

**Inverted Meckel's diverticulum in a 13-year-old boy**

**Running title:** Inverted Meckel's diverticulum in a child

Hüseyin Özbey (MD, Professor)

Dmitry Anatolievich Morozov (MD, Professor, Chairman)

Department of Pediatric Surgery, Division of Pediatric Urology and Andrology,

Sechenov First Moscow State Medical University, Moscow, Russia

**Corresponding Author:** Hüseyin Özbey Department of Pediatric Surgery, Division of Pediatric

Urology and Andrology, Sechenov First Moscow State Medical University, Moscow, Russia

Tel: +905325403720 (mobile) e-mail: huseyinbey@hotmail.com

\* The parents have signed a consent for publication and the form is held by Dr

Hüseyin Özbey, Sechenov First Moscow State Medical University.

\*Conflicts of Interest and Source of Funding: None

Number of text pages:2, Word count:303, Number of figures:1

**Key words:** inverted Meckel's diverticulum; intussusception; abdominal pain; intestinal obstruction

Meckel's diverticulum is a true ileal diverticulum, arising from incomplete obliteration of the vitelline duct during embryogenesis. However, inversion of Meckel's diverticulum on itself is rare, especially in children (1,2).

An overweight (60 kg), 13-year-old-boy presented with a 10-hour history of intermittent, colicky abdominal pain with associated vomiting. The family reported similar attacks that had spontaneously resolved without diagnosis over the past six years. On physical examination, the abdomen was soft and not distended, but a slight tenderness was elicited in the lower abdomen with deep palpation. The complete blood count was normal. Abdominal ultrasonography (US) and computed tomography (CT) of the abdomen revealed a 8-13 cm tubular structure within the ileum, suggesting ileo-ileal intussusception. (Figure 1A-C). Upon performing an exploratory laparotomy, an inverted Meckel's diverticulum was found (Figure 1D-E). It was resected and an anastomosis performed. The post-operative course was uneventful.

Intestinal obstruction is the most common complication of Meckel's diverticulum, occurring in 20-25% of cases. If the diverticulum becomes inverted, it can act as a lead point for small bowel intussusception and should be suspected as a potential cause of intussusception in children. Inverted Meckel's diverticulum is often associated with a prolonged history of incomplete obstructive symptoms, including intermittent abdominal pain and vomiting, as seen in our case (1,2,3). Unlike Meckel's diverticulum, isolated inversion of the Meckel's diverticulum is an uncommon entity that is clinically difficult to diagnose (2,4). The reason for inversion is poorly understood. Treatment of the inverted diverticulum is surgical, whether diagnosed pre-operatively or intra-operatively, and includes segmental resection and anastomosis.

## References:

1. Rhodes E, Stone T, Spruill L, Hardie AD. A case report of inverted Meckel's diverticulum. *Radiol Case Rep.* 2021 ;16 :1118-1122.
2. Bains L, Bhatia R, Kaushik R, Lal P, Rajpaul G, Veerpal. Inverted Meckel's diverticulum: a case report. *J Med Case Rep.* 2021; 15: 264-268.
3. Barry WE, Rosenberg DM, Warren M, Kim ES. Small bowel intussusception secondary to inverted Meckel's diverticulum. *J Pediatr Surg Case Rep.* 2017; 25: 49-51.
4. Chong EH, Kim DJ, Kim S, Kim G, Kim WR. Inverted Meckel's diverticulum: Two case reports and a review of the literature. *World J Gastrointest Surg.* 2018; 10: 70-74.

ACCEPTED

**Figure 1:** Ultrasound findings of a sausage-shaped soft tissue mass in the ileum (A), target sign mimicking ileo-ileal intussusception (B), and CT image of the inverted diverticulum with partial obstruction (C). Intraoperative view of the base of the inverted Meckel's diverticulum on the antimesenteric side of the ileum (D), and the resected segment showing the inversion of the Meckel's diverticulum onto itself (E).

