



Paediatric Surgery

ANALYSIS OF ETIOLOGIES, CLINICAL PRESENTATIONS AND SURGICAL MANAGEMENT IN CASES OF INTESTINAL OBSTRUCTION IN PEDIATRIC AGE GROUP

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ABSTRACT **Background:** Intestinal Obstruction in pediatric age group is a common cause of surgical emergency in a tertiary health care center in developing countries like India. The Aim of this study is to determine the incidence, clinical presentations and post-operative outcomes in cases with intestinal obstruction. **Study Methods:** We did a 5 year retrospective review of all children aged 15 years and below, managed for intestinal obstruction between January 2018 and December 2022 at the Pediatric Surgical Division of Dr. Vasantrao Pawar Medical College, Nashik. Data extracted from their case notes and analyzed included the patient's age, sex, causes of intestinal obstruction, symptoms and signs, management outcome and post-operative complications and overall prognosis is observed. Data is presented in pie charts and tabular form. **Results:** A total of 70 children were studied retrospectively from this period in which 48 were boys and 22 were girls. According to the data collected, Intussusception is found out to be the most common cause of obstruction in children (18 cases, 25%). Other common etiologies were Hirschsprung's disease (16 cases, 22.8%) and Imperforate anus (14 cases, 20%). The most common surgical intervention done in all emergency cases of obstruction was Colostomy which was done in 32 cases, 45.7%. Post-operatively, Surgical site infections (24 cases, 34%) and sepsis (10 cases, 7% out of which 8 were neonates age <1 month) were the most common complications. Mortality was seen in only 4 cases, 5% and all were neonates. **Conclusion:** The Etiologies of Intestinal obstruction are variable and are commonly seen in low socioeconomic and developing countries. Although the mortality may be low but the morbidity is significantly high in such patients and needs a prompt surgical intervention for the same.

KEYWORDS :

INTRODUCTION

Intestinal obstruction is a common presentation in pediatric surgical emergencies and presents with different etiologies depending on country or region. Its morbidity and mortality are high in low-income and middle-income countries, with variable influencing factors. The aim of this study is to determine the etiologies, morbidity and mortality of pediatric intestinal obstruction and to assess the factors associated with the outcomes of these conditions.

Intestinal Obstruction occurs due to various reasons. Broadly we can classify them according to the dynamic causes and adynamic causes. Diseases like Volvulus and Intussusception are the dynamic causes of obstruction while diseases like Hirschsprung's are the adynamic causes of obstruction. So accordingly the various causes of obstruction are studied, classified, appropriate surgical treatment is done and their prognosis is studied.

There is a male predominance with a male to female ratio ranging between 1.8 and 3.5:1 and majority of patients present before 5 years..

Reportedly, Mortality of intestinal obstruction in children ranges from 3% to 11% and the morbidity varies from 4% to 60%. The common morbidities include Surgical site infections (SSI), sepsis, wound dehiscence, stoma related complications and Entero-cutaneous fistula. To avoid such complications, there is a high need of prompt surgical intervention specifically in pediatric age group.

So accordingly a study like this is must in countries like India with more people belonging to low socio-economic strata where sensitization of people regarding these causes of intestinal obstruction is must and to discuss its prompt management in the Tertiary health care centers.

MATERIALS AND METHODS

This was a 5-year retrospective review of all children aged 15 years and below, managed for intestinal obstruction between January, 2018 and December, 2022 at the Pediatric Division of Department of General Surgery in Dr. Vasantrao Pawar Medical College, Nashik.

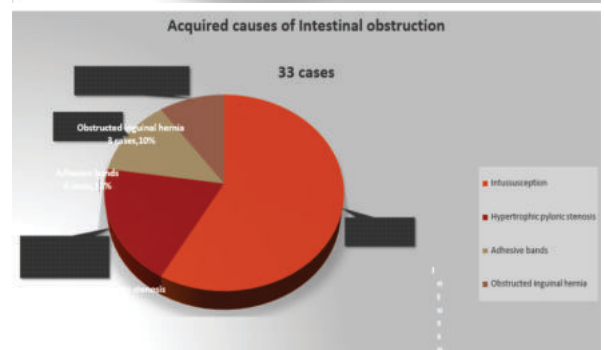
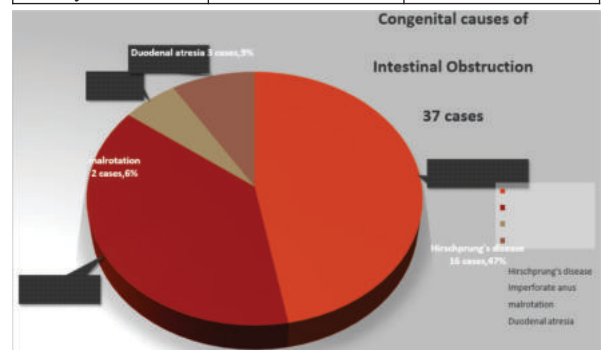
Data extracted from their case notes and analyzed included the patient's age, sex, causes of intestinal obstruction, symptoms and signs, management outcome and post-operative complications and overall prognosis is observed in the last year (2023) The cases of paralytic ileus were excluded from this study.

