

# A study of clinico-etiological factors associated with intestinal obstruction in pediatric patients at tertiary health care center

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## Abstract

**Introduction:** 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. **Aims and Objectives:** Study of Clinico-etiological factors associated with intestinal obstruction in Pediatric patients at tertiary health care center.

**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:** Peak incidence is seen in age group > 1 year to 6 years (34.78%). Peak incidence in males is in age group of > 1 years (40.9%). Peak incidence in females is in age group of 0 to 1 month (33.33%). Total no of cases was 69 of which 44 were male and 25 were female accounting for 63.76% and 36.23% respectively. Sex ratio male: female= 1.76. The majority of the patients were having Intussusceptions I.e. 31.87% followed by ; Hirschprung,s disease- 14.49% ; Adhesions and bands-13.04%; Obstructed inguinal hernia-11.59%; Low anorectal malformation-11.59%; Intestinal atresia-05.79%; Congenital diaphragmatic hernia-04.34%; Midgut malrotation-04.34%; High anorectal malformation-02.89%. **Conclusion:** The present study of acute intestinal obstruction was undertaken to study the incidence of various causative factors. The commonest cause of acute intestinal obstruction is intussusceptions with ileocolic intussusceptions cases more common than ileoileal intussusceptions. Hirschprung,s disease was the next common cause. Adhesions and bands, low anorectal malformation, obstructed inguinal hernia, intestinal atresia, midgut malformation, congenital diaphragmatic hernia, comprise the remaining causes.


**Keywords:** Intestinal obstruction, Intussusceptions, Hirschprung,s disease, Obstructed inguinal hernia, Intestinal atresia Congenital diaphragmatic herni.

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## INTRODUCTION

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. Everettkoop, 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: <sup>1</sup>Honor their fiduciary role as experts in the requires in the benefits, risks, and expected outcomes for proposed treatments.; <sup>2</sup>accept the vulnerability of their pediatric patients and parents; and<sup>3</sup> 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>9,10,11,12,13,14,15</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 underlying pathology. The presence of absence of intestinal ischemia

## 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: Age and sex distribution**

Age Group	Male	Female	Total	%
0-1 month	12	08	20	28.98
>1month-1 year	11	07	18	26.08
>1 year-6 years	18	06	54	34.78
>6 years-12 years	03	04	07	10.14
<b>Total</b>	<b>44</b>	<b>25</b>	<b>69</b>	<b>100</b>

Peak incidence is seen in age group > 1 year to 6 years (34.78%). Peak incidence in males is in age group of > 1 years (40.9%). Peak incidence in females is in age group of 0 to 1 month (33.33%). Total no of cases was 69 of which 44 were male and 25 were female accounting for 63.76% and 36.23% respectively. Sex ratio male: female= 1.76.

**Table 2: Etiology of obstruction**

Etiology	Total	%
Adhesions and bands	09	13.04
High anorectal malformation	02	02.89
Hirschprung, s disease	10	14.49
Congenital diaphragmatic hernia	03	04.34
Intestinal atresia	04	05.79
Intussusceptions	22	31.87
Obstructed inguinal hernia	08	11.59
Intestinal stenosis	00	00.00
Low anorectal malformation	08	11.59
Neoplasm	00	00.00
Midgutmalrotation	03	04.34
<b>Total</b>	<b>69</b>	<b>100</b>

The majority of the patients were having Intussusceptions I.e. 31.87% followed by ; Hirschprung, s disease- 14.49% ; Adhesions and bands-13.04%; Obstructed inguinal hernia-11.59%; Low anorectalmalformation-11.59%; Intestinal atresia-05.79%; Congenital diaphragmatic hernia-04.34%; Midgut malrotation-04.34%; High anorectal malformation-02.89%.

## 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. with the fast growth of population the percentage of children comprising the total population remains high and so does pediatric emergencies. With better diagnostic facilities the treatment of pediatric intestinal obstructions has

improved a lot and hence the statistical importance of studies of intestinal obstruction cannot be overestimated.

Comparison of etiology of obstruction in present study with

Sr. No	Causes	Present study	Ratan SR <i>et al</i> <sup>16</sup>	Javed Ahmad <i>et al</i> <sup>17</sup>	Ljaz Hussein <i>et al</i> <sup>18</sup>
1	intussusception	31.87%	20.8%	17.7%	40%
2	Hirschprung,s diseases	14.49%	6%	0	12%
3	Intestinal atresia	05.79%	11.8%	16.4%	1%
4	Anorectal malformations	14.48%	2%	0	2%
5	Tumor	0	0	4%	0
6	Malrotation	04.34%	2%	12%	4%
7	Adhesions	13.04%	9.4%	0	18%

In the present study the most common cause of intestinal obstruction in pediatric age group was intussusception which was comparable to another similar study done by rattan SR *et al*<sup>63</sup>. In similar studies done in other developing countries by javedahmad *et al*<sup>66</sup> and Ijaz Hussein *et al*<sup>64</sup> intussusception remains the leading cause of intestinal obstruction in children. The present study however differs from other studies in the respect that hirschsprungs disease and anorectalmalformation are the nex common causes of intestinal obstruction in the given set of population. This can be attributed to the fact that with the considerable improvement in the living standards of the rural population and improved awareness regarding the health of a child the infective pathologies of intesting obstruction like round worm infestation have decreased in number. Also with availability of prenatal diagnostic facilities, and unavailability of specialist care in nearby vicinity all such cases are reported to the rural tertiary centre.

## CONCLUSION

The present study of acute intestinal obstruction was undertaken to study the incidence of various causative factors. The commonest cause of acute intestinal obstruction is intussusceptions with ileocolic intussusceptions cases more common than ileoileal intussusceptions. Hirschprung,s disease was the next common cause. Adhesions and bands, low anorectal malformation, obstructed inguinal hernia, intestinal atresia, midgutmalformation, congenital diaphragmatic hernia, comprise the remaining causes.

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