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Study of Intestinal Obstruction in Pediatric Age Group

Aasit L Pathak[1], Jay N Bagtharia[2], Suhan Khamar[3], Nidhi Shukla[4]

Author's Affiliation: [1]Associate Professor, [2,3,4]Senior Resident, Department of General Surgery, MP Shah Medical College, Jamnagar, Gujarat 361008, India.

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Abstract

Context: Pediatric intestinal obstruction is a fascinating subject. Because of the specificity of age group, the etiology and management will vastly differ from adult patient and pediatric patients will need very careful management. Because of poor symptomatology and thereafter management initially by either paramedical personnel or unexperienced personnel, the patient suffers a great deal, and early diagnosis and treatment gets usually delayed. Moreover, due to unavailability of trained institutes, morbidity and mortality in this age group significantly rise.In the light of present knowledge, it is possible to outline therapeutic principle which if applied promptly and skillfully, should result in a gratifying outcome to both patient and surgeon in a vast majority of cases. Intestinal obstruction in pediatric age group, due to many differences in aetiology and pathological effects in the body, differs considerably from adult age group. Due to anatomical and physiological difference between these two, the pathological picture and clinical manifestations will vary and accordingly, management also differs. A pediatric patient requires a great deal of scrutinization at every stage of management, diagnosis, pre-operative, postoperative etc. The present study is a retrospective study of 30 cases of small intestinal obstruction in pediatric age group which makes a genuine effort to find out the aetiological factors, modes of presentation and special management in them.

AIMS

- To study various clinical presentations in pediatric patients of small intestinal obstruction.
- To study the age and sex distribution of different etiological factors.
- To study etiopathology of small intestinal obstruction in pediatric patients.
- To study different treatment modalities in these patients.
- To evaluate the outcome in pediatric intestinal obstruction.

Methods and Materials

- Study Settings: Department of General Surgery of teaching hospital attached to medical college
- Study period: Two year
- Sample Size: 30 Cases
- Study Type: Retrospective Study

Results: Intestinal obstruction is one of the commonest intra-abdominal pathology encountered in paediatric age group. Cause of intestinal obstruction varies from intussusception, intestinal atresia, worm infestation and obstructed inguinal hernia. The cause of intestinal obstruction also varies with age. Success in treatment of intestinal obstruction depends largely upon early diagnosis, skillful management which comprises of investigations and treatment. Preop-resuscitation, per op-ventilatory and fluid management and post op fluid, nutrition and electrolyte management have an equally important role to play like the surgery itself.

Corresponding Author: Jay N Bagtharia, Senior Resident, Department of General Surgery, MP Shah Medical College, Jamnagar, Gujarat 361008, India.

E-mail: jaybagtharia@gmail.com

Improvement in surgical and anesthetic technique and advances in neonatal and pediatric health care have improved the final outcome in intestinal obstruction. However, being in developing country with a non-ignorable bulk of children suffering from malnutrition and communicable disease, a high degree of suspicion from pediatrician, radiologist and a surgeon working simultaneously for a common task shall always be beneficial for the society.

Better understanding of pediatric intensive care and endoscopic advances in the field of surgery shall be able to extend the boundaries of curative treatment and thus further decrease the morbidity and mortality rates.

Keywords: Instestinal obstruction; Pediatric age group; Intussusception; Obstructed inguinal hernia; Worm infestation; Early diangnosis; Treatment.

Introduction

Pediatric intestinal obstruction is a fascinating subject. Because of the specificity of age group, the etiology and management will vastly differ from adult patient and pediatric patients will need very careful management. Because of poor symptomatology and thereafter management initially by either paramedical personnel or unexperienced personnel, the patient suffers a great deal, and early diagnosis and treatment gets usually delayed. Moreover, due to unavailability of trained institutes, morbidity and mortality in this age group significantly rise. Hypothermia and coagulopathy is common in neonates.

In the light of present knowledge, it is possible to outline therapeutic principle which if applied promptly and skillfully, should result in a gratifying outcome to both patient and surgeon in a vast majority of cases.

Intestinal obstruction in pediatric age group, due to many differences in aetiology and pathological effects in the body, differs considerably from adult age group. Due to anatomical and physiological difference between these two, the pathological picture and clinical manifestations will vary and accordingly, management also differs. A pediatric patient requires a great deal of scrutinization at every stage of management, diagnosis, pre-operative, postoperative etc.

The present study is a retrospective study of 30 cases of small intestinal obstruction in pediatric age group which makes a genuine effort to find out the aetiological factors, modes of presentation and special management in them.

Methodology

Materials

- Study Settings: Department of General Surgery of teaching hospital attached to medical college
- Study period: Two year
- Sample Size: 30 Cases
- Study Type: Retrospective Study

Inclusion criteria

- Patient clinically diagnosed as small bowel obstruction with clinical features like abdominal pain, vomiting, abdominal distension and constipation.
- Diagnosed cases of small bowel obstruction (more than 4 air-fluid levels on plain X-ray abdomen).
- Patients who underwent exploratory laparotomy for acute small bowel obstruction or conservative management for small bowel obstruction.
- Age less than 12 years.

Exclusion criteria

- Age more than 12 years.
- Patients having large bowel obstruction.

Methods

This retrospective study was carried out on data obtained from 30 pediatrics patients who underwent exploratory laparotomy for acute small bowel obstruction or conservative management for small bowel obstruction. Study was carried out for a period of 2 year from May 2018. Data collection includes a detailed record of the patient`s history, physical examination, and necessary investigations like baseline blood investigations, X-ray abdomen erect and supine in all cases, ultrasound abdomen and CT scan was recorded based on the requirement for each case. Treatment and Intra-operative findings were recorded and histopathological reports collected for the operated cases. Postoperative treatment, follow up immediate and delayed up to 1 month were recorded.

