Case Report

# Bidirectional Intussusceptions in a 6-Month Old Girl: A Case Report and Literature Review

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**Summary**

A six-month old girl was brought to the emergency room of Ebonyi State University Teaching Hospital, Abakaliki, Ebonyi State in Nigeria, with a five-day history of bilious vomiting, abdominal distension and passage of bloody, mucoid stool. Clinical examination revealed a vague mass palpable at the left upper quadrant of the abdomen. Rectal examination showed presence of bloody mucoid stool; no masses were felt. The clinical impression was intussusception, which was confirmed at laparotomy. The intussusception however, consisted of two separate segments in opposite directions to each other. One was an antegrade (ileo-ileo-caeco-colic) intussusception that had migrated distally to the distal third of the transverse colon, while the other was a retrograde (sigmoido-colic) intussusception that had migrated proximally to meet the on-coming ileo-colic intussusception at the distal third of the transverse colon. Both segments were reduced successfully without the need for resection.

***Keywords:*** Retrograde Contiguous Intussusception.

## Introduction

Intussusception is the telescoping of one segment of the gastro intestinal tract into an adjoining segment. Majority of intussusception in children are ileo-colic and are secondary in type[1]. Intussusception is usually antegrade, where the proximal segment iso-peristaltically intussuscepts into the distal bowel. There is scarcity of report on the co-existence of an antegrade ileo-colic intussusception with a retrograde colo-colic intussusception. In this report we communicate a case of simultaneous antegrade and retrograde intussusception managed at Ebonyi State University Teaching Hospital, Abakaliki in Ebonyi State of Nigeria.

## Case Report

A six-month old girl weighing 6.5 kg was admitted into the children emergency room of Ebonyi State University Teaching Hospital, Abakaliki in Ebonyi State of Nigeria with a five-day history of colicky abdominal pain- the cycle of which had become increasingly frequent and associated with bilious vomiting and passage of mucoid bloody stool. The bloody stool later gave way to constipation, scanty urine and progressive abdominal distension.

At presentation, the child was weak, moderately pale and severely dehydrated. The abdomen was distended but soft with some vague tenderness and guarding over the left upper quadrant of the abdomen. There was also a palpable indefinite mass at that left upper quadrant of the abdomen.

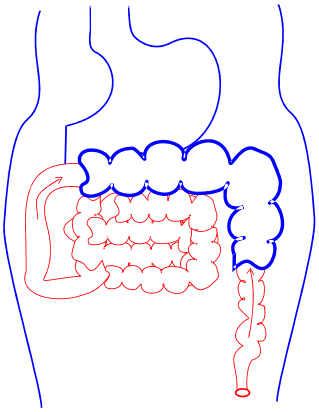
Rectal examination showed an empty rectum. No masses were felt per rectum but the glove was stained with "red currant-jelly" stool. The clinical impression was intussusception.

**Table 3:**
Causes of recurrent abdominal pain in 42 children

| Parameter | Before Resuscitation | 6 Hours after Resuscitation |
|---|---|---|
| Pcv | 26% | 29% |
| Na | 119 mmol/ l | 123 mmol/ l |
| K | 6 mmol/ l | 4.5 mmol/ l |
| Urea | 15 mmol/ l | 7 mmol/ l |
| Creatinine | 136.4 mmol/ l | 130 mmol/ l |

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The pulse rate was138 beats per minute and the temperature was 39.20c. The results of packed cell volume (PCV), electrolyte and urea as well as creatinine before and after 6 hours of resuscitation are shown in table1. Urine output was satisfactory at the end of the six hours period of resuscitation.

At laprotomy, two intussusception segments in opposite directions were found and both had their apices abutting on each other at the distal third of the transverse colon. at the distal third of the transverse colon. The proximal segment was ileo-ileo caeco-colo-colic in-tussusception, the apex of which was at the distal third of the transverse colon and abutted on the apex of a (retrograde) sigmoido-colic intussusception. Both apices were easily separable within the lumen of the transverse colon.

Both segments were also easily reducible by taxis and the bowel segments were all viable. No obvious abnormality of the involved segments of bowel was noted. An inversion appendectomy was performed and peritoneal lavage was done and abdomen was then closed in layers.

