



## CASE REPORT

### GIANT STAGHORN COMMON BILE DUCT CALCULUS: A CASE REPORT

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#### ABSTRACT

A bile duct stone is defined as large if it is more than 15mm in size and giant when it is 5cm or more. Giant staghorn calculi are usually uncommon but can be found in oriental cholangio-hepatitis and usually pigment stones. Bile infection appears to be the initial event leading to stone formation. The primary bile duct stones form within the bile ducts and usually of brown pigment type while secondary bile duct stones arise from gall bladder and intra or extra hepatic ducts. There are very few published reports which describe a giant staghorn calculus in the common bile duct (CBD). The purpose of this case report is to report a new rare case of giant staghorn CBD calculus and discuss the diagnostic and surgical approach because staghorn calculi are very rare in the biliary tract.



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#### INTRODUCTION

Stones which produce obstruction of the CBD may have arisen in the CBD, in the gall bladder or in the extrahepatic or intrahepatic ducts.<sup>1</sup> Some patients may remain asymptomatic while others progress to symptomatic condition with deranged liver function test such as elevated serum gamma glutamyl transpeptidase (GGT) and alkaline phosphatase (ALP).<sup>2,3</sup> The treatment modalities depends upon the site, size and condition of the impacted stone and recurrence has been reported frequently in such cases.<sup>4</sup> The commonest stones which originate in the gall bladder are the infective and cholesterol stones and later they may migrate to the CBD are of secondary bile duct stones (75%) while primary bile duct stones (25%) usually take origin within the bile duct where they enlarge by containing higher proportion of bilirubin form brown pigment type stones. The size of an obstructing stone varies from a few millimeters in diameter (if impacted in ampulla) to several centimeters. Stones in bile duct are considered as large if they are more than 15mm in size and giant if they are 5cm or more.<sup>1,5,6</sup> We are presenting a case in whom we removed a giant staghorn calculus from the CBD measuring 9cm×3cm.

#### CASE REPORT

A 47 year old married male was admitted in General surgery department of Chitwan Medical College Teaching Hospital, Chitwan, Nepal on 23<sup>rd</sup> April 2019 with presentation of pain right upper abdomen for 3 months which was gradual in onset, continuous dull aching type and aggravated after meal. Pain followed by nausea and vomiting but no fever was recorded. There was history of jaundice noticed from 1 month duration but no history of other illness and surgery. He was non-smoker but occasionally used to consume alcohol. On examination, patient's general condition was normal, average built, oriented to time place person and mild icteric. His vital status was normal. The abdominal examination revealed mild tenderness in right hypochondriac region. There was no palpable abdominal lump.

On investigation, hemoglobin was 14.8gm/dL, total leucocyte count was 5900/cu mm, differential count of N61 L27 E8 M4. Liver function test was found to be total serum bilirubin 3.8mg/dL, conjugated serum bilirubin 2mg/dL, ALT-186 U/L, ALP-88 IU/L, prothrombin time 13 sec, INR-1.0. Urine analysis, renal function test and blood sugar level were normal. Plain X-ray of chest and abdomen were normal. ECG was normal. Ultrasonography of the abdomen and pelvis showed contracted gall bladder with stone, prominent CBD with solitary stone (4cm) in the lumen with dilated intrahepatic biliary ducts.