Results

- The present retrospective study was conducted by reviewing the records of paediatric patients admitted with symptoms and signs of intestinal obstruction in

Department of General Surgery of teaching hospital attached to medical college.

Table 1: Age wise Distribution of Pediatric Intestinal Obstruction.

Age Group	No. of Cases	Percentage (%)
0-1 month	03	10.00
1-12 months	05	16.67
1-5 years	18	60
5-12 years	04	13.33
0-12 years	30	100

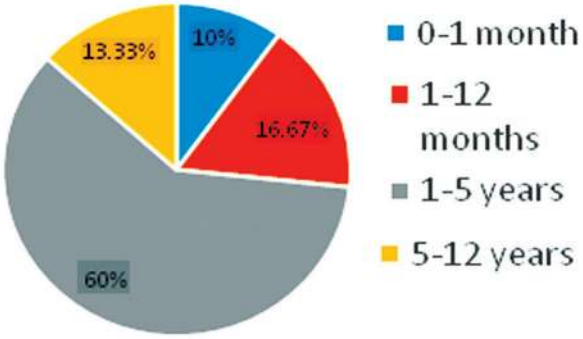

Fig. 1: Age wise case distribution.

In this study most common age group was 1-5 years which consisted of 18 patients. Age group 1-12 month consisted of 5 patients and the least common age group was <1 month consisting of 3 patients.

Table 2: Sex Wise Distribution of Paediatric Intestinal Obstruction.

No.	Sex	No. of Cases	Percentage (%)
1.	Male	15	50
2.	Female	15	50
Total		30	100

Sex Distribution

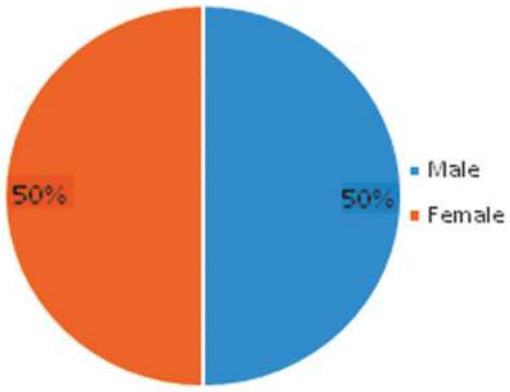

Fig. 2: In this study out of 30 cases 15 were males and 15 were females.

As in the other diseases where sex distribution is influenced by socio-economic status, nutritional status and environmental factors, but pediatric intestinal obstruction is distributed equally in both sexes.

Table 3: Distribution of Cases According to Clinical Presentation.

Clinical Presentations	Number of Cases	Percentage (%)
Abdominal Pain	16	53
Vomiting	24	80
Constipation	05	17
Abdominal Distension	12	40
Diarrhea	02	07
Blood in stool	02	07
Fever	08	27
Other	05	17

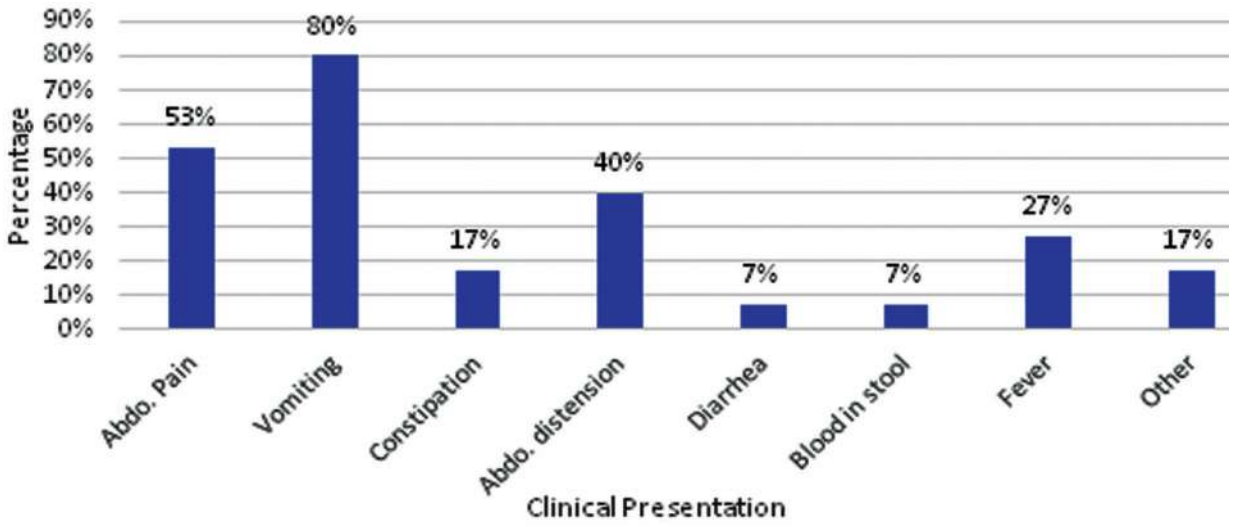

Fig. 3: Clinical Presentation

In this study most common presenting symptom was vomiting which was present in 80% cases followed by abdominal pain (53%), abdominal distension (40%), fever (27%), constipation (17%), blood in stool (07%) and diarrhea (07%).

Vomiting being the commonest symptom suggests that there are more chances of proximal small bowel involvement in intestinal obstruction.

Fig. 4: Distribution of Cases According to Clinical Finding.

