

Abnormal localization of gallbladder and atresia of superior part of duodenum

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Özet

Safra kesesinin anormal lokalizasyonu ve duodenum'un superior parçasının atrezisi

Elli yaşında erkek bir kadavrada, duodenum'un superior parçasının atrezisiyle birlikte safra kesesinin de anormal lokalizasyonlu olduğunu gördük. Karaciğerin sağ lobunun alt tarafında 58x49x36 mm boyutlarında bir kavite vardı. Bu kavitenin derininde, safra kesesi karaciğere gömülü olarak bulunuyordu. Bu kavite tamamen omentum majus'un bir bölümüyle örtülüydü. Omentum majus kaldırıldığında, kavitenin mideye bakan tarafında pilorik ostium, duodenuma bakan tarafında ise duodenal ostium görüldü. Kavitenin bu bölgesine uyan duodenumun superior parçasının atrezik olduğu saptandı. Bu kadavranın normal yaşamında, duodenum'un superior parçası ve bulbus duodeni'nin yokluğu nedeniyle, mide içeriği pilorik ostium aracılığıyla kaviteye, duodenum ostiumu aracılığıyla da duodenuma geçtiği varsayıldı. Farklı yerleşim gösteren safra kesesi, deneyimsiz cerrahlar, gastroenterologlar ve radyologlar tarafından yapılan laparoskopik girişimler ve radyolojik değerlendirmeler sırasında hataya yol açabilir.

Anahtar kelimeler: Karaciğer, safra kesesi, duodenal atrezi, gelişimsel anomali

Abstract

This article presents abnormal localization of gallbladder with atresia of superior part of duodenum in a 50-year-old-male cadaver. On inferior side of right lobe of the liver was a cavity with diameters of 58x49x36 mm. At the bottom of this cavity the gallbladder was embedded the liver. This cavity was completely covered with a part of the greater omentum. When the greater omentum was removed, we observed ostium of pylor on the gastric side and the ostium of duodenum on the duodenal side of the cavity. It was observed that there was atresia of superior part of duodenum corresponding to the region of the cavity. In the normal life of this cadaver, because of the absence of superior part of duodenum and bulbus duodeni, gastric content was pouring into this cavity through the pyloric ostium and into duodenum through the duodenal ostium of the cavity. Unusual settlement of the gallbladder may lead inexperienced surgeons and radiologists into error during laparoscopic interventions or radiological assessments. Variant settlement of the gallbladder may lead inexperienced surgeons, gastroenterologists and radiologists into error during laparoscopic interventions or radiological assessments.

Keywords: Liver, gallbladder, duodenal atresia, developmental abnormality.

Introduction

Duodenal anomalies are rarely seen in adults, through these defects are usually encountered during the embryonic development and childhood or early childhood as a gastric outlet obstruction. Occasionally these anomalies remain asymptomatic up to adult period and may not be described because of their rarity. Duodenal atresia rarely seems together with abnormal position of the gallbladder (1). Gallbladder may show a number of developmental variations. Most of these variations occur in several

stages of embryonic period due to the development pauses. Numerical anomalies of gallbladder are duplication, accessory gallbladder and rarely agenesis of gallbladder; position anomalies are the left side settling position, transvers position, retroperitoneal position, unconnecting (floating) position and intrahepatic position. Also, other ectopic gallbladders may be seen in the retroduodenal region, lesser omentum, falciform ligament, muscles of abdominal wall or inside of the thorax. Most of these anomalies may create a hidden peril in ultrasound images (2-6).

In our case, first part of duodenum was absent and intrahepatic gallbladder was present. Being unaware

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of this unusual settlement of the gallbladder may lead inexperienced surgeons and radiologists into error during laparoscopic interventions or radiological assessments.

