

# When the Gallbladder Turns to Stone – A Case Report on Porcelain Gallbladder

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## Introduction

- Gallbladder pathologies are very common. Approximately 6% of the world experiences gallstones, and there are over 800,000 cholecystectomies performed in the United States each year.<sup>1</sup>
- A porcelain gallbladder (PGB) is a condition in which there is partial or transmural calcification of the gallbladder wall.<sup>2</sup>
- PGB is rare and is found in approximately 0.2% of all cholecystectomy specimens.<sup>2</sup>
- PGB is predominantly found in females during the sixth decade of life.<sup>2</sup>
- Gallstones are commonly associated with PGB and can coincide in 60%<sup>3</sup> to 100%<sup>2</sup> of cases.
- PGB is frequently asymptomatic but can present with signs and symptoms of cholelithiasis including right upper quadrant (RUQ) abdominal pain, nausea, and vomiting that are worse after eating.<sup>3</sup>
- Unlike cholecystitis, the ideal diagnostic imaging for PGB is a computed tomography (CT) scan of the abdomen, but it can also be identified with ultrasound or plain radiograph.<sup>4</sup>
- Historically, PGB was associated with a high risk of gallbladder carcinoma (GBC), an aggressive cancer of the biliary tract.<sup>5,6</sup>
- Recent data suggests that the association between PGB and GBC is much lower than previously portrayed.<sup>2</sup>
- An elective laparoscopic cholecystectomy is the current treatment of choice for the management of symptomatic PGB.<sup>3</sup>

## Treatment Course

The patient presented to her PCP with symptoms. An abdominal CT was ordered and demonstrated gallbladder wall calcifications. A PET scan was negative.

One month later

The patient presented to the hospital for an elective robotically assisted laparoscopic cholecystectomy.

The gallbladder was contracted with many adhesions present. Surgical approach required transition from infundibular-first approach to top-down approach.

The gallbladder was successfully removed without further complication and the patient was discharged home the same day.

Two weeks later

The patient presented for surgical follow up with complete relief of symptoms. There was no role for further evaluation of GBC.

## Case Description

### History

- 69-year-old female presented to her PCP with RUQ abdominal pain, nausea, and occasional vomiting for one month
- The pain was colicky, intermittent, and radiated to her epigastrium
- Pain was exacerbated with eating and nothing alleviated her pain
- PMHx includes gastroesophageal reflux disease (GERD), type 2 diabetes mellitus, hyperlipidemia, and thyroid carcinoma
- Medications: amlodipine 5mg, atorvastatin 20mg, metformin 500mg, ondansetron 4mg
- Social history and family history non-contributory
- Review of symptoms:  
(-) fevers, rash, weight loss, changes in bowel movements, easy bruising/bleeding  
(+) abdominal pain, nausea, vomiting

### Physical Exam:

- Vitals:
  - BP: 122/90 mmHg
  - Temp: 97.7°F
  - HR: 86 bpm
  - RR: 18 breaths per minute
  - SpO2: 100% on room air
  - BMI: 23.4
- Abdomen soft and non-distended with no evidence of masses; normoactive bowel sounds
- Tenderness and cessation of inspiration with deep palpation over the RUQ
- Mild tenderness with palpation of epigastrium
- No evidence of rash, jaundice, or scleral icterus
- Regular heart rate and rhythm; no clicks, rubs, murmurs, or gallops
- Lungs clear and equal to auscultation bilaterally
- Remainder of physical exam within normal limits

Figure 1: Axial CT Abdomen



Abdominal CT scan demonstrated intramural calcifications of the gallbladder wall and chronic inflammation of the gallbladder (Figure 1 and Figure 2)

Figure 2: Coronal CT Abdomen

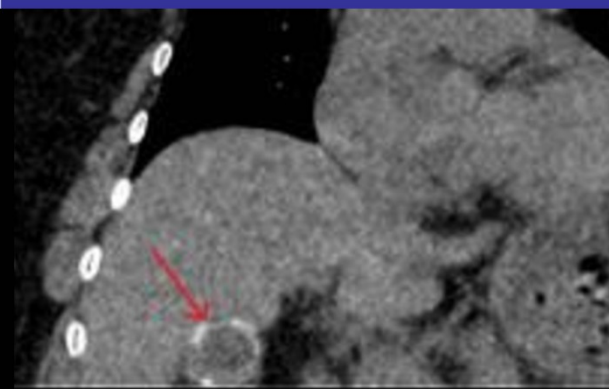


Table 1: Differential Diagnosis for RUQ Pain

Cholecystitis	Bowel Obstruction
Cholelithiasis	Diverticular Disease
Peptic Ulcer Disease	Nephrolithiasis
GERD	Porcelain Gallbladder
Hepatitis	Gallbladder carcinoma

## Discussion

- Incidental findings of gallbladder calcifications and PGB are increasing due to advancements in imaging modalities.<sup>4</sup>
- Elective cholecystectomies are considered a low-risk and minimally invasive procedure that can cure PGB related symptoms while eliminating the risk of gallbladder carcinoma.<sup>3</sup>
- Wall calcifications seen in PGB may be attributed to chronic inflammation of the organ.<sup>2</sup>
- The calcified wall can cause a brittle, blue, and hard consistency of the gallbladder,<sup>4</sup> which may increase the risk of complications during cholecystectomy.<sup>3</sup>
- This patient required a transition from an infundibular approach to a top-down approach during the procedure due to adhesions and difficulty manipulating the hard, contracted porcelain gallbladder.
- The estimated incidence of GBC in PGB is 6%, compared to the 1% risk of developing GBC without the presence PGB.<sup>7</sup>
- The current data demonstrating a low correlation between PGB and GBC justifies the recommendation of an elective cholecystectomy for symptomatic PGB, and careful, patient-based decision making for asymptomatic PGB.<sup>3,8</sup>

## Conclusion

- PGB is a rare condition of the gallbladder characterized by wall calcification.
- PGB is usually identified incidentally on imaging or histopathology but should be considered in patients that present with symptoms of cholelithiasis.
- While the incidence of GBC in PGB is far lower than previously believed, further evaluation for gallbladder carcinoma or metastatic disease is recommended in patients diagnosed with PGB on imaging.
- An elective cholecystectomy is a relatively low risk treatment choice for symptomatic PGB with the benefit of symptom relief and prophylactic treatment for gallbladder carcinoma.

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