Clinical Finding	Number of Cases	Percentage (%)
Abdominal Distension	12	40
Tenderness	25	83
Guarding	04	13
Rigidity	04	13
Visible peristalsis	01	03
Inguinal swelling	01	03
Red currant jelly stool	07	23

Commonest finding in clinical examination while dealing with paediatric patients of intestinal obstruction in this study was Abdominal Tenderness (83%), followed by Abdominal Distension (40%), Red Currant jelly stool (23%), Rigidity (13%), Guarding (13%) and Visible Peristalsis (3%).

This suggests that usually the inflammation sets in early even at the time of presentation and it is reflected as tenderness on palpation of abdomen.

Radiological Investigation

X-ray Finding	Number of Cases	Percentage (%)
Plain X-ray Abdomen		
Gas Filled Bowel Loops	28	93.33
Multiple Air fluid level	28	93.33
Double bubble sign	01	3.33
Triple bubble sign	01	3.33

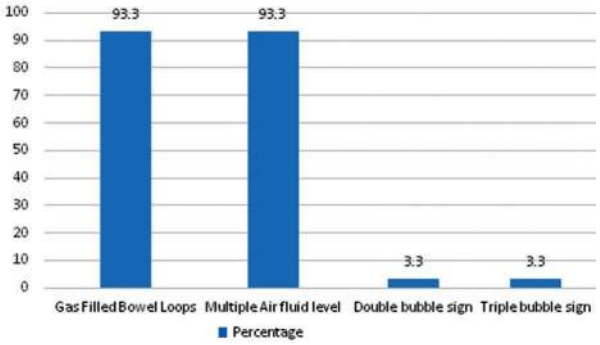

Fig. 5: X-Ray Finding.

B. Ultrasonography Finding

Usg Abdomen	Cases	Percentage
Dilated Bowel Loops / Excessive Gas Filled Bowel Loops	25	83%
Intussusception	24	80%
Stomach appears distended, rest of the bowel appears collapsed	02	07%

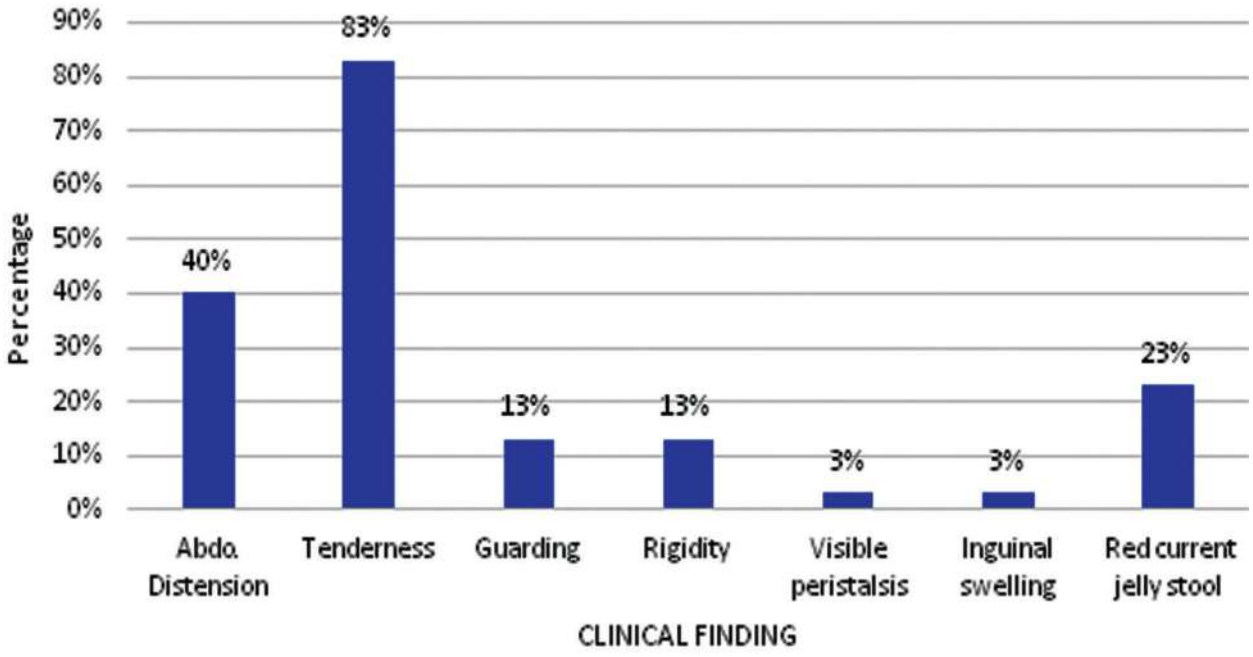

Fig. 4: Distribution of cases according clinical finding.

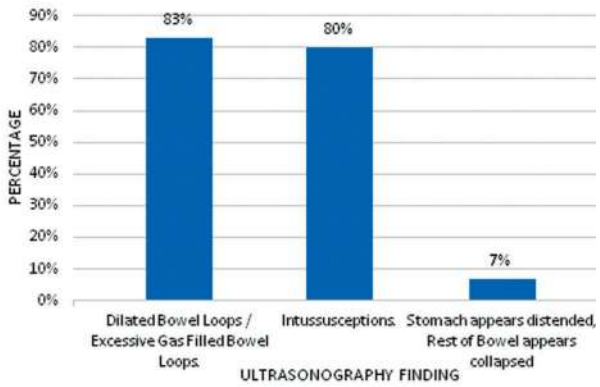

Fig. 6: Ultrasonography finding.

