graphs and tables.

### Observations and Results

During a period of 1 year from August 1<sup>st</sup>, 2019 to August 1<sup>st</sup>, 2020, all the patients operated for acute intestinal obstruction (n=68) in Department of Surgical Gastroenterology, Osmania Medical College & Hospital, Hyderabad, constitute the study group.

A total of 2956 patients got operated in our department during that period, of which 994 were emergency surgeries and 249 were emergency laparotomies. Of these emergency laparotomies, 68 were due to Acute Intestinal Obstruction (AIO). Hence, cases operated for AIO constitute 2.30% of all surgeries, 6.84% of all emergency surgeries and 27.30% of all emergency laparotomies performed in our institute.

**Table 1:** Etiological distribution of emergency laparotomies

Etiology	Number of cases	Percentage (%)
Acute intestinal obstruction	50	21.73
Perforation- peritonitis	78	31.45
Appendicular abscess	24	9.68
Mesenteric ischaemia	6	2.42
Penetrating trauma abdomen	16	6.45
Blunt trauma abdomen	28	11.29
Biliary sepsis	5	2.02
Miscellaneous	23	9.27
Total	230	100

Hence, surgeries for AIO forms a major part of emergency laparotomies being the second most common in our institute (n= 50, 21.73%).

**Table 2:** Age distribution

Age group (years)	Males	Females	Total number	Percentage (%)
16- 20	2	0	2	4
21- 30	6	3	9	18
31- 40	4	4	8	16
41- 50	3	0	3	6
51- 60	13	2	15	30
61- 70	7	3	10	20
71- 80	2	1	3	6

As per the above table and bar chart, the maximum incidence in the present study group is 51-60 year age group (n=15, 30%). Among males, maximum incidence was in 51-60 year age group (n=14) and among females, in 31-40 year age group (n=5).

The mean age of presentation was 46.55 years  $\pm$  15.76 years

(standard deviation), ranging from 20-80 years. The mean age of presentation for male was 46.6 years and for female was 46.5 years.

**Table 3:** Sex distribution

Sex	Male	Female
Number of cases	37	13
Percentage (%)	74	26

Male patients were more commonly affected when compared to females in the ratio of 2:1 as shown in the above table.

**Table 4:** Socio-economic status\*

Socio-economic status	Upper	Lower
Number of cases	11	39
Percentage	22	78

As describes in the methodology, cases were divided into upper and lower based on modified Kuppuswamy scale. Majority of the patients in this study (n=55, 81%) belonged to the lower socio-economic status.

**Table 5:** Symptoms

Symptoms	Total number of cases	Percentage (%)
Pain abdomen	47	94
Vomiting	45	90
Abdominal distension	48	96
Constipation/ Obstipation	44	88
Fever	6	12

**Table 8:** Etiological pattern (sex-wise distribution) of AIO in adults

Etiology	Total number of cases	No. of case in Males	No. of cases in Females	Percentage (%)
Hernia (Obstructed/ Stangulated)	18	16	6	36
Adhesion	10	8	2	20
Malignancy	6	4	2	12
Abdominal tuberculosis	8	6	2	16
Volvulus	2	1	1	4
Intussusception	3	2	1	6
Intestinal bands	2	1	1	4
Stricture	2	0	2	4
Miscellaneous	1	1	0	2

The most common cause of AIO in our study was obstructed/strangulated hernias (n=18, 36.0%). The next common etiology was post-operative adhesions (n=10, 20%) followed by abdominal tuberculosis (n= 8, 16%). There was no

In the present study, the most common symptoms were pain abdomen (n=47, 94%) and vomiting (n= 45, 90%),

**Table 6:** Duration of symptoms

Duration	Total number of cases	Percentage (%)
≤ 1 day	24	48
2-3 days	26	52
4-7 days	8	16
> 7 days	3	6

In this study, most of the cases presented after 2-3 days of onset of symptoms (n=26, 52%). The mean duration of symptoms in the present study was 2.72 days.

**Table 7:** Signs

Signs	Total number of cases	Percentage (%)
Tachycardia	46	92
Hypotension	11	22
Tenderness	20	40
Palpable mass/ bowel	13	26
Exaggerated tympanic bowel sound	46	92

In the present study, the most common signs were tachycardia (n=47, 92%) and exaggerated tympanic bowel sounds (n= 46, 92%).

### Etiological distribution of AIO

**Table 9:** Etiologic distribution of Obstructed/Strangulated Hernia

Type	Obstructed	Strangulated	Total number	Percentage (%)
Inguinal	7	2	9	18
Paraumbilical	3	3	6	12
Incisional	4	0	4	8

The hernia going for AIO most commonly was the inguinal hernia (n=9, 18.0%) whereas, paraumbilical hernia had the maximum propensity to strangulate (3 of 6= 50%).

