Post-traumatic pancreatic pseudocyst formation in a child: a case report

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European Journal of Medical Case Reports
Volume 2(1):19-22
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https://doi.org/10.24911/ejmcr/2/4
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ABSTRACT

Background: Pancreatic pseudocyst formation following blunt abdominal trauma is a lesser known entity in the pediatric age group as compared to pancreatitis. The pickup rate of various post-traumatic hidden pathologies is now possible because of modern diagnostic armamentarium.

Case Presentation: We present a 3-year-old girl who reported with blunt abdominal trauma and developed pancreatitis. She subsequently developed pseudocyst in the follow-up period of management. Modern diagnostic tools like ultrasonography, computed tomography, and magnetic resonance imaging helped in clinching the diagnosis.

Conclusion: Blunt abdominal trauma in children should be taken seriously from the diagnostic as well as management point of view. We can manage the case as per the complications with the help of various diagnostic modalities, as was done in our present case.

Keywords: Pseudocyst, pancreatitis, ultrasonography, computed tomography, MRI, case report.

Received: 10 November 2017 **Accepted:** 23 January 2018

Type of Article: CASE REPORT

Funding: None

Declaration of conflicting interests: None

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Introduction

Pancreatitis is a known entity following blunt abdominal trauma in adults, but the incidence is less common in children. Pseudocyst formation is one of the sequelae which arise following blunt abdominal trauma. The overall incidence of pseudocyst formation is 1.6%–4.5% and 0%–69% are post-traumatic. Pseudocyst is surrounded by fibrous capsule which is not lined by the endothelium.

Case Presentation

A 3-year-old female child reported with pain in the abdomen with off and on vomiting for two days' duration. She was of average built (Figure 1).

There was past history of blunt trauma 6 weeks back for which she was treated conservatively for traumatic pancreatitis. She was discharged with the subsequent fortnightly follow-up. On examination, her vitals were stable. Blood pressure was 120/60 mm of Hg and pulse 76 beats per minute. The abdomen was soft but there was a small swelling in the epigastric region, which was slightly tender. The rest of the systemic examination was unremarkable. Plain x-ray of the thoraco-abdominal region was done, which did not show any abnormality (Figure 2).

Serum amylase and lipase were slightly raised. Ultrasound examination revealed a cystic mass measuring 5.14 × 4.9 × 4.0 cm at the junction of the pancreatic head and body. There was some debris noticed within the lumen and it was not communicating with any other organ (Figure 3a,b).

Color flow imaging (CFI) did not reveal any vascular background of the lesion (Figure 4(a) and (b)).

Contrast enhanced computerized tomography (CECT) of the abdomen was done, which revealed the cystic mass (8 HU) near the body region with a very thin marginal wall. This was adjacent to the pancreas, which appeared to be of normal density (Figure 5a,b,c).

Magnetic resonance imaging (MRI) studies were done to see the relation to the liver and the pancreatic tubular structures. The lesion was hypointense on T1W and hyperintense on T2W (Figure 6a,b,c).

MRI balanced turbo-field-echo sequences revealed the exact extent of the pseudocyst with the surrounding architectural structures (Figure 7a,b).

Magnetic resonance cholangio-pancreaticography (MRCP) did not reveal any communication with either common bile duct or pancreatic duct (Figure 8).

Discussion

Pseudocyst is a known complication following pancreatitis, but is slightly less common in the pediatric age group. The most common cause for this entity is following trauma in children. There is compression injury to the pancreas as it lies anterior to the spine. The most frequent pancreatic injury is in the head and body regions, because of their anatomical placement [2]. Ultrasonography is the initial modality of choice to diagnose any collection or



Figure1. *3-year-old girl with normal physique who suffered blunt abdominal trauma and was diagnosed to be having pancreatic pseudocyst during follow-up.*



Figure 2. *Plain thoraco-abdominal skiagram shows normally placed structures with normal bowel gas shadows pattern. No air-fluid level seen,to suggest any intestinal obstruction.*

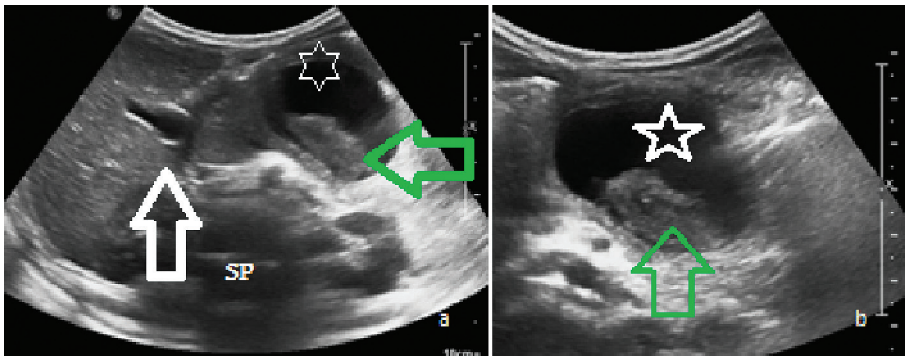


Figure 3. *Ultrasound images. (a) Axial section shows fluid collection (white star) anterior to pancreas and SP.This also showed some echogenic debris (green arrow). (b) Oblique scan shows total extent of the collection region (white star) with the mobile echogenic sediments (green arrow). SP, spine.*

