

# Intestinal Obstruction in Children

Sirajuddin Soomro, Sikandar Ali Mughal

## ABSTRACT

*Objective* To identify various causes and the outcome of intestinal obstruction in children older than one month of age.

*Study design* Descriptive case series.

*Place & Duration of study* Department of Paediatric Surgery Chandka Medical College Hospital Larkana, from January 2010 to December 2011.

*Methodology* Patients above one month of age who presented with signs and symptoms of intestinal obstruction were included. Patients with history of chronic constipation, trauma, post diarrhoeal distention, obstruction resulting from compression by tumors. Those with free gas on x-ray abdomen and where management done conservatively were excluded from the study.

*Results* During the study period a total of 55 cases, 41(74.5%) males and 14 (25.5%) females were operated. The age of patients ranged from 1 month to 14 year. The main presenting features were not passing stools (100%), pain abdomen (89.09%), vomiting (85.45%), abdominal distension (81.81%), fever (21.81%), bleeding per rectum (18.18%) and mass abdomen (16.36%).

The causes of intestinal obstruction found were intussusception (27.3%), Meckel's diverticulum with band causing obstruction (16.4%), obstructed inguinal hernia (14.5%), post operative adhesions (9.1%), congenital peritoneal bands (7.3%), Hirschsprung's disease (7.3%), abdominal tuberculosis (5.5%), typhoid ileal perforation (5.5%), malrotation (3.6%) and umbilical hernia (3.6%). Fifty-four (98.18%) patients recovered and discharged while one (1.81%) patient died.

*Conclusions* Intussusception and Meckel's diverticulum with a band were the most frequent causes of intestinal obstruction. One patient in this series died.

*Key words* Intestinal obstruction, Intussusception, Meckel's diverticulum, Child.

## INTRODUCTION:

Intestinal obstruction is one of the most common emergencies in the practice of paediatric surgery. Children with intestinal obstruction can be divided in two groups neonatal and non-neonatal.<sup>1</sup> Intestinal should be suspected in any child with persistent vomiting, distention of abdomen and abdominal pain.<sup>2</sup> The causes of intestinal obstruction may have

regional specificities. The various causes of intestinal obstruction in children include intussusception, post operative adhesions, volvulus, hernias, abdominal tuberculosis and obstruction due to ascaris lumbricoidis infestation.<sup>3,4,5</sup>

Intestinal obstruction is a potentially life threatening condition, undiagnosed or improperly managed can progress to vascular compromise which causes bowel necrosis, perforation, sepsis and death, hence early recognition and prompt treatment is required.<sup>2</sup> This study was conducted to find out various causes and outcome of intestinal obstruction in children older than one month of age in our region.

## Correspondence:

Dr. Sirajuddin Soomro  
Department of Paediatric Surgery  
Chandka Medical College, Shaheed Mohtarma Benazir Bhutto  
Medical University Larkana  
E mail: soomrosiraj@yahoo.com

**METHODOLOGY:**

This study was conducted in the Department of Paediatric surgery Chandka Medical College Hospital Larkana, from January 2010 to December 2011. All the patients above one month of age who presented with non passage of stool, pain abdomen, vomiting and distention of abdomen and underwent surgery, were included. Patients younger than one month of age, patients with history of chronic constipation, trauma, post diarrhoeal distention, with free gas on x-ray abdomen, obstruction resulting from compression by tumors and patients managed conservatively were excluded.

Detailed history was taken and a thorough physical examination, including digital rectal examination, performed on all the patients. Baseline investigations including CBC and ESR, serum electrolytes, urea / creatinine were done. Plain x-ray abdomen and x-ray chest were obtained in all cases. Ultrasound abdomen and contrast studies were done in suspected cases of intussusception, malrotation and Hirschsprung's disease.

All the patients were clinically stabilized before surgery and a nasogastric tube was placed for aspiration. Intravenous fluids, antibiotics and analgesics were administered. Blood transfusion was done before surgery where indicated. All the patients underwent open surgery. The cause of intestinal obstruction and outcome of were recorded. Each patient was followed up weekly for one month and monthly for three months in outpatient department.

**RESULTS:**

During the study period a total of 55 patients were operated. There were 41 (74.5%) males and 14 (25.5 %) females. The age of the patients ranged from

one month to 14 year.

The common clinical presentations are shown in table I. The various causes of intestinal obstruction found were intussusception, obstructed hernias (inguinal and umbilical), Meckel's diverticulum with band etc (table II). Laparotomy and resection and anastomosis, division of obstructing bands, resection of Meckel's diverticulum and repair or exteriorization were the surgical procedures performed depending upon the cause of intestinal obstruction.

