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CASE IMAGE

# Pancreatic stones causing secondary biliary obstruction: An uncommon presentation of chronic pancreatitis

**Wesley C. Judy**[1,2] | **Tom K. Lin**[1,2]

[1]Department of Pediatrics, University of California San Diego, San Diego, California, USA

[2]Division of Gastroenterology, Hepatology, and Nutrition, Rady Children's Hospital, San Diego, California, USA

**Correspondence**

Tom K. Lin, Division of Gastroenterology, Hepatology, and Nutrition, Rady Children's Hospital, 3020 Children's Way, MC 5030, San Diego, CA 92123, USA.
Email: tkl003@health.ucsd.edu

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genetic, obstructive, pediatric, risk factors

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None

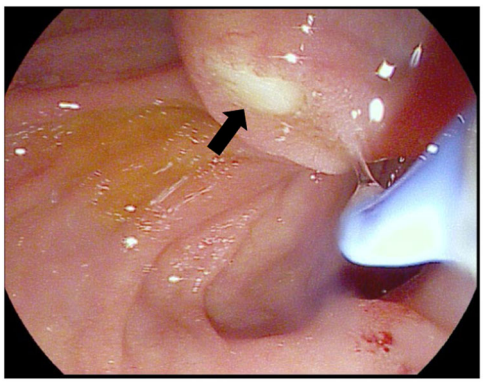

**FIGURE 2** Endoscopic retrograde cholangiopancreatography endoscopic image showing major ampulla with findings of a crowning impacted stone (arrow).

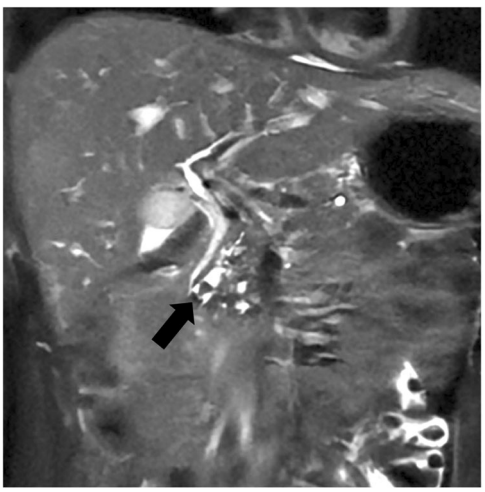

**FIGURE 1** Magnetic resonance cholangiopancreatography with impacted large stone (arrow) within the main pancreatic duct at the level of the ampulla of Vater.

A 13-year-old female with chronic abdominal pain presented with acute worsening pain of the right upper quadrant. Peak biochemical abnormalities were: lipase 978 U/L (≤60 U/L), aspartate transaminase 233 U/L (≤30 U/L), alanine aminotransferase 131 U/L (≤54 U/L), alkaline phosphatase 250 U/L (≤280 U/L), γ-glutamyltransferase 435 U/L (≤21 U/L), total bilirubin 1.3 mg/dL (≤1.0 mg/dL), and direct bilirubin 0.7 mg/dL (≤0.2 mg/dL). A magnetic resonance cholangiopancreatography identified a dilated main pancreatic duct (MPD) with large intraductal filling defects at the level of the head of the pancreas and a dilated common bile duct (Figure 1).