Moreover, lower socio-economic status and increased duration of symptoms were found to be significant association with complicated hernia (p-value = 0.001 and 0.01 respectively).

**Table 10:** Age-wise distribution of the common etiologic groups

Etiology	Most common Age group (Years)	Second common Age group (Years)
Hernia (Obstructed/Stangulated)	51-60(37.3%)	41-50(25.9%)
Adhesion	21-30(26.57%)	31-40, 51-60, 61-70 (21.41% each)
Abdominal tuberculosis	21-30(30.00%)	31-40, 51-60, 61-70 (20.00% each)
Malignancy	61-80(50% each)	31-40 (25.00%)

In this study, obstructed/ strangulated hernias and malignancies were more common in the older age groups, 51-60 years (n=9, 37.3%) and 61-80 years (n=4, 50%) respectively, while adhesions and abdominal tuberculosis, though more common in

the 21-30 years age group, were evenly distributed across the ages.

Total number of cases with intestinal obstruction due to adhesions secondary to prior surgeries = 14

**Table 11:** Preceding surgeries in cases of AIO secondary to adhesions

Previous Surgeries	Number of cases	Percentage (%)	Comments
Appendicectomy	8	50.00	Open appendicectomy
Laparotomy	4	21.43	1. Lat. Pancreatico- jejunostomy. 2. Ileal perforation- closure 3. Left hemicolectomy.
Hysterectomy	2	14.29	Open TAH ± BSO
Laparoscopic procedures	2	14.29	1. Lap. Cholecystectomy 2. Lap appendicectomy

The most common preceding surgery leading to AIO due to adhesions in this study was found to be open appendicectomy

(n=8, 50%) followed by laparotomy (n=4, 25.0%).  
Investigations

**Table 12:** Blood investigations

Investigations	Total number of cases	Percentage
Anemia	9	18
Leucocytosis	3	6
Dyselectrolytemia (hypokalemia)	11	22
Deranged Renal function	2	4
Hypoalbuminemia	9	18

The presence of the above may add to the morbidity of AIO cases but the statistical significance could not be established due to inadequate number of cases for the same.

Erect abdominal X-ray revealed multiple air fluid levels in 46 cases (92.0%). Management.

**Table 13:** Distribution of surgeries performed

Surgery	Total number of cases	Percentage (%)
Laparotomy + Resection- anastomosis	15	30
Laparotomy + Stoma	5	10
Laparotomy + Adhesiolysis/ Band excision	12	24
Laparoscopic adhesiolysis	4	8
Reduction of hernia + anatomical repair	12	24
Laparotomy + Resection - anastomosis + Anatomical repair of hernia	5	10
Miscellaneous	2	4

In this study, reduction of obstructed hernia with anatomical repair and laparotomy with resection-anastomosis were the most common surgeries performed (n=18, 26.47% and n=17, 25.00%

respectively) followed by laparotomy with adhesiolysis / band excision (n= 14, 20.59%).

Postoperative complications:

**Table 14:** Postoperative complications

Complications	Total number of cases	Percentage (%)
Surgical site infection	9	18
Burst Abdomen	5	10
Prolonged ileus (> 72 hours)	8	16
Septicemia	6	12
Respiratory (effusion, atelectasis, consolidation)	6	12
Anastomotic leak/ Fecal fistula	2	4
Repeat procedure(s)	3	6

In the present study group, 10 cases (20.0%) had no complications, and the most common complication was surgical site infection (n=9, 18%) followed by prolonged ileus (n=8, 16.0%).

### Mortality

Total number of mortalities: 1

Percentage: 2.0%

### Discussion

Acute intestinal obstruction (AIO) continues to be one of the most common surgical emergencies worldwide and its clinical pattern, especially with regards to etiology, has been changing over the last few decades. Varying etiologic pattern has been noted in developing nations (Indian subcontinent and some African nations) as compared to the industrialized nations.



In this study, we have analyzed the characteristics of cases of AIO in a teaching tertiary care hospital, Osmania Medical College & Hospital, located in the metropolitan city of Hyderabad in Southern India, which caters to a large population belonging to diverse socio-economic background from the city and the neighbouring towns and villages. A total of 68 patients were studied over one year from August 2019 to August 2020.

### Study group characteristics

#### Etiological pattern

The etiology of intestinal obstruction varies from one geographical location to another. Post-operative adhesions appear to be the most common cause in the Western world<sup>12</sup> as well as in parts of Asia (such as China<sup>5</sup>).