In this study clinical features were supplemented by X-ray abdomen and ultrasonography in most of the cases and other special investigation wherever indicated such as CECT abdomen done in 1 case. Gas filled bowel loops were noted 28 cases (93.33%) while multiple air fluid level was seen in 28 cases (93.33%) of plain X-ray of abdomen and double bubble sign seen in 1 case (3.33%) and triple bubble sign seen in 1 case (3.33%).

USG abdomen in Pediatric intestinal obstruction patients shows dilated bowel loops and/or excessive gas filled bowel loops in 25 cases and finding of intussusception in 24 cases. 2 cases were reported in which stomach appears dilated and rest of the bowel appears collapsed. CECT abdomen was done in 1 case which was suggestive of small bowel obstruction due to ileo-colic intussusception involving terminal ileum and caecum.

This study shows that radiological investigations like x-ray abdomen in erect and supine position demonstrates multiple air fluid levels and dilated bowel loops whereas ultrasonography reveals dilated bowel loops and intussusception, with type of intussusception which guides us about the location of obstruction as well as the type of intussusception.

Etiology

Etiology	Number of Cases	Percentage (%)
Intussusception	24	80
Obstructed inguinal hernia	01	3.33
Duodenal atresia	01	3.33
Jejunal atresia	01	3.33
Worm infestation	01	3.33
Not known	02	6.66
Total	30	100

In this study intussusception was the most common pathology (80%). Next in frequency was small bowel atresia (6.66%), worm infestation (3.33%), right obstructed inguinal hernia in 1 case (3.33%) and in 2 cases etiology was not known (6%). In this study, 2 cases of intussusception had acute appendicitis and 1 case of intussusception had small bowel adhesion as intra operative finding.

This study shows that acquired causes of intestinal obstruction i.e. intussusception is more common than congenital causes.

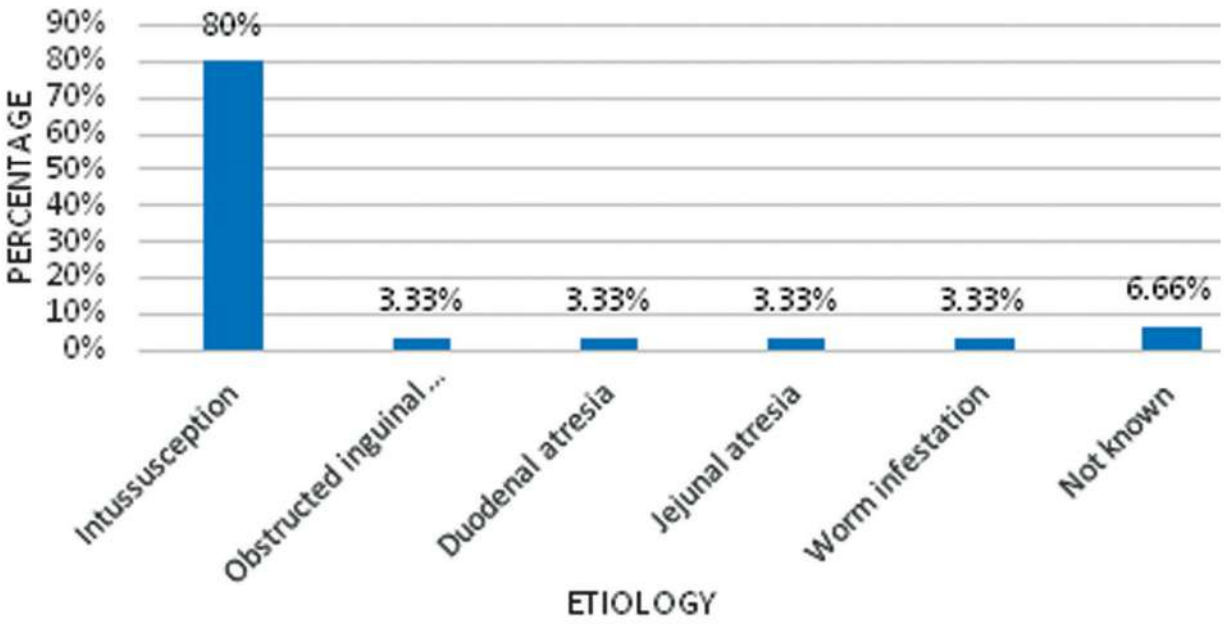

Fig. 7: Etilogy.

Treatment Modality

Treatment Modality	Case	Percentage (%)
Conservative	18	60%
Usg Guided Hydrostatic Reduction	05	16.66%
Operative	07	23.33%

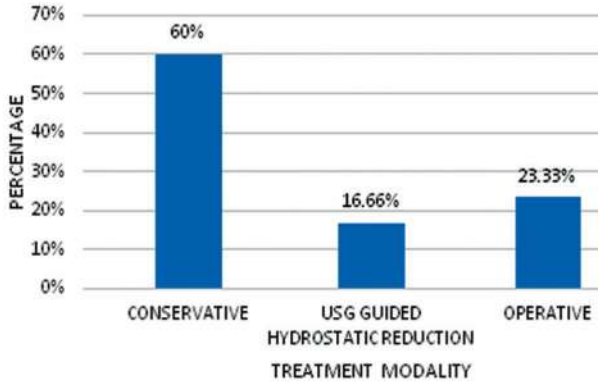

Fig. 8: Treatment Modality.

In this study out of 30 cases, 23 cases treated conservatively which include 18 cases (60%) without any intervention and 05 cases (16.66%) of intussusception treated with ultrasonography guided hydroreduction. 07 cases (23.33%) treated by operative management, of which 06 cases underwent exploratory laparotomy and 01 case treated by right inguinal herniotomy with right orchidectomy. Conservative management includes nasogastric tube insertion, active aspiration, nil by mouth, enema, antibiotic, IV fluid administration and electrolyte correction.

