Evolving Trends in Intervention Types for Pediatric Pancreatic Pseudocysts

Rhea Gupta, BS[1], Kristen N. Kaiser, MD[1,2], Ella G. Boardley, BS[1], Thomas K. Maatman, MD,[2] Brian A. Mcferron, MD[3], Alan P. Ladd, MD[4], Brian W. Gray, MD[4]

[1]Indiana University School of Medicine, Indianapolis, IN, USA; [2]Indiana University, School of Medicine, Department of Surgery, Indianapolis, IN, USA; [3] Riley Hospital for Children, Section of Pediatric Gastroenterology, Indianapolis, IN, USA; [4] Riley Hospital for Children, Section of Pediatric Surgery, Indianapolis, IN, USA

Background: Pancreatic pseudocysts (PP) have various treatment options, including careful monitoring without intervention and procedural interventions (endoscopic, percutaneous, surgical excision). The composition of procedures and optimal management in pediatric patients remains unclear. Therefore, this study aims to (1) identify characteristics and outcomes of patients associated with PP intervention types and (2) evaluate trends over time of intervention types for pediatric PP.

Methods: The Pediatric Health Information System (PHIS) database was used to evaluate patient characteristics, procedures, and outcomes. Identification codes (ICD-9 and -10) identified patients less than 18 yo with PP from 2005-2022 and their associated interventions. Interventions related to their pseudocysts were categorized as endoscopy, interventional radiology (IR), surgery, or multiple and were compared using bivariate analysis.

Results: Data was analyzed from 2718 patients of which 697 had a procedural intervention. Most patients were Male (52%), Caucasian (51%), not Hispanic or Latino (58%), and had a mean age of 12.2 years (SD 7.6 years). Procedures consisted of surgery (48%), endoscopy (23%), IR (20%), and multiple (9%). There were no differences in gender across intervention subtypes. Patients were significantly younger for those undergoing surgical intervention (11.5±8years) versus endoscopy (14.0±7.2years) and IR (12.2±7.7years) ($p<0.001$). More endoscopy procedures were performed in PHIS hospitals in the Midwest (29%) and South (34%) vs the Northeast (13%) and West (24%). The proportion of patients undergoing a procedure has decreased from 30% to 18% from 2005-2022. Surgical procedure proportion has decreased over time from 18% to 5% of patients. Whereas endoscopic procedures have increased over time from 2% to 15% of patients. This increase began around 2014 and has been steadily increasing since then.

Conclusion: For pediatric patients with PP, surgical procedures are more common in younger patients. Endoscopic procedures have become most frequently utilized for intervention for PP, while surgical procedures have decreased over time.