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Optimal timing of cholecystectomy in children with gallstone pancreatitis

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ABSTRACT

Background: Little data exist regarding the recurrence of pancreatitis in pediatric patients with gallstone pancreatitis awaiting cholecystectomy. This study evaluates the recurrence rate of pancreatitis after acute gallstone pancreatitis based on the timing of cholecystectomy in pediatric patients.

Materials and methods: A retrospective chart review of all patients admitted with gallstone pancreatitis from 2007 to 2015 was performed. Children were divided into the following five groups. Group 1 had surgery during the index admission. Group 2 had surgery within 2 wk of discharge. Group 3 had surgery between 2 and 6 wk postdischarge. Group 4 had surgery 6 wk after discharge, and group 5 patients had no surgery. The recurrence rates of pancreatitis were calculated for all groups.

Results: Forty-eight patients with gallstone pancreatitis were identified in this study. The 19 patients in group 1 had no recurrence of their pancreatitis. Of the remaining 29 patients, nine (31%) had recurrence of pancreatitis or required readmission for abdominal pain prior to their cholecystectomy. In group 2, two of the eight patients (25%) had recurrent pancreatitis. In group 3, three of eight patients (37.5%) developed recurrent pancreatitis. In group 4, three of five patients (60%), and in group 5, one of eight. No children in group 5 had demonstrable gallstones at presentation, only sludge in their gallbladder.

Conclusions: Cholecystectomy during the index admission is associated with no recurrence or readmission for pancreatitis. Therefore, we recommend that cholecystectomy be performed after resolution of an episode of gallstone pancreatitis during index admission.

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Introduction

Gallstone disease is the most common cause of acute pancreatitis (AP) for adults in the western world.[1] In children, acute gallstone pancreatitis is rare. However, the incidence of AP has been rising in the last decade, estimating an incidence of one in 7500/y in the US (the Children's Hospital of Pittsburgh) and one in 28,000/y in Australia (The Royal Children's Hospital, Melbourne).[2,3] The prevalence of pediatric cholelithiasis has increased more than 10-fold since 1959, paralleling the rising pediatric obesity epidemic worldwide.[4-6] Biliary tract disease (e.g., gallstones or sludge in the gallbladder) is thought to account for 10%–30% of AP pediatric patients.[7] This suggests a shift in pediatric gallbladder disease etiology, which historically has been associated with hemolytic disorders, dependence on parenteral nutrition, and cystic fibrosis.[6,8] Currently, idiopathic pancreatitis, gallstone disease, drug therapy, and trauma are the most common causes for AP in children.[3,9] More recently, undocumented biliary sludge or microlithiasis has been theorized to be the underlying mechanism behind idiopathic pediatric pancreatitis.[1,10-12]

Management of this disease entity involves allowing resolution of the AP and subsequent laparoscopic cholecystectomy, which is the definitive treatment.[1] The goal of cholecystectomy is to prevent recurrence of future gallstone-related complications. Reported complications of gallstone pancreatitis without cholecystectomy during index admission include acute cholecystitis, biliary colic, recurrence of pancreatitis, and increased conversion from laparoscopic to open cholecystectomy.[13-15] In adults, recurrent gallstone pancreatitis is suggested to be more severe than index presentation with up to 50% of recurrent cases reported as severe.[1] Furthermore, morbidity and mortality in recurrent pancreatitis is reported as high as 40% and 10%, respectively.[1]

Clear guidelines exist for the timing of cholecystectomy after an episode of gallstone pancreatitis in the adult population, favoring cholecystectomy during the index admission.[16] However, in the pediatric population, there is little to no consensus about optimal timing for cholecystectomy. It is also unclear whether preoperative common bile duct (CBD) size predicts recurrence or if endoscopic retrograde cholangiopancreatography (ERCP) with stent placement reduces the risk of recurrence in children. In adults, Neoptolemos *et al.*[17] found significantly reduced morbidity and mortality with severe gallstone pancreatitis that underwent ERCP within 72 h of admission. Adult guidelines do not recommend ERCP regardless of pancreatitis severity unless there is evidence of CBD obstruction or cholangitis.[1,18] In practice, ERCP can be performed if CBD dilation, symptoms, or biochemical markers fail to improve with hospitalization.[1,13]

A recent pediatric study from an administrative database conducted in the United Kingdom[15] revealed significantly higher readmission rates if cholecystectomy was delayed for more than 2 wk after the initial management of acute gallstone pancreatitis or if ERCP without cholecystectomy was performed. Sheffield *et al.*[19] noted that institution of treatment pathways improved rates of cholecystectomy from 48% to 78% in adults. Historically, proponents for delaying surgery argue that urgent surgery may be complicated due to the unresolved local inflammation with increased risk of injury to bile ducts or increased risk of conversion to open surgery.[1,13] Other smaller studies have shown that early cholecystectomy in children with gallstone pancreatitis leads to decreased recurrence rates without increased complications.[13,20] Despite the evidence, the timing of cholecystectomy in children continues to be based on the surgeon's preference with no current standardization. The aim of our study was to evaluate the recurrence and readmission rates for gallstone pancreatitis with interval cholecystectomy and to identify risk factors for recurrence.

Material and methods

After obtaining institutional review board approval, a retrospective review of all consecutive patients who were managed at Cardinal Glennon Children's Hospital/Saint Louis University was performed. All patients managed for AP from 2007 to 2015 were identified via International Classification of Diseases, Ninth Revision codes. Only patients treated for acute gallstone pancreatitis in this 8-y period were included in this study. An electronic and paper chart medical record search of these patients was then performed. Demographic data including age, gender, and race were collected. Acute pancreatitis was defined using the International Study Group of Pediatric Pancreatitis: in Search for a Cure (INSPPIRE) criteria[21] by meeting two of the following three elements: clinical symptoms (abdominal pain, nausea, vomiting, or back pain); serum levels of pancreatic amylase and/or lipase three times the upper limit of normal and/or radiographic evidence of AP including pancreatic edema on ultrasound or computed tomography. Resolution of pancreatitis was considered when patients had no abdominal pain or tenderness, was able to tolerate a diet, and were hemodynamically stable with or without laboratory evidence of normal lipase levels.

We did not attempt to classify the severity of pancreatitis in this study since no scoring system has been validated for

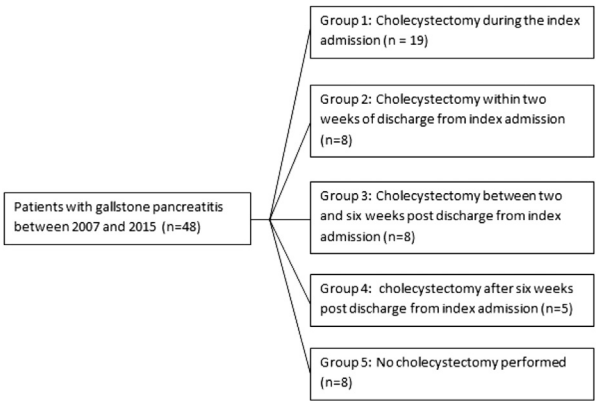

Fig. 1 – Distribution of patients with a diagnosis of gallstone pancreatitis by group. Figure illustrates the distribution of patients managed for a diagnosis of gallstone pancreatitis divided into groups by the timing of cholecystectomy.