# Double intussusception in a child presenting as acute abdomen- a case report.

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## Abstract

Double intussusception in children is an extremely rare entity with only 15 cases reported in medical literature till present.

An 18-month-old male child presented with features of intestinal obstruction. Evaluation showed an ileocolic intussusception on ultrasound. Initially, hydrostatic pressure reduction was attempted but was unsuccessful. Exploratory laparotomy revealed a double intussusception of ileo-ileal intussusception over colon and Meckel's diverticulum as the lead point. The histopathology of the excised specimen revealed normal ileum and hypertrophic pancreatic tissue in the Meckel's diverticulum.

The significance of early diagnosis and suspicion of double intussusception intraoperatively and the surgical management is emphasized in this case report.

## Keywords

- Intussusception
- Hydrostatic reduction
- Meckel's Diverticulum
- Ultrasound; Laparotomy

## Introduction

Intestinal obstruction in preschool children is one of the common emergencies necessitating emergency room visits and Intussusception is one of the common causes in children. The global incidence of intussusception is reported to be between 0.5 and 4.3 cases per 1000 live births.[1] Double telescoping of the intestinal loop is very rare with only 15 cases reported so far.[2] We report a case of male child with ileocolic intussusception which on operative reduction revealed another intussusception with Meckel's diverticulum intussuscepting into ileum and the combined intussusception acting as another lead point. We discuss the surgical challenges in managing this case.

**Case presentation:** An 18-month-old male child, presented with multiple episodes of vomiting, constipation, and excessive crying for three days. There was

progressive abdominal distension associated with generalized abdominal pain for one day. Vomitus was non-bilious, non-projectile and consisted of food particles occurring after each feed. There was no history of fever, obstipation, trauma to the abdomen or past abdominal surgical intervention. On evaluation, the child was dehydrated and had tachycardia. Abdomen was distended with generalized guarding and absent bowel sounds. Hematology and biochemistry samples were normal except for elevated leucocyte count. An erect X-ray of the abdomen showed dilated bowel loops with multiple air-fluid levels without any free air under the dome of the diaphragm. Ultrasonography of the abdomen revealed dilated bowel loops with concentric hypoechoic and hyperechoic contents suggestive of intussusception. **Figure 1.**

