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A MYSTERIOUS GALLBLADDER: OBLITERATED CYSTIC DUCT ENCOUNTERED DURING LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Background: Congenital absence or obliteration of the cystic duct is a rare biliary anomaly that may be discovered incidentally during cholecystectomy. Such anomalies increase the risk of bile duct injury, making early recognition and careful operative strategy essential. **Case Presentation**: A 70-year-old woman with a history of hypertension and hypothyroidism presented with intermittent colicky right upper abdominal pain and bloating for past one month. She had no fever, vomiting, jaundice, weight loss or history of prior upper abdominal surgery. Intraoperatively the cystic duct was found to be obliterated both proximally and distally. A single cystic artery entered the gallbladder at the critical angle of safety. The gallbladder was distended and contained multiple pigmented calculi, the largest measuring approximately 1 cm. A safe laparoscopic approach with careful identification of anatomy and limited dissection was successfully performed. The patient had an uneventful postoperative recovery. **Conclusion**: Absent or obliterated cystic duct, though rare, should be suspected when the anatomy is unclear intraoperatively. Pre- operative imaging, such as MRCP and intraoperative adjuncts, including cholangiography or indocyanine green fluorescence imaging, can aid in diagnosis and reduce the risk of iatrogenic bile duct injury. Surgeons should adhere to the principles of the critical view of safety and be prepared to modify the operative plan, including conversion to open surgery or biliary reconstruction if necessary.

KEYWORDS: cystic duct agenesis; absent cystic duct; obliterated cystic duct; gallbladder; cholecystectomy; bile duct injury; MRCP.

INTRODUCTION

Anomalies of the extrahepatic biliary tree are uncommon but clinically significant, as they increase the risk of iatrogenic bile duct injury during cholecystectomy. Congenital absence (agenesis) or acquired obliteration of the cystic duct is rare and is often encountered unexpectedly during surgery. Several case reports and small series have described intraoperative recognition and management strategies for this anomaly. Preoperative diagnosis remains challenging, as routine ultrasonography may not adequately delineate the cystic duct. Magnetic resonance cholangi- opancreatography (MRCP) is the most useful noninvasive imaging modality when there is suspicion of such anomaly.

CASE PRESENTATION

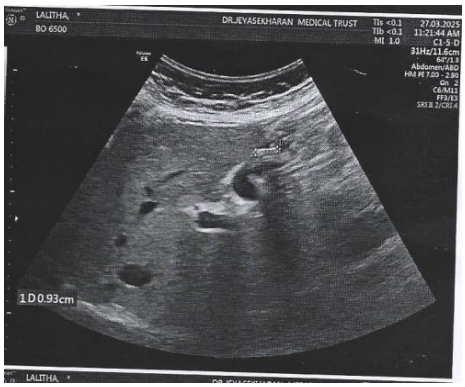
A 70-year-old female presented with intermittent, colicky right upper abdominal pain and episodic bloating for one month. She had no history of fever, vomiting, jaundice, weight loss, anorexia or prior upper abdominal surgery. Her comorbidities included systemic hypertension and hypothyroidism, both of which were medically controlled.

Clinical Findings

The patient's vital signs were stable. Abdominal examination revealed mild tenderness in the right hypochondrium without guarding or a positive Murphy's sign. No palpable mass was detected.

Preoperative Workup

Ultrasound of the abdomen revealed a distended gallbladder containing multiple calculi. Liver function tests were within normal limits. No preoperative MRCP was per- formed.



Ultrasound Sonography image.

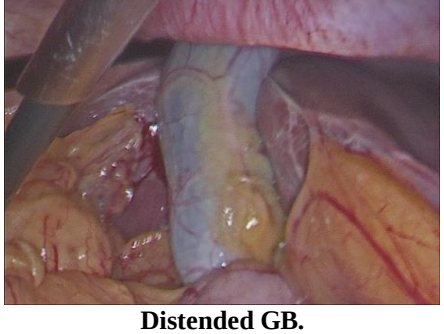
The gallbladder was markedly distended and contained multiple pigmented stones, the largest measuring approximately 1 cm.

The cystic duct was obliterated both proximally and distally, with no identifiable ductal lumen.

