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Pancreatic Duct Transection

Trauma to the pancreas occurs most commonly in children after blunt injury to the abdomen. The pancreas is a retroperitoneal organ closely related to the lumbar vertebral column susceptible to crush injury or transection after a direct blow to the abdomen. Causes of pancreatic injury include motor vehicle accidents, bicycle handbars, falls, crush or child abuse. The child develops abdominal pain, tenderness, leukocytosis and hyperamylasemia. Diagnosis is confirmed with CT Scan enabling the physician to grade the injury as 1 (minor contusion), 2 (major contusion), 3, (distal transection or ductal injury), 4 (proximal transection involving the papilla), and 5 (complete pancreatic head disruption). MRCP can further delineate the pancreatic duct injury. Most pancreatic injuries, including duct transection, can be nonoperative managed unless the child presents with hemodynamic instability from blood loss or associated bowel perforation. Using nonoperative management the child is placed NPO, NG suction, hydrated, TPN, and antibiotic prophylaxis while the pancreas is monitored for pseudocyst development which occurs in almost 50% of children after duct transection. Approximately half of these pseudocysts need drainage and of these drainage procedures half are performed percutaneously. Internal drainage procedures need wall maturity which occurs six weeks cyst development. Follow-up CT can display atrophy of body and tail of pancreas from enzymatic autodigestion.

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Paucity of Bile Ducts

Paucity of interlobular bile ducts (PIBD) is defined as the reduction in the number of interlobular bile ducts. It is a cause of cholestatic jaundice during infancy sometimes difficult to distinguish from biliary atresia. Usually, two types of PIBD, syndromic and nonsyndromic are considered. In the syndromic type known as Alagille=s syndrome, paucity is a major feature of the disease. In the nonsyndromic, paucity is only a part of the disease, and an inconstant finding. Alagille=s syndrome is characterized by cholestasis of variable severity with PIBD and anomalies of the cardiovascular system,

skeleton, eyes, and face. In both types of PIBD the diagnosis is made with the use of liver biopsy while certifying patency of the extrahepatic biliary system through HIDA, MRCP or intraoperative cholangiography. Therapy consists of supplementation of those vitamins and administration of cholestyramine, phenobarbital, prednisolone, or ursodeoxycholic acid. Children with Alagille identified in infancy because of cholestasis have a 50% probability of long-term survival without liver transplantation. Factors that contribute to mortality are complex heart disease, intracranial bleeding, hepatic disease or hepatic transplantation. Prognosis of the nonsyndromic type is variable.

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Double Cystic Duct

The biliary tree is composed of intrahepatic radicals, common hepatic duct, gallbladder, a single cystic duct and a common bile duct emptying into the papilla of Vater. Anatomic variations of the biliary tree are common and a cause of biliary injury during removal of both gallbladder and common bile duct stones. Variants of the extrahepatic bile ducts are present in 10% of patients such as low insertion of the cystic duct into the common hepatic duct, emptying of the cystic duct into the right hepatic duct and a second-order large branch draining into the cystic duct. One of the most rare congenital anomaly of the biliary tree is the presence of double cystic duct. It is usually associated with a double gallbladder (80%). Less than 15 cases have been reported in the literature, all adults, none in children. Recently we encountered the first case of double cystic duct associated with a single gallbladder in a six-year-old child. Most cases have been identified during open cholecystectomy for symptomatic cholelithiasis. The cystic ducts usually drain to the common bile duct and the right hepatic duct. Other time the two cystic ducts form a triangular formation with the common hepatic duct. There is only one cystic artery that arises from the right hepatic artery and accompanies the primary cystic duct to be distributed to the gallbladder. This rare anatomic variant can be defined using intraoperative cholangiography whenever the doubt occurs or during preoperative ERCP or MRCP studies. Management is ligation of both ducts.

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