

# A clinico-etiological study of intestinal obstruction with respect to age and gender in pediatric patients

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## Abstract

**Introduction:** Gastrointestinal obstruction in the pediatric age group may be due to a variety of congenital and acquired conditions. **Aims and Objectives:** To study Clinico-etiological factors of intestinal obstruction with respect to Age and Gender in Pediatric patients. **Methodology:** This was cross-sectional study carried out in pediatric patients admitted to tertiary health care center with intestinal obstruction during the Year June 2014 to June 2015. All the Pediatric Patients diagnosed as intestinal obstruction were included into study while adult patient and those who don't give consent were excluded from the study. **Results:** The commonest cause of intestinal obstruction is intussusception accounting to about 31.87% of cases. Hirschsprung's disease is the next common cause accounting for 14.49% of cases. Adhesions and bands are the next commonest cause accounting for about 13.4% of cases. Low anorectal malformation. Obstructed inguinal hernia, are next commonest accounting for about 11.59% of all cases. Intestinal atresia accounts for 5.79% of cases. Midgutmalrotation, congenital diaphragmatic hernia is the next commonest cause accounting for about 4.34% of cases each. In the present study- Adhesions and bands as the cause of intestinal obstruction were seen more commonly in age group of 1 to 6 years. Anorectal malformations (both high and low types) were more common in age group of 0 to 1 months congenital diaphragmatic hernia, malrotations was commonly seen after the age of 1 year. However ileo-ileal intussusception was common in age group of 1 month to 1 year and ileocolic intussusceptions was common in age group of 1 to 6 years. Obstructed inguinal hernias were also common in age group of 1 to 6 years. **Conclusion:** Most common cause for small bowel obstruction was intussusception. Adhesions, malrotation, obstructed inguinal hernia, intestinal atresia, midgutmalrotation congenital diaphragmatic hernia were the other causes. Most common cause for large bowel obstruction was hirschsprung's disease followed by anorectal malformations. Appendectomy was the commonest causes responsible for obstruction due to postoperative adhesions.


**Keywords:** Intussusception, Hirschsprung's disease, Intestinal obstruction, Anorectal malformations.

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## INTRODUCTION

Gastrointestinal obstruction in the pediatric age group may be due to a variety of congenital and acquired conditions. Over a period of 18 months; 150 cases of acute intestinal obstructions accounted for 40% of the abdominal emergencies at our center. Children with

esophageal atresia, anorectal anomalies, Hirschsprung's disease, adhesive intestinal obstruction not requiring surgery, and peritonitis without mechanical obstruction were excluded. Pediatric surgery arose in the middle of the 20<sup>th</sup> century as the surgical care of birth defects required novel techniques and methods and become more commonly based at children's hospitals. One of the sites of this innovation was children's hospital of Philadelphia. Beginning in the 1940s under the surgical leadership of C. Everett koop, newer techniques for endotracheal anesthesia of infants allowed surgical repair of previously untreatable birth defects. By the late 1970s, the infant death rate from several major congenital malformation syndromes had been reduced to near Zero.<sup>1</sup> The ethical responsibilities of the pediatric surgeon are shaped by the unique relationship of the 3 parties: the infant of child patient, the parents, and the pediatric surgeon. Medical ethicists have characterized the primary duty of the

