



## Clinical image. Single gallbladder with double cystic duct in a 2-year-old child

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### **Abstract**

*A single gallbladder with a double cystic duct is a very rare finding, especially in the pediatric population. Herein we report a case of a 2- year old female child that was admitted to the hospital with a second episode of acute pancreatitis. Preoperative ultrasonography demonstrated the presence of gall- stone disease in the gallbladder and common bile duct dilatation. MRCP did not reveal any biliary tree anomalies. The patient underwent cholecystectomy in combination with intraoperative cholangiography via minimal incision in the right upper abdominal quadrant. Histopathological examination documented the presence of a duplicated cystic duct containing debris. The gallbladder in this case was single and not duplicated. This variation increases the risk of ductal injury, need for open conversion and postoperative complications.*

### **Key Words**

*Cystic duct duplication, double cystic duct, aberrant cystic duct, single gallbladder, pediatric population, acute pancreatitis*

## **Introduction**

Although cystic duct variation is quite common, a single gallbladder with a double cystic duct is a very rare finding. There were no reported cases in a study of the intraoperative cholangiograms of 3845 cases [1]. This variation increases the risks of ductal injury, need for open conversion and postoperative complications. Few cases with this rare condition are preoperatively diagnosed [2]. We present a case of gallstone disease and recurrent episodes of acute pancreatitis with a double cystic duct, which was intraoperatively diagnosed.

The aim of this specific case presentation is to report this rare variant and its diagnostic assessment and therapeutic management in the pediatric population.

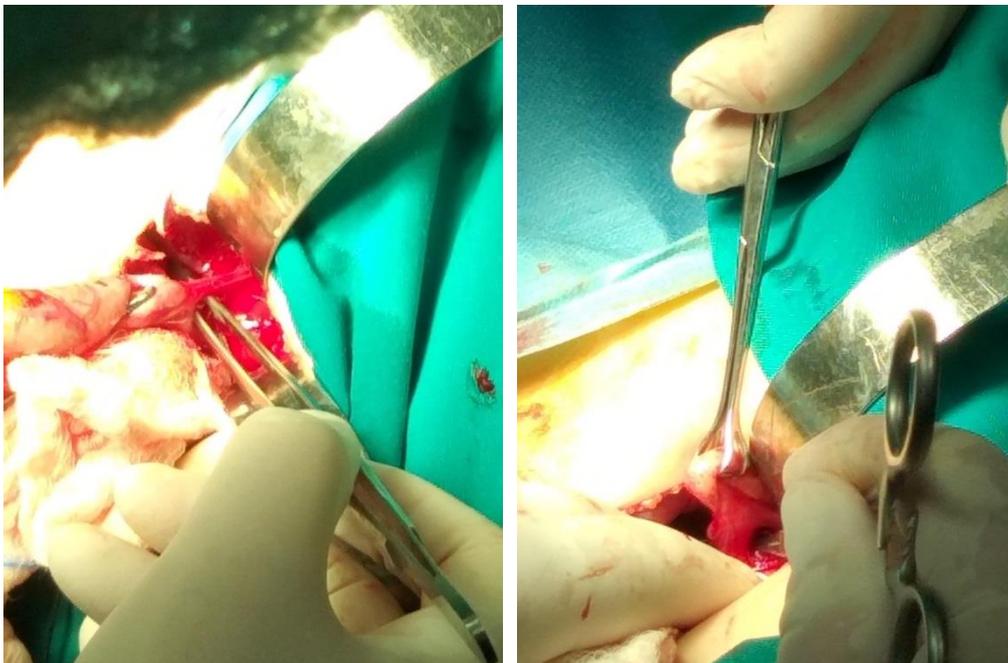
## **Case Description**

A 2-years-old female child was admitted to our hospital with two episodes of acute pancreatitis in a total period of 18 months. Gall-stone disease in the gallbladder and common bile duct dilatation were diagnosed by ultrasonography. MRCP did not reveal the aberrant cystic duct. (Figure 1).

