

ENDOSCOPIC DRAINAGE OF A PANCREATIC PSEUDOCYST IN CHILDREN***K. Ez-zouak, A. Elghemari and N. Lahmidani D. Benajah**

Hepato-Gastroenterology Department, CHU Hassan II of Fez, Sidi Mohamed Benabdellah University, Faculty of Medicine and Pharmacy of Fez, Morocco.

***Corresponding Author: K. Ez-zouak**

Hepato-Gastroenterology Department, CHU Hassan II of Fez, Sidi Mohamed Benabdellah University, Faculty of Medicine and Pharmacy of Fez, Morocco.

Article Received on 23/12/2022

Article Revised on 13/01/2023

Article Accepted on 03/02/2023

ABSTRACT

Pancreatic pseudocyst (PPC) in children is a rare complication whose most common cause is pancreatic trauma. The management of PPC has evolved over the years. Symptomatic pancreatic pseudocysts have traditionally been treated by surgery, percutaneous drainage and, more recently, endoscopic drainage. Although the role of the endoscopic drainage has been established as a treatment option in the adult population, available data regarding the efficacy and safety of endoscopic drainage in pediatric patients are limited. We present our experience with endoscopic drainage of pancreatic pseudocyst (EDPP) in a child and discuss its values.

KEYWORDS: Pancreatic pseudocyst, child, endoscopic drainage.**INTRODUCTION**

Pseudocysts of the pancreas are a rare, benign condition, especially in children. They appear 4 to 6 weeks after the onset of an acute episode of pancreatitis, complicate a chronic pancreatitis or follow an abdominal trauma. Treatment options range from medical management to different forms of drainage procedures available: open surgery or percutaneous catheter drainage or endoscopic drainage. There is considerable evidence regarding the utility of endoscopic drainage of Pancreatic pseudocyst in adult patients.^[3,4,5,6] New data also suggest that endoscopic drainage maybe a safe and effective treatment in children.^[7] In contrast to adults, pediatric studies on the role of endoscopic drainage are limited. Here, we describe a case of symptomatic pseudocyst in a child successfully treated by endoscopic drainage.

CASE REPORT

Our patient is a male child, 7 years old, who was operated of trauma of the abdomen complicated by pancreatic pseudocyst. He benefited from an external surgical drainage with good clinical and radiological evolution. 3 months later he readmitted to the emergency for intense epigastric abdominal pain radiating to the entire abdomen with several episodes of vomiting, all evolving in a context of fever and altered general condition. The patient was hemodynamically stable, fever at 39° with epigastric tenderness. The biological check-up showed normocytic normochromic anemia at 9.7g/dl, an inflammatory syndrome with hyperleukocytosis at 14190 elts/mm³ with predominance of neutrophils, an elevated CRP at 97mg/l, and the lipasemia was correct.

The abdominal CT scan (figure 1) showed a hypodense, rounded, well-limited, homogeneous, thin-walled, corporal intra-pancreatic cystic formation, enhanced after injection of contrast medium, measuring 81 x 70 x 104 mm in diameter (transverse x antero-posterior x height), this collection was pushing forward the splenic vein and backward the superior mesenteric vein and artery, which remained permeable and there was no dilatation of the pancreatic duct. The recurrence of PPC with surinfection was suspected. A probabilistic antibiotic was introduced. Endoscopic drainage was indicated. Given the proximity of the cyst to the stomach and the absence of interposition of vessels, a trans-gastric endoscopic approach was performed, a bulge was observed at the level of the posterior of the stomach in relation to the wall of the pseudocyst, which made it possible to guide the endoscopic drainage without echo-endoscopy (figure 2A); firstly, a fistulotomy was carried out using a 10 FR cystotome (figure 2B), then 2 guide wires were put in place, followed by pneumatic dilatation of the orifice with a 12 mm balloon, resulting in the flow of a serum liquid from the cyst contents (figure 2C), a bacteriological sampling of the liquid was carried out and lastly the endoscopic drainage by placing 2 plastic pigtail prostheses of 7 fr/12 cm ensuring continuous cystogastric drainage (Figure 3A). The control by scope at the end of the procedure showed a double pigtail prosthesis in place (Figure 3B). No complications occurred during the procedure, no post procedure complications were reported. The bacteriological examination of the cyst fluid came back in favor of a *Klebsiella pneumoniae* and antibiotic therapy was targeted according to the antibiogram. The abdominal

CT scan performed 48 hours after the procedure showed a decrease in the size of the drained PPC with double prosthesis in place. The child was discharged after 5 days. The CT scan performed after 1 month confirmed a disappearance of PPC and the double prosthesis were removed. The child was asymptomatic with no recurrence at three year follow-up.

