International Surgery Journal
Bakhshi G et al. Int Surg J. 2021 Dec;8(12):3745-3748
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20214780

Case Report

Pancreatic pseudoaneurysm and its conundrum

Girish Bakhshi[1], Sushrut Baligar[1]*, Aishwarya Dutt[1], Rajalakshmi Venkateswaran[1], Avinash Gutte[2], Ravi Landge[1], Chettubattina Ravi Teja[1]

[1]Department of General Surgery, [2]Department of Radiology, Grant Government Medical College and Sir J. J. Group of Hospitals, Mumbai, Maharashtra, India

Received: 04 October 2021
Accepted: 30 October 2021

***Correspondence:**
Sushrut Baligar,
E-mail: baligarsushrut@gmail.com

ABSTRACT

Rupture of visceral artery pseudoaneurysm can lead to hypovolemic shock in a patient with pancreatitis. With the advent of minimally invasive treatment techniques most of these can be managed by minimally invasive route and have excellent prognosis when timely intervention is initiated. Herewith, we reported a case of ruptured pseudoaneurysm of superior pancreaticoduodenal artery in a patient with pancreatitis who presented with haematemesis. The patient was successfully managed with coil embolization. A brief case report with review of literature is presented here.

Keywords: Pancreatitis, Pseudoaneurysm, Coil embolization, Haematemesis

INTRODUCTION

A pancreatic pseudoaneurysm usually occurs when there is an erosion of a peripancreatic or pancreatic artery into a pseudocyst.[1] Increased excretion of elastase, induced by chronic local inflammation, leads to autodigestion of peripancreatic vessels or erosion of concomitant pseudocysts into adjacent vessels.[2] Though splenic artery pseudoaneurysm is the most common visceral artery pseudoaneurysm less than 200 cases have been described.[3] Pseudoaneurysm of pancreaticoduodenal and its branches are even rarer and less than 50 cases have been described in literature.

CASE REPORT

A 37 year old male patient presented with pain in abdomen and vomiting since 10-15 days. The pain in abdomen was periumbilical, insidious onset and gradually progressive and colicky in nature. The vomiting was non bilious, non-hemorrhagic and contained undigested food particles. The patient reported similar complaints 1 year back and was treated conservatively. He was a known alcoholic since 10-12 years and consumed approximately 10 units per week.

On admission to the hospital he was hemodynamically stable. Abdominal examination revealed a non-tender epigastric lump of approximate size 10×6 cm was noted extending from epigastrium to just above the umbilicus.

Ultrasound of the abdomen showed chronic calcific pancreatitis with 10×16×21 cm hypoechoic collection surrounding the pancreas extending superiorly till the right hypochondriac region and inferiorly till the pelvic region, features suggestive of pancreatic pseudocyst.

During the course of stay in the hospital patient had an episode of haematemesis and fainting episode. The hemoglobin dropped from 9 g/dl to 6 g/dl in a span of 3 days. Resuscitation was done and blood transfusions were given. Emergency contrast enhanced computed tomography was done which showed thrombosed segment of gastroduodenal artery with pseudoaneurysm likely arising from superior pancreaticoduodenal artery, communication of subhepatic pseudocyst with first part of duodenum with hemorrhagic content within. The

subhepatic pseudocyst measured 9.3×10×20 cm approximate volume 930 cc and maximum wall thickness being 3.3 m. It was seen abutting and extending along right lateral wall of 1st, 2nd and 3rd part of duodenum. The main pancreatic duct measured 4 mm and the cyst wall thickness was 3 mm. Intra pancreatic pseudocyst noted within the body of the pancreas, measured 3×1.5×3 cm approximate volume of 6 cc and wall thickness being 2 mm. Few (2-3) peripancreatic pseudocyst were noted in the head and proximal part of body with largest measuring 2.7×1.1×1.1 cm approximate volume 1-2 cc and wall thickness 2 mm.