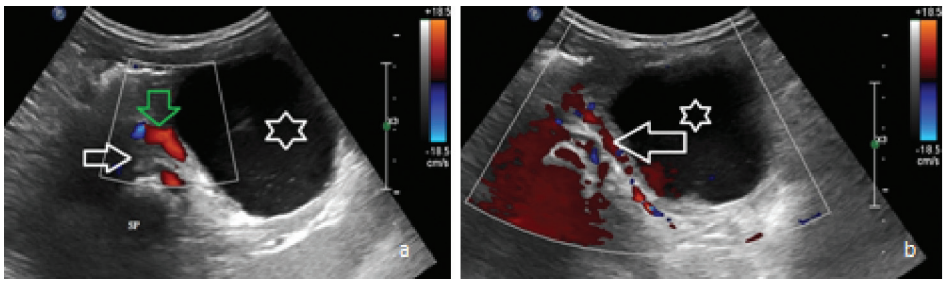


Figure 4. *Color flow imaging. (a) Anechoic collection (white star) anterior to the superior mesenteric artery (green arrow) and pancreatic body region being on posterior side (white arrow). (b) Oblique view shows displayed spleno-portal axis (white arrow) by the anechoic fluid collection (white star).*

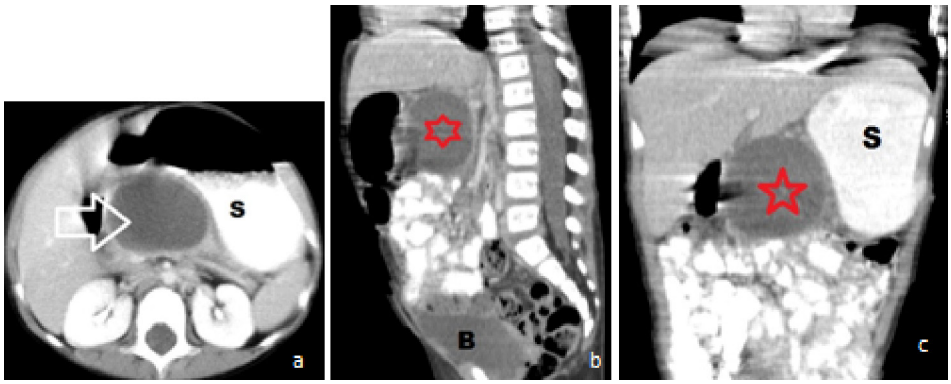


Figure 5. *Contrast enhanced computerized tomography abdomen. (a) Axial section shows well-defined collection (white arrow) adjacent to stomach (s). (b) Sagittal section shows posterior placement of pseudocyst (red star). (c) Coronal section shows pseudocyst (red star) placed in between the liver and stomach (S).*

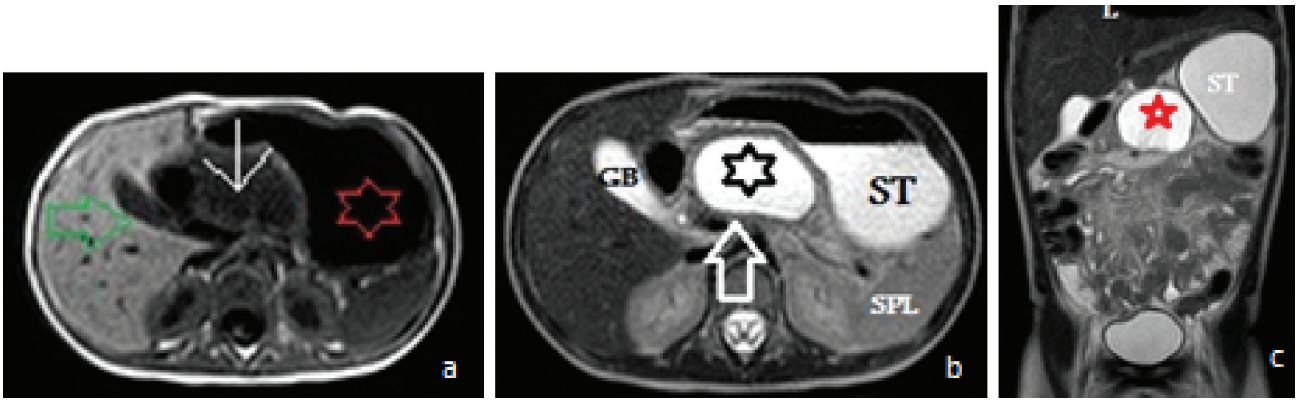


Figure 6. *Magnetic resonance imaging images (a) T1W axial section shows hypointense collection (inverted arrow) with adjoining stomach (red star). (b) T2W axial section shows the same collection as hyperintense (black star) in-between GB and ST. SPL lies posterolateral to the stomach. (c) Coronal T2W image shows well-delineated hyperintense pseudocyst postero-medial to the ST. GB, gall bladder; ST, stomach; SPL, Spleen.*