surgeon. As healer, as one of promoting good and acting with beneficence, while keeping the patient at the center of all decisions. The ethical duty of beneficence requires pediatric surgeons to: 1) Honor their fiduciary role as experts in the requires in the benefits, risks, and expected outcomes for proposed treatments.; 2) accept the vulnerability of their pediatric patients and parents; and 3) place the interests of their patients over personal or third party interests. Furthermore, pediatric surgeons are obliged to provide care for their infant patients with major congenital anomalies over an extended period of time, often well into adulthood.<sup>2</sup> Infants and children commonly present to the emergency department (ED) with abdominal and gastrointestinal (GI) symptoms. In most cases these symptoms are caused by a self-limited process such as viral gastroenteritis; however, they might also be the harbingers of life-threatening surgical emergencies. Because symptoms such as vomiting, diarrhea, abdominal pain, and fever are so common and so nonspecific in children, the recognition of surgical emergencies is frequently delayed or missed altogether. When one also considers the difficulties inherent to the pediatric examination, it is not surprising that the diagnosis of intussusception, pyloric stenosis, malrotation with volvulus, and bowel obstruction continue to be among the most elusive diagnosis for the emergency physician (EP).<sup>3</sup> Intestinal obstruction occurs in about 1 in 1,500 live births. Intestinal obstruction should be suspected in any child with persistent vomiting, distention, and abdominal pain, because delayed diagnosis and treatment can lead to devastating consequences. Infants and young children with intestinal obstruction present with pain, irritability, vomiting, and abdominal distention. Small-bowel obstructions progress to decreased or no bowel movements. Undiagnosed or improperly managed obstructions can progress to vascular compromise, which causes bowel ischemia, necrosis, perforation, sepsis and death.<sup>4</sup> Worldwide, the etiology of intestinal obstruction is relatively uniform, in adult most commonly adhesions, followed by incarcerated hernias and either volvulus or tumours in developing and developed countries, respectively, and in children most often hernias, then intussusceptions and adhesions.<sup>5,6,7</sup> Mortality and morbidity in pediatric small-bowel obstruction depend on the type of lesion that causes the intestinal blockage, whether it is a closed-loop or strangulated obstruction, and the time elapsed before diagnosis and definitive, adequate treatment. Mortality is low with early diagnosis and treatment. If left untreated, strangulated obstruction are always lethal. Mortality rates may reach 65% if more than 75% of the small bowel is necrotic at the time of laparotomy. Strictures and adhesions are late complication due to short-bowel

syndrome<sup>8</sup>. Clinical features and diagnosis<sup>9,10,11,12,13,13,14,15</sup> The four cardinal features of intestinal obstruction are nausea and vomiting, colicky abdominal pain, abdominal distension and constipation their onset and severity varies not only with the duration of established obstruction but also with the anatomic site. The four cardinal features vary according to, The location of obstruction The age of obstruction, The under lying pathology. The presence of absence of intestinal ischemia.

### AIMS AND OBJECTIVES

Study of Clinico-etiological factors associated with intestinal obstruction in Pediatric patients at tertiary health care center.

### MATERIAL AND METHODS

This was cross-sectional study carried out in pediatric patients admitted to tertiary health care center with intestinal obstruction during the Year June 2014 to June 2015. All the Pediatric Patients diagnosed as intestinal obstruction were included into study while adult patient and those who don't give consent were excluded from the study.

### RESULTS

**Table 1:** Etiology percentage wise sex distribution

Etiology	Males		Females	
	No of Cases	%	No of cases	%
Adhesions and bands	05	55.55	04	44.44
High anorectal malformation	01	50	01	50
Hirschprung's disease	07	70	03	30
Congenital diaphragmatic hernia	01	33.33	02	66.67
Intestinal atresia	04	100	00	0
Intussusception	14	63.63	08	36.36
Obstructed inguinal hernia	07	87.5	01	12.5
Intestinal stenosis	00	00	00	00
Low anorectal malformation	04	50	04	50
Neoplasm	00	00	00	00
Midgutmalrotation	01	33.33	02	66.67
<b>Total</b>	<b>44</b>		<b>25</b>	

The commonest cause of intestinal obstruction is intussusception accounting to about 31.87% of cases. Hirschsprung's disease is the next common cause accounting for 14.49% of cases. Adhesions and bands are the next commonest cause accounting for about 13.4% of cases. Low anorectal malformation. Obstructed inguinal hernia, are next commonest accounting for about 11.59% of all cases. intestinal atresia accounts for 5.79% of cases.

Midgutmalrotation, congenital diaphragmatic hernia is the next commonest cause accounting for about 4.34% of cases each.