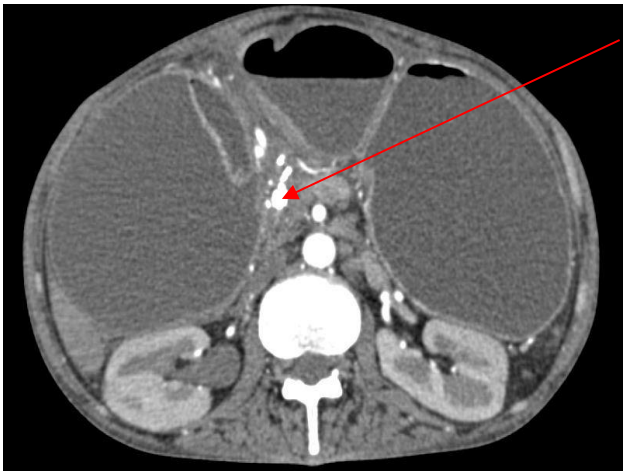

Figure 1: Contrast enhanced computed tomography of abdomen; the red arrow shows pseudoaneurysm of the superior pancreaticoduodenal artery with communication into the subhepatic pseudocyst.

Figure 2: Contrast enhanced computed tomography of abdomen; red arrow shows thrombosed segment of gastroduodenal artery; white arrow shows pseudoaneurysm likely from superior pancreaticoduodenal artery.

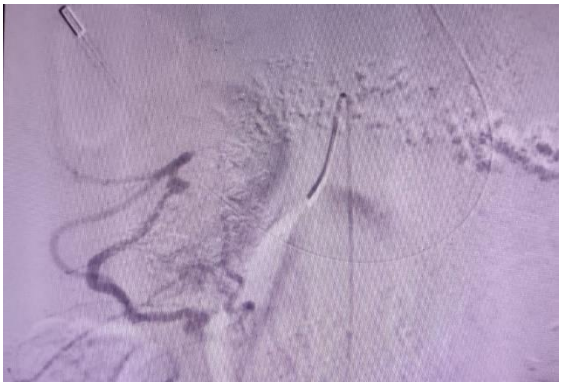

Figure 3: Superior pancreaticoduodenal artery pseudoaneurysm.

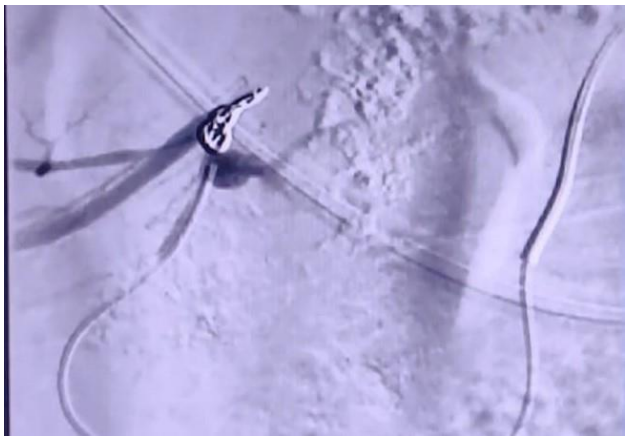

Figure 4: Superior pancreaticoduodenal artery pseudoaneurysm status post coil embolization.

Figure 5: Upper gastrointestinal endoscopy showing duodenal ulcer.

The patient was planned for upper gastrointestinal endoscopy but in view of superior pancreaticoduodenal artery pseudoaneurysm interventional radiological procedure was planned first.

A thorough discussion with the team of interventional radiology was done and patient was decided to be managed by interventional radiology failing which an open surgery would be planned. With surgical stand by patient was immediately wheeled into the theatre where coil embolization of the pseudoaneurysm was planned.

Right femoral access taken. Superior mesenteric artery angiogram revealed large 15×10 mm pseudoaneurysm from superior pancreaticoduodenal artery. Prograte microcatheter was passed across the neck of pseudoaneurysm in to distal superior pancreaticoduodenal artery. Selective embolization of diseased segment was carried out with 35% histoacryl glue and two embolization coils. Post procedural angiogram revealed complete exclusion of diseased segment with normal proximal superior pancreaticoduodenal artery. Coeliac angiogram did not reveal filling of pseudoaneurysm.

Upper gastrointestinal endoscopy was done which showed ulcer in the 2nd part of duodenum with adherent clot.

The patient was treated with intravenous proton pump inhibitors. The patient was kept nil per oral for the sake of healing of ulcer. Image guided nasojejunal tube was inserted and patient was given nasojejunal feeds for 3 weeks after which check endoscopy was done which showed complete healing of ulcer.