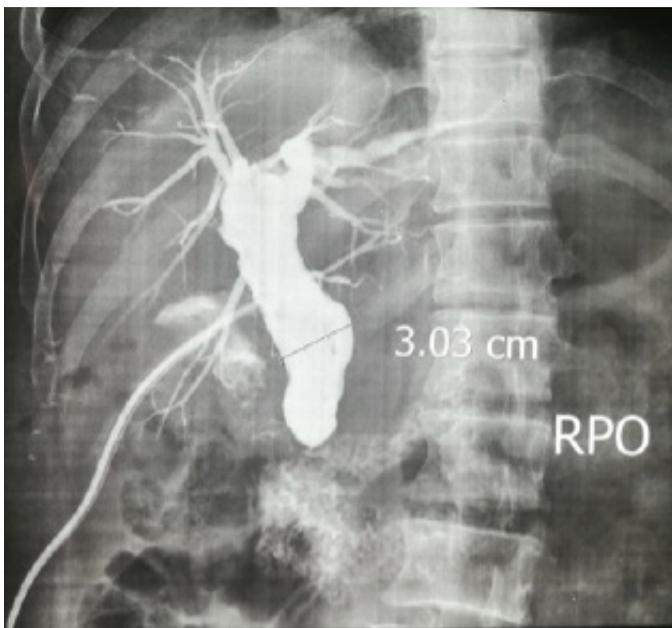
Patient was planned for open cholecystectomy and choledochotomy with CBD exploration. On surgery, intraoperative findings revealed small contracted gall bladder with small solitary stone and grossly dilated CBD containing a solitary large stone that filled CBD and common hepatic duct (CHD) completely (9cm×3cm) with extension into the right and left hepatic ducts (Figure 1). Liver was found normal.



**Figure 1: Staghorn CBD calculus (9cm×3cm)**

Stay sutures were placed and CBD was opened just distal to the confluence of cystic duct insertion in CHD. Stone was removed en block. Gall bladder was removed. The CBD was closed over T-tube. Abdominal drain kept in right Morison's pouch.

The postoperative period was uneventful. Abdominal drain removed on 4<sup>th</sup> postoperative day (POD). T-tube cholangiogram was done on 10<sup>th</sup> POD which revealed post cholecystectomy status with dilated CBD, CHD and intrahepatic biliary ducts with abrupt distal termination of CBD without residual calculus (Figure 2 & 3). Patient was discharged on 13<sup>th</sup> POD with uneventful hospital stay.



**Figure 2: T-tube cholangiogram on 10<sup>th</sup> POD (RPO)**



**Figure 3: T-tube cholangiogram on 10<sup>th</sup> POD (LPO)**

On follow up, patient general health condition was improved. Liver function test was normal. Ultrasonography of abdomen showed decreased duct size. T-tube was removed after 30<sup>th</sup> POD.

## DISCUSSION

Bile duct stones which could potentially result in complications such as cholangitis and pancreatitis. Some patients may remain asymptomatic while others progress to a symptomatic stage.<sup>3</sup> In most cases of choledocholithiasis, a solitary stone is found in the CBD.<sup>2,7</sup> Walter and Snell reported a solitary stone in two thirds of their cases. Staghorn calculi are branched stones that occupy a large portion of the collecting system and the shape results from the adhesions of biliary debris.<sup>8,9</sup> Giant staghorn CBD calculi have been reported in literature. Bahuleyan reported a giant CBD stone measuring 6.5cm×3cm and weighing 40.5 grams in 38 years old female.<sup>1</sup> Ahmed et al. showed a CBD stone measuring 8.5cm×3.5cm and weighing 55 grams. Jayant et al. reported a giant staghorn CBD calculus of 9cm×4cm in a 65 years old man<sup>5</sup> while Mohamed et al. reported the size of 9cm×4.5cm and removed endoscopically by making several fragments.<sup>10</sup> Hajong et al. reported the second case of giant staghorn CBD calculus of 8cm×6cm in a 48 years old lady. No complications such as rupture or perforations resulting from giant CBD calculi have been reported. The best radiological examination to establish the diagnosis is ultrasonography followed by magnetic resonance cholangiopancreatography (MRCP). Endoscopic treatment is often unsuccessful because of the calculus size and the only treatment is always surgical.<sup>6</sup>

## CONCLUSION

Stone of the biliary tract is considered to be a benign, but may sometimes be complicated. Giant staghorn calculi are very rare in the CBD. Only few reports of staghorn CBD stone have been published in literature. The treatment strategy for giant CBD stone is always surgical and identical to that for other bile duct stones.

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