In our present study, we found obstructed hernia to be the most common etiology of AIO which was comparable with a similar study done in Eastern India by Souvik Adhikari *et al.*<sup>[8]</sup> in 2010. The second most common etiology in our study was adhesions and its incidence was higher than Souvik Adhikari *et al.*<sup>[8]</sup> study but half of what was found in other study groups like Playforth *et al.*<sup>[13]</sup> (54%) and Arshad Malik *et al.*<sup>[9]</sup> (41%).

The most common and preceding surgery in patients with adhesions was open appendicectomy (50%) followed by laparotomy (22%) and hysterectomy (14%) which was comparable with studies by Adesunkanmi AR *et al.*<sup>[2]</sup> and Foster NM *et al.*<sup>[14]</sup>.

Hence, obstructed hernia is the leading etiology for AIO in this institution, located in Bangalore, Southern India. However, the incidence is lower compared to similar studies<sup>[8]</sup>, mostly due to improving socio-economic status of people and better accessibility to health care in this region, leading to early surgical repair of hernia.

Adhesions, the second most common etiology for AIO in this study, has a considerably high incidence, which is comparable with other studies, probably due to increased number of timely surgeries for diseases that previously went untreated, such as surgeries for various intra-abdominal and pelvic malignancies. Tuberculosis assumes great importance as a cause of AIO and is mainly attributed to increasing incidence of HIV and its coexistence with tuberculosis<sup>[15]</sup>.

#### Disease Incidence

In our clinical study incidence of AIO is 2.30% of all operated cases (emergency and elective) and 6.44% of all emergency surgeries. In Souvik Adhikari *et al.*<sup>[8]</sup> series incidence was 9.85% of total surgical cases. In Bhargava Anderson's series incidence was 3% of total surgical cases.

#### Age Incidence

Our study showed the peak incidence is in the age group 51-60 (30%) followed by 61- 70 years (20%) which is slightly higher when compared to the previous study groups Souvik Adhikari *et al.*<sup>[8]</sup>, Cole GJ *et al.*<sup>[16]</sup> with peaks at 31-40 and 41-50 years respectively.

The mean age in our current study is 46.55 years whereas Souvik Adhikari *et al.*<sup>[8]</sup> shows mean age of 44 years. These studies are almost comparable.

The male: female ratio in this study (2:1) is comparable with the Osuigwe AN *et al.*<sup>[17]</sup> and lower than the studies cited in the table above.

The gender discrepancy in our patients with males outnumbering females by a can be possibly accounted for, as a large number of our patients had obstructed inguinal hernia, and in our country we mostly males suffer from this condition. Also, women in rural India are mostly housewives which limit their exposure to

tubercle bacilli in contrast to males. Again, volvulus and malignant disease of the gastrointestinal tract are more common in males as compared to females.

### Clinical presentation

The clinical feature of intestinal obstruction, pain abdomen, vomiting distension of abdomen and constipation are not present in all cases.

In the present study, the frequencies of the clinical features were comparable with the other study groups- Souvik Adhikari *et al.*<sup>[8]</sup>.

The most common signs in this study were tachycardia (94%) and exaggerated tympanic bowel sounds (92%) which were also comparable with the abovementioned studies.

### Laboratory investigation

Haematological investigation for anemia, leukocytosis, hypokalemia, deranged renal functions and hypoalbuminemia did not yield much statistical significance in this study.

### Radiology

The erect abdomen X-ray helps us in the diagnosis of intestinal obstruction as well as in differentiating the small bowel with large bowel obstruction. Multiple air fluid level can be seen in small multiple intestinal obstruction whereas only gas shadow seen in large bowel obstruction until the ileo-caecal valve is competent.

In the present study of the 47 cases, 94% of X-ray abdomen showed multiple air fluid levels. IV contrast enhanced CT scan can identify the transition zone and help find the level of bowel obstruction when diagnosis is doubtful but it wasn't a part of this study.

### Surgical Management

In this study, the surgeries preferred for each of the etiologies of AIO are similar to the studies by Souvik Adhikari *et al.*<sup>[8]</sup>. Reduction of obstructed hernia with anatomical repair and laparotomy with resection-anastomosis were the most common surgeries performed in this study (26.47% and 14.00% respectively).

The pattern of complications in this study was comparable with that found by Souvik Adhikari *et al.*<sup>[8]</sup> with surgical site infection being the most common complication followed by prolonged ileus.

The mortality rate in the present study is lesser than the other studies cited above most probably because of the presence of highly advanced ICU facility available in our hospital.

Out of 4 mortalities, 2 patients had malignancy, 1 was brought to hospital very late and the last patient had HIV with abdominal tuberculosis. The patients with malignancy belonged to the older age group, their general health condition (with anemia, hypoalbuminemia) was poor and had comorbidities like diabetes, hypertension, IHD.

