

# Giant Gall Bladder Stone: A Case Report and Review of Literature

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## ABSTRACT

Gallbladder stones usually exhibit significant variation in size but rarely up to 5cm. Giant gallbladder stones, defined as stones greater than 5cm in diameter or more than 70 grams in weight, are a rare phenomenon and pose a management challenge. Laparoscopic cholecystectomy while being the gold standard of surgically removing gallbladders has a high rate of conversion to open even in expert hands due to the challenges of handling the giant gallstones. These challenges include difficulty grasping the gallbladder with the laparoscopic instruments, difficulty in exposing the anatomy of Calot's triangle due to the size of the stone and extrinsic compression on the Calot's triangle and difficulty in retrieving the specimen. We present the management of our first case of cholecystectomy for a giant gallbladder stone and discuss the choice of surgery.

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**Keywords:** Giant, gallbladder stone, laparoscopic cholecystectomy, Calot, fundus first.

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## INTRODUCTION

Gallstone diseases were predominantly seen in the developed world. However, over the last few decades, the incidence in developing countries has been steadily increasing with recent reports placing the incidence of gallstone diseases at 2% to 6% in most African nations.<sup>1-3</sup> The exact aetiology of gallstones is not known but a multitude of risk factors has been implicated. The most consistent risk factor reported is the female sex. Other risk factors include obesity, rapid weight loss, Caucasian race, age more than 40 years, dyslipidemia, sedentary lifestyle and diabetes mellitus.<sup>4,5</sup>

The pathogenesis of gallstones has been studied extensively and it is believed that biliary supersaturation from hypersecretion of cholesterol forms an integral part of the formation of cholesterol gallstones. Other alterations in the hepatobiliary system observed in patients with gallstone include accelerated nucleation, gallbladder dysmotility, and mucin gel accumulation.<sup>6-8</sup>

Gallstones usually exhibit significant variation in size, they may range from 3mm to more than 5cm. Typically, less than 5mm gallstones may not require treatment because they may pass spontaneously through the bile duct without any symptoms.<sup>9</sup> However any gallstone of more than 10mm may obstruct the bile ducts causing jaundice and infection which will necessitate cholecystectomy and common bile duct exploration.<sup>9</sup>

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The size of the stone may also increase the risk of gallbladder cancer. Studies have shown that gallstones greater than 3 cm carry a higher risk for gallbladder cancer.<sup>10</sup> Giant gallbladder stone is defined as a gallstone that is more than 5 cm in its widest diameter or weighing above 70g.<sup>11–13</sup> The treatment of giant gallstones is challenging because of the difficulty associated with laparoscopic delivery of the gallbladder. Some surgeons believe that this is an indication of open cholecystectomy but this has been disputed with multiple reports of successful laparoscopic cholecystectomy in giant gallstones albeit with some difficulties.<sup>11–13</sup> In a developing country like ours where laparoscopic surgery facilities are inadequate and expertise is slowly gaining momentum, removing giant gallstones with open surgery is an easier decision to make. We present a report on our first case of giant gallstone treated with open cholecystectomy.

### Case report

A 65-year-old woman presented to us with severe right hypochondrial pain of 2 weeks duration which started gradually as a dull ache. It had become severe and colicky and radiated to the right shoulder. There was associated nausea, anorexia and 4 episodes of vomiting. She had a low-grade fever for a few days but it subsided after a course of antibiotics. There was no jaundice.

She had a long-standing history of dyspepsia/ epigastric discomfort of more than 10 years. It was usually precipitated by fatty meals. She had used antacids with minimal relief.

She was neither a known hypertensive nor a known diabetic patient.

On examination, she was an elderly woman, not ill, not in any distress, afebrile, not pale, and anicteric.

The abdomen was flat and moved with respiration. There was a palpable roundish mass at the right hypochondrium that was tender, Murphy's sign was positive. A diagnosis of resolving acute calculous cholecystitis was made.