DISCUSSION

Pseudocysts of the pancreas (PPC) is a rare pathology in children.^[1] While pseudocysts in adults are part of the complications of chronic pancreatitis in 20-80% of cases depending on the series, closed abdominal trauma remains the most common etiology of PPC in children.^[2] Although spontaneous resolution in children is possible in 25-50% of cases, particularly in the case of traumatic pseudocysts with a favorable prognosis, some persist and eventually require drainage.^[3] Pseudocysts that are symptomatic or present certain complications (infected pseudocyst, fistulization or biliary obstruction by the pseudocyst) require drainage.^[4] The choice of drainage technique depends on the size, location, presence or absence of infection and age of the pseudocyst. There are many options for drainage of pancreatic pseudocyst. Historically, surgical drainage has been the preferred procedure in the pediatric population but It can result in significant morbidity with a risk of severe complications.^[5] Percutaneous drainage can be effective, but it is generally associated with a longer time to resolution and higher failure rates in children and adults. Endoscopic drainage of (PPC) has evolved over the past few decades in the adult population.^[8-9] and has become the preferred treatment approach because it is less invasive than surgery, avoids the need for an external drain and has a high long-term success rate. The results of endoscopic and surgical treatment are comparable in terms of efficacy, but with lower cost, shorter hospitalstay, less risk of complications and better quality of life after endoscopic drainage. Treatment related mortality is lower with endoscopic treatment (0.2% vs 2.5%).^[10] Endoscopic drainage techniques for pancreatic pseudocysts in cludeso-called transmural drainage through the gastric wall (cysto-gastrostomy). This was the case for our patient, whose cyst was located in the

presence of a bulge in the gastric wall, or through the duodenal wall (cysto-duodenostomy), and transpapillary drainage, which consists of intubating the main pancreatic duct with a nasocystic drain or simple prosthesis. The transpapillary approach assumes the existence of a communication between the (PPC) and the main pancreatic duct. The echo-endoguided transmural approach is usually performed with a linear echo-endoscope, allowing puncture of the (PPC).^[12] One or more stents are then placed depending on the size of the collection and its contents. However, drainage should ideally be performed with a large-gauge stent, with double pigtail stents being preferred to reduce the risk of migration, hemorrhage or perforation of the collection wall.^[14] Complications of endoscopic drainage of the pancreatic pseudocyst include bleeding, intestinal perforation, infection, obstruction or migration of the prosthesis and recurrence of the PPC.^[8,12] A morphological check-up is recommended at 4 weeks (CT or MRI) to assess the size of the cyst.^[4] The over all clinical success after endoscopic drainage was 89% to 92%. This finding suggests that endoscopic drainage is an effective drainage modality in pediatric patients with CFP. This finding is supported by the low recurrence rate (13%) over a mean follow-up of approximately 2 years. These results are comparable to those reported in adult studies, where the over all success rate of endoscopic drainage has been reported in 63-100% of cases.^[15]

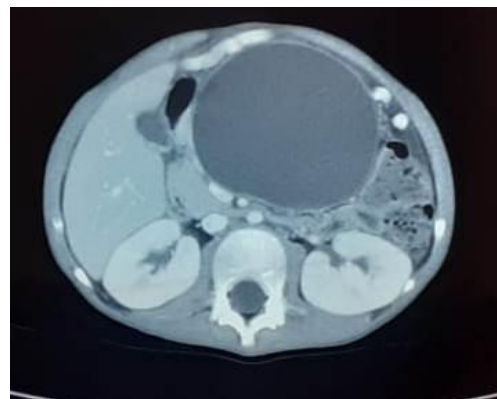


Figure 1: Scannographic image showing the size of PPC compressing the gastric lumen.



Figure 2:

A=Bulge in the posterior gastric wall in relation to PPC,

B=Fistulotomy with a 10 Fr cystotome;

C=Flow of liquid contained in the PPC after implementation of the 2 guide wires and pneumatic expansion.