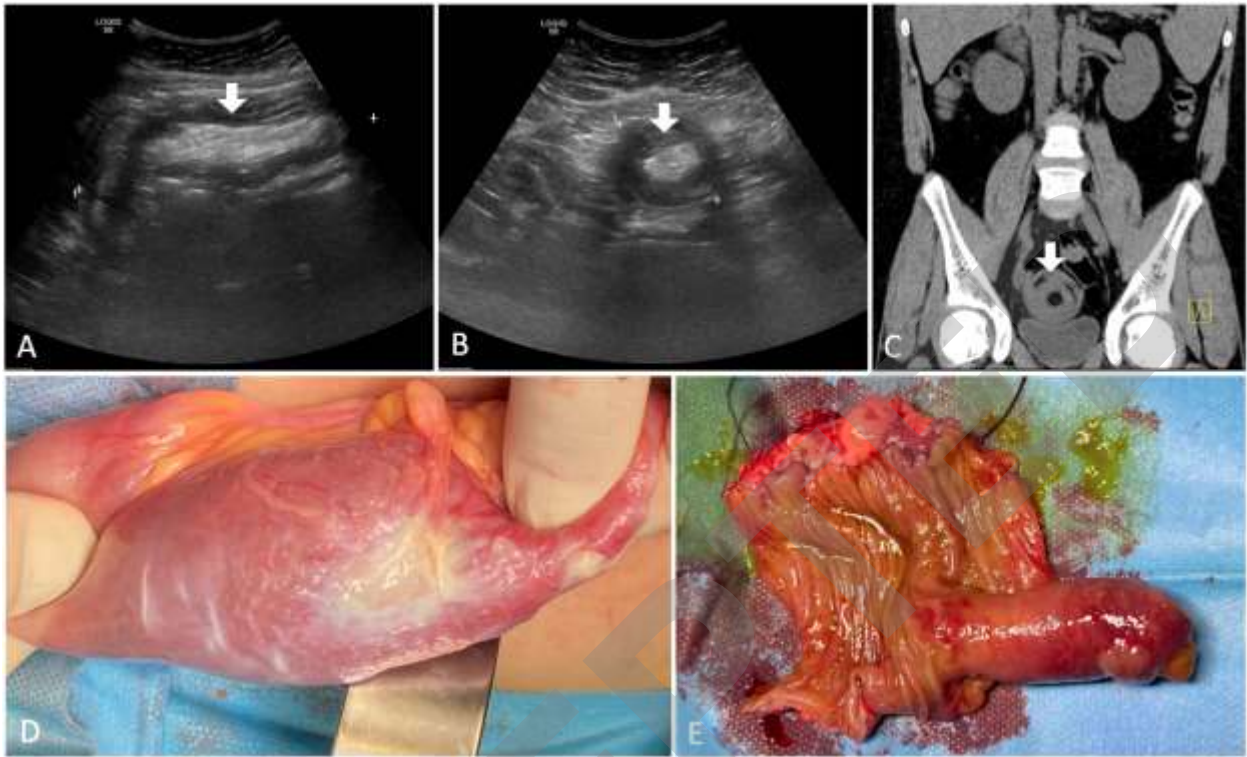
**Image of the Month Poll** A teenager presents with colicky abdominal pain and an intussusception is noted on imaging - abdominal ultrasonography and computed tomography (see below). A Meckel's diverticulum precipitated intussusception is suspected. Which is the most likely mechanism?

- a) Intestinal polyp within the Meckel's diverticulum
- b) mucosal ulceration
- c) Meckel's diverticulitis
- d) Inverted Meckel's diverticulum

- Correct answer is Inverted Meckel's diverticulum (choice d). Upon performing an exploratory laparotomy, an inverted Meckel's diverticulum was found. Resection and an anastomosis were performed. The post-operative course was uneventful.

Source: Özbey H, Morozov DA. Inverted Meckel's diverticulum in a 13-year-old boy. Journal of Pediatric Gastroenterology and Nutrition. (In press)

Figure



Downloaded from <http://journals.lww.com/jpgn> by BhDMf5ePHkav1zEum1tQIN4a+kLLHEZ9bshHo4XW10hCwWCX1AW  
nYOp/IIqH3i3D000dRy7TvsF4C13VC1y0abggQZXdgGj2MwIZLeI= on 05/04/2023

ACCEPTED