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Porcelain Gallbladder: A Case Report

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Introduction

Porcelain gallbladder (PGB) is defined as calcium deposits encrusting the internal visceral layer, which becomes hard, brittle, and bluish[1] When extensive calcium deposits invade the gallbladder, the gallbladder wall can become fragile, brittle, and bluish, which results in a porcelain appearance. Other names for this condition are calcified gallbladder or calcifying cholecystitis[2]

Case Report

The patient, a 60-year-old female, had a history of hypertensive myocardiopathy and was under treatment for this condition. Family history revealed that her sister underwent cholecystectomy in 1995. One year prior to the current evaluation, the patient began experiencing intermittent right upper quadrant pain resembling biliary colic. Notably, she did not present with jaundice, clinical signs of cholestasis, or any gastrointestinal transit issues. Throughout this period, she maintained an afebrile state and preserved overall health.

Upon examination, the patient exhibited tenderness in the right upper quadrant, while the rest of the abdomen was soft and non-tender. No additional alarming signs were noted.

An abdominal ultrasound was performed, revealing a significantly atrophied gallbladder with a calcified wall. The ultrasound also demonstrated a posterior acoustic shadow, consistent with a sclerosed, atrophic gallbladder. These findings raised the suspicion of porcelain gallbladder.

A comprehensive biological assessment was conducted, yielding the following results:

- Hemoglobin: 13 g/dL
- White blood cells: 5720/µL
- Prothrombin time (TP): 91%
- Total bilirubin: 4.11 mg/L
- Gamma-glutamyl transferase (GGT): 12 UI/L
- Alkaline phosphatase (PAL): 92 UI/L

These laboratory values were within normal limits, further indicating that there was no ongoing infection or significant hepatic dysfunction.

The patient underwent a retrograde cholecystectomy via laparoscopy. During exploration, an

atrophic sclerosed gallbladder with calcified walls containing sludge and microlithiasis was observed. (FIG 1, 2)

Figure 1

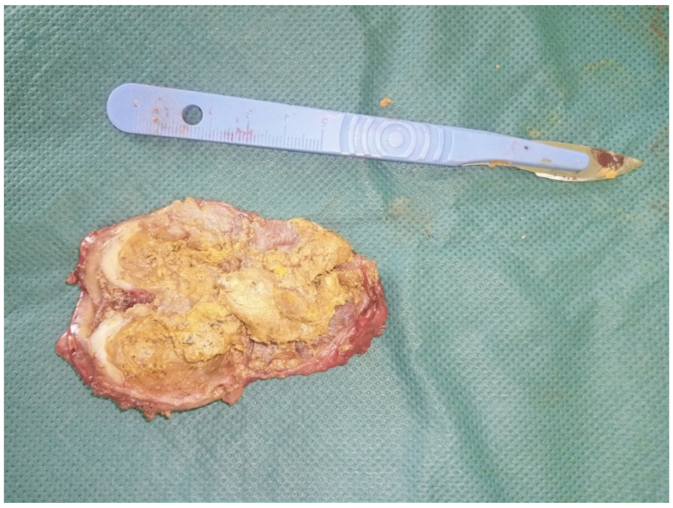

Figure 2 :

The postoperative course was straightforward, and the patient was discharged on postoperative day 2 with an uncomplicated recovery.

The histopathological examination showed morphological features of chronic lithiasic hyaline cholecystitis. There are no signs of malignancy.

Discussion

Porcelain gallbladder is defined as a calcification of the gallbladder wall. It is a rare condition and is seen in 0.06% to 0.8% of cholecystectomies. It was first described in 1929.[3] The term PGB originally refers to the blue discoloration and brittle consistency of the gallbladder wall, but it is often used to describe all types of gallbladder calcification. When extensive calcium deposits invade the gallbladder, the gallbladder wall can become fragile, brittle, and bluish, which results in a porcelain appearance.[2] Although the etiology of PGB is poorly understood, the chronic inflammatory process causes an alteration in calcium metabolism leading to cholelithiasis and transmural calcification of the gallbladder[1] It is commonly seen among elderly females and is associated with gallstones in about 90% of cases. It is associated with high risk of malignancy and the rate may vary from 5 to 22%. Porcelain gallbladders are associated with gallstones in 90% of cases[4]

William Osler,12 in the 1925 edition of Principles and Practice of Medicine, described 2 pathologic types of gallbladder wall calcification: diffuse intramural calcification and selective mucosal calcification. In the first type, a continuous band of calcium infiltrates and replaces the muscular layer of the gallbladder wall. It is accompanied by dense fibrosis of the entire gallbladder wall, and the mucosal epithelium is denuded and sloughed away. The second type, selective mucosal calcification, is characterized by flecks of calcium in the inner layer, or mucosa, of the gallbladder wall[5]

Majority of patients are asymptomatic; however, few may present with mild symptoms of biliary disease such as indigestion and postprandial pain. The thickening and calcification of GB ultimately render it nonfunctional, which can be seen on oral cholecystogram and technetium-99m hepato imido diacetic acid (HIDA) radionuclide uptake imaging.

[6]

On plain radiograph or CT scan, a typical GB fossa calcification can be visualized in patients with radio opaque gall stones and porcelain GB demonstrating curvilinear calcifications of a segment or the entire wall. However, CT is more sensitive than conventional radiographs Although an ultrasound scan (USS) can depict highly echogenic acoustic shadowing with curvilinear structure in the GB fossa.[6] As CT imaging increases worldwide for a variety of indications, the discovery of incidental findings also increases dramatically. Although plain X-ray has a higher spatial resolution, CT is highly sensitive for even minute calcifications, which explains the increasing prevalence of porcelain gallbladder. [7]

Laparoscopic cholecystectomy (LC) has become the gold standard surgical procedure for symptomatic cholelithiasis. The success rate in LC is closely associated with the experience of the surgeon as well as the macroscopic appearance of the gallbladder[8] It is preferred over open cholecystectomy in patients with noncomplicated porcelain GB. Recently, single port laparoscopic cholecystectomy has been described through a 2-cm umbilical incision with single incision laparoscopic system-SILS (Covidien; Mansfield, OH) having three 5-mm holes. In complicated patients, open cholecystectomy is the treatment of choice to avoid theoretical risk of tumor seeding.[6] Scleroatrophic gallbladders are macroscopically visible entities that are frequently encountered during LC. In case of inflammation, atrophy and fibrosis of the gallbladder with tight adhesion between the gallbladder and liver, the structures within Calot's triangle are difficult to identify. If acute cholecystitis is excluded, cases of difficult LC mainly consist of scleroatrophic gallbladders.[8]

Current research suggests that a prophylactic cholecystectomy is not routinely advised for PGB patients. It is essential to remember that a nonsurgical procedure may require a long follow-up. Prophylactic cholecystectomy is controversial for PCB. In addition, laparoscopic cholecystectomy risks severe complications, favouring nonoperative treatment. Proponents of a prophylactic cholecystectomy highlight the advantages of removing the gallbladder to potentially cure any early-stage cancers that were not discovered.[9]

Conclusion

This case highlights the importance of recognizing porcelain gallbladder in asymptomatic patients or those with mild symptoms. Regular follow-up and imaging studies may be warranted to assess for any changes in the gallbladder status, and to evaluate the need for potential surgical intervention to prevent complications, such as malignancy. Further studies and clinical assessments will help guide the management of similar cases in the future.

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