Postoperatively wound infection was the commonest complication (n= 6 -10.90%). In 4 (7.27%) cases excoriation around the stoma developed. One (1.8%) patient developed partial wound dehiscence and another (1.8%) patient had breakdown of intestinal anastomosis. Hospital stay ranged from 3 to 22 days. Fifty-four (98.18%) patients recovered and discharged. There was one mortality in this series. It was a case of intussusception and the cause of death was septicaemia.

**DISCUSSION:**

Intestinal obstruction is a common paediatric surgical emergency. It is the result of various causes depending upon age. Its occurrence can be acute or chronic. Peak incidence of intestinal obstruction is noted below one year of age,<sup>6</sup> most of our patients were also younger than one year. The causes of intestinal obstruction also has regional variations. In our series most frequent cause was intussusception followed by Meckle's diverticulum with band.

Intussusception remains the commonest cause of bowel obstruction in infants and children as reported by many authors.<sup>5,7,8</sup> In this series out of total of fifteen cases of intussusception, nine patients were younger than one year of age. All the cases were

**Table I: Clinical Presentation**

Clinical Features	Number of Patients (n)	Percentage
Non passage of stool	55	100
Pain abdomen	49	89.09
Vomiting	47	85.45
Distention of abdomen	45	81.81
Fever	12	21.81
Bleeding per rectum	10	18.18
Mass abdomen	09	16.36

**Table II: Causes of Intestinal Obstruction**

Cause of Obstruction	Number of Patients (n)	Percentage
Intussusception	15	27.3
Meckel's Diverticulum with Band	09	16.4
Obstructed Inguinal Hernia	08	14.5
Post-operative Adhesions	05	9.1
Peritoneal Bands	04	7.3
Hirschsprung's Disease	04	7.3
Abdominal Tuberculosis.	03	5.5
Typhoid Ileal Perforation	03	5.5
Malrotation	02	3.6
Obstructed Umbilical Hernia	02	3.6

explored surgically. Ileo-colic intussusception was the commonest type (n=12 -80%) followed by ileo-ileal (n=2 - 13.33%) and colocolic (n=1- 6.66%) type. In three cases intussusception reduced manually and gut found viable. In six patients the gut was gangrenous and resection and primary anastomosis performed, while in three patients the intussuscepted gut resected and both ends exteriorized. Most of the intussusceptions were of idiopathic type while the lead point was found in three cases.

Meckel's diverticulum with an associated band causing obstruction was the second common cause of intestinal obstruction. The mechanism of obstruction usually is external compression, entrapment of a loop to twisting of a loop around the axis of the band leading to volvulus.<sup>10</sup> Same was observed in our cases. Out of nine (16.4%), six patients (66.66%) required division of obstructing band, resection of Meckel's diverticulum and repair of the defect. In two (22.22%) patients the gut was found gangrenous and required resection and anastomosis while in one (11.11%) patient the compression of mesentery by the band attached with Meckel's diverticulum was to the extent that the intestine was gangrenous up to the right transverse colon and required right hemicolectomy and ileostomy. Similar modes of treatments are reported in the literature.<sup>5</sup>

Obstructed/incarcerated inguinal hernia was the cause of obstruction in 8 (14.54%) of the cases in our series. The reported incidence of obstructed inguinal hernia in literature ranges from 9-31%.<sup>10</sup> In three patients the gut was gangrenous which required resection and anastomosis which was done

through the same incision. Post operative adhesions as a cause of small bowel obstruction in children can occur days to months or even years after the primary laparotomy. Its etiology is not agreed upon.<sup>11</sup> Five (9.1%) patients presented with post operative adhesions. There were two cases of Hirschsprung's disease who developed adhesive obstruction after endorectal pull through operation and two cases of anorectal malformations both of which were operated for abdominoperineal pull through. In one case appendectomy was done six months earlier. The cases of Hirschsprung's disease and anorectal malformations developed adhesive obstruction within first week of operation. All the 5 cases needed exploration and lysis of adhesions as also reported in literature.<sup>11</sup>

Congenital peritoneal bands were the cause of intestinal obstruction in 4 (7.3%) of the cases. It is one of the rare causes of intestinal obstruction that has no relationship with former intra abdominal problems.<sup>12</sup> In all the cases the obstructing band was arising from mesentery and compressing the loop of ileum. In all the patients the obstructed part of intestine found viable and the obstructing band divided. Similar type of cases have also been reported in national and international literature.<sup>1, 7, 10</sup>

Late presentation of cases of Hirschsprung's disease with acute intestinal obstruction is still seen in our practice as reported by others.<sup>1, 10</sup> There were 4 (7.3%) cases of Hirschsprung's disease who presented beyond infancy with acute intestinal obstruction and their ages were between 2-5 year. They were managed by staged treatment. Tuberculosis of abdomen as a cause of intestinal obstruction was found in 3 (5.5%) cases.

