

## PANCREATIC LESIONS IN CHILDREN: OUR EXPERIENCE IN THE SURGICAL WARD

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### HOW TO CITE THIS ARTICLE:

Naveen M. A, Sudhir B. M, Saurabh Kumar Sinha, Satish V. "Pancreatic lesions in children: our experience in the surgical ward". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 30, July 29; Page: 5584-5590.

**ABSTRACT: INTRODUCTION:** Pancreatic lesions though observed in every part of the world, however it is an uncommon condition in children, with published series reporting an incidence of 2 to 9 cases per year per institution. The small number of patients has made it difficult to evaluate the outcome, genetic factors, management, prognostic factors, severity and epidemiologic factors in childhood in a prospective fashion. **AIMS & OBJECTIVES:** The present study aims to screen the incidence of pancreatic lesions among children in different age group, their clinical presentation, diagnostic methods and their management in a prospective manner. **METHODS:** The present study was undertaken at department of surgery, KIMS Hospital Bangalore. The study period was 18 months involving 44 cases. **RESULTS:** The study revealed, that increased incidence of pancreatic pathology has come into light due to better imaging technique available. The incidence of pancreatic lesions was found to be more in male children, presenting in the form of abdominal pain, vomiting and distention. Forty per cent of the cases were treated surgically and followed up on regular basis during which no complications were observed. **CONCLUSION:** It can be concluded that imaging techniques though expensive is effective in diagnosing pancreatic lesions and hence recommended for liberal usage.

**INTRODUCTION:** The pancreas is not a common site of surgical pathology in children. In children, pancreatic sections are usually performed for neoplasia, chronic pancreatitis (CP), trauma, or persistent hyperinsulinemic hypoglycemia.<sup>(1, 2, 3, 4, 5)</sup> The main pancreatic tumors in children are pancreatoblastoma, papillary cystic tumors and malignant endocrine tumors of the pancreas.<sup>6</sup> These are usually managed surgically and evidence for the role of adjuvant therapy is nearly entirely anecdotal. Pancreatic trauma may need surgery for duct disruption or pseudocysts. CP may necessitate a pancreatic ductal drainage procedure or pancreatic resection for intractable pain, biliary complications or when pancreatitis is indistinguishable from a neoplasm.

**PATIENTS AND METHODS:** After obtaining approval from the ethical committee, a retrospective review was performed of all patients with pancreatic pathology requiring pancreatic operations that were less than 18 years of age and were cared for at our hospital, between 2009 and 2010. Forty four patients were identified and reviewed for clinical presentation, operative intervention and outcome with follow-up.

**RESULTS:** A total of 44 cases were included in this study. Majority (90.9%) of the patients were boys with only 4 female patients. Six to 10 years was the most common age group affected (Chart 1). Forty patients were diagnosed with pancreatitis; 15 patients had acute disease and 25 patients had

chronic pancreatitis. Three patients presented with pancreatic trauma and one patient in our study group was found to have a pancreatic tumor.

Patients with acute pancreatitis were treated conservatively. Bowel rest, fluid and electrolyte correction and antibiotics sufficed in 11 of the 15 patients. Only 4 patients with acute pancreatitis underwent surgical debridement. Worsening clinical condition with evidence of abscess/necrosis were the indications. Three of these patients required only one laparotomy whereas one child required a second laparotomy. All four patients recovered within 3 weeks.

All chronic pancreatitis patients in our study group were managed by surgical methods. Pancreatico-jejunostomy was the most common surgery performed (15 patients). (Figure 1). Distal pancreatectomy was done in 7 patients and cysto-gastrostomy was done in 3 patients.

Traumatic injury to the pancreas was managed by conservative methods in two patients and distal pancreatectomy was done in the other patient. (Figure 2).

One patient in our study group had a tumor arising from the pancreas. CT image and the intraoperative images are shown in figure 3 and 4. A pylorus preserving pancreatico-duodenectomy was done. Histopathological analysis revealed it to be pseudo papillary Ca of the head of pancreas.

All patients were followed up weekly for first month, every 15 days for next month and monthly over the next 4 months.

**DISCUSSION:** Surgical disorders of the pancreas are distinctly uncommon in infancy and childhood.<sup>2,7</sup> Most pancreatic operations performed in children are due to pancreatitis, and tumors arising from the Chronic pancreatitis in childhood is an uncommon but potentially debilitating disorder.

