



Loop formation of Meckel's diverticulum causing small bowel obstruction in adults: report of two cases

Erişkinlerde ince bağırsak tıkanıklığına neden olan Meckel divertikülüne bağlı halka oluşumu: İki olgu sunumu

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Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, and in the majority of cases it remains asymptomatic. The total lifetime rate of complications is 4%. It is an uncommon cause of intestinal obstruction in adults. Loop formation of Meckel's diverticulum leading to small bowel obstruction is an extremely rare event. We report two such cases in which the bowel became obstructed and strangulated in a loop formed by adhesion of the distal end of the Meckel's diverticulum to the proximal ileum and mesentery.

Key Words: Adults; intestinal obstruction; Meckel's diverticulum.

Meckel divertikülü olguların çoğunluğunda asemptomatik olarak kalan en yaygın konjenital gastrointestinal sistem anomalisidir. Yaşam boyu komplikasyon oranı %4'dür. Erişkinlerde nadir bir intestinal tıkanıklık nedenidir. İnce bağırsak tıkanıklığına neden olan Meckel divertikülüne ilişkin halka oluşumu oldukça enderdir. Biz, Meckel divertikülünün distal ucu ile proksimal ileum ve mezenter arasında halka şeklinde adezyonlar oluşmasıyla bağırsağın tıkanıldığı ve strangülasyona uğradığı iki olguyu sunuyoruz.

Anahtar Sözcükler: Erişkinler; intestinal tıkanıklık; Meckel divertikülü.

Meckel's diverticulum is an uncommon cause of intestinal obstruction in adult life.^[1] Rarely, Meckel's diverticulum may form a loop due to adhesions between its distal end and the bowel itself or the mesentery.^[2-6] Adhesion of the diverticulum to the bowel wall, thus creating a loop and causing obstruction, has been reported only twice.^[5,6] Bowel loops may become entangled in this loop and strangulated. The condition is usually not suspected before exploration, but may lead to gangrene of the bowel and high mortality if the treatment is delayed.

CASE REPORTS

Case 1- A 32-year-old male with no previous history of abdominal surgery presented with a history of abdominal pain and vomiting of two days' duration. History of absolute constipation was present for one day. There was no history of similar pain in the past. On examination, his vital signs were within normal limits, but signs of dehydration were present. The abdomen was distended, with muscle guarding and

rigidity throughout. Bowel sounds were increased. Ultrasonography (USG) of the abdomen revealed hyperperistaltic dilated small bowel loops. Erect radiograph of the abdomen showed multiple air fluid levels situated in the central abdomen and to the left (Fig. 1). A nasogastric tube was inserted, which drained bilious secretion. The patient was taken for exploratory laparotomy, and a proximal ileal segment was found, compressed by a loop formed by adhesion of the tip of the Meckel's diverticulum to the antimesenteric border of the terminal ileum (Fig. 2a). Proximal bowel loops were dilated, but fortunately not gangrenous. The Meckel's diverticulum and adhesion were excised, and the small bowel freed and decompressed. The base of the diverticulum was inflamed (Fig. 2b). Continuity was restored with end-to-end anastomosis. The patient made an uneventful recovery after the surgery and was asymptomatic at the last follow-up.

Case 2- A 28-year-old male presented with a history of abdominal pain, vomiting and constipation of



Fig. 1. Case 1 - Erect abdominal radiograph showing multiple air-fluid levels predominantly in the central abdomen and to the left.

three days' duration. There was no history of a previous similar pain or of previous surgery. The abdomen was distended, with tenderness and guarding throughout. Total leukocyte count was 19,600/cmm. Renal function tests were normal. USG of the abdomen revealed hyperperistaltic dilated small bowel loops with a small amount of free fluid in the abdomen. Plain X-ray of the abdomen revealed multiple air-fluid levels (Fig. 3). Exploratory laparotomy was planned. Intra-operatively, the Meckel's diverticulum with gangrenous base was found attached to mesentery by its distal end, thus forming a loop (Fig. 4). A segment of the terminal ileum was compressed in this



Fig. 3. Case 2 - Erect abdominal radiograph showing multiple air-fluid levels predominantly in the central abdomen and to the left.

loop with proximal dilatation. A proximal 8'' segment of the ileum was gangrenous. En-bloc resection of the gangrenous segment of bowel and Meckel's diverticulum was performed, and continuity was maintained with end-to-end anastomosis. The patient had an uneventful postoperative recovery.