An abdominal ultrasound scan revealed a huge, rounded gallbladder stone which measured 6cm by 5.5cm across. She was prepared for cholecystectomy. Under general anaesthesia, Kocher's incision was made (figure 1) to deliver the gallbladder which was then removed through the 'Fundus first' approach.

Cut open, the excised gallbladder contained about 100mls of mucinous fluid and a giant dark-coloured stone that measured 6.3cm by 5.5cm and weighed 63 grams. (figure 2).

Her recovery was uneventful. Histology of the excised gallbladder showed features of chronic inflammation and no evidence of malignancy.

Qualitative Chemical analysis of the stone revealed a mixed stone containing calcium, xanthine, phosphate, cholesterol, and bilirubin as the main contents. It was negative for oxalate and urate.



Figure 1: Intraoperative picture of the huge gallbladder, approached through a Kocher's incision



Figure 2: Huge dark-colored stone, the width of 3 fingers, removed from the gallbladder. Measured 6.3 by 5.5cm.

### DISCUSSION

Gallstone diseases constitute a significant burden to the population of North America and Western Europe. It is believed to affect up to 15 % of the population in these parts of the world. In most parts of Africa, the burden of gallstone disease is minimal but it has been increasing in the past few decades.<sup>1–3</sup> The exact aetiology of gallstones is not known but a multitude of risk factors has been implicated. These risk factors include female sex, obesity,

rapid weight loss, Caucasian race, age more than 40 years, sickle cell disease, dyslipidemia, sedentary lifestyle and diabetes mellitus.<sup>4,5,7</sup>

Most gallstones are not symptomatic. Only about 20% of gallstones become symptomatic. It may manifest as biliary colic or flatulent dyspepsia. Or it can present as symptomatic complicated and this spectrum includes acute cholecystitis, common bile duct stones, cholangitis, and pancreatitis.<sup>14,15</sup> Cholecystectomy is recommended for all complicated gallstones. In the presence of symptomatic uncomplicated gallstones, current clinical practice guidelines have no consensus but most surgeons opt for cholecystectomy.<sup>14,15</sup>

Giant Gallbladder stone is defined as a gallstone that is more than 5 cm in its widest diameter or weighing above 70g.<sup>11-13</sup> Though reports showed that giant gallstones are rare, most of these stones are symptomatic at presentation and require operative treatment. Laparoscopic cholecystectomy is the gold standard for the treatment of gallstone disease but in giant gallstones, there are reports of difficulty in laparoscopic cholecystectomy. This difficulty is attributed to more severe inflammation and thickening of the gallbladder wall, difficulty grasping the gallbladder with the laparoscopic instruments and difficulty in exposing the anatomy of Calot's triangle due to the size of the stone and extrinsic compression on the Calot's triangle.<sup>11-13</sup> These anticipated problems have resulted in some surgeons proposing giant gallstones as one of the indications for open cholecystectomy in the current settings and that is why in this index patient, we chose open cholecystectomy.<sup>16,17</sup> However, with improvement in skills and dexterity in laparoscopic surgical practice, there are reports of successful laparoscopic cholecystectomy in giant gallstone disease. It has been shown that laparoscopic fundus first cholecystectomy is associated with fewer complications compared to conventional Calot first cholecystectomy especially in difficult cholecystectomies.<sup>18</sup> So for patients with giant gallstones, the use of fundus first laparoscopic cholecystectomy may be associated with reduced conversion to open cholecystectomy.<sup>18-20</sup> Singh et al<sup>12</sup> reported in year 2020, the removal of a 12.8 x 7cm gallstone as the largest gallstone removed laparoscopically in the world. Xu et al<sup>13</sup> reported emergency laparoscopic cholecystectomy with the removal of

a 9.5cm stone. In Nigeria, Igwe et al reported a series of two patients that had successful laparoscopic cholecystectomy with the removal of an 8 cm stone and an 8.2cm stone.<sup>11</sup>

## CONCLUSION

Giant gallstone diseases are usually symptomatic and may require open cholecystectomy. With the increase in skills and dexterity, laparoscopic cholecystectomy can be performed successfully in patients with giant gallstones. In any case, the 'Fundus first approach' is most suitable.

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