**Table 2:** Age wise etiological distribution

Etiology	0-1 month	1month -1 years	>1 year- 6 years	>6years- 12 years	Total
Adhesions	0	0	06	03	09
High anorectal malformation	02	0	0	0	02
Hirschsprung's disease	05	02	02	01	10
Congenital diaphragmatic hernia	03	0	0	0	03
Intestinal atresia	04	0	0	0	04
Ileocolic intussusception	0	02	10	02	14
Obstructed inguinal hernia	0	03	05	00	08
Ileoileal intussusception	0	08	0	0	08
Intestinal stenosis	0	0	0	0	00
Low anorectal malformation	04	03	01	0	08
Neoplasm	0	0	0	0	00
Midgutmalrotation	02	0	0	01	03
<b>Total</b>	<b>20</b>	<b>18</b>	<b>24</b>	<b>07</b>	<b>69</b>

In the present study-Adhesions and bands as the cause of intestinal obstruction were seen more commonly in age group of 1 to 6 years. Anorectal malformations (both high and low types) were more common in age group of 0 to 1 months congenital diaphragmatic hernia, malrotations was commonly seen after the age of 1 year. However lleo-ileal intussusception was common in age group of 1 month to 1 year and lleocolic intussusceptions was common in age group of 1 to 6 years. Obstructed inguinal hernias were also common in age group of 1 to 6 years.

## DISCUSSION

Post-operative adhesions however were found to be an important cause of intestinal obstruction in two of the three studies compared the finding of which were comparable. Post operative adhesions as a cause of small bowel obstruction in children can occur days to months or even years after the primary laparotomy. Apart from the most common causes of intestinal obstruction intestinal atresias and malrotation of intestine were also found to be fairly common in the present study. However in the present study no cases of malignancy as causes of intestinal obstruction was found. The most common cause of intestinal obstruction in the present study was found to be intussusception which has remained the commonest cause in various other studies compared. Also even in older studies like udwadia *et al* (1962)<sup>15</sup> and dayalan *et al*

(1976)<sup>16</sup> intussusception was the commonest causes of intestinal obstruction in children. The present study was very much similar in finding to belokar *et al*<sup>17</sup> in terms of the other causes of intestinal obstruction which was also carried in a rural set up. Tumors of intestines, both malignant and benign, are rare in children and are not the common causes of obstruction. In all the above studies compared no cause of obstruction was found to be tumor. In the present study was studied the causes of intestinal obstruction requiring surgical intervention in 4 age categories of children. Most studies in literature have either addressed a particular age group or a particular cause of intestinal obstruction.<sup>18</sup> however raten *et al*<sup>19</sup> did study the age group wise distribution of causes of intestinal obstruction which can be compared with the present study. Children were divided into 4 age subgroups, namely, neonates (< 1 month), infants (>1 month to <1 year), pre-school (>1year to <6 years), and school goers (<6 years to <12 years). It was found the intussusceptions was the most common cause of intestinal obstruction in children however no case of intestinal obstruction was found in the neonatal age group thus emphasizing the fact that intestinal obstruction due to intussusceptions though remains the most common it is relatively uncommon as a cause in the neonatal category, similar findings were echoed also by ratan SR *et al*<sup>19</sup> who also did not find any case of intestinal obstruction in neonates due to intussusceptions. The present study observed a pattern of causes of intestinal obstruction in different ages, e.g., intestinal atresia, malrotation of intestine (neonates), intussusceptions (infants), adhesions and intussusceptions and adhesive obstruction, with or without peritonitis (school goers). NO case of intestinal atresia was noted beyond the neonatal period. This study was very much similar in its findings when compared with ratan SR *et al*.<sup>19</sup> Obstructed inguinal hernia as the cause of intestinal obstruction was not seen in neonates in our study most of the cases appeared after the neonatal phase of the was over in the infant and preschool age which appears to be the peak age of appearance of congenital hernia. This findings can also be seen in study of ratan SR *et al*<sup>19</sup> however they did find few cases of obstructed inguinal in neonatal age group. The distribution of hirschsprungs disease in both the studies was fairly comparable in all the mentioned age categories. Most cases of hirschsprung's disease in the present study were detected in the neonatal period itself, probably due to a high index of clinical suspicion.