Operative Finding

Operative Finding	Number of Cases	Percentage (%)
Intussusception with acute appendicitis with dilated Bowel Loop	02	29
Intussusception with inter bowel adhesion with Dilated Bowel Loop	01	14
Duodenal atresia	01	14
Jejunal atresia	01	14
Worm filled bowel loop with ileal twisting	01	14
Necrosis of testis with small bowel in hernial sac with dilated bowel loop	01	14
Total Cases	07	100%

In this study 30 cases were taken from that 23 cases treated conservatively and 7 case was operated from that 2 patient having intussusception with acute appendicitis with dilated bowel loop and 1 patient having intussusception with interbowel adhesion with dilated bowel loop and 1 patient having duodenal atresia and 1 patient having jejunal atresia and 1 case have worm filled ileal loop with ileal twisting.

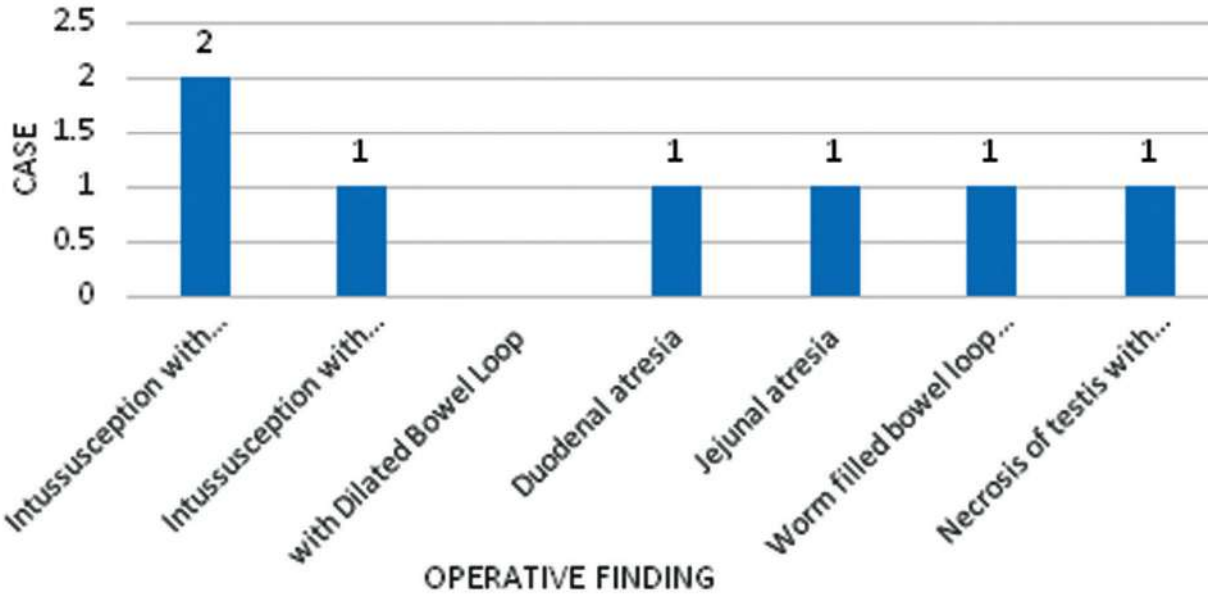

Fig. 9: Operative Finding.

Surgical Modality of Treatment

Treatment Modality	Cases	Percentage (%)
Exploratory laparotomy with manual reduction of Intussusception with appendicectomy	02	28.7
Exploratory laparotomy with manual reduction of Intussusception with interbowel Adhesiolysis	01	14.3
Duodenal resection with duodenoduodenostomy	01	14.3
Jejunal resection with jejunojejujunal anastomosis	01	14.3
exploratory laparotomy f/b manual derotation of ileum f/b manual emptying of worm filled ileum	01	14.3
Herniotomy with orchidectomy	01	14.3

In this study 23% cases managed by operative intervention and rest 77% case managed conservatively. Operative intervention includes Exploratory laparotomy with manual reduction of Intussusception with appendicectomy 2 case (28.7%), Exploratory laparotomy with manual reduction of Intussusception with interbowel Adhesiolysis 1 case (14.3%), Duodenal resection with duodenoduodenostomy 1 case (14.3%), Jejunal resection with jejunojejujunal anastomosis 1case (14.3%), exploratory laparotomy f/b manual derotation of ileum f/b manual emptying of worm filled ileum 1 case (14.3%) and Herniotomy with orchidectomy 1 case (14.3%).

Outcome

Outcome	Our Study
Recover	93%
Death	07%

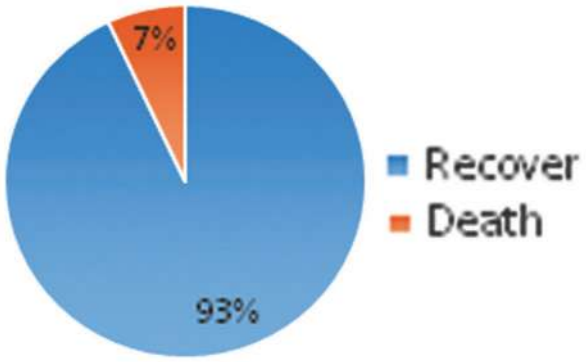

Fig. 11: In our study, mortality is 7%.