In chronic pancreatitis, surgery is an option in patients with intractable chronic pain who fail medical management.<sup>8</sup> Operations performed include drainage (lateral pancreaticojejunostomy-Puestow procedure) or resectional procedures of varying degree. ERCP has a definite role in the management of this illness as the findings direct further management strategies.<sup>9</sup> Endoscopic pancreatic drainage and stone removal is a safe and effective modality of treatment for patients with chronic calcifying pancreatitis, in whom elevated intraductal pressures are thought to be the cause of pain.<sup>10</sup> A longitudinal pancreaticojejunostomy is beneficial for ductal dilatation and associated pseudocysts or pancreatic ascites. However mimicking results in the adult population, the performance of this procedure in the absence of consistent ductal dilatation gives unsatisfactory results.<sup>11</sup> A resectional procedure may be useful if a Puestow procedure fails to ameliorate pain,<sup>8</sup> with as many as 75% of patients having a reasonable lifestyle after pancreatic resection.<sup>12,13</sup> Among resectional procedures, total pancreatectomy has the highest 30-day mortality (5%) and morbidity (47%) and should be avoided. Proximal pancreatectomy will provide pain relief in ~ 90% patients long-term.<sup>13</sup> Duodenal preserving pancreatic head resection (DPPHR – Beger procedure) is another surgical option that has been recently compared against PD and found to be superior to PD in terms of quality of life, pain relief, nutritional status and length of hospital stay.<sup>14</sup> Two other surgical options include the Frey procedure (duodenum-preserving resection of the head of the pancreas combined with a longitudinal pancreaticojejunostomy),<sup>15</sup> and duodenum and spleen sparing total pancreatectomy for end-stage CP.<sup>16</sup> The availability of so many surgical options clearly implies that none of them are ideal procedures or provide consistent results. Regarding deterioration of pancreatic function after pancreatic drainage procedures or partial pancreatectomy for CP, it is not

an invariable, immediate consequence of the operation, but rather progression of disease that contributes to this phenomenon.<sup>17</sup> pancreas or surrounding tissue or pancreatic trauma.

The use of octreotide remains controversial. It continues to be used prophylactically for the prevention of pancreatic leaks after pancreatic resections on the basis of reported studies, primarily in patients with chronic pancreatitis.<sup>18, 19</sup> However, there also exist significant data that show octreotide to be of no benefit in preventing pancreatic leaks and postoperative morbidity after pancreatic resection<sup>20,21</sup> but rather controls pancreatic volume that may make the leak more manageable. Based on these data we can make no recommendation regarding its use for preventing pancreatic leaks in the pediatric population.

The pancreas and duodenum are the fourth most common injured organs after kidney, spleen and liver in children who sustain blunt abdominal trauma.<sup>4</sup> Serum amylase and lipase determinations may support clinical suspicion in the diagnosis of pediatric pancreatic trauma but are not reliable or cost-effective as screening tools.<sup>22</sup> CT scan remains the main diagnostic modality used in pediatric blunt abdominal trauma. Unfortunately, CT scan may not be conclusive in showing the presence or extent of pancreatic injury.<sup>3,4</sup> Therefore, in otherwise stable patients with suspected pancreatic ductal injury on initial CT scan, prompt ERCP is recommended.<sup>3</sup>

Arkowitz et al<sup>22</sup> have proposed a useful classification system for pancreatic trauma. A useful algorithm,<sup>3</sup> supported by several authors, has been proposed for management of patients with ductal disruption. When significant ductal injury is present, ERCP with stenting should be attempted, followed by stent removal in 10-12 days.<sup>23,24</sup> If stenting is unsuccessful, distal pancreatectomy is the most commonly performed operation and has very good results with a low morbidity.

Approximately 50% of pseudocysts can be managed nonoperatively with the remainder requiring some form of operative drainage.<sup>22</sup> A recent study showed that pancreatic leaks after distal pancreatectomy are reduced significantly with ligation of the main pancreatic duct.<sup>25</sup>

Pediatric pancreatic tumors arise from exocrine or endocrine tissue and include ductal adenocarcinoma, acinar cell carcinoma, pancreatoblastoma, solid pseudo papillary tumor and endocrine neoplasms. Also, the pancreas may be involved in tumors arising within the mass of the gland from non-pancreatic cell types adjacent to it and involving the pancreas secondarily. Pediatric pancreatic tumors often present with abdominal pain and jaundice, which is in contradiction from the adult population where these findings are uncommon.<sup>1</sup> This likely reflects the fact that tumors are more evenly distributed along the length of the gland in children and ductal adenocarcinoma, the most common pancreatic neoplasm causing jaundice in adults, is extremely rare in children. Ductal adenocarcinoma of the pancreas has been described in the past, however, Shorter et al,<sup>1</sup> have questioned the diagnosis in the pediatric population. Surgical resection, whenever feasible is the mainstay of treatment. Chemotherapy (cisplatin, doxorubicin, cyclophosphamide, and etoposide) in the adjuvant and neoadjuvant setting has been used with encouraging results<sup>1,11,12</sup> and postoperative radiation may have a role for incompletely resected disease.<sup>13</sup> Solid and papillary epithelial neoplasm of the pancreas is an uncommon low-grade malignant tumor seen predominantly in young females.<sup>1,11,14</sup> It has been described variously as Frantz's tumor, solid pseudo papillary tumor, papillary cystic neoplasm, solid and papillary neoplasm, and solid and cystic tumor. Generally, this neoplasm presents as an abdominal mass.<sup>14</sup> Focal necrosis, hemorrhage into the tumor and calcification occur commonly.<sup>1,15</sup>