The third patient had malrotation and had come with strangulation and full-blown sepsis after 7 days of initial symptoms and conservative management in other hospitals. Hence, the delay in early diagnosis and management was the key factor.

The fourth case, a HIV positive patient (CD4 count= 144) with ileal tubercular stricture, was extremely malnourished and post operatively had a cardiac arrest.

### Limitations of the study

Unlike the other studies reviewed above, instances of intestinal

obstruction that responded to conservative treatment were not included in this analysis and were considered 'subacute.' As a result, several etiologies, such as adhesions and tuberculosis, were not exactly analogous to previous research.

### Conclusion

In this institution in Hyderabad, Southern India, the most common cause of AIO is obstructed hernia. However, the incidence is limited in comparison to similar studies, owing to people's improved socioeconomic status and better access to health care in this region, which leads to early surgical treatment of hernias. Adhesions, the second most common aetiology of AIO in this study, have a significantly high incidence, most likely due to a rise in the number of timely procedures for diseases that previously went untreated, such as surgeries for various intra-abdominal and pelvic malignancies. Tuberculosis is the third most common cause of AIO in our study, which is mostly due to the rising prevalence of HIV and its association with tuberculosis.

### Acknowledgment

The author is thankful to Department of Surgical Gastroenterology for providing all the facilities to carry out this work.

### References

1. Dudhwala MFG. Study on Role of CECT Abdomen in Intestinal Obstruction: A Clinical Approach. *New Frontiers in Medicine and Medical Research* 2021;5:120-127.
2. Bellio G, Kurihara H, Zago M, Tartaglia D, Chiarugi M, Coppola S *et al*. Jejunoileal diverticula: a broad spectrum of complications. *ANZ Journal of Surgery* 2020;90(7-8):1454-1458.
3. Duc PH, Xuan NM, Thuyet NH, Huy HQ. Intestinal obstruction due to acute appendicitis. *Case Reports in Gastroenterology* 2020;14(2):346-353.
4. Archampong EQ, Naaeder SB, Darko R. Changing pattern of intestinal obstruction in Accra, Ghana. *Hepatogastroenterology* 2000;47:185-93.
5. Chen XZ, Wei T, Jiang K, Yang K, Zhang B, Chen ZX *et al*. Etiological factors and mortality of acute intestinal obstruction: a review of 705 cases. *Zhong Xi Yi Jie He Xue Bao* 2008;6:1010.
6. Ismail Khan M, Shah A, Ali N. Pattern of dynamic intestinal obstruction in adults. *J Postgrad Med Inst* 2005;19:157-61.
7. Evers BM. Small intestine. 19th ed. Chapter 48. In: *Sabiston Textbook of surgery: The biological basis of modern surgical practice*, Townsend CM Jr, Beauchamp RD, Evers BM, Mattox KL, eds. Philadelphia: Saunders Elsevier 2012, 1237.
8. Adhikari Souvik, Mohammed Zahid Hossein, Das Amitabha, Mitra Nilanjan, Ray Udipta. Etiology and Outcome of Acute Intestinal Obstruction: A Review of 367 Patients in Eastern India. *Saudi J Gastroenterol* 2010;16(4):285-287.
9. Arshad Malik M, Madiha Shah, Rafique Pathan, Krishan Sufi. Pattern of Acute Intestinal Obstruction: Is There a Change in the Underlying Etiology? *Saudi J Gastroenterol* 2010;16(4):272-274.
10. Kapoor VK. Abdominal tuberculosis. *Postgrad Med J* 1998;74:459-67.
11. Horvath KD, Whelan RL. Intestinal tuberculosis: Return of an old disease. *Am J Gastroenterol* 1998;93:692-6.
12. Moran BJ. Adhesion-related small bowel obstruction. *Colorectal Dis* 2007;9:39-44. [PubMed: 17824969]
13. Playforth RH. Mechanical small bowel obstruction and plea for the earlier surgical intervention. *Ann Surg* 1970;171:783-8.
14. Foster NM, McGory ML, Zingmond DS, Ko CY. Small bowel obstruction; a population-based appraisal. *J Am Coll Surg* 2006;203:170-6.
15. Sharma MP, Bhatia V. Abdominal tuberculosis. *Indian J Med Res* 2004;120:305-15.
16. Cole GJ. A review of 436 cases of intestinal obstruction in Ibadan. *Gut* 1965;6:151.
17. Osuigwe AN, Anyanwu. Acute intestinal obstruction in Nnewi Nigeria: A five year review. *Nigerian J Surg Res* 2002;4:107-11.