

Non-Neonatal Intestinal Obstruction in children: 3 Years Experience and review of literature.

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Abstract:

Aim: To study the clinical presentation, the etiology, management and outcome of Non-Neonatal intestinal obstruction in children over a period of 3 years in our department and review of relevant literature.

Materials and methods: It is a retrospective study of 100 children with age group of above one month to 12 years of age with intestinal obstruction were managed from June 2007 to June 2010 at our department of pediatric surgery. The hospital records were retrieved and analyzed.

Results: The commonest cause was Adhesions and Congenital bands 32, followed by Intussusception 22, Malrotation 20, Meckel's diverticulum 7, Obstructed Hernia 4, Post operative Appendectomy adhesions 3, Post operative Ventriculo-Peritoneal shunt adhesions 2, Abdominal Tuberculosis 2, Segmental Enteritis 2, Mesenteric cysts 1, Omental cysts 1, Multiple small bowel strictures 1, Jejunal diaphragm with central 2-3mm opening 1 and Trichobezoar 1. Out of the 100 children there were 68 males and 32 females. Their ages ranged from 1 month to 12 years. One month to 1 year age 38 patients, 1 to 2 years age 11 patients, 2 to 3 years 7 patients, 3 to 4 years 13 patients, 4 to 5 years 6 patients, 5 to 6 years 5 patients and 6 years to 12 years 20 patients. The Mortality rate was 6%.

Conclusions: Intestinal obstruction is a common Pediatric Surgical emergency at our center. The incidence is higher in males than in females. The incidence is higher in the age group from 1 month to 1 year. Abdominal pain, vomiting, abdominal distention and constipation are the predominant presenting symptoms. Adhesions and Congenital bands are the commonest type of intestinal obstruction 32% and Intussusception 22% and Malrotation 20% are the next common types in our study. Mortality is significantly higher in those who present late (>72hrs) than in those presenting between 24 to 72hrs. Higher mortality was noted in patients presenting late with signs of peritonitis, septicemic shock, gangrene of the bowel and perforation. Early diagnosis and surgical management can prevent gangrene of bowel and reduce mortality.

Key Words: Non-Neonatal Intestinal Obstruction, Children

I. Introduction

Intestinal obstruction is one of the most common emergencies in paediatric surgery. Children with intestinal obstruction can be divided in two groups neonatal and non-neonatal[1] Intestinal should be suspected in any child with persistent vomiting, distention of abdomen and abdominal pain[2]. The various causes of intestinal obstruction in children include intussusception, post operative adhesions, volvulus, hernias, abdominal tuberculosis and obstruction due to ascaris lumbricoidis infestation[3,4,5]. 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[2]. This study was conducted to find out various causes and outcome of intestinal obstruction in children older than 1 month of age upto 12 years in our region.

II. Material And Methods

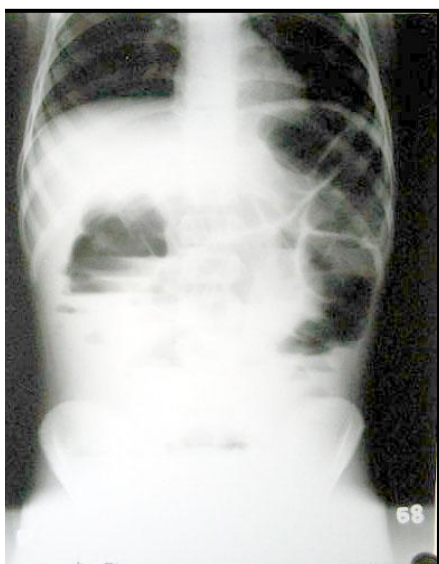
From June 2007 to June 2010 a total number of 10662 new out patients were seen, in which a total number of 1916 were admitted to the Pediatric Surgical ward in which 1218 major operations were performed. Over this 3 year period, 100 cases of intestinal obstruction in infant and children got operated. The neonates were excluded from this study.

	Male	Female	Total
New out patients	5354	5308	10662
Inpatients	1283	633	1916

Total major operations: 1218, Total minor operations: 1527
Intestinal obstruction in infants and children =100 Cases

Investigations:

All patients had a plain x-ray of the abdomen in upright posture, ultrasound abdomen, complete blood picture, serum electrolytes and creatinine and in a few cases upper gastrointestinal series or barium enema. All patients were admitted, their dehydration and electrolytes imbalance corrected by administration of intravenous fluids and nasogastric tube aspiration, prophylactic broad spectrum antibiotics were started and blood was cross matched prior to operation.



Intestinal Obstruction due to adhesions



Intestinal Obstruction due to Malrotation



Intestinal Obstruction due to VP Shunt

III. Results

Incidence:

Age incidence:

Most of the patients were 1 month to 1 year age –38 cases, 1 to 2 years -11 cases, 2 to 3 years -7 cases, 3 to 4 years -13 cases, 4 to 5 years –6, 5 to 6 years –5 cases, above 6 years to 12 years –20 cases.