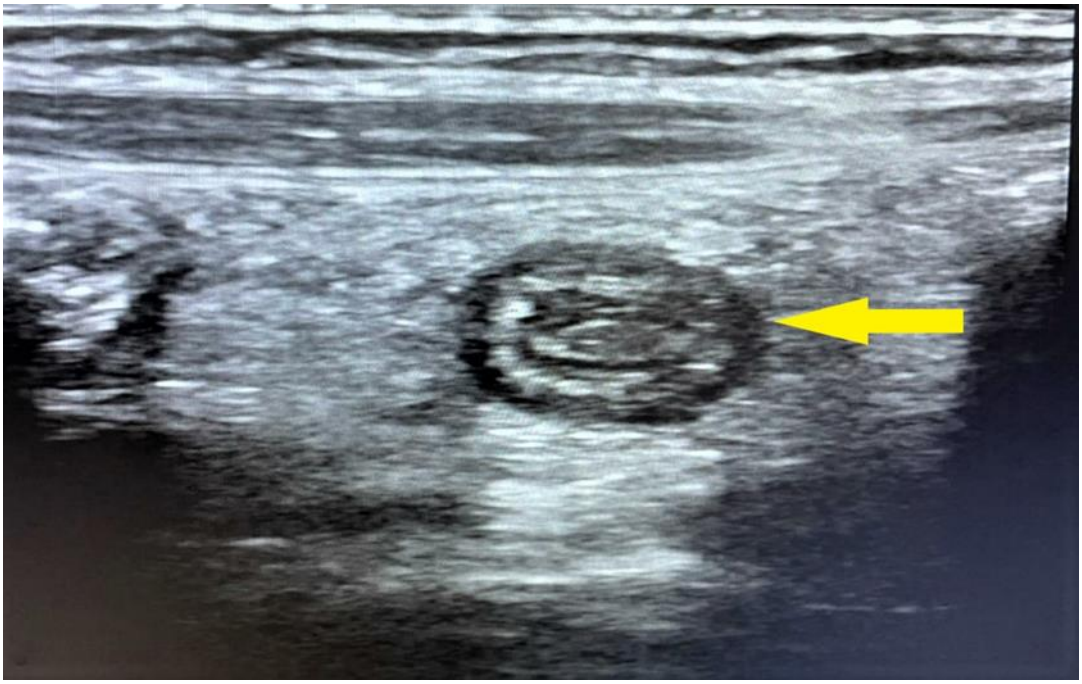

**Figure 1:** Ultrasonographic image in the pre-operative period showing “Target Sign”.

Three attempts at hydrostatic reduction under general anesthesia were unsuccessful and an exploratory laparotomy was performed. Intraoperatively, there was ileocolic intussusception which was reduced manually by milking the ileal intussusceptum from the intussuscipiens. On manual reduction of ileocolic intussusception, another ileo-ileal intussusception measuring about 8 cm was seen with Meckel's diverticulum acting as a lead point. The Meckel's diverticulum was found to have a 2 × 2 cm firm mass at the tip **Figure 2-3.** Resection of the Meckel's diverticulum with end-to-end ileo-ileal anastomosis was performed. Post-operative recovery was uneventful, oral feeds were started on the fourth post-operative day and the child was discharged on the seventh postoperative day. The patient was reviewed after one month and was found to be comfortable and gut function was normal.