Post coiling patient did not have any further episodes of haematemesis. Patient was on full diet , vitally stable and hence discharged with advice of strict alcohol abstinence and precautions to be taken in case of further episodes of haematemesis. Review CT at 8 weeks showed resolution of pseudocyst and pseudoaneurysm with no filling beyond the pseudoaneurysm.

Review upper gastrointestinal endoscopy at 8 weeks showed no recurrence of the ulcer.

DISCUSSION

Pseudoaneurysms are a well-known complication of pancreatitis. The pseudoaneurysms of pancreatico-duodenal artery were extremely rare, they comprised roughly 5% of all visceral artery pseudoaneurysms.[4] Most commonly these were secondary to chronic pancreatitis.[5] When the pseudoaneurysm was localized more distally, in the pancreaticoduodenal artery arcade (as opposed to the gastroduodenal artery), the rate of rupture was 50-90%.[4] There was no correlation between pseudoaneurysm size and risk of free rupture.[4] The presenting features ranged from asymptomatic to being lethal with accompanied hypovolemic shock. Present case was a 37 year old male who presented with haematemesis and pain in abdomen.

Visceral artery pseudoaneurysm can be diagnosed by ultrasound, CT or visceral angiography with sensitivity of 50%, 67% and 100% respectively. Since visceral artery pseudoaneurysm can undergo free rupture and result in hemodynamic instability emergency treatment may be necessary.[6] In present case CT not only helped in diagnosing the cause of haematemesis but also accurately delineated the artery of origin and communication of subhepatic pseudocyst with first part of duodenum with hemorrhagic content within.

The treatment approach largely depended on the hemodynamic status and availability of angiographic theatre. When available therapeutic embolization was the first line of therapy in hemodynamically stable patients as in this case.

Embolization can be achieved with coils, particulate materials such as polyvinyl alcohol or gel foam, N-acetyl cyanoacrylate or a combination of these agents.[7] As an alternative to embolization, a stent graft may be deployed across the abnormal vessel to allow distal organ perfusion, while excluding the pseudoaneurysm from circulation.[7] Stents cannot be used if there was not sufficient vessel length on either side of the pseudoaneurysm, if there was significant vessel tortuosity or a correctly sized stent graft was not available.[8] In present case 35% histoacryl glue and two embolization coils were used. Observation after embolization was necessary to monitor for complications such as early or late re-bleeding, which occured in 20-40% of patients.[9] Percutaneous thrombin injection was a useful adjunct to transcatheter embolization when the pseudoaneurysm was not accessible by catheter technique. Percutaneous thrombin injection was pioneered by Cope et al in 1986.[10] The initial case series reported four cases treated for peripheral aneurysms by percutaneous thrombin injection. Luchs et al treated a pancreatitis-related pseudoaneurysm.[11] The aneurysm was treated by direct percutaneous thrombin injection using ultrasound guidance after a failed attempt at transcatheter embolization because of technical difficulties.

Some authors have argued that embolization did not cure a diseased pancreas and subsequent surgery was always indicated.[12] This opinion was supported by this series in that of the 9 surgical interventions to treat bleeding pseudoaneurysms, only 1 patient (1/8, 12.5%) rebled and no patient died because of surgery. By contrast, angiographic embolization as the treatment modality for bleeding pseudoaneurysms resulted in a rebleeding rate of 66.7% (2/3). These observational results can be explained partly by the relatively young age in patients receiving surgical treatment in this series (median age, 35 years). Nevertheless, the small number of patients in this study precluded a comparison of results between surgical intervention and arteriographic embolization. In present case patient was treated with coil embolization and pancreatic enzyme supplements. Check endoscopy had shown healing of the duodenal ulcer and angiography post embolization had shown no filling of pseudoaneurysm post coil embolization hence surgery was not required for this patient. Surgery in chronic pancreatitis with pseudocyst was reserved for patients with underlying stricture or obstruction in the main pancreatic duct.[13] In present case there was no stricture or obstruction in the main pancreatic duct. The cyst wall thickness was less than 6 mm and there was

communication of the subhepatic pseudocyst with the duodenum hence surgery was deferred and conservative management followed.

Debate still existed about the best surgical procedure for treating bleeding pancreatic pseudoaneurysms. Some researchers suggested that proximal and transcystic ligation of a bleeding vessel with internal or external drainage of the cyst was superior to pancreatic resection.[14] Location of the pseudoaneurysm was a major issue when selecting a treatment course (arterial ligation or resection of the diseased pancreas) and was related to patient outcome.