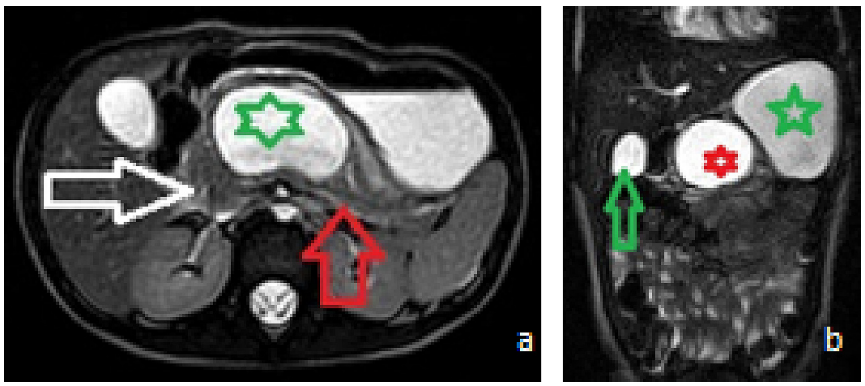


Figure 7. *Magnetic resonance imaging images contd. (a) Axial section of BTFE sequence shows hyperintense pseudocyst (green star) with head of pancreas (white arrow) and spleno-portal axis (red arrow). (b) Coronal BTFE shows pseudocyst (red star) with the stomach on the left-hand side (green star) and the gall bladder on the right-hand side (green arrow). BTFE, Balanced turbo-field-echo.*

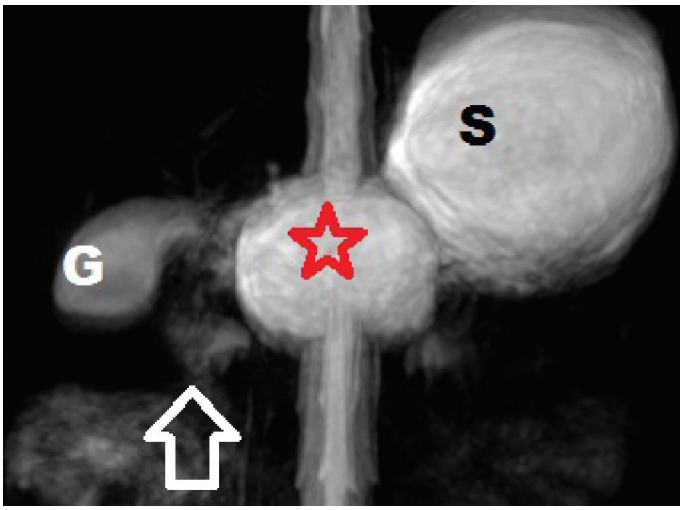


Figure 8. *Magnetic resonance cholangio-pancreaticography image. There is a common normal entry of the common bile and pancreatic ducts (white arrow). Hyperintense well-defined pseudocyst (red star) lies in between the gall bladder (G) and the stomach (S). The child was diagnosed as having pseudocyst formation as the sequel to previous traumatic etiology of pancreatitis. The child has been planned for cystogastrostomy after 2 weeks of conservative management.*

cystic mass of the organ. CFI further adds to the diagnosis to differentiate it from the vascular pathologies. MRI helps in anatomic details and further delineation of the cystic mass. MRCP is an invaluable tool in finding any communication with the biliary or pancreatic tree. Conservative treatment is always preferred in children. This

includes bowel rest and total parenteral nutrition. The cutoff line for management is the size of the cyst. If the size is more than 5 cm, surgical maneuver is indicated, otherwise it is treated conservatively [3]. These cysts can become complicated by rupture, hemorrhage, or infection. Percutaneous drainage can be done safely, but recurrence is common. This is indicated in infected and non-septated pseudocysts. There was a complete resolution of pseudocysts in the series of 9 cases by Sharma and Maharshi [5] and all had endoscopic drainage [4,5].

Conclusion

The management of pediatric pseudocyst depends on the size of the cyst and the associated extent of injury. The management can be contemplated by percutaneous, endoscopic procedure or internal drainage, depending on the guidelines described. Percutaneous drainage has always shown poorer outcome than surgical cases.

Acknowledgement

We are thankful to Mr. Nitish Virmani, Ms Nitika, Rajdeep, and Raushan of the Faculty of Allied Health Sciences of SGT University, Gurgaon, for carrying out the radiological investigations and for procuring the images.

List of Abbreviations

BTFE	Balanced turbo-field-echo
CECT	Contrast enhanced computerized tomography
CFI	Color flow imaging
CT	Computed Tomography
GB	Gall bladder
MRCP	Magnetic resonance cholangio-pancreaticography
MRI	Magnetic resonance imaging

Informed Consent

Informed consent of parents was taken to report this case.

Competing Interest

None

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Summary of the case

Patient (gender, age)	1	3-year-old female child
Final Diagnosis	2	Post-traumatic pancreatic pseudocyst
Symptoms	3	Pain in abdomen following blunt trauma
Medications	4	Conservative treatment
Clinical Procedure	5	Underwent US, CECT, and MRI studies
Specialty	6	Radio-diagnosis