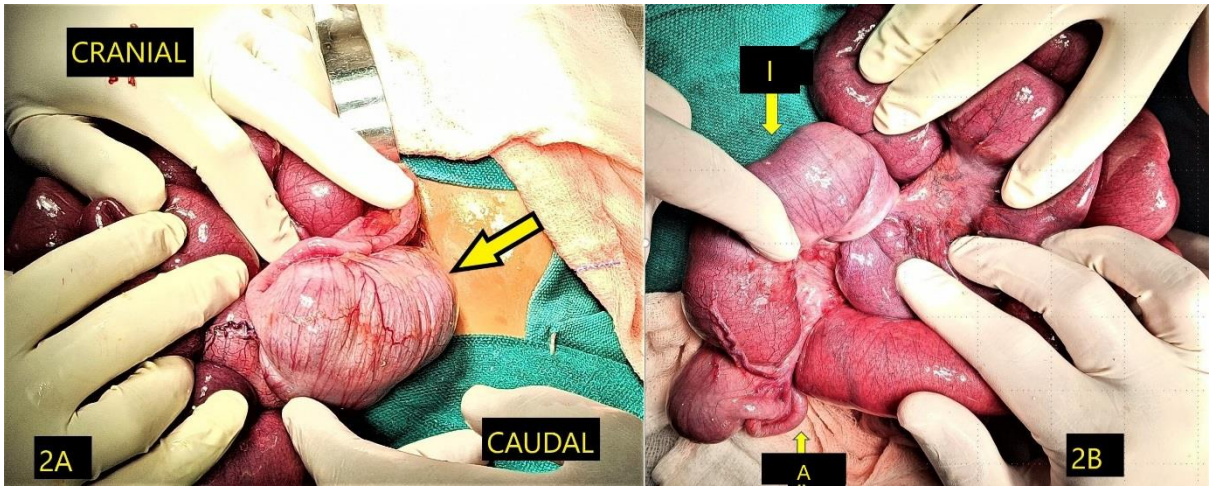


**Figure 2:** Intra-operative photograph depicting double intussusception:

**2A:** Ileo-colic intussusception (marked by the yellow arrow).

**2B:** Ileo-ileal intussusception (**I:** ileo-ileal intussusception; **A:** Appendix).

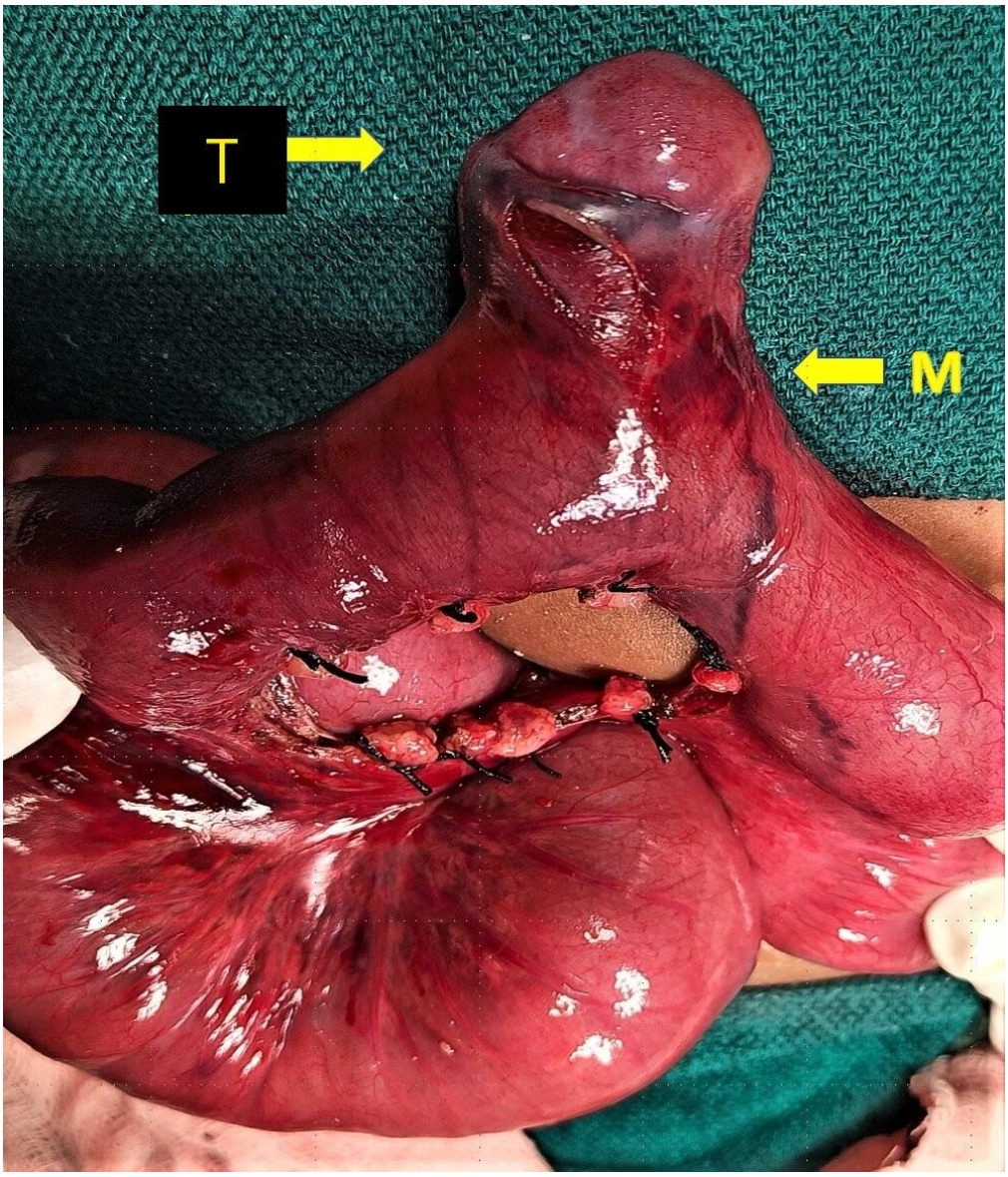


**Figure 3:** Intra-operative photograph depicting: M: Meckel's Diverticulum. T: Ectopic tissue at the tip of the Meckel's Diverticulum.

The histopathological examination of the specimen revealed small intestine and diverticulum showed normal columnar cells lining the mucosal epithelium with mucus-secreting cells along with lamina propria, submucosa and muscularis propria. Sections from the nodule on tip showed heterotopic pancreatic tissue in the form of pancreatic acini arranged in lobules separated by thin fibrocollagenous septae. No granuloma, atypia or evidence of malignancy were noted. **Figure 4.**

