

The use of intraoperative cholangiogram during laparoscopic double cholecystectomy

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ABSTRACT

Double gallbladder is a rare finding in patients with symptomatic cholelithiasis or acute cholecystitis. The incidence has been described as 1 in every 4000-5000 patients during autopsy. To identify the gallbladder (GB) duplication prior to surgical removal of the GB is of utmost importance. It is not unusual to identify this diagnosis intraoperatively, but by using US, ERCP or MRCP more than 50% of the cases are diagnosed preoperatively. The use of intraoperative cholangiogram helps to identify the anatomy and confirm the diagnosis during laparoscopic cholecystectomy in patients with gallbladder duplication.

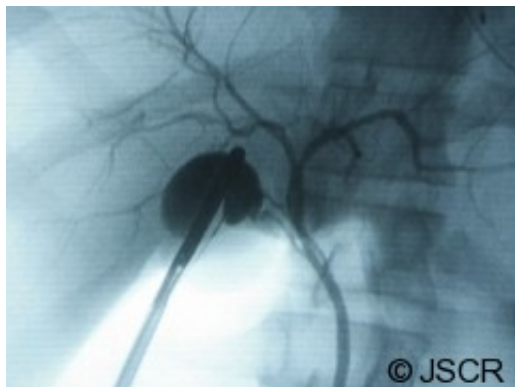
INTRODUCTION

Double gallbladder is a rare diagnosis, especially in symptomatic patients. Successful laparoscopic treatment has been described previously in only a few cases. Rarely the diagnosis is suspected preoperatively when using only ultrasound. Other diagnostic tests like Magnetic Resonance Cholangiopancreatography (MRCP), Endoscopic retrograde cholangiopancreatography (ERCP) and Intraoperative cholangiogram can be more accurate in the diagnosis of this condition. Intraoperative cholangiogram represents a powerful tool for the surgeon when dealing with double gallbladder, it help to delineate the anatomy and confirms the diagnosis. (1,2) We present a case report of a patient with symptomatic cholelithiasis with double gallbladder treated laparoscopically using intraoperative cholangiogram.

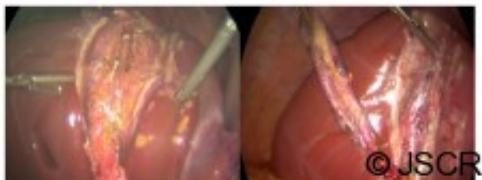
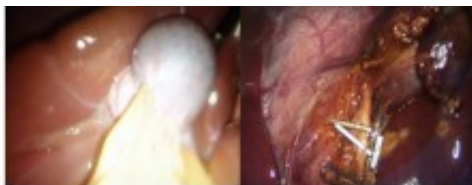
CASE REPORT

A 21 year old male otherwise healthy with no previous surgical history, presented to the emergency room with the chief complaint of several hours of right upper quadrant pain that started after a large meal. The pain was associated with nausea and non bilious vomiting. The patient described a history of several weeks of right upper quadrant pain after meals but normally it would subside without any intervention. On admission, the patient had normal and stable vital signs and on physical exam there was tenderness to palpation on the right upper quadrant but no peritoneal signs. His laboratory exams were unremarkable with a normal white blood cell count and normal liver function test. A right upper quadrant sonogram showed

evidence of cholelithiasis and a questionable double gallbladder. The patient was admitted to the hospital and he was taken to the operating room where he underwent a laparoscopic cholecystectomy using the standard 4 port technique with intraoperative cholangiogram (Fig 1).



During the operation a double gallbladder was found with two separate cystic ducts and two cystic arteries. (Fig 2-3) The intraoperative cholangiogram helped to identify each cystic duct and the operation was otherwise uneventful. The patient was transferred to the recovery room and then to the regular ward. He was started on clear liquid diet postoperatively and he was discharged home on postoperative day one. The pathology report showed evidence of cholelithiasis and chronic cholecystitis.



DISCUSSION

Gallbladder duplication is a very rare diagnosis. Even though the true incidence reported during autopsy is about 1:4000-5000, the incidence of symptomatic double gallbladder is much lower. The duplication normally happens during the 5-6 embryonic week. The

gallbladder primordium can split and form a gallbladder duplication but this only represents a congenital anomaly of the gallbladder. True gallbladder duplication has two cystic ducts and two cystic arteries. The true double gallbladder forms from an extra primordium during the embryonic development. The symptomatic patient with two gallbladder represents a diagnostic and treatment challenge to the general surgeon.(1-3)

To aid in the diagnosis the surgeon can use ultrasound, MRCP, ERCP and ultrasound. None of these tools are 100% sensitive and only in little more than 50% of the cases the diagnosis is made preoperatively.(2,3) In our case the ultrasound was questionable but certainly prompted the use of intraoperative cholangiogram to help define the anatomy. In figure 2 two cystic ducts can clearly be seen which makes our case a true gallbladder duplication treated successfully with standard laparoscopic technique.

The differential diagnosis of a GB duplication seen in US is large, but the most common diagnosis are a Phrygian cap, gallbladder diverticulum or a choledochal cyst.(3) Once the diagnosis has been made by seen two cystic ducts in the symptomatic patient, the surgical removal of both gallbladders is indicated. There are only a few case reports of double GB successfully managed laparoscopically in the literature.(3-7)

Our case shows that the use of intraoperative cholangiogram confirms the diagnosis and helps to identify both cystic ducts. Previous literature have shown conflicting and controversial results when trying to use intraoperative cholangiogram to prevent bile duct injuries, but there no large series or randomized studies evaluating the use of Intraoperative cholangiogram in patients with double gallbladder. (8-10) We recommend routine use of IOC when dealing with abnormal anatomy or congenital anomalies of the gallbladder. The evidence is anecdotal but as shown on this case report clearly seen two cystic ducts accurately diagnosed a gallbladder duplication and prevented the surgeon from leaving an unidentified gallbladder which later can become a diagnostic enigma.

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