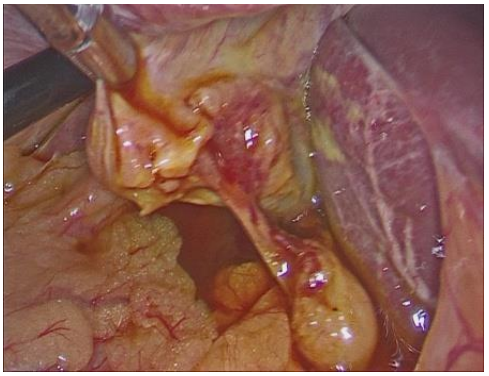
A single cystic artery was present, entering the gallbladder at the expected "critical angle of safety".

No adhesions or scarring were noted to suggest prior surgical or iatrogenic injury.

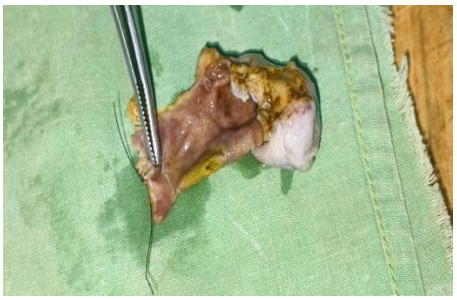
Intraoperative Findings (Laparoscopic) images

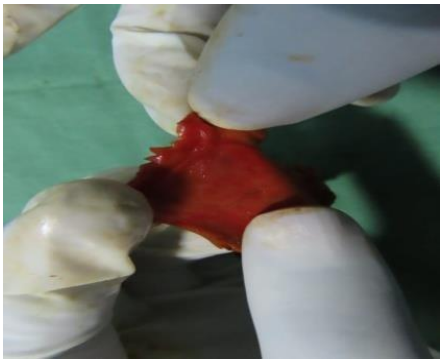


Distended GB.

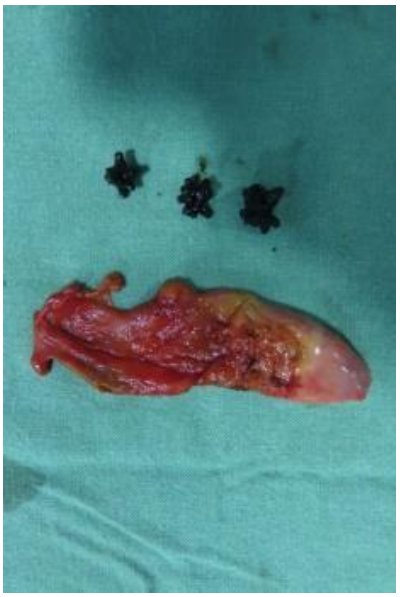


Cystic artery only was found entering the gall bladder at critical view of safety.





Obliterated cystic duct.



Specimen.

Operative Management
Given the unclear anatomy, careful dissection was limited to the Hartmann's pouch and infundibulum. The critical view of safety was attempted; however, as no cystic duct could be delineated, further dissection toward the common bile duct was avoided to prevent iatrogenic injury. Intraoperative cholangiography was considered but not performed due to inability to cannulate a cystic duct lumen. The gallbladder was successfully removed through controlled dissection, and the specimen was retrieved. Hemostasis was se- cured, and no intraoperative bile leak was observed.

Postoperative Course
The patient had an uneventful recovery and was discharged on postoperative day 3. At the 1-month follow-up, she was doing well with no new complaints.

Histopathology
Histopathological examination revealed chronic calculous cholecystitis with absence of the muscularis mucosa, submucosa, and muscularis propria, consistent with acquired obliteration of the cystic duct.

DISCUSSION

Incidence and Types
Congenital absence of the cystic duct or gallbladder agenesis with absent cystic duct is extremely rare. Reports in the literature are limited to isolated case reports and small series. Some patients have true congenital agenesis, while others have an atretic or obliterated cystic duct due to chronic inflammation or scarring.

Embryology
The gallbladder and cystic duct develop from the hepatic diverticulum during embryogenesis. Failure of normal canalization or aberrant development can result in agenesis, abnormal insertion patterns or cystic duct obliteration.