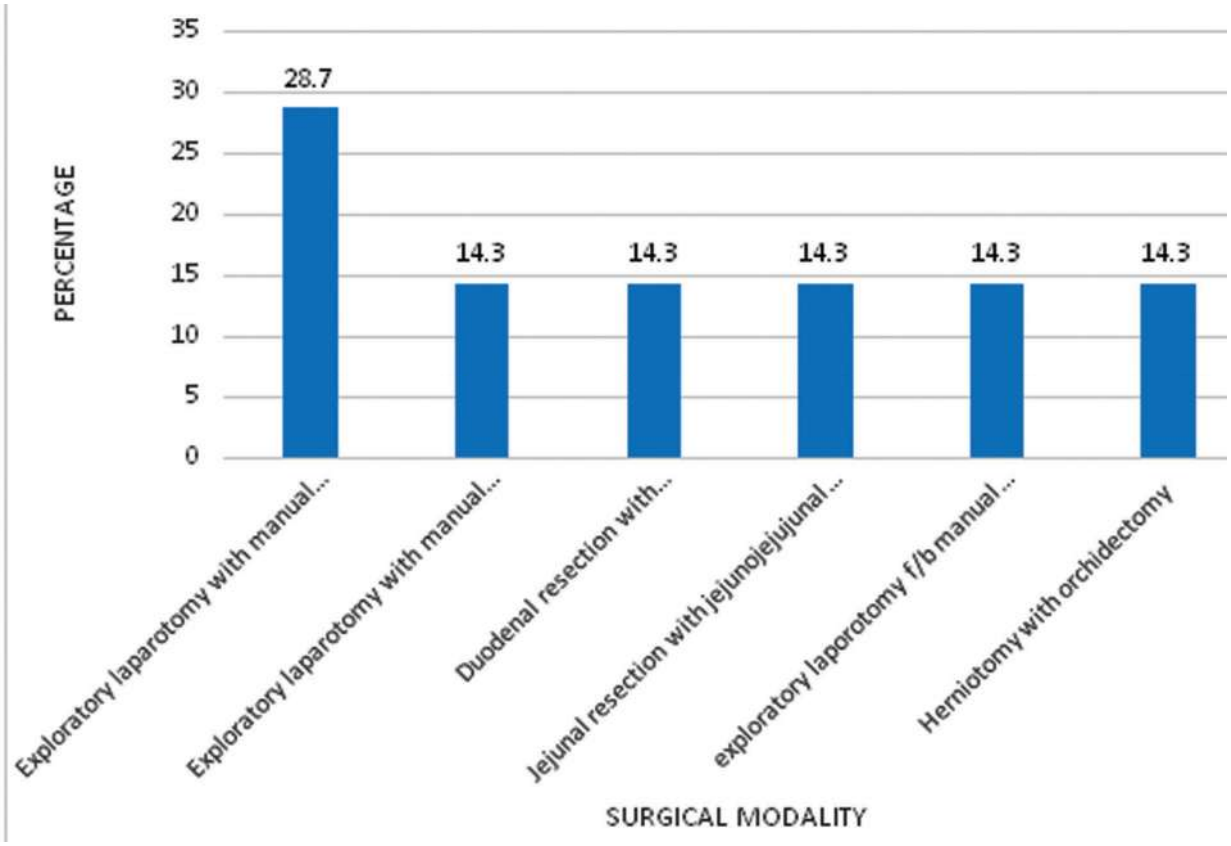

Fig. 10: Surgical Modality

Discussion

Intestinal obstruction is a common paediatric surgical problem and cuts across the different age groups in children. Its occurrence in children may be acute or chronic. Presentation in the neonate is usually acute and is usually the most common emergency surgical condition seen in them. Intestinal obstruction occurs in all age groups. The causes of intestinal obstruction in the general population (neonate and children) may vary considerably from country to country as well as from time to time.

This study has been compared with various studies of intestinal obstruction done in other regions or country and the study done in same institute before 30 years.

Table : Age distribution.

Age	Ogundoyin et al (2009) 04(%)	Soomro & Mughal et al02(2013) (%)	Anil Jatav et al (2015) 03(%)	Same institute study (1990) 91(%)	This study (%)
0-1 year	61.54	29.8	62.9	50	27
1-5 years	23.08	26.3	24.4	25	60
>5 years	15.38	13.9	12.6	25	13

Maximum number of cases of obstruction are in age group of 1-5 year (60%) followed by 27% in 0-1 years of age and 13% of more than 5 years.

Ogundoyin et al (2009) in their study reported incidence of 62.9% for the age group of 0-1 year and another 24.4% for 1-5 years and 12.6% in for more than 5 years.

Another study Soomro and Mughal (2013) observed 59.81% for <1 year of age and rest 40.2% were more than 1 year.

Anil Jatav et al (2015) study shows maximum number of cases of intestinal obstruction were in age group of 0-1 year 62.9%. Followed by 24.4% in 1-5 years of age and 12.6% of more than 5 years.

Similar study undertaken in same institution in 1990 shows that maximum number of cases of intestinal obstruction were in age group 0-1 year: 50% followed by 1-5 year: 25% and 5-12 year: 25%.

Peak incidence of intestinal obstruction is usually under 1 year of age. In present study, as in other compared studies, showed that intestinal obstruction was more prevalent in 1-5 year of life may be due to delayed weaning.

Table: Sex Ratio.

Sex	Ogundoyin et al (2009)	Soomro & Mughal et al (2013)	Anil Jatav et al. (2015)	Same institute study	Present study
Male	1.9	2.9	4.4	1.2	1
Female	1	1	1	1	1

In this study out of total 30 cases of intestinal obstruction 15 (50%) male and 50% females. Male to Female ratio 1:1. Ogundoyin et al (2009) reported Male:Female ratio of 1.9:1, Soomro and Mughal et al (2013) observed 2.9:1. In year 2015 Anil Jatav et al shows male to female ratio 4.4:1. Same institutional study 30 years back had male:female ratio 1.2:1 and present study has same sex ratio. The important reason of male female similarity is the fact that there is increased female sex ratio and increase in awareness and education amongst people and free health related service in this institution.