A total of 70 children were studied retrospectively from this period in which 48 were boys and 22 were girls.

Data collected is presented in pie chart and tabulated form.

Table 1 Age Wise Presentation

Age Range	Number of Patients	%
0-1 month	24	34%
2-12 months	20	28.5%
1-5 years	17	24.2%
6-10 years	5	7.14%
11-15 years	4	5.7%



Clinical Features

Clinical Features	Number of Patients	%
Abdominal Pain	58	82%
Vomiting	40	57%
Constipation	37	52.9%
Abdominal distension	43	61%
Fever	22	31%
Abdominal mass	8	11.4%
Diarrhea	4	5%

Operative Findings

Findings	Number of Patients
Atretic Bowel	5
Malrotation with congenital bands	2
Volvulus with congenital bands	3
Pyloric stenosis	6
Dilated bowel loops	25
Gangrenous bowel loops	5
Impacted worms	0
Imperforate anus with or without fistula	13
Ileo colic	12
Ileo ileal	02
Colo colic	01

Procedure Performed

Procedure	Number of Patients
Colostomy	32
Duodeno - duodenostomy	3
Entero - enterostomy	0
Pyloromyotomy	0
Herniotomy	3
Umbilical herniorrhaphy	2
Anoplasty (low Anorectal malformation)	6
Bowel resection and anastomosis	9
Ladd's Operation	2

Post-operative Complications

Complications	Number of Patients	%
Surgical site infection	26	37.14%
Wound dehiscence	11	15.7%
Septicemia	04	5.85%
Post-operative fever	56	80%
Adhesive bowel obstruction	02	2.85%
Prolapsed Colostomy	01	0.07%
Fecal fistula	01	0.07%

RESULTS

According to the data collected, Intestinal obstruction is more commonly seen in children <1 year (62%). Hirschprung's disease is found out to be the most common congenital cause of obstruction in children (16 cases, 22.8%). Other common etiologies were imperforate anus (13 cases, 18%) and Duodenal Atresia (3 cases, 4%). The most common Acquired cause of obstruction was Intussusception (18 cases, 25%) followed by Hypertrophic Pyloric stenosis (6 cases, 9%) and minimal cases of obstructed inguinal and umbilical hernia. The most common surgical intervention done in all emergency cases of obstruction was Colostomy which was done in 32 cases, 45.7%. Resection Anastomosis was done in 9 cases, 12%. Anoplasty was done in 6 cases of low lying ARM. Post-operatively, fever (56 cases, 80%), Surgical site infections (26 cases, 38%) and sepsis (5 cases out of which 4 were neonates age <1 month) were the most common complications. Mortality was seen in only 4 cases, 5% and all were neonates.

DISCUSSION

Intestinal obstruction is a common pediatric surgical problem and comes across in different age groups in children. It can be acute or chronic. Presentation in the neonate is usually acute and is the most common emergency surgical condition seen in them⁶⁻⁸. Published peak incidence of intestinal obstruction has usually been under the age of 1 year². All but one neonate had congenital causes of intestinal obstruction in the present series with the only acquired condition being intussusception. Perinatal intussusception is a rare and an unusual cause of intestinal obstruction in infants^{10,11}. It gives a confusing clinical picture that often delays its diagnosis and treatment thus causing a high mortality¹⁰⁻¹⁵. The pattern of the etiology of intestinal obstruction in this study agrees with the previously reported patterns outside India with intussusception as the most common acquired cause of intestinal obstruction and overall most common cause of intestinal obstruction in children^{1-3,5,15-19}, although our findings also showed a slight variation in the incidence of other causes of intestinal obstruction in this series compared to these previous reports^{1,4}.

We observed that upper gastro intestinal obstruction is still more common than lower gastro intestinal obstruction as suggested by previous studies¹⁻⁵. The classical features of intestinal obstruction, namely, vomiting, excessive crying/abdominal pain, constipation and abdominal distension were observed in over 34% of our patients and

this is consistent with reports from other parts of the country¹⁻².

Postoperative complications related to sepsis occurred more commonly in this study. Surgical site infection was the most common while septicemia and post operative pyrexia were the other common occurrences. We believe that these complications resulted from the operative findings of bowel gangrene with intestinal perforation and peritonitis which prolonged their duration of hospital stay. Our overall mortality is low compared with other reports in India¹⁻⁴.

CONCLUSION

Lastly, The etiological pattern and clinical presentation of intestinal obstruction in India is still similar to previous reports from the other parts of the country with Intussusception being the most common cause of Intestinal obstruction in pediatric age group^{2,4-5}. Etiologies are variable and are commonly seen in countries like India with maximum people belonging to low socioeconomic strata and needs prompt surgical interventions at a Tertiary care center. Although the mortality is low, the management of the patients is still associated with high morbidity (60.78%) in our environment.

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