Age incidence:

CAUSES OF OBSTRUCTION	1m-1yr	1-2yrs	2-3yrs	3-4yrs	4-5yrs	5-6yrs	6-12yrs
Adhesions and Bands	01	4	1	6	6	4	10
Intussusception	20	1	0	1	0	0	00
Malrotation	10	3	2	3	0	0	02
Meckel's diverticulum	04	0	1	0	0	0	02
Obstructed Hernia	01	2	0	1	0	0	00
P.O.Appendicectomy adhesions	00	0	0	0	0	0	03
P.O.V.P.Shunt	01	1	0	0	0	0	00
T.B.Abdomen	00	0	0	1	0	0	01
Segmental enteritis	00	0	0	1	0	1	00
Mesenteric cysts	00	0	2	0	0	0	00
Omental cysts	00	0	1	0	0	0	00
Multiple Small Bowel strictures	00	0	0	0	0	0	01
Jejunal Diaphragm	01	0	0	0	0	0	00
Ileocaecal Trichobezoar	00	0	0	0	0	0	01
TOTAL	38	11	7	13	6	5	20

Sex incidence:

Intestinal obstruction is common in males 68 cases; 68% and females 32 cases; 32%.

Sex Incidence

AGE	MALE	FEMALE	TOTAL
1 month to 1 year	25	13	38
1 to 2 years	09	02	11
2 to 3 years	06	01	07
3 to 4 years	09	04	13
4 to 5 years	04	02	06
5 to 6 years	04	01	05
6 to 12 years	11	09	20
TOTAL	68	32	100

Incidence of various causes of obstruction

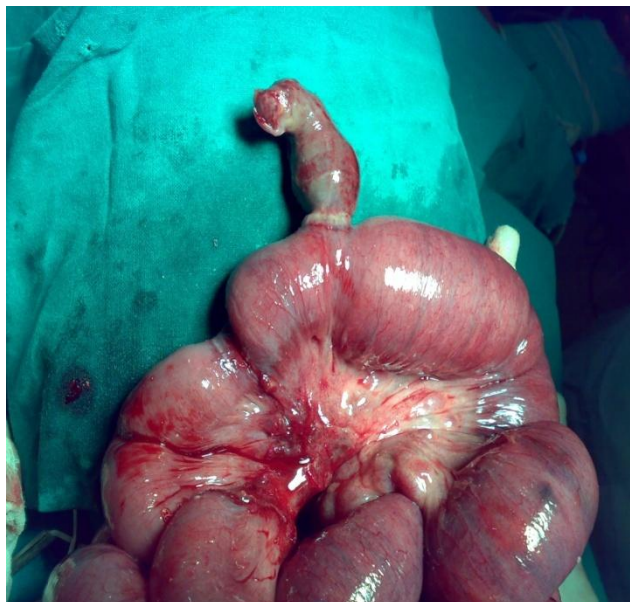
CAUSES OF OBSTRUCTION	Male	Female	Total
Adhesions and Bands	22	10	32
Intussusception	15	07	22
Malrotation	13	07	20
Meckel's diverticulum	05	02	07
Obstructed Hernia	03	01	04
P.O.Appendicectomy adhesions	02	01	03
P.O.V.P.Shunt	02	00	02
T.B.Abdomen	01	01	02
Segmental enteritis	01	01	02
Mesenteric cysts	02	00	02
Omental cysts	01	00	01
Multiple Small Bowel strictures	01	00	01
Jejunal Diaphragm	00	01	01
Trichobezoar	00	01	01
TOTAL	68	32	100



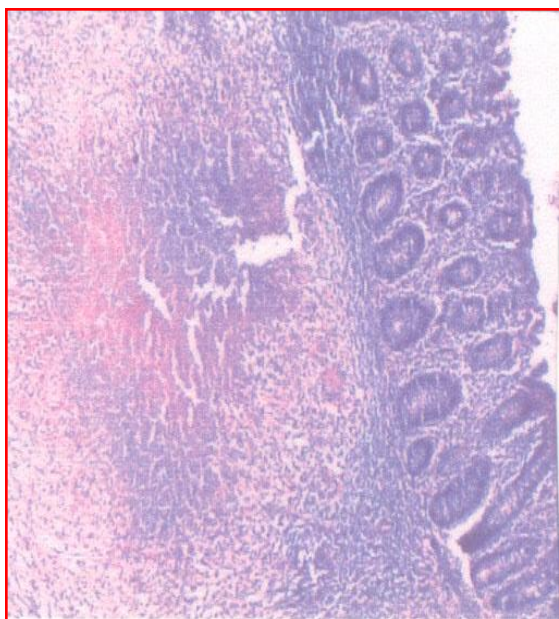
Operative Photograph showing Mesenteric cysts