Case Report

This case was observed during the routine dissection of a 10% formalin fixed and 50-year-old-male cadaver in Department of Anatomy, Gulhane Military Medical Academy. The anterior abdominal wall of the cadaver was dissected by median cut of upper umbilicus and an unusual cavity covered by greater omentum was exposed on the inferior side of liver's right lobe. It has been seen that the gallbladder was embedded under the floor of this cavity instead of bed of gallbladder and the first part of duodenum was atresic after removing of the greater omentum. The dimensions of the cavity were measured by a compass. The cavity had 58x49x36 mm dimensions and it was completely covered with a part of greater omentum so tight that prevents the leaking of content. When the greater omentum covering the cavity was removed, we observed the ostium of pylor on the gastric side and the ostium of duodenum on the duodenal side of the cavity (Figure 1, 2). Because of the absence of superior part of duodenum, gastric content was pouring into the cavity and then into duodenum through the duodenal ostium of the cavity.

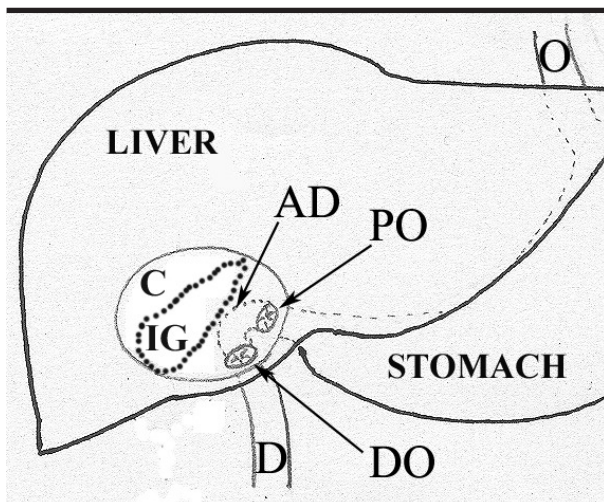


Figure 1: Schematic illustration showing the abnormality. C; Cavity, PO; Ostium of pylor, DO; Ostium of duodenum, D; second part of duodenum, AD; Atresia of superior part of duodenum, IG; Intrahepatic gallbladder, O; Oesophagus.

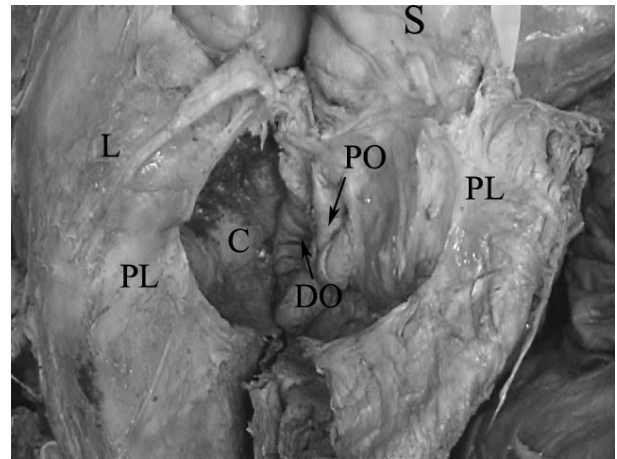


Figure 2: Peritoneal layer is removed, the ostiums of pylor and duodenum are observed in the cavity (Right lobe of liver, inferior aspect). L; Liver, PL; Peritoneal Layer, C; Cavity, PO; Ostium of pylor, DO; Ostium of duodenum, S; Stomach.

Gallbladder was buried in floor of the cavity. Wall of the gallbladder closed the opening of the cavity was hypertrophic (Figure 3).

