

Patent vitelline duct as a cause of acute abdomen: Case report of an adult patient

Feride ALEVLİ¹, Sami AKBULUT², Yasemin DOLEK³, Bahri ÇAKABAY², Arsenal SEZGİN⁴

Departments of; ¹Surgery, ³Pathology, Çankırı State Hospital, Çankırı
 Departments of ²Surgery, ⁴Pathology, Diyarbakır Education and Research Hospital, Diyarbakır

A patent vitelline duct is an uncommon condition. Diagnosis is based on clinical and radiological findings. Complications include prolapse, intestinal obstruction, hemorrhage, and perforation. Here, we report the case of a 23-year-old man with patent vitelline duct who presented with umbilical discharge, severe abdominal pain, fever of 38.5°C, no gas/feces passage, and nausea and vomiting for three days. Laparotomy with midline incision was performed because of acute abdomen. A patent vitelline duct from the terminal ileum to the umbilicus was observed. Meckel's diverticulitis and ileus were also noted. En bloc resection of the umbilicus, patent vitelline duct and a 15 cm ileal segment was performed. The patient was discharged five days after the operation.

Key words: Patent vitelline duct, Meckel's diverticulum

Akut karın'a sebep olan vitellus kanalı: Erişkin bir hastanın takdimi

Vitellus kanalının açık kalması, nadir rastlanan bir durumdur. Tanısı klinik ve radyolojik olarak konulur. Komplikasyon olarak prolapsus, barsak tıkanıklığı, kanama ve perforasyon görülür. Burada, 3 gündür bulantı-kusma, gaz-gaita yapamama, 38.5°C'ye varan ateş, şiddetli karın ağrısı ve göbeğinden akıntı şikayeti olan 23 yaşında erkek hasta sunduk. Akut karın tablosu sebebiyle orta hat insizyonu ile laparotomi yapıldı. Terminal ileumdan umbilikus'a uzanan patent vitellus kanalı gözlemlendi. Ayrıca Meckel divertikülit ve ileus hali de vardı. Göbek, açık olan vitellus kanalı ve 15 cm'lik ileum segmenti en-blok olarak çıkartıldı. Hasta, ameliyattan beş gün sonra taburcu edildi.

Anahtar kelimeler: Patent vitellus kanalı, Meckel divertikülü

INTRODUCTION

Vitelline duct malformations comprise a wide spectrum of anatomical structures and associated symptoms. They may range from a completely patent vitelline duct (PVD) at the umbilicus to a variety of lesser remnants, including cysts, fibrous cords connecting the umbilicus to the distal ileum, granulation tissue at the umbilicus, umbilical hernia, or Meckel's diverticulum (1). Here, we report a case of PVD in a 23-year-old man, which caused acute abdominal pain and intestinal obstruction.

CASE REPORT

A 23-year-old man was admitted to our emergency

unit in 2008. He suffered from abdominal pain, fever of 38.5°C, nausea and vomiting, constipation, no passage of gas or feces, and abdominal distension for three days. The patient's history revealed that he had been followed in another center for a diagnosis of omphalitis, and cauterization with a silver nitrate pen had been performed. There was no history of hospitalization due to acute abdomen. Furthermore, the white discharge from the prolapsed region had been present since childhood. Laboratory investigations showed: blood urea nitrogen, 38 mg/dl (5-23); creatinine, 1.7 mg/dl (0.6-1.2); and C-reactive protein, 58 mg/l (0-0.5).

Address for correspondence: Sami AKBULUT

Department of Surgery,
 Diyarbakır Education and Research Hospital,
 Op. Dr. Seref Inaloz Caddesi
 21400, Diyarbakır, Turkey
 Phone: + 90 412 228 54 34 • Fax: + 90 412 229 59 12
 E-mail: akbulutsami@gmail.com

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Figure 1. Upright plain abdominal radiography revealed small bowel obstruction with marked small bowel air–fluid levels.

Blood cell count revealed leukocytosis at 22,500/ μ l (4-11,000), a hemoglobin level of 10.5 g/dl (12-16), and a platelet count of 408,000/ μ l (150-450,000). Other serum parameters were within normal limits. An upright plain abdominal film revealed small bowel obstruction with marked small bowel air–fluid levels (Figure 1).