## CONCLUSION

Most common cause for small bowel obstruction was intussusception. Adhesions, malrotation, obstructed inguinal hernia, intestinal atresia, midgutmalrotation

congenital diaphragmatic hernia were the other causes. Most common cause for large bowel obstruction was hirschsprung's disease followed by anorectal malformations. Appendectomy was the commonest causes responsible for obstruction due to postoperative adhesions.

## REFERENCES

1. [http://en.wikipedia.Org/wiki/pediatric\\_surgery](http://en.wikipedia.Org/wiki/pediatric_surgery)
2. Baylis F, caniano DA, Oldham KT, Colombani PM, Foglia RP, et al, Principles and practice of pediatric surgery, PA. Lippincott Williams andwilkins. 2005; 349-356.
3. M. McCollough, G, Q. sharieff. Emerg Med Clinics North America. 2003;21: 909-935
4. Wyllie Robert. Intestinal atresia, stenosis and malrotation. Nelson Textbook of pediatrics. 18ed. Saunders; 327.
5. Stewardson, R, H., Bombeck, C.T. and Nyhus.L.M. Critical operative management of small bowel obstruction. Ann. Surg. 1978;187,189-193
6. Adesunkanmi, A.R. and Agbakwurw. E.A. changing pattern of acute intestinal obstruction in a tropical Africal population. E. African Med.J.1996; 73:727-731
7. McConkey. S.J. case series of acute abdominal surgery in rural Sierraleone. World J. surg. 2002; 26:509-513.
8. Moss RL, Kalish LA, Duggan C, et al. clinical parameters do not adequately predict outcome in necrotizing enterocolitis: a multi-institutional study. J perinatol. Oct 2008; 28(10); 665-74.
9. Das S. "intestinal obstruction". A concise textbook of surgery.4<sup>th</sup> edition Calcutta.2006; 998-1010.
10. Wyllie R. "Intestinal atresia, stenosis and malrotation". Behrman RE Kliegman RM, Jenson HB, et al. in Nelson textbook of pediatrics 18 Ed Philadelphia, Elsevier 2007; 1558-1562.
11. Winslet MC. Russel RCG, Williams NS, Bulstrope CJK. In Bailey and love's short practice of surgery 24<sup>th</sup> Ed. London. Arnold publication. 2004; 1186-1202.
12. Jack P, ZinnerMj, Seymeur I. Schwartz, et al. In Maingot's abdominal operations vol 2 10<sup>th</sup>ed United states of North America A simon and Schuster Company. 1997; 1159-1171.
13. Ryckman FC, Rudolph CD, Rudolph AM, Hostetter MK, et al. in Rudolph's pediatrics 21 Ed. United states on North America. McGraw Hill Publication. 2003; 1376-1379.
14. McCollough M, sharieft GQ. "Abdominal pain in children". In pediatrclin N Am 2006; 53; 107-137.
15. Stevenson RJ, "Non-neonatal intestinal obstruction in children". In surgclin N Am 65(5); 1985; 1217-1233.
16. Udwasdia T.E, Desa A E., Desa A.E., acute intussusception in infancy and childhood. In jour of surg vol.24. 1962; 335.
17. Dayalon N, Ramkrishna H.S., the pattern of intestinal obstruction with special reference to ascariasisindpead jour 1976; 13:47
18. BelokarWK, Subrahmanyam M, Ananth KS, et al. study of intestinal obstruction in children. Springer New York 1977; 38:60-64
19. Stringer MD, spitz L. Abel R, kiely E, Drake DP, Agrawal M, et al. Management of alimentary tract duplication in children. Br J surg 1955;82:74-8
20. Belokar WK, Subrahmanyam M, Ananth KS, et al. study of intestinal obstruction in children. Springer New York 1977; 38:60-64

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