Clinical Presentation and Diagnosis
Most patients present with symptoms resembling biliary colic or cholelithiasis. Preoperative ultrasound often identifies gallstones but may not clearly visualize the cystic duct. MRCP or CT cholangiography can noninvasively define biliary anatomy and may detect absent or aberrant cystic ducts, helping to prevent unexpected intraoperative findings.

Difference between Congenital and Acquired Obliteration of the Cystic Duct
Cause
Congenital: Proximal part of the gallbladder diverticulum fails to develop.
Acquired: Gallstone impaction with inflammation, fibrosis, and scarring.

Initial Presentation
Congenital: Jaundice, acute pancreatitis. Acquired: Biliary colic, acute cholecystitis.

Histopathology
Congenital: Gallbladder with all three layers — mucosa, lamina propria, and muscularis propria. Muscularis mucosa and submucosa are absent.

Acquired: Cystic duct remnant with three layers — mucosa, lamina propria, and con- nective tissue containing inflammatory cells and fibrosis. Muscularis mucosa, submucosa and muscularis propria are absent.

Radiological Findings
Congenital: Collapsed gallbladder with a wide mouth attached directly to the common hepatic duct; no signs of inflammation.
Acquired: Distended gallbladder; gallstones may be impacted at the cystic duct remnant; evidence of chronic inflammation.

Complications
Congenital: Obstructive jaundice, recurrent pancreatitis at short intervals.
Acquired: Obstructive jaundice, pancreatitis, Mirizzi's syndrome

Intraoperative Recognition and Implications
When the cystic duct cannot be identified, continuing blind dissection significantly in- creases the risk of common bile duct injury. Strategies recommended in the literature include:
Stop and reassess the anatomy rather than proceed with forceful dissection.

Use intraoperative cholangiography (IOC) or indocyanine green (ICG) fluorescence to de- lineate biliary anatomy when feasible.

Consider a fundus-first (top-down) cholecystectomy to avoid hazardous dissection in Calot's triangle.

Convert to open surgery if safe identification cannot be achieved or if complex biliary re- construction may be required.

Management Recommendations
Preoperative MRCP should be considered when ultrasound findings and clinical presentation are discordant or if prior imaging suggests anomalous anatomy. Intraoperative adjuncts such as IOC or ICG can be in- valuable for confirming biliary anatomy. If the cystic duct is truly absent or cannot be safely identified, a cautious fundus-first cholecystectomy with minimal dissection around the hepatocystic triangle is recommended, with readiness to convert to open surgery if necessary. Documentation of the anomaly and postoperative imaging (e.g., MRCP) is advised.

Review of Similar Reports
Multiple case reports and reviews describe both

congenital absence and atretic/obliterated cystic ducts encountered during cholecystectomy. These reports consistently emphasize the importance of cautious dissection and the use of intraoperative imaging adjuncts to avoid iatrogenic bile duct injury.

CONCLUSION

Absent or obliterated cystic duct is a rare but clinically significant anatomical variation with important implications for safe cholecystectomy. Surgeons should maintain a high index of suspicion when the cystic duct is not identifiable, pursue noninvasive imaging preoperatively when indicated and employ intraoperative adjuncts (IOC, ICG) or modify the operative technique (fundus- first approach or conversion to open) to minimize the risk of bile duct injury.

REFERENCES

1. Boushehry R, Husain F, Saleem A, et al. Congenital absence of the cystic duct: Case report of a rare anomaly and review of the lit- erature. Int J Surg Cas Rep., 2022; 96: 107353.
2. Fiaschetti V, Tarantino L, Perri M, et al. Gallbladder agenesis and cystic duct absence in an adult patient diagnosed by magnetic resonance cholangiography: report of a case and review of the literature. Radiol Med., 2010; 115(7): 1115–1124.
3. Cabajo CM, Martin del Olmo JC, Blanco AJ, Atienza SR. Gallbladder and cystic duct absence: an infrequent malformation in laparoscopic surgery. Surg Endosc., 1997; 11: 483– 484.
4. Anderson K, et al. Case report of intraopera- tively diagnosed gallbladder agenesis: use of Firefly/ICG to confirm anatomy. Tech- niques/Reports, 2022.
5. The laparoscopic solution in a case of con- genital cystic duct anomaly: a case report and review of the literature. (PDF) – outlines intraoperative management strategies (fundus- first, minimal dissection).