Clinical Presentation

Clinical Presentation	Ogundoyin et al (2009) (%)	Soomro & Mughal et al (2013) (%)	Anil Jatav et al (2015) (%)	Same institute study (%)	Our study (%)
Vomiting	62.79	85.45	82.6	80	80
Abdomen pain	34.88	89.09	28.1	65	53
Abdomen distension	43.41	81.81	61	95	40
Constipation	34.88	100	63	45	17
Bleeding per rectum	24.03	18.18	22.6	10	07
Fever	31.01	21.81	-	15	27
Diarrhoea	6.20	-	-	-	07

In this study clinical features includes vomiting (80%), abdominal pain (53%), abdominal distension (40%), Fever (27%), constipation (17%), abdominal lump (12%), bleeding per rectum (07%), and diarrhoea (07%).

Same institutional study reported that clinical features included abdominal distension (95%), vomiting (80%), abdominal pain (65%), constipation (45%), bleeding per rectum (10%) and fever (15%).

In year 2009 Ogundoyin et al reported that clinical features included vomiting (62.79%), abdominal pain (34.88%), abdominal distension (43.41%), constipation (34.88%), bleeding per rectum (24.03%), fever (31.01%) and diarrhoea (6.20%). In the year 2013 Soomro and Mughal observed that the main presenting features were not passing stool (100%), abdominal pain (89.09%), vomiting (85.45%), abdominal distension (81.81%), fever (21.81%) and

bleeding per rectum (18.18%). In year 2015, Anil Jatav et al showed that included vomiting (82.6%), constipation (63%), abdominal distension (61.1%), abdominal pain (28.1%), abdominal lump (25.9%) and bleeding per rectum (22.6%).

It has been observed in this study that proximal small intestinal obstruction is still more common than distal small intestinal obstruction as also suggested by other studies.

Etiology

Etiology	Ogundoyin et al (2009) (%)	Soomro & Mughal et al (2013) (%)	Anil Jatav et al (2015) (%)	Same institute study (%)	This study (%)
Intussus-ception	29.3	27.3	23.1	10	80
Small bowel atresia	-	-	-	-	6.66
Meckel's diverticulum	-	16.4	3.3	05	-
Band and adhesion	8.46	16.4	11.9	15	-
Volvulus and Malrotation	3.08	3.6	4.4	-	-
Hirschsprung disease	13.85	7.3	13.7	-	-
Infection (Typhoid and TB	-	11	-	5	-
Imperforate Anus (Anorectal malformation and Bowel atresia)	25.39	-	13.7	45	-
Obstructed Inguinal Hernia	16.92	14.5	3	5	3.33
Umbilical hernia	1.54	3.6	-	-	-
Round worm obstruction	0.77	-	-	10	3.33
IHPS	0.77	-	10	-	-

In this study, intussusception constituted 80% of case, being the most common cause followed by small bowel atresia (6.66%), obstructed inguinal hernia (3.33%) and worm infestation (3.33%) and in 2 cases, etiology was not known.

In same institutional study, Imperforate Anus (Anorectal malformation and Bowel atresia) constituted 45% of case, being the most common cause followed by Band and Adhesion (15%), Intussusceptions (10%), Round worm obstruction (10%), obstructed inguinal hernia (05%). In the year 2009, Ogundoyin et al described that the major causes of intestinal obstruction in their study were intussusceptions (29.23%), anorectal malformations (22.31%), obstructed inguinoscrotal hernia (16.92%) and Hirschsprung's disease (13.85%).

In the year 2013, Soomro and Mughal found that the causes of intestinal obstruction 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%).

Intussusception was the most common (23%) cause of paediatric intestinal obstruction in the Anil Jatav et al followed by intestinal atresia (13.7%), Hirschsprung's disease (13.7%), Infantile hypertrophic pyloric stenosis (10%), band obstruction (7.8%), malrotation and volvulus (4.4%), postoperative adhesion (4.1%) and Meckel's diverticulum 3.3%, peritonitis 4.8%, obstructed external hernia 3%.

As accepted in various studies, intussusception was found out to be the most common cause of paediatric intestinal obstruction. Bands and adhesions are at a lower place in the list of causative factors.

Treatment Modality

Treatment modality	Ogundo-yin et al (2009) (%)	Soomro & Mughal et al (2013) (%)	Anil Jatav et al (2015)	Same institute study (1990) (%)	This study (%)
Conservative	-	12.8	24.5	20	77
USG Guided hydrostatic reduction	-	-	-	-	16.66
Exploratory laparotomy with Reduction of Intussusception	22	5.45	9.3	-	6.66
Bowel Resection and Anastomosis	26	20	27.5	15	6.66
Manual emptying of Worm filled bowel with ileal derotation	-	-	-	-	3.33
Band lysis and adhenolysis	-	16.36%	8.2%	5%	3.33
Derotation	-	3.63%	1.9%	-	3.33

Treatment Modality	Ogundo-yin et al (2009) (%)	Soomro & Mughal et al (2013) (%)	Anil Jatav et al (2015)	Same Institute study (1990) (%)	This study (%)
Diverti-culectomy	-	16.36%	2.2%	-	-
Appendi-cectomy	-	-	0.7%	-	6.66
Colostomy and ileostomy	29.23%	-	10.4%	30%	-
Pyloro-myotomy	0.77%	-	10.0%	-	-
Duodeno-Duodenostomy	1.54%	-	2.6%	-	3.33%
Herniotomy	18.46%	18.18%	1.9%	-	3.33%
Enterotomy / Enterostomy	2.31%	-	-	-	-
Anoplasty	6.92%	-	-	10%	-
Pull through operation	8.46%	7.27%	-	-	-
Anorectoplasty	10%	-	-	-	-
Ladd operation	3.08%	-	-	-	-

In this study 77% cases were managed by conservatively and rest 23% case managed by operation. Operative intervention includes manual reduction of intussusception (10%), appendicectomy (6.66%), Bowel Resection and Anastomosis (6.66%), Band lysis and adhenolysis (3.33%`) and Derotation (3.33%).

