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ECTOPIC HYPOPLASTIC GALL BLADDER- CASE REPORT

Anatomy

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ABSTRACT

Gallbladder, a derivative of foregut is a flask shaped structure present on the inferior surface of liver.it stores and concentrates bile. The diseases of this organ can be diagnosed by ultrasonography and operated through laparoscopy.But congenital anomalies are difficult to diagnose through scan and may lead to iatrogenic injury to biliary system.In order to avoid this a thorough knowledge of congenital variations is necessary. This is a case of rare congenital anomaly,in which a hypolpastic gallbladder was covered by liver tissue in the gall bladder fossa. This intrahepatic gallbladder is due to abnormal migration or incomplete canalization of cystic bud. Awareness of rare congenital anomalies will help the radiologist and surgeons to diagnose and plan their operative procedures which are either laparoscopic or open cholecystectomy .

KEYWORDS

gall bladder, hypoplastic, cystic bud, liver

Introduction

Gallbladder ,a flask shaped diverticulum present on the inferior surface of liver. It is a foregut derivative arising from caudal part of hepatic diverticulum at 4th week of intrauterine life .beta –catenin signalling pathway plays a key role in this process.(1)It has fundus ,body & neck. Fundus extends beyond the inferior margin of the liver ,body lies in contact with liver and neck lies at porta hepatis .Cystic duct that starts from the neck joins with common hepatic duct forming bile duct to transmit the liver secretions to the second part of duodenum.

gall bladder measures about 7-10 cm in length with a capacity of 50 ml. It lies in the fossa connected by connective tissue and its undersurface is connected by visceral peritoneum. Developmental anomalies leads to abnormal position and shape of the gall bladder that are clinically significant.Sometimes the cystic bud is surrounded by liver parenchyma leading to intraparenchymal hypolplastic gall bladder or by small mesentry leading to floating gall bladder. Knowledge of these rare congenital anomalies that are difficult to diagnose will prevent iatrogenic injury during laparoscopy.

Case report:

In one of the liver that was removed during dissections of under graduate medical students, gallbladder was not found on the inferior surface of liver. Instead, a small cystic elevation covered by liver tissue was found in the fossa of gall bladder.(fig.1) Dissection was carried out and a thin layer of liver tissue was reflected. Underneath this tissue a small gallbladder was identified and lying in between the organ and liver tissue the cystic artery(CA) was seen. The artery rose from right hepatic artery and had a course on the body of gallbladder. Later it supplied the organ by dividing into two branches- superficial branch passed along the left margin and the deep branch along its right margin. The under surface of gall bladder was firmly connected to liver tissue .The elongated curved neck continued as cystic duct and joined with common hepatic duct to form common bile duct. It was present anterior to the portal vein (PV)and branches of hepatic artery (HA) were on its left side. The relation of structures at porta hepatis were portal vein and anterior to it were a bile duct and branches of hepatic artery. (fig.2)

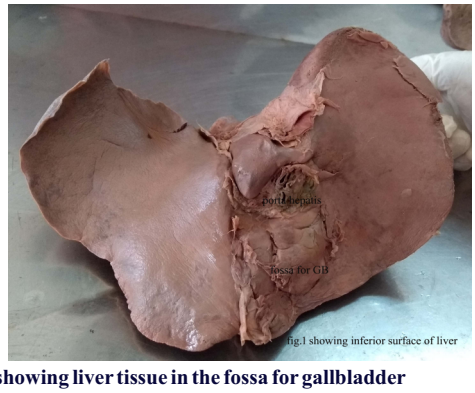

Fig.1 showing liver tissue in the fossa for gallbladder

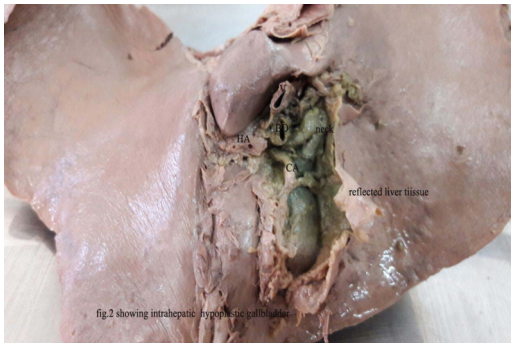

Fig.2 showing intrahepatic hypoplastic gallbladder

Discussion

Gall bladder stores, concentrates & empties the bile in response to fatty food.(3)Developmental anomalies based on shape or location of the gall bladder are rare and are difficult to diagnose with imaging studies. Congenital hypoplasia & agenesis of gall bladder were reported but hypoplasia is rare compared to agenesis.(4,5,6,7) Agenesis of gall bladder may have genetic predisposition. Ectopic location of gall bladder is very rare and common malpositions are left sided, transverse position, retro peritoneal & floating(8).Intrahepatic gallbladder is a very rare congenital anomaly .These variations of gall bladder can lead to intraoperative injury of the common bile duct (or) other parts of biliary tree.(9) As a result of false identification of these structures, surgeon has to adopt open method rather than laparoscopy. In a rare ectopic intrahepatic gall bladder cholecystectomy is hazardous and is mostly diagnosed due to abscess or cholecystitis(10). Ultra sonography is the gold standard investigation for the diagnosis of gall stones but in hypoplasia, it shows contracted and sunken gall bladder which is inconclusive and surgery is required in order to diagnose. When ultrasound is inconclusive,a noninvasive magnetic resonance cholangiopancreatography(MRCP) imaging is a useful preoperative tool.(11).

Normally the relation of structures at porta hepatis from posterior to anterior are portal vein, hepatic artery and bileduct. A study by Sapna et al on portal triad structures mentioned that knowledge of varied number of these structures are useful during liver transplantations.(12)

Developmentally the cause for intrahepatic gallbladder is due to abnormal migration or rapid growth of liver tissue around the developing cystic bud and hypoplastic nature is due to incomplete development or failure of recanalisation of the solid primordium. (13,14)

Conclusion

Intrahepatic hypoplastic gallbladder is a rare congenital anomaly that is difficult to diagnose with ultrasonography. To plan any procedures in this condition MRCP is the best diagnostic tool to prevent iatrogenic injury to biliary system. This rare condition is due to abnormal migration or failure of canalization of cystic bud.

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