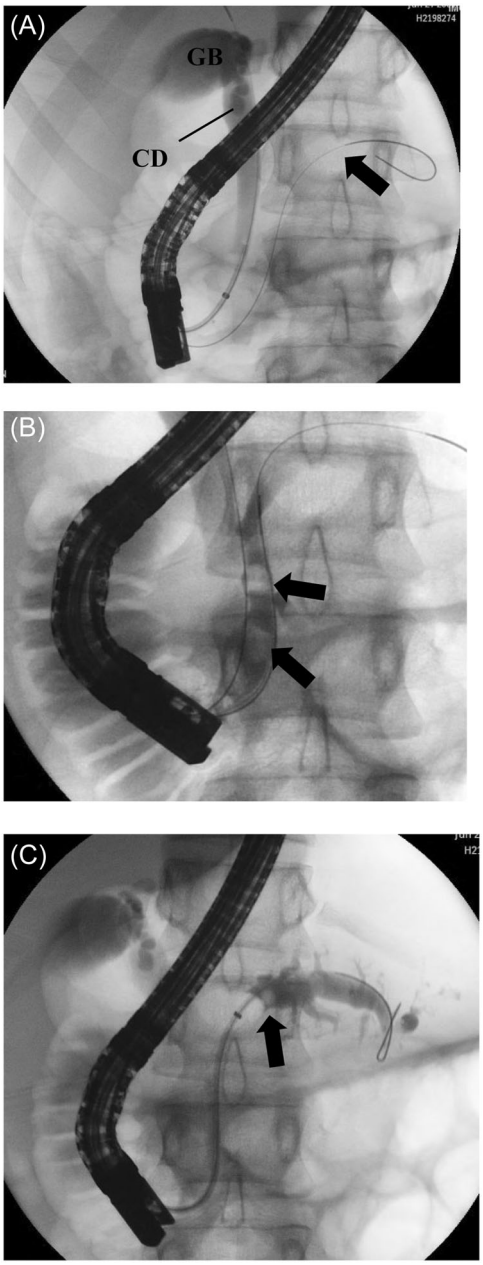


**FIGURE 3** (A) ERCP cholangiogram opacifying a dilated main bile duct and unremarkable appearing GB and CD. Extraction balloon with guidewire in place within the biliary tree. Second guidewire is in place within the main pancreatic duct (arrow). (B) ERCP pancreatogram with large intraductal stones (arrows) at the level of the head of the pancreas. (C) ERCP pancreatogram with inflated extraction balloon. Small intraductal stone (arrow) with ductal findings of a dilated main pancreatic duct and multiple ectatic side branches. CD, cystic duct; ERCp, endoscopic retrograde cholangiopancreatography; GB, gallbladder.

An endoscopic retrograde cholangiopancreatography (ERCP) was performed and identified a large impacted stone at the ampulla of Vater (Figure 2). Upon initial biliary cannulation, the only identified cholangiogram abnormality was that of a dilated main bile duct (Figure 3A). A biliary sphincterotomy and balloon sweep of the bile duct confirmed the absence of a primary biliary obstructive process (e.g., biliary stone or stricture). This was followed by a pancreatogram opacifying several filling defects within the MPD with ductal dilation and multiple ectatic side branches (Figure 3B,C). A pancreatic sphincterotomy was performed followed by extraction of several stones from the MPD (Figure 4). A prophylactic pancreatic stent was then inserted. Two weeks post-ERCP, liver function tests were normalized and abdominal pain significantly improved.

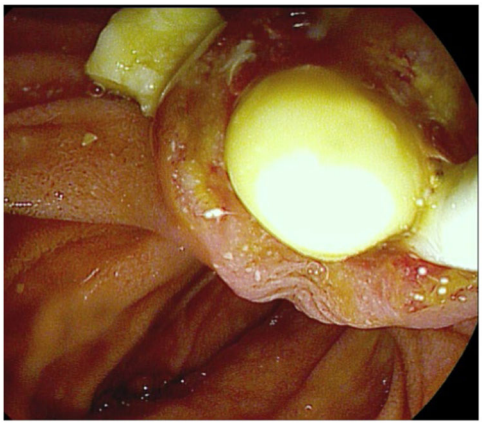

**FIGURE 4** Two (2) large pancreatic stones extracted from the pancreatic duct following pancreatic sphincterotomy.

Choledocholithiasis is the most common cause of acute pancreatitis in the pediatric population, occurring in 10%–30% of cases.[1] In comparison, a pancreatic stone obstruction of the biliary system has rarely been reported in adults[2–4] or within pediatrics.[5] Moreover, the formation of pancreatic stones would be strongly supportive of a chronic pancreatitis (CP) diagnosis. Excess alcohol and smoking are the most common causes of CP in adults,[6] and genetic mutations have been identified to be the predominant risk factor for CP in children.[7,8] This child's pancreatitis genetic testing found her to possess a heterozygous serine peptidase inhibitor kazal type 1 (*SPINK1*) mutation and double heterozygous cystic fibrosis transmembrane conductance regulator (*CFTR)* mutations.

This child was found to have pancreatic ductal findings of CP despite the absence of a preceding documented episode of acute pancreatitis. Her history of chronic abdominal pain likely was related to unrecognized occurrences of low-grade pancreatitis with the progressive accumulation of end-organ damage resulting in CP. Her only pancreatitis risk factor is the identified genetic mutations. The relatively indolent clinical course leading up to her acute presentation with secondary biliary obstruction due to large pancreatic stones emphasizes the disease heterogeneity of CP in children. The clinical challenge remains that despite an improved awareness of the higher than previously

recognized incidence of pancreatitis in children, the diagnosis may elude the experienced practitioner until the disease declares itself with an unexpected dramatic presentation.

## ACKNOWLEDGMENTS

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## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

## ETHICS STATEMENT

All attempts have been exhausted in trying to contact the parent/guardian for the purpose of attaining their consent to publish this case report. Due to these failed attempts, a letter from the Chair of the Department was obtained in lieu of the informed consent.

## ORCID

*Wesley C. Judy* http://orcid.org/0000-0003-3887-5059
*Tom K. Lin* http://orcid.org/0000-0002-4267-6477

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