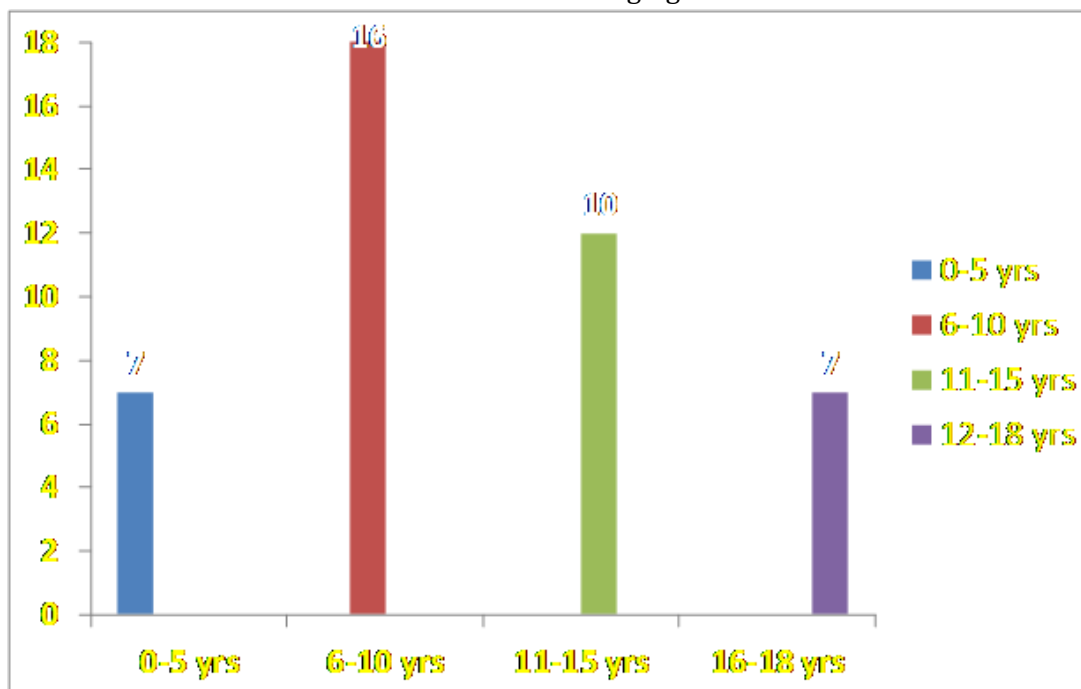
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CHART 1: Bar chart showing Age incidence



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FIGURE 1: Intraoperative photograph of pancreatic duct dissection being done

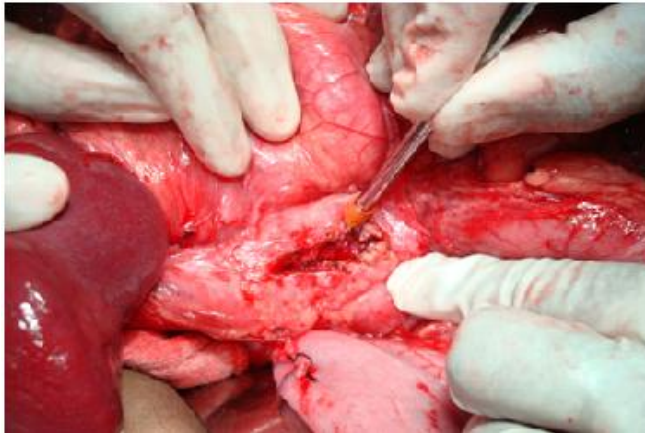


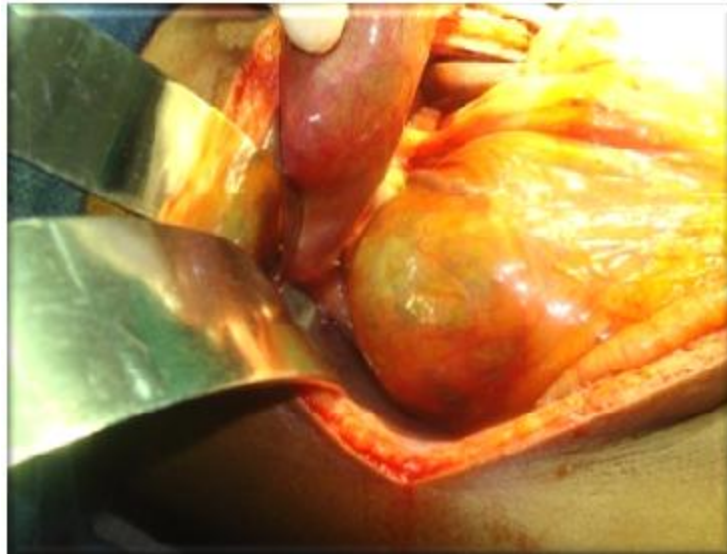
FIGURE 2: Distal Pancreatectomy being done



FIGURE 3: CT Scan showing Pancreatic head mass



FIGURE 4: Intraoperative photograph of Pancreatic head mass



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Date of Submission: 19/07/2013.  
Date of Peer Review: 20/07/2013.  
Date of Acceptance: 23/07/2013.  
Date of Publishing: 25/07/2013