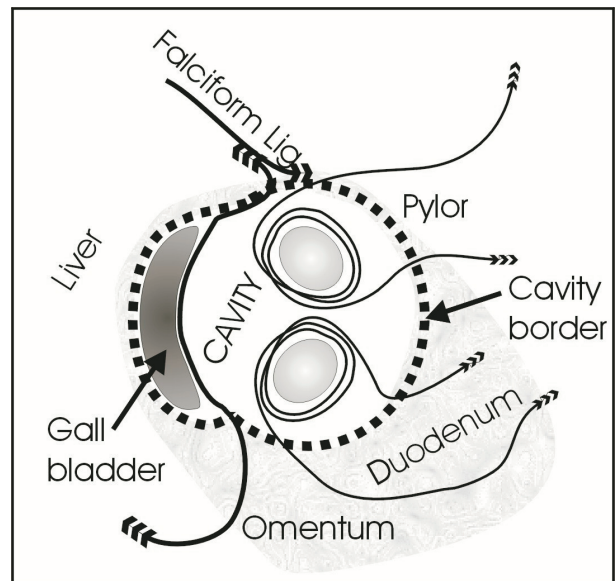


Figure 3: Schematic illustration of the figure 2.

In our case, common bile duct formed by the junction of the cystic and hepatic ducts as usual. It descends within the hepatoduodenal ligament; it then passes to the right side of the head of the pancreas. And near its termination the duct open by a common orifice upon papilla, located at the inner side of the second portion of the duodenum 2 cm below its duodenal orifice. We got some histologic section from the cavity. But, we couldn't get a good histologic image because of the cadaver has waited formalin solution

for a long time.

Discussion

Duodenum is a C-shaped tube lying in front of, and right side of the inferior vena cava and aorta. It is divided into four parts. The first 2.5 cm (the duodenal cap) lies between the peritoneal folds of the greater and lesser omentum, but the remainder is retroperitoneal. The first part of the duodenum runs to the right, upwards and backwards from the pylorus. The gallbladder exists on the anterior of duodenal cap (7).

Conjenital duodenal anomalies are rare in adults. In the pediatric population, the incidence is estimated to be 1 in 20 000 to 40 000 births. These anomalies originate in the early embryologic development period of the foregut. Whereas the primitive foregut undergoes lengthening and rotation, the hepatobiliary and pancreatic anlagen begin as buds or diverticula at the middle of the duodenum and similarly grow and rotate. During this period, duodenal atresias, intraluminal webs, annular and ectopic pancreata, and malrotations of various types develop (1). Seminal studies showed that the intraluminal duodenal anomalies are the main cause of the anomalies such as atresias or webs. As the duodenum enlarges and lengthens, vacuoles are formed that coalesce, and eventually a lumen is reestablished (8, 9). In our case, unjoining of these vacuols breaks off the luminal continuity and so the first part of duodenum could not finish its development.

Numerous cases have been reported in previous studies and case reports such as gallbladders with intrathoracic localization and abnormal position within the internal obliq muscle (5,6,10), malformations related to congenital agenesis of gallbladder (3,11,12), congenital anomalies of gallbladder with duodenal anomalies (1,2,13,14). The VACTERL association consists of a spectrum of deficits including vertebral defects (V), anal atresia (A), cardiac anomaly (C), tracheal-esophageal fistula with esophageal atresia (TE), renal defects (R), and radial limb dysplasia. Fujishiro et al. reported the VACTERL association along with duodenal atresia. The detection of characteristic findings (enlarged stomach and duodenum, possibly change in gallbladder) by use of ultrasonography and MRI might be useful for the prenatal diagnosis of such cases (15). In our case, we also demonstrated the congenital atresia of duodenum and position anomaly of gallbladder. We haven't met any report about duodenal atresia with

intrahepatic gallbladder in the inferior part of the liver in literatures. Knowledge of this settlement of gallbladder is particularly important in preoperatif cholangiography and laparoscopic cholecystectomy. By settling behind of peritoneum and embedding into liver, the gallbladder may be supposed to be agenesic. In addition, the cavity we described which was covered with greater omentum in inferior side of the liver, may be perforated in laparoscopic interventions. Consequently, being aware of this rare variation has an importance for surgeons during gastrectomy, operations of congenital duodenal anomalies and pyloric stenosis, and for gastroenterologists during Endoscopic Retrograde Cholangio-Pancreatography (ERCP), cholangiography and gastroscopy.

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