DOUBLE GALL BLADDER: A RARE ENTITY

* Tutor, **Professor Department of surgical gastroenterology unit, NAMS, Bir Hospital

ABSTRACT
Double gallbladder is a rare embryological anomaly of clinical significance. Despite availability of modern imaging, only 50% of recently reported cases had preoperative diagnosis, which is desirable in every case to avoid serious operative complications. With a preoperative diagnosis of double gallbladder, laparoscopic cholecystectomy can be safely and successfully performed with meticulous dissection, aided by operative cholangiogram. Double gallbladder does not present with any specific symptom, neither it increases disease possibility in either lobe. Here we report a case of a symptomatic young female presented with short history of dyspepsia and abdominal pain. Ultrasound scan didn’t give the preoperative diagnosis. While laparoscopic cholecystectomy was performed, after clipping and transection of cystic duct, two lumens at cut end of cystic duct was observed, so converted to open cholecystectomy which corroborated the findings seen by laparoscopic method, the two lumen of cut end of cystic duct joining the common bile duct and macroscopically the extracted specimen showed two separate gall bladder with separate cystic duct, one gallbladder containing multiple cholesterol stones while another containing multiple black stones.

KEY WORDS: Double gallbladder anomaly, cystic duct, laparoscopic cholecystectomy, open cholecystectomy, pathology

INTRODUCTION
The gallbladder is the main part of the extrahepatic biliary system. The presence of a double gallbladder was first reported in 31 BC by Pliny. Double gallbladder is a rare congenital anomaly occurring in approximately 1/4,000 births as estimated by Boyden, in 1926. Double gallbladder affects males and females relatively equally; however, owing to a higher incidence of gallbladder disease in females, the number of cases of double gallbladder is higher in females than in males. Because of the variability of anatomy, an accessory gallbladder may be discovered only at surgery or even be missed intraoperatively, especially when intrahepatic. To date, gallbladder duplication has been detected by ultrasonography (US), oral cholecystography (OCG), scintigraphy, and helical computed tomography (CT) performed after OCG. Although percutaneous transhepatic cholangiography (PTC) and endoscopic retrograde cholangiopancreatography (ERCP) can be used to detect a suspected gallbladder duplication, both are invasive and not routinely used in patients with biliary colic. Modern imaging techniques like MRCP can also preoperatively detect duplication. Laparoscopic cholecystectomy can be done for double gallbladder. Thus we report a case of true gall bladder duplication with separate cystic ducts joining common bile duct which was not detected preoperatively.

CASE REPORT
A 40 year old female presented with complaints of epigastric pain, worse after meals, abdominal distension and altered bowel habits since 2 months. There was history of jaundice 12 years back and regular menstrual cycle. Hematological investigations including...
Liver function tests were normal. Ultrasonography revealed multiple calculi in Gall bladder largest measuring 1 cm. Laparoscopy using a standard 4 ports technique showed dilated Common Bile duct and wide cystic duct. Dissection at Calot’s triangle was done, cystic artery ligated with clips and cut in between clips. Cystic duct ligated with clips and cut in between clips. Two lumens were suspected at the cut end of cystic duct.

So Laparoscopic operation was converted to open cholecystectomy. Cut edges of the two cystic ducts are noted joining common bile duct separately which was checked with right angle forceps. Two cystic ducts were transfixed. Gall bladder was dissected out of gallbladder fossa and extracted out for macroscopic careful inspection. Careful inspection of gallbladder bed showed no biliary leak. Hemostasis was secured, and Drain was kept at right subphrenic space. Macroscopically the removed specimen of the gallbladder showed two separate gall bladder in fold of peritoneum with two separate cystic ducts and one gall bladder was containing multiple black stones while another gallbladder was containing multiple cholesterol stones.

The subsequent post-operative days were uneventful with abdominal drain outputs were 50 ml, 120 ml, 50 ml and 50 ml on postoperative days 1, 2, 3 and 4 respectively. Drain was removed on 4th postoperative day and patient was discharged on the same day. Histopathological examination showed cholecystitis.

**DISCUSSION**

True duplication of the gallbladder results from the division of a single gallbladder primordium during the fifth or sixth week of embryonic development. Two subtypes are recognized as true gallbladder duplications. The gall-bladders may share a common cystic duct, the “Y type,” or may be divided by an internal or external septum, the “V type.”

