Agenesis of gall bladder: Diagnosed before it is an unpleasant laparoscopic surprise-clinical case report and review

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ABSTRACT

INTRODUCTION & BACKGROUND: Agenesis of gall bladder is a rare congenital anomaly and incidence is 0.007–0.0027%. Even though gall bladder is absent, clinical presentation of 50% cases, mimic biliary colic. This combined with inconclusive radiological findings leads to wrong preoperative diagnosis and patients are subjected to unnecessary surgery causing complications like injury to biliary tract.

Except for few cases where a preoperative diagnosis of absent gall bladder was made in majority of cases, agenesis of the gallbladder is described as an incidental finding during surgery. The work has been reported in line with the SCARE criteria (Agha et al., 2018).

CASE PRESENTATION: This article will share our experience about two cases who presented with complaints of pain in right upper quadrant and USG examination revealed inconclusive reports as choledocholithiasis with contracted or shrunken gall bladder in first case and in second case as cholelethiasis with non-visualisation of gall bladder. On further imaging with MR cholangiogram diagnosis of agenesis of gall bladder was made and unnecessary surgery was avoided.

DISCUSSION: Ultrasound is the imaging technique of choice to assess the gallbladder; but difficulty arises when gallbladder is either contracted or atrophic. Magnetic cholangiorenosonance is a non-invasive modality which can describe anatomy of biliary apparatus. So Magnetic cholangiogram should be combined with inconclusive USG studies for gall bladder agenesis.

CONCLUSION: With better imaging modalities, it has been possible to diagnose gallbladder agenesis before surgery. And so inconclusive US reports of gall bladder should be combined with MR imaging. In Perioperative scenario on suspicion of gall bladder agenesis present norm is to quit laparoscopy and resort to MR cholangiogram to reduce exploration complications.

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1. Introduction & background

Agenesis of gallbladder is a rare congenital anomaly occurring in third and fourth week of gestation and occurs due to failure of development of hepatic diverticular bud [1]. It was first reported by Lemrey and Bergan in 1701 and 1702, and is one of the rare congenital abnormalities of biliary tract. Females are affected more than males with a female to male ratio is 3:1. This anomaly become obvious in second or third decade of life [2].

In spite of gall bladder being congenitally absent some of the patients present with symptoms similar to biliary colic and this combined with inconclusive radiological findings is wrongly interpreted, and diagnosis is most of times missed posing a great difficulty to the operating surgeon at the time of surgery. This puzzle like scenario in the operating room invites unnecessary exploration in the search of gall bladder, and thus increases the chance of complications, as injury to biliary tract [3–5].

This article discusses our experience about two cases who reported to surgery department of an apex teaching institute and were diagnosed before surgery and an unpleasant scenario in operating room was thus avoided. Very few cases have been described where a preoperative diagnosis of absent gall bladder was made. In the majority of cases, agenesis of the gallbladder is described as an incidental finding during surgical procedure. The work has been reported in line with the SCARE criteria [14].

2. Clinical case presentation

Case 1: A middle aged lady presented with symptoms of right upper abdominal pain and dyspepsia. She had no previous surgical history and was taking oral contraceptive pills with no history of any known drug allergies. The pain was located in right upper quadrant, was of dull aching type, sudden in onset, colicky in nature and was radiating to her right shoulder.

She was hemodynamically stable and there was no fever. On examination her abdomen was soft with negative Murphy’s sign and there was active peristalsis.

The patient was evaluated further and informed consent was taken. Ultrasound imaging revealed cholelethiasis with contracted...
and shrunken gall bladder. Laboratory tests like liver function tests, complete blood counts were within normal limits. Subsequently the contrast CT scan of abdomen (Fig. 1) was done which revealed non-visualization of gall bladder and cystic duct. Further to confirm MR cholangiogram (Fig. 2) was performed and the gall bladder was found to be absent with rest of the extra hepatic biliary tree to be normal. Patient responded well to conservative treatment and was discharged in satisfactory condition after one week and with uneventful follow ups for four weeks.

Case 2: Similarly, second case was also a middle aged female with signs and symptoms of biliary colic. On examination she was hemodynamically stable and per abdomen examination revealed no rigidity or tenderness with normal bowel sounds. Informed consent was taken and USG examination was done which revealed impression of cholelethiasis with non-visualization of gall bladder. On further imaging with MR cholangiogram, (Fig. 3) diagnosis of agenesis of gall bladder was confirmed and there was no evidence of cholelethiasis. After giving conservative treatment patient was discharged after one week in satisfactory condition and with no complaints during follow ups for one month.

3. Discussion

Incidence of agenesis of gall bladder is 0.007–0.0027% in clinical scenario, and in autopsy cases it was 0.04–0.13% [6–8].

It is well known that ultrasound is the imaging technique of choice to assess the gallbladder; but difficulty in reporting arises when gallbladder is either contracted or atrophic and the report is inconclusive. WES triad was described for diagnosis of gallstones (WES means Wall, Echo and Acoustic shadow). Some ultrasound examinations performed on patients of agenesis of gall bladder can report cholelethiasis, and this can be explained owing to the fact that radiologist can misdiagnose the periportal tissue, subhepatic peritoneal folds, duodenum or calcified hepatic lesions with the WES triad [9].

Magnetic cholangioresonance is an efficient method for diagnosis of agenesis of Gall bladder. It is a non-invasive imaging modality which does not require contrast to visualise bile and hence does not interfere with biliary flow. Also it can detect ectopic gall bladder giving the picture of biliary tree and depicting the anatomy of bil-
Agenesis of the gallbladder can create difficulties for surgical team intraoperatively. With development of better imaging modalities, it is possible to diagnose gallbladder agenesis before surgery.

- Where USG reports are inconclusive for Gall Bladder next step for a clinician is to advise a MR cholangiogram to reach an accurate preoperative diagnosis.
- In Perioperative scenario, on suspicion of gallbladder agenesis one should resort to MR cholangiogram rather than unnecessary exploration, to avoid exploration complications.

**Declaration of Competing Interest**

No conflict of interest.

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**Ethical approval**

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**Consent**

“Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.”

**Author contribution**

First author was treating surgeon and has entire role in preparing the manuscript.

**Registration of research studies**

Not applicable.

**Guarantor**

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