Postoperatively, child had protracted twitching and convulsions, which were attributable to fever. The fever, and hence the convulsions and twitching, was corrected by injection of phenobarbitone and algopyrine. The child did well thereafter and was discharged on the 6th postoperative day. She has remained well on subsequent follow-up visits.

## Discussion

Intussusception may be primary or secondary. Between 80 95% of childhood intussusceptions are primary or idiopathic[1]. In Nigeria, most cases of intussusception present 3 - 4 days after the onset of symptoms[2], and 80 95% of such patients are within the age range of 3 months to 3 years[3].

Electrolyte derangement, in particular hyponatraemia, is a common finding in intussusception[4], most likely due to protracted vomiting. Careful and adequate correction of severe hyponatraemia is necessary for a good postoperative outcome[5,6].

Intussusception is usually antegrade (or isoperistaltic) such that it is the proximal part of the gut that intussuscepts into the distal bowel[7]. The mechanism of primary antegrade intussusception is not yet very clear. Different theories have been propounded, including disproportion in size between the ileum and the ileo-caecal valve in infants and children[8]; hypertrophied ileo-caecal valve causing an entrapment syndrome of the Jackson's veil[9], as well as mobile caecum and / or peristaltic wave between the lateral and anterior taenia opposite the ileo-caecal valve as a cause of caeco-colic intussusception[10].

In older children, the proposed mechanisms include a long ascending mesocolon[11], redundant descending colon, which may predispose to multiple segments of intussusception[12]. Local change in the intestinal wall, if coupled with the forces of peristalsis, will also result in intussusceptions.

Idiopathic intussusception in children in our sub-region is associated with the hypertrophy of the Peyer's patches, which are largely caused by viral infection[13-15]. The peak is related to the season of enteritis which occurs during the weaning period in over 50% of cases. In the United States, this peak is usually between the ages of nine months to five years[16], while in Nigeria it is it is between four months and one year[17-18]. Of all the possible aetiologic factors mentioned above, only enlarged Peyer's patches were noted in our patient. The enlarged Peyer's patches may be due to upper respiratory infection or gastroenteritis[19]. Another possible reason for the enlargement of the Peyer's patches in our patient is the mucosal congestion arising from the intussusception.

While most intussusceptions are antegrade,

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retrograde intussusception is possible and has been described. However retrograde intussusceptions are extremely rare. A review of the literature by Akehurst from 1677 to 1955 showed that only 103 cases of retrograde intussusceptions were recorded[20].

Most of the retrograde intussusceptions described were secondary to some predisposing factors like gastro esophageal intussusceptions occurring after a Nissen-fundoplication[21], jejuno-gastric intussusception following gastro-enteric anastomosis[22-26]. However, the retrograde intussusception seen in this report could not be attributed to any antecedent event.

The mechanism of retrograde intussusception is even more uncertain: - the postulation is that the same local changes in intestinal wall which interact with the forces of peristalsis to produce antegrade intussusception may also occur to produce a retrograde intussusception - therefore whichever pattern of intussusception that results (antegrade or retrograde) is purely by chance [27].

Another postulate is that retrograde intussusception may not be as rare after all and that it can (and does) occur in conjunction with antegrade intussusception. But when the retrograde moiety occurs first, it builds up a back (proximal) pressure which paradoxically results in its auto-(or spontaneous) reduction. Conversely, if the antegrade moiety occurs first, the resultant backpressure is not directed to, and therefore has no effect on the retrograde component and both components can therefore co-exist[28].

Whichever is the case, bi-directional intussusception is an extreme rarity. In a series by Rao et al, out of 122 cases of intussusception encountered over 14 years, only one case was a contiguous antegrade and retrograde intussusception[28]. Unlike the case in this report which is believed to be idiopathic, the bi-directional intussusception described by Rao et al occurred in a patient who had necrotising enteritis, which was believed to be the predisposing factor.

Unidirectional antegrade intussusception is the most reported type of intussusception in childhood. However, this report has shown that a bidirectional intussusception is possible in childhood. It is hoped that this addition to the scarce medical literature on this rare entity will increase awareness topaediatric surgeons.

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