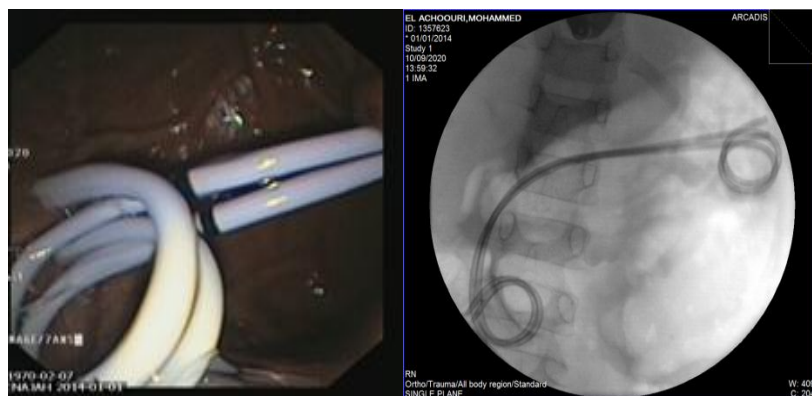


Figure 3: A=Intra gastric coiled double pigtail prosthesis/ B= Scopic control showing the correct position of the double pigtail prosthesis.

CONCLUSION

Endoscopic drainage of pancreatic pseudocysts represents a safe, applicable, and effective alternative for the management of pancreatic pseudocysts in children and should be considered a treatment of choice with minimal procedural morbidity. Further trials with larger sample sizes are needed to expand its value in the pediatric population.

BIBLIOGRAPHY

1. Donald Cooney R, Jay Grosfeld L. Pancreatic and Gastrointestinal Trauma in Children. *Pediatric Clinics of North America*, 1975; 22(2): 365. Google Scholar
2. Giakoustidis A, Antoniadis N, Giorgakis I, Tsoulfas G, Dimitriadis E, Giakoustidis D. Pancreatic pseudocyst in a child due to blunt abdominal trauma during a football game. *Hippokratia*, 2012; 16(1): 71-3. PubMed | Google Scholar
3. Istvan Patty, Maher Kalaoui, Mohammed Al-Shamali, Fuad Al-Hassan, and Basil Al-Naqeeb. Endoscopic Drainage for Pancreatic Pseudocyst in Children. *Journal of Pediatric Surgery*, 2001; (3): 503-505.
4. Deprez PH. Le traitement endoscopique des pseudokystes pancréatiques, *Post'U*, 2013; 293-302.
5. Saad DF, Gow KW, Cabbabe S, Heiss KF, Wulkan ML. Cystogastrostomie laparoscopique pour le traitement des pseudokystes pancréatiques chez l'enfant. *J Pediatr Surg* 2005; 40: e1310.1016/j.jpedsurg, 2005.07.041 [PubMed] [CrossRef] [Google Scholar]
6. Bethany J Farr, Victor L Fox, David P Mooney. Endoscopic cyst gastrostomy for traumatic pancreatic pseudocysts in children: a case series. *Trauma Surg Acute Care Open*, 2020; 5: e000456.
7. Catalano MF, Geenen JE, Schmalz MJ, et al: Treatment of pancreatic pseudocysts with ductal communication by transpapillarypancreatic duct endoprosthesis. *Gastrointest Endosc*, 1995; 42: 214-218.
8. Fockens P, Johnson TG, van Dullemen HM, et al: Endosonographic imaging of pancreatic pseudocysts before endoscopic transmural drainage. *Gastrointest Endosc*, 1997; 46: 412-416.
9. Rosso E, Alexakis N, Ghaneh P. Pancreatic pseudocyst in chronic pancreatitis: endoscopic and surgical treatment. *Dig Surg*, 2003; 20: 397-406.
10. Binmoeller KF, Seifert H, Walter A, Soehendra N. Transpapillary and transmurale drainage of pancreatic pseudocysts. *Gastrointest Endosc*, 1995; 42: 219-24.
11. Giovannini M, Pesenti C, Rolland AI, Moutardier V, Delpero JR. Endoscopic ultrasound guided drainage of pancreatic pseudocysts or pancreatic abscesses using a therapeutic echoendoscope. *Endoscopy*, 2001.
12. Cremer M, Deviere J, Baize M, Matos C. New device for endoscopic cystoenterostomy. *Endoscopy*, 1990; 22: 76-7.
13. Cahen D, Rauws E, Fockens P, Weverling G, Huibregtse K, Bruno M. Endoscopic drainage of pancreatic pseudocysts: long-term outcome and procedural factors associated with safe and successful treatment. *Endoscopy*, 2005; 37: 977-83.
14. Zaheer Nabi, Rupjyoti Talukdar, Sundeep Lakhtakia; Outcomes of Endoscopic Drainage in Children with Pancreatic Fluid Collections: A Systematic Review and Meta-Analysis; May, *Pediatric Gastroenterology hepatology and nutrition*, PubMed, 2022.