Upon physical examination, peripherally hyperemic granulation tissue resembling mucosal prolapse was observed in the umbilicus (Figure 2). The discharge of a white liquid from the granulation tissue was also observed. Upon auscultation of the abdomen, bowel sounds were found to be consistent with mechanical bowel obstruction. Physical examination revealed muscular defense and rebound tenderness in the right lower quadrant. The clinical symptoms were thought to be consistent with perforated appendicitis or mechanical intestinal obstruction caused by Meckel's diverticulum; therefore, laparotomy with a midline incision was performed. The appendix was found to be normal. However, a PVD with a wide base persisted and Meckel's diverticulum was present (Figures 3, 4). Because ileal segments were wrapped around the PVD, the proximal region of the intestine was dilated. Then, an intestinal segment that included the inflamed region and Meckel's diverticulum, 15 cm in length, was resected, and an end-to-end anastomosis was performed. The patient was discharged five days after the operation. Histopathological findings were consistent with

extensive diverticulitis, PVD and pronounced inflammation of the mucosa (Figure 5).

DISCUSSION

Meckel's diverticulum is the most common congenital abnormality of the small intestine. Although first described by Fabricius Hildanus in 1598, it is named after Johann Friedrich Meckel, who established its embryonic origin in 1809 (2). The prevalence of Meckel's diverticulum is usually around 2% of the general population (3,4).

The vitelline duct is typically obliterated during the eighth week of gestation. However, failed or



Figure 2. Persistent umbilical discharge of serous material since birth, with excoriation of the periumbilical skin.



Figure 3. PVD between the terminal ileum and excised umbilicus, after laparotomy.



Figure 4. Local hyperemia of the ileum and base of the duct.

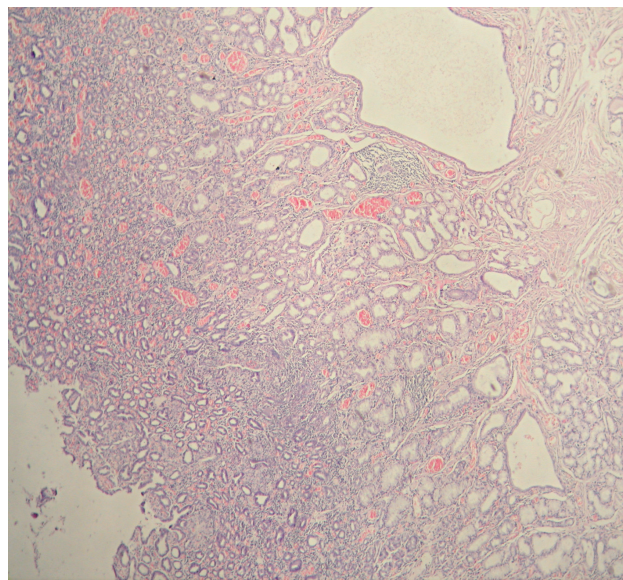


Figure 5. H&E (X20) stained sections of the diverticulum sac shows congested vessels and dense mononuclear inflammatory infiltrate in the submucosal region.

incomplete vitelline duct obliteration results in a spectrum of abnormalities, the most common of which is diverticulum (97%). The other abnormalities include PVD (appearing as a draining fistula at the umbilicus), umbilical sinus, omphalomesenteric cyst, and a fibrous band connecting the bowel to the umbilicus (1,5-7).

Patent vitelline duct is a rare occurrence (1). Diagnosis is based on clinical and radiological findings. Clinical findings may be atypical in some cases (8). All symptoms appear to be age-dependent, with most usually appearing before the age of 4 years (6).

In most patients with PVD, the discharge of gas or feces from the umbilical orifice is observed. In our case, although the vitelline duct was found to be

completely patent, the discharge of gas or feces from the umbilicus had not been observed over the patient's 23 years; instead, only a white liquid discharge was found. Patients with diverticulitis present with focal or diffuse abdominal tenderness. Usually, abdominal tenderness in the peri-umbilical region is more pronounced than the pain of appendicitis. In our case, acute abdomen was observed. Based on a clinical diagnosis of perforated appendicitis or mechanical intestinal obstruction, laparotomy with midline incision was performed.

In conclusion, although PVD is very rare in adults, clinical findings, physical examination, and, in particular, patient history aid in the diagnosis of this condition.

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