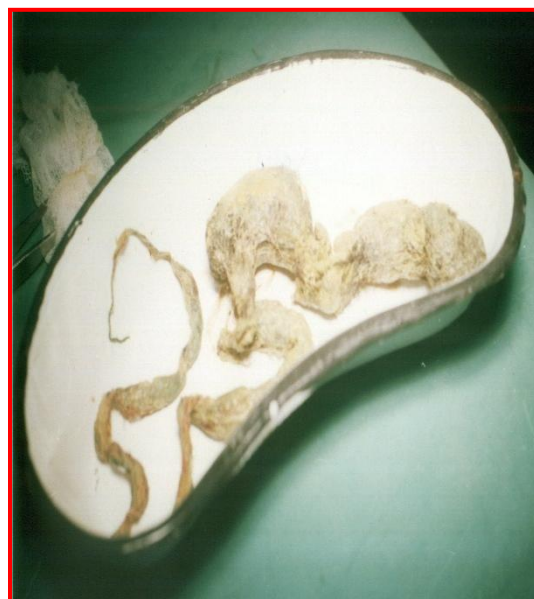
Operative Photograph showing Intussusception



Operative Photograph showing Meckel's diverticulum



Intestinal Trichobezoar



Intestinal Tuberculosis

Clinical Presentation

CLINICAL FEATURES	NO. OF PATIENTS	PERCENTAGE
Pain abdomen	70	70
Vomiting	66	66
Abdominal Distention	60	60
Constipation	60	60
Peritonitis & shock	32	32
Bloody stools	20	20
Mass abdomen	18	18

Time of presentation after the onset of symptoms

TIME OF PRESENTATION	NO. OF PATIENTS
00 to 24hrs	14
24 to 48hrs	16
48 to 72hrs	18
> 72hrs	52

TOTAL	100
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Mortality:

Among 100 patients of intestinal obstruction 94 patients are survived, 6 patients expired. The Mortality rate was 6%.

CAUSE OF OBSTRUCTION	No. of cases expired			
	TOTAL NO: CASES	MALE	FEMALE	TOTAL
Adhesions & Bands	32	2	1	3
Intussusception	22	1	1	2
Malrotation	20	1	0	1
TOTAL		4	2	6

IV. Discussion

Intestinal obstruction is the most common surgical emergency in infants and children. It is the result of various causes depending upon age. Its occurrence can be acute or chronic. The causes of intestinal obstruction also has regional variations. Peak incidence of intestinal obstruction is noted below one year of age,[6] In our series most frequent cause was Adhesions and Congenital bands 32, followed by Intussusception 22, Malrotation 20. where as Intussusception remains the commonest cause of bowel obstruction in infants and children as reported by many authors.[5,7,8] Multiple adhesions or bands were seen in 32 cases, in this, 8 cases of ileal perforation was found, in 4 cases major leak occurred after the operation period lead to septicemia and dehydration & shock leading to death in 2 cases, (one male and one female) and 2 cases survived. A 2 month old male infant came with an umbilical discharge, intestinal obstruction, on laparotomy multilocolated abscesses with adhesions was seen, on 6th post operative day wound dehiscence occurred and multiple leaks occurred, severe dehydration, septicemia, shock and death on 12th post operative day. Jejunal perforation was seen in 4 patients and resection of edges and anastomosis done. Adhesiolysis was done and no postoperative complications seen in the remaining 20 patients. In this series total of 22cases of intussusception, was common in 5 months to 1year age and found to be more common in boys (15) than girls (7).

All the cases were explored surgically. Ileo-colic intussusception was the commonest type (20). In 13 cases intussusception reduced manually and gut found to be viable. In 9 patients the gut was gangrenous and resection and primary anastomosis performed. Most of the intussuptions(21) were of idiopathic type while the lead point was found in 1 case. Mortality in 2 patients, one female and one male are presented late >72 hrs and dehydration and septicemic shock with gangrene of the bowel. Malrotation is seen in 20 patients, male 13 and female 7 cases, in which 6 cases of midgut volvulus were present. Meckel’s diverticulum is seen in 7 patients, (male 5 and female 2 cases). Wedge resection and anastomosis in 4 cases, resection and end to end anastomosis in 3 cases done and bands released. Obstructed inguinal hernia is seen in 4 patients and got operated, viable intestine reduced and herniotomy done. The reported incidence of obstructed inguinal hernia in literature ranges from 9-31%.[9]. Postoperative appendicectomy, intestinal obstruction is seen in 3 patients, two males and one female case. Laparotomy adhesions are released. Tuberculosis of abdomen as a cause of intestinal obstruction was found in 2cases.After surgery standard protocol of anti Koch’s regime instituted [10].

V. Conclusions

Intestinal obstruction is a common Pediatric Surgical emergency at our center. The incidence is higher in males than in females. The incidence is higher in the age group from 1month to 1year. Abdominal pain, vomiting, abdominal distention and constipation are the predominant presenting symptoms. Adhesions and Congenital bands are the commonest type of intestinal obstruction 32% and Intussusception 22% and Malrotation 20% are the next common types in our study. Mortality is significantly higher in those who present late (>72hrs) than in those presenting between 24 to 72hrs.Higher mortality was noted in patients presenting late with signs of peritonitis, septicemic shock, gangrene of the bowel and perforation. Mortality rate is 6% in the present study. According to literature mortality due to Intussusception is <1%, due to complications of Meckel’s diverticulum: 1 to 10% and due to Malrotation with midgut volvulus: >75%, bowel necrosis is 65%. Early diagnosis and surgical management can prevent gangrene of bowel and reduce mortality.

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