In all the affected cases there were adhesions involving the loops of small intestine with characteristic tubercles on the serosa of the intestine. The patients were treated in accordance with protocol described in the literature.<sup>1,5,13</sup>

Three (5.5%) patients were diagnosed at the time of surgical exploration as cases of ileal perforation. All the perforations were repaired primarily.<sup>14</sup> Two (3.6%) cases of malrotation presented beyond infancy with intestinal obstruction. The cause of obstruction was Ladd's bands and adhesions. In both the cases the adhesions lysed and Ladd's bands divided as suggested in the literature.<sup>15</sup> Complications of incarceration or strangulation due to umbilical hernia are rare.<sup>16</sup> During the study period we managed 2 (3.6%) patients who were 5 and 7 month old and presented with obstructed umbilical hernia. Fifty-four (98.18%) patients recovered and discharged while one (1.81%) expired. The reported mortality of cases of intestinal obstruction is around 5%.<sup>9</sup>

#### CONCLUSIONS:

In this series intussusception and Meckel's diverticulum with band found to be the leading causes of intestinal obstruction. One patient of intussusceptions died due to septicaemia.

#### REFERENCES:

- Gangopadhyay AN, Wardhan H. Intestinal obstruction in children in India. *Pediatr Surg Int.* 1989;4:84-7.
- Shalkow J. [Internet] Pediatric Small-Bowel Obstruction. Available from [www.emedicine.medscape.com/article/930411-overview](http://www.emedicine.medscape.com/article/930411-overview). Updated 61-02-2012, cited 11-01-2013.
- Shiekh KA, Baba AA, Ahmad SM, Shera AH, Patnaik R, Sherwani AY. Mechanical small bowel obstruction in children at a tertiary care centre in Kashmir. *Afr J Paediatr Surg.* 2010;7:81-5.
- Ogundoyin OO, Afolabi AO, Ogunlana DI, Lawal TA, Yifieyeh AC. Pattern and outcome of childhood intestinal obstruction in tertiary hospital in Nigeria. *Afr J Health Sci.* 2009;9:170-3.
- Ghritlaharey RK, Budhwani KS, Shrivastava DK. Exploratory laparotomy for acute intestinal conditions in children: A review of 10 years of experience with 334 cases. *Afr J Paediatr Surg.* 2011;8:62-9.
- Uba AF, Edino ST, Yakuba AA, Sheshe AA. Childhood intestinal obstruction in Northwestern Nigeria. *West Afr J Med.* 2004;23:314-8.
- Hussain I, Akhtar J, Ahmed S, Aziz A. Intestinal obstruction in infants and older children. *J Surg Pakistan.* 2002;7:2-6.
- Banu T, Masood AFM. Aetiology of intestinal obstruction in Bangladesh children. *Dhaka Shishu Hosp J.* 1991;7:78-80.
- Mahmood K, Ahmed S, Hameed S, Ali L. Intestinal obstruction. A review of 200 consecutive cases. *Professional Med J.* 2007;14:355-9.
- Mahmood K, Ahmed S, Ali L, Hameed S. Pattern of intestinal obstruction in Children-A review of 200 consecutive cases. *Ann Punjab Med Coll.* 2000;4:5-8.
- Vijay K, Anindy C, Bhanu P, Mohan M, Rao PLNG. Adhesive small bowel obstruction in children-Role of conservative management. *Med J Malaysia.* 2005;60:82-4.
- Etensel B, Ozkisacik S, Doger F, Yazier M, Gursoy H. Anomalous congenital band: a rare cause of intestinal obstruction and failure to thrive. *Pediatr Surg Int.* 2005;21:1018-20.
- Mirza B, Ijaz L, Saleem M, Sheikh A. Surgical aspects of intestinal tuberculosis in children: Our experience. *Afr J Paediatr Surg.* 2011;8:185-9.
- Akhtar J, Batool T, Ahmed S, Zia K. Surgical management of suspected enteric ileal perforations in children. *J Surg Pakistan.* 2011;16:145-8.
- Nasir AA, Abdur-Rahman LO, Adeniran JO. Outcomes of surgical treatment of malrotation in children. *Afr J Paediatr Surg.* 2011;8:8-11.
- Keshtgar AS, Griffiths M. Incarceration of umbilical hernia in children: Is the trend changing? *Eur J Pediatr Surg.* 2003;13:40-3.