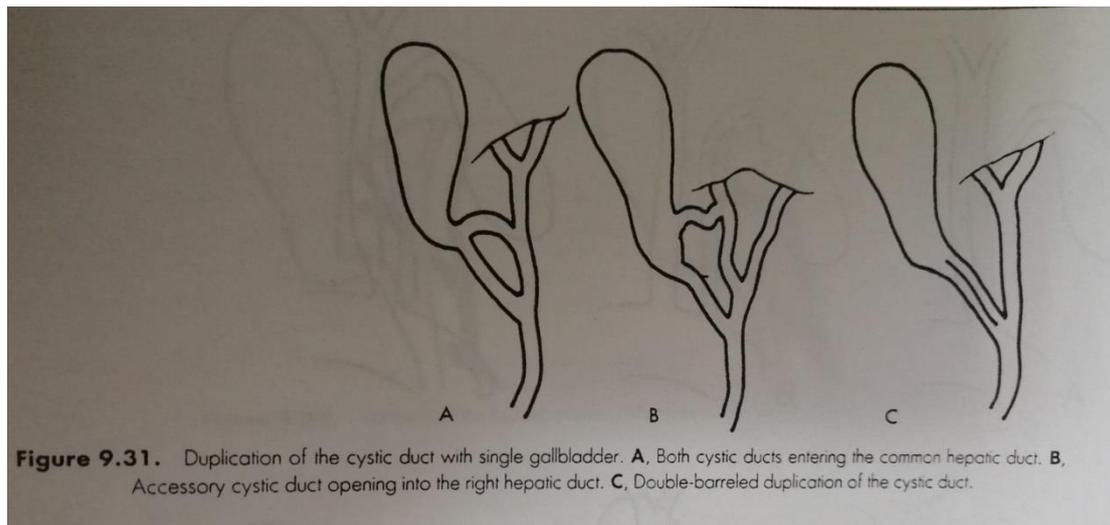
Cholecystectomy was successfully performed in combination with intraoperative cholangiography via minimal incision in the right upper abdominal quadrant. The aberrant cystic duct was found rising from the cystic neck and communicating with the distal part of common hepatic duct, and was successfully ligated (Figure 2). The excised specimen showed a duplicated cystic duct containing debris. The postoperative course was uneventful, and our patient was discharged from hospital on postoperative day 5.



**Figure 1:** Preoperative MRCP, not revealing the aberrant cystic duct



**Figure 2:** Intraoperative image of the cystic duct duplication



**Figure 3:** Classification of cystic duct duplication with single gallbladder (three types) [3]

## Discussion

A single gallbladder with double cystic duct is a very rare anomaly. Scandalakis and Grey classify the duplication of the cystic duct with single gallbladder in three types (Figure 3). Type 1 corresponds to our case [3].

If an anomaly of the biliary duct system is not identified during surgery, it may turn out to be a bile leak. This causes significant postoperative complications, with morbidities in 0.2–2% of cases after laparoscopic cholecystectomy [4].

10 cases of double cystic duct with single gallbladder treated with laparoscopic cholecystectomy, only in the elderly, were found in PubMed through May 2017 after searching with the terms “double cystic duct”; “duplication of cystic duct” and “laparoscopic cholecystectomy” [5]. 9/10 cases (90 %) were diagnosed as double cystic duct during surgery. In the case of a operative misdiagnosis the patient developed bile fistula postoperatively and was reoperated on the first post-operative day [6]. 2/10 (20 %) required conversion to open surgery because of suspicion of bile duct injury. Complications occurred in 4 cases (40 %).

### Clinical message

Cystic duct duplication with a single gallbladder is a very rare finding, especially in the pediatric population, that can be misdiagnosed preoperatively. The intraoperative diagnose is very significant, because if not identified it may turn out to bile leak, causing significant postoperative complications and requiring reoperation. In case the laparoscopic method is chosen, conversion to open surgery might be required.

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