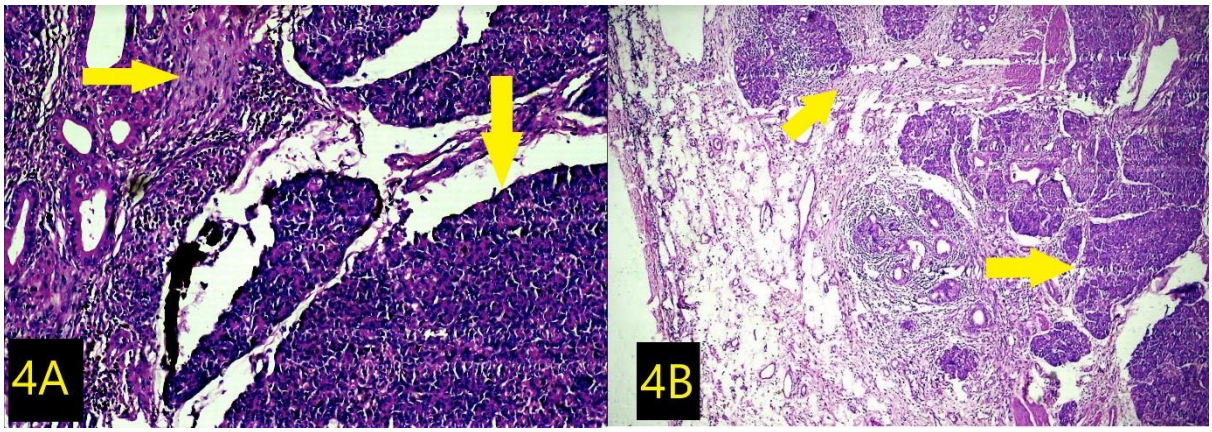


**Figure 4:** Post-operative histopathological image showing:

**4A:** High resolution image (100x; H&E) showing darkly stained ectopic pancreatic tissue and lightly stained, normal intestinal mucosa.

**4B:** Low resolution image (20x; H&E) showing darkly stained ectopic pancreatic tissue and lightly stained, normal intestinal mucosa.

## Discussion

Double intussusception in children is an extremely rare entity and was first reported by Mustafa et al in 1976 where there was a double ileo-vitelline duct intussusception in a one-month-old baby.[3] The detailed description of all the 14 cases reported in literature was described by Yu *et al* along with their case of double intussusception in a 21-month-old girl with Meckel's diverticulum and intestinal duplication.[2] In their article, most of the children were males and ileocolic region was the most common site for double intussusception. Double intussusception is classified into four types. They are a) Two different intussusceptions at two different parts of the intestine; b) Double compound intussusception; c) Double prolapse of the distal and proximal intestine through a patent Vitello-intestinal tract; and finally, d) Two separate intestinal loops telescoping into the same distal or proximal gut.[2-4] Our case is an example of the fourth variant.

The clinical presentation of double intussusception is similar to that of classical intussusception. The child may present with abdominal pain, vomiting, passage of red-colored stool or signs of intestinal obstruction. The typical signs are abdominal distension and a palpable mass on abdominal examination. Abdominal ultrasound is a valuable investigative tool and the pathognomonic feature is a triple circle sign.[5] However; the abdominal mass and the triple circle sign will be present only in half the cases.[6] A similar case was reported by Scholz *et al* where the cause of double ileo-ileal intussusception was heterotopic pancreatic tissue presenting as a polypoidal mass.[7] Heterotopic pancreatic tissue is reported in many cases of double and triple intussusception similar to our case. The most common site for heterotopic pancreatic tissue is stomach, duodenum and jejunum. It is also commonly seen in Meckel's diverticulum. Almost half of cases of double intestinal obstruction were found to have heterotopic pancreatic tissue.[8]

Hydrostatic pressure enema is considered the first line of management in the reduction of intussusception as it is safe and has a high success rate. We made three attempts at hydrostatic reduction with no success, and then performed a laparotomy which surprised us with a double intussusception.

Double intussusception is not generally amenable to hydrostatic reduction.

Moreover, there is risk of incomplete reduction and persistence of partial obstruction. In addition, bowel ischemia may result in long standing cases of double intussusception. Both Laparoscopy and open surgery are effective in reducing double intussusception.[9] Careful inspection of all the bowels is essential after reduction of the pathology and a resection-anastomosis procedure is required for a pathological lead point, unhealthy intestinal loops, or any rare pathology.

## Conclusion

Intussusception is one of the common causes of intestinal obstruction in children, especially males. The possibility of a double intussusception needs to be kept in mind by the treating surgeon when presentation is abnormal or hydrostatic reduction fails. Radiological evaluation can help in preoperative diagnosis. Surgical management in the form of laparoscopy or laparotomy is always required for early effective management of a double intussusception.

## Ethical Consideration

This case report was reviewed and approved by Internal institutional ethical committee

Consent to publication was obtained from the parents of the child for article and pictures.

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## Conflict of interests

There is no conflict of interest

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