Conservative management also includes USG guided hydrostatic reduction, fluid correction and serum electrolyte correction. In same institutional study colostomy and ileostomy procedure were done more commonly (30%), followed by conservative management (20%) and bowel resection and anastomosis (15%).

In Nigeria year 2005 study, all cases were managed operatively. In year 2013 Soomro and Mughal study, 12.8% of cases were managed conservatively and rest 87.2% of cases had undergone surgical intervention.

In Anil Jatav et al. 2015 study, out of 270 patients 75.5% cases had operative modality, where 24.5% cases had non operative approach.

Treatment motility of choice for acute intestinal obstruction is surgery in most other studies. However, in this study, the percentage of conservative treatment modality is higher. Since majority of cases, were of intussusception, they could be treated by conservative management, including USG guided hydrostatic reduction and very few cases underwent operative management.

Outcome

Outcome	Ogundoyin et al (2009) (%)	Soomro & Mughal et al (2013) (%)	Anil Jatav et al (2015) (%)	Same institute study (1990) (%)	Present study (%)
Recover	96.92	98.18	92.2	80	93
Death	3.08	1.81	7.8	20	07

In the present study, mortality is 07%.

In the same institutional study, mortality rate was 20%.

In year 2009 Ogundoyin et al. reported overall mortality rate to be 3.08%.

In year 2013, Soomro and Mughal described overall mortality was 1.81%.

In year 2015, Anil Jatav et al. found that overall mortality was 7.8%.

Acquired causes of intestinal obstruction are still more common than congenital causes. Congenital pathology most commonly occurs in neonatal age group.

Early diagnosis and management can help to decrease the morbidity and mortality associated with this condition. The high mortality in past was due to delayed diagnosis and referral, parental neglect, low socio-economic status, anaesthetic complications and lack of neonatal intensive care. But of late the mortality is coming down due to increased awareness, early referral, availability of staff trained in neonatal handling and better antibiotics, improved paediatric anaesthesia and improvement of post-operative care.

In this retrospective study, 30 pediatric patients of small intestinal obstruction up to 12 years of age group were studied in Department of General Surgery of teaching hospital attached to medical college.

After evaluating various clinical, bio-chemical and radiological parameters the following facts were found out:

- Majority of patients were of less than 5 years of age (87%). Male to female ratio in this study was found to be 1:1.
- Congenital anomalies were more common in neonatal age group.
- The most common cause of small bowel intestinal obstruction was intussusception (80%) followed by small bowel atresia (06%) & followed by obstructed hernia and others.
- Vomiting (80%) is the common symptom in this study followed by abdominal pain (53%), abdominal distension (40%), fever (27%) and

constipation (17%). This shows that small bowel was victim in majority of intestinal obstruction case.

- The commonest clinical finding was tenderness (83%) followed by abdominal distension (40%), red currant jelly stool (23%) and guarding/rigidity (13%).
- Clinical Assessment was supplemented by X-ray abdomen standing and Ultrasonography abdomen in all patients. Most common finding in X-ray Abdomen was patterned air fluid level and dilated gas filled bowel loops and in ultrasonography, was dilated and excessive gas filled bowel loops.
- Approximately 77% patients in our study were managed conservatively while rest of patients required some operative intervention. The operative management is required for congenital causes like small bowel atresia soon after birth and vary few cases of intussusception while operating these patients we found that in majority of them the bowel was dilated. Operative finding in most of the cases were dilated bowel loops which was followed by intussusception, acute appendicitis, interbowel adhesions, worm filled bowel loops and obstructed hernias etc. Conservative treatment includes nasogastric tube insertion, nil by mouth, bowel decompression, fluid management, correction of electrolyte imbalance and USG guided hydrostatic reduction. Mortality rate in this study was found to be 7%.
- Main stay of curative treatment for acute intestinal obstruction is conservative in acquired etiology and operative in congenital etiology.

Conclusion

Intestinal obstruction is one of the commonest intra-abdominal pathology encountered in paediatric age group. Cause of intestinal obstruction varies from intussusception, intestinal atresia, worm infestation and obstructed inguinal hernia. The cause of intestinal obstruction also varies with age. Success in treatment of intestinal obstruction depends largely upon early diagnosis, skillful management which comprises of investigations and treatment. Preop-resuscitation, per op-ventilatory and fluid management and post op fluid, nutrition and electrolyte management have an equally important role to play like the surgery itself. Improvement in surgical and anesthetic technique and advances in neonatal and pediatric health care have improved the final outcome in intestinal obstruction. However, being in developing country with a non-ignorable bulk of children suffering from malnutrition and communicable disease, a high degree of suspicion from pediatrician, radiologist and a surgeon working simultaneously for a common task shall always be beneficial for the society.

Better understanding of pediatric intensive care and endoscopic advances in the field of surgery shall be able to extend the boundaries of curative treatment and thus further decrease the morbidity and mortality rates.

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