DISCUSSION

Meckel's diverticulum is a congenital outpouching arising from the antimesenteric border of the distal ileum that is present in 1-3% of the general population. It is a remnant of the vitellointestinal duct that connects the primitive gut to the yolk sac during devel-

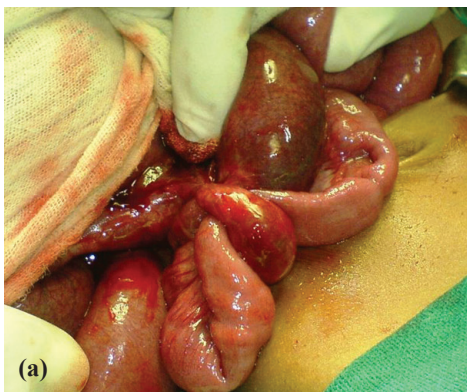


Fig. 2. Case 1 - (a) Obstruction of the ileal segment by a loop formed by adhesion of the tip of the Meckel's diverticulum to the antimesenteric border of the terminal ileum; (b) The resected specimen of the Meckel's diverticulum.

(Color figure can be viewed in the online issue, which is available at www.tjtes.org)

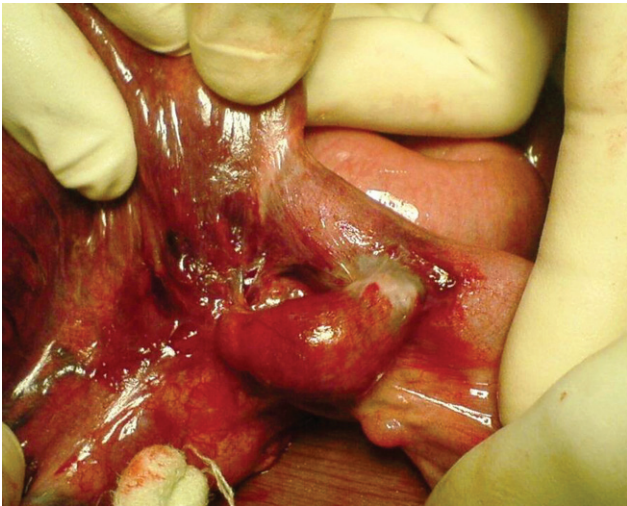


Fig. 4. Case 2 - The Meckel's diverticulum with gangrenous base attached to the mesentery by its distal end, thus forming a loop.

(Color figure can be viewed in the online issue, which is available at www.tjtes.org)

opment. The majority of cases remain asymptomatic, but complications include hemorrhage, intestinal obstruction, diverticulitis, umbilical discharge, perforation, and peritonitis.^[7] Only about 4% of patients with Meckel's diverticulum are symptomatic.^[8] The total lifetime rate of complications is widely accepted at 4%, with a male-to-female ratio ranging from 1.8:1 to 3:1.2 While in adults, the most common complication is intestinal obstruction,^[5] Meckel's diverticulum is an infrequent cause of intestinal obstruction.^[1,5]

Various mechanisms of small intestinal obstruction from Meckel's diverticulum include diverticular intussusception, which is the most common mechanism, volvulus from persistent attachment to the umbilicus, congenital meso-diverticular bands, Littre's hernias, foreign body impaction, diverticulitis, and adhesions or neoplasms.^[2,4,9] Other very rare causes of obstruction from Meckel's diverticulum include formation of a loop between the end of a Meckel's diverticulum and the adjacent mesentery or bowel wall.^[2-4,9] Loop formation as a result of the development of adhesions between the distal end of the diverticulum and the mesentery or the bowel is an extremely rare finding.^[2-4,10] The former finding of adhesion of the diverticulum to the mesentery, thus forming a loop and leading to an obstructive case in adults, is very rarely reported; formation of a loop due to adhesion of the tip of the Meckel's diverticulum to the bowel has been reported only twice in the literature.^[5,6]

Preoperative diagnosis of intestinal obstruction because of Meckel's diverticulum may be challenging and requires a high degree of suspicion.^[11] If such a case is left untreated, it leads to strangulation and ischemic necrosis of the bowel loop. Hence, it should

be treated as an emergency condition with immediate exploratory laparotomy after initial resuscitation. The main aim of surgery is to remove the Meckel's diverticulum along with resection of the gangrenous segment of the bowel, if gangrene is present.^[11] Recently, laparoscopy has proved useful to resolve small bowel obstruction associated with Meckel's diverticulum.^[12]

Both the cases reported herein were young adult males presenting with acute colicky abdominal pain. There was no history in either patient that would have suggested any common etiology leading to acute intestinal obstruction.

In conclusion, loop formation due to adhesions between the distal end of the Meckel's diverticulum and the intestine or the mesentery is an infrequent phenomenon and is even rarer in adults. The condition requires a high degree of suspicion, and should be included in the differential diagnosis of small bowel obstruction in adults.

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