CONCLUSION

Rupture of pancreatic pseudocyst into the bowel is a rare cause of upper gastrointestinal bleed. High index of suspicion is required in a patient who is an alcoholic and presents with haematemesis. Haematemesis in patients with pancreatitis should alert the treating surgeon towards rupture of pseudoaneurysm as possible differential. After initial resuscitation and stabilization of patient, upper gastrointestinal endoscopy and contrast enhanced computed tomography of the abdomen is the key to diagnosis of pseudoaneurysm. Interventional radiology provides a minimally invasive method of treatment of pseudoaneurysm. Multitude of treatment modalities are available for the treatment of pseudoaneurysms it is best individualized on a case to case basis taking into account various factors mainly hemodynamic status, availability of angiographic treatment modality and accessibility of the catheter to the pseudoaneurysm. Follow up of these patients is required as they are prone for recurrent pseudoaneurysm.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Hoilat GJ, Mathew G, Ahmad H. Pancreatic pseudoaneurysm. Treasure Island (FL): StatPearls Publishing; 2021.
2. Stanley JC, Frey CF, Miller TA, Lindenauer SM, Child CG. Major arterial hemorrhage: a complication of pancreatic pseudocysts and chronic pancreatitis. Arch Surg. 1976;111(4):435-40.
3. Tessier DJ, Stone WM, Fowl RJ, Abbas MA, Andrews JC, Bower TC, et al. Clinical features and management of splenic artery pseudoaneurysm: case series and cumulative review of literature. J Vasc Surg. 2003;38(5):969-74.
4. Dallara H, Habboushe J. Spontaneous inferior pancreaticoduodenal artery pseudoaneurysm rupture. Intern Emerg Med. 2017;12(8):1319-21.
5. Hu K, Chang W, Chu C, Wang T, Yan T, Shih S. Gastroduodenal artery aneurysm bleeding mimicking hemobilia: a case report. Dig Dis Sci. 2008;53(10):2805-7.
6. Pitton MB, Dappa E, Jungmann F, Kloeckner R, Schotten S, Wirth GM, et al. Visceral artery aneurysms: Incidence, management, and outcome analysis in a tertiary care center over one decade. Eur Radiol. 2015;25(7):2004-14.
7. Kalva SP, Yeddula K, Wicky S, Castillo CF, Warshaw AL. Angiographic intervention in patients with a suspected visceral artery pseudoaneurysm complicating pancreatitis and pancreatic surgery. Arch Surg. 2011;146(6):647-52.
8. Fankhauser GT, Stone WM, Naidu SG, Oderich GS, Ricotta JJ, Bjarnason H, et al. The minimally invasive management of visceral artery aneurysms and pseudoaneurysms. J Vasc Surg. 2011;53(4):966-70.
9. Pang TC, Maher R, Gananadha S, Hugh TJ, Samra JS. Peripancreatic pseudoaneurysms: a management-based classification system. Surg Endosc. 2014;28(7):2027-38.
10. Cope C, Zeit R. Coagulation of aneurysms by direct percutaneous thrombin injection. Am J Roentgenol. 1986;147(2):383-7.
11. Luchs SG, Antonacci VP, Reid SK, Pagan-Marin H. Vascular and interventional case of the day. Pancreatic head pseudoaneurysm treated with percutaneous thrombin injection. Am J Roentgenol. 1999;173(3):830.
12. Bresler L, Boissel P, Grosdidier J. Major hemorrhage from pseudocysts and pseudoaneurysms caused chronic pancreatitis: surgical therapy. World J Surg. 1991;15(5):649-53.
13. Parekh D, Natarajan S. Surgical management of chronic pancreatitis. Indian J Surg. 201577(5):453-69.
14. ElHamel A, Parc R, Adda G, Bouteloup PY, Huguet C, Malafosse M. Bleeding pseudocysts and pseudoaneurysms in chronic pancreatitis. Br J Surg. 1991;78(9):1059-63.

Cite this article as: Bakhshi G, Baligar S, Dutt A, Rajalakshmi V, Gutte A, Landge R, et al. Pancreatic pseudoaneurysm and its conundrum. Int Surg J 2021;8:3745-8.