Accessory duplication of the gallbladder arises from two distinct gallbladder primordia. This results in three sub-types. The first is the “H-shaped” or ductular type, also the most common, in which two separate
Double Gall Bladder: A Rare Entity

gallbladders and two separate cystic ducts join the common bile duct. The second is the duodenal type in which the two cystic ducts enter the duodenum directly. The last is the trabecular type in which the accessory cystic duct enters the right intrahepatic system (figure 1). Though initially classified by Boyden, Harlaftis classification is surgically more relevant and universally accepted. Commoner variety of type-1 occurs in split primordium and type-2 (often called accessory gallbladder) from double primordium during 5th and early 6th week of embryogenesis. Although estimated to occur once in every 4000 autopsies, the incidence of reported symptomatic cases is probably very low. The position of the duplicate gallbladder may be subhepatic, intrahepatic, within the gastrohepatic ligament or within the gallbladder fossa. True and accessory gallbladder duplication occur in approximately equal numbers and with an even male to female ratio. Given the higher frequency of symptomatic cholelithiasis in women, duplication is seen more often clinically in women.

There are no specific symptoms or signs associated with multiple gallbladders; the disease entities reported in the second or occasional third moiety include cholelithiasis, cholecystitis and carcinoma. Occasional case reports of post-cholecystectomy patients having a second attack of cholecystitis have been published.

US have high sensitivity in detecting this condition, but lacks in specificity when compared with MRCP. Other conditions such as a folder gall-bladder, Phyrigian cap, gallbladder diverticulum or vascular band, choledochal cyst, intraperitoneal fibrous (Ladd’s) bands, pericholecys-tic fluid and focal adenomyomatosis may mimic gallbladder duplication. Goiney et al suggested a more sensitive ultrasonographic sign of gall-bladder duplication. This sign consisted of isolated contraction of the non-diseased gallbladder with absent contraction of the diseased gallbladder. Scintigraphy may also be falsely negative in cystic duct obstruction of an accessory or double gallbladder. ERCP is the gold standard for pre-operative diagnosis. If duplication is suspected, ERCP has been recommended to define the biliary tract anatomy clearly before surgical intervention.

Pre-operative detection is only 50%, leaving chance for accidental detection during surgery. Surgeons not aware of this anomaly can miss the 2nd lobe with subsequent recurrence of symptoms requiring reoperation.

Unless diseased, this anomaly is of no clinical significance. Neither it has any specific symptom, nor increases the chance of occurrence of disease in either lobe. Thus there is no role of prophylactic cholecystectomy in accidentally diagnosed cases. Disease process occurs in equal frequency and nature as in single gallbladder, making gallstone disease the commonest affection. Both moieties may be affected or one may be spared, however both lobes should be removed during surgery even if disease is present only in one. Though about 250 cases of double gallbladder have been reported in the literature, co-existence of two different pathologies in two lobes is extremely rare.

Meticulous dissection of any additional cystic or tubular structures in the subhepatic region, identification of anatomical details prior to transection along with a high degree of awareness of gallbladder anomalies could possibly prevent catastrophic consequences. With a pre-operative diagnosis of double gallbladder, previously general rule is to proceed with laparoscopic cholecystectomy in type-1 variety and open procedure for type-2, as the later variant increases the possibility of biliary and vascular injury. This explains small number of successful laparoscopic procedures with type-2
variant. However, in the present scenario successful laparoscopic cholecystectomies have been reported in type-2 double gallbladder with minimal morbidity. Laparoscopic magnification offers a clear picture of details and a skilled laparoscopic surgeon may not need to convert these cases to open procedures. Standard 4-port technique is generally sufficient; occasionally, an additional port is needed to facilitate retraction of adjacent structures. Intraoperative cholangiography is helpful in clarification of ductal details and is recommended in all such cases.\textsuperscript{10, 17}

In this case, the diagnosis of duplicated gallbladder had not been made preoperatively despite the fact that ultrasonography was performed. The diagnosis of gallbladder duplication was made intraoperatively, initially surgical management was performed laparoscopically when suspicion was made by observing two lumens at cut end of cystic duct after clipping and transection. The finding was corroborated when converted to open cholecystectomy as both lumens of cystic duct was joining common bile duct and two gallbladder with separate cystic duct was seen macroscopically with black stones in one gallbladder and cholesterol stones in another gallbladder.

\textbf{CONCLUSION}

Double gallbladder is a rare embryological abnormality. Awareness of this condition amongst surgeons and radiologists is crucial as pre-operative diagnosis is desirable. Trial laparoscopy aided by operative cholangiogram should be considered in all cases of pre-operatively diagnosed double gallbladder, keeping a low threshold of conversion to open surgery when structure identification becomes anything less than definite. This can safely be accomplished laparoscopically without cholangiogram if the infundibulum-cystic duct junction can be clearly identified in both gallbladders with meticulous dissection.

\textbf{REFERENCES}