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GASTRODUODENAL ARTERY BRANCH PSEUDOANEURYSM OCCLUSION WITH COVER STENT

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ABSTRACT

60 years old patient with post pancreatitis Gastroduodenalartery branch pseudo-aneurysm underwent trans-catheter occlusion by a covered coronary artery graft stent without compromising distal pancreatic branch. There was a pulsatile mass in right hypochondrium which soon disappeared after successful cover stent deployment.

Keywords: Gastroduodenalartery branch aneurysm, Coronary Artery Stent Graft

INTRODUCTION

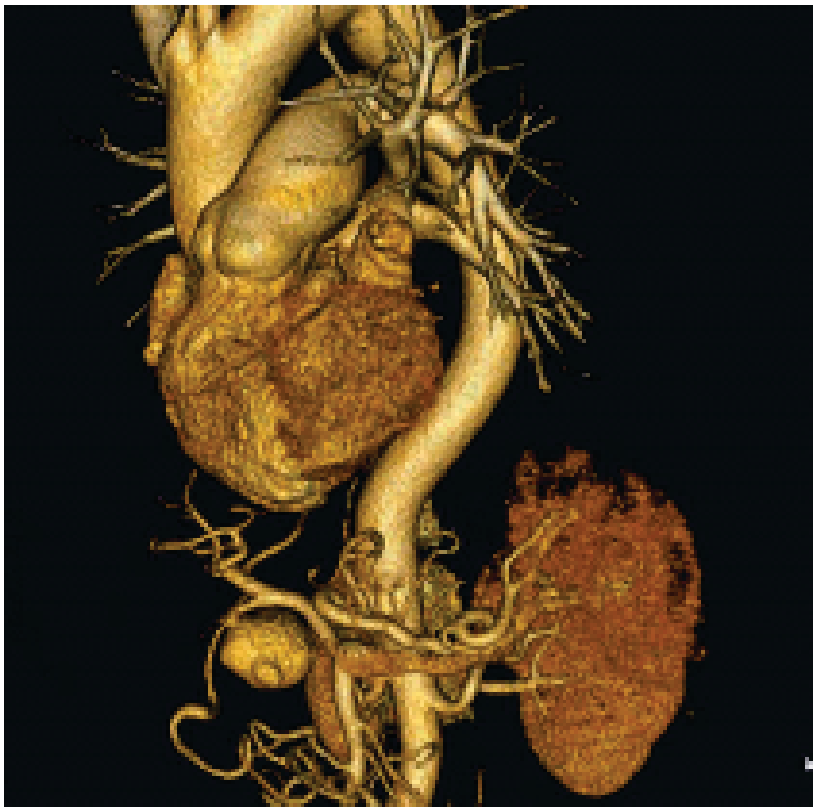
Visceral artery aneurysms (VAAs) are rare with a reported incidence of 0.01 to 0.2% .[1] However, VAAs are clinically important and potentially lethal; 22% of all visceral artery aneurysms present as clinical emergencies; 8.5% result in death.[1] VAAs include both true aneurysms, limited by all three layers of the arterial wall, which undergo progressive dilation and wall thinning, and pseudoaneurysms (VAPAs), wherein there is a tear of the vessel wall and a periarterial hematoma.[2] Pseudoaneurysms can develop as a result of blunt or penetrating trauma, inflammation, infection, vasculitis, and iatrogenic trauma secondary to surgical, endoscopic, and radiologic procedures.2 Typically, surgery or endovascular management is considered for VAAs when they are larger than 2 cm in diameter, demonstrate rapid growth, and when patients present with symptoms attributable to the aneurysm. In addition, therapy is often advocated for VAAs in women of childbearing age, pregnant women, and liver transplant recipients irrespective of their size and presence of symptoms.3 However, considering the natural history of the VAAs and the risk of rupture, there is a general agreement in the literature to treat these lesions even when they are asymptomatic.4 VAPAs are distinguished from the true aneurysms by clinical and imaging criteria. Clinically, the patients with VAPAs, typically present with an antecedent history of arterial trauma, intraabdominal or, retroperitoneal inflammation, malignancy, or biliary tract manipulation. Imaging demonstrates focal arterial disruption in the setting of an otherwise normal artery. Presence of perivascular inflammation in the setting of an irregular aneurysmal wall also suggests a pseudoaneurysm. Aneurysmal morphology favorable for endovascular therapy include saccular aneurysms with a narrow neck, aneurysms with adequate collateral flow, and

aneurysms of vessels that are not the only source of blood supply to that organ.[4] Patients are considered candidates for endovascular treatment if inflow and outflow vessels to and from the aneurysm can be accessed and occluded by a catheter-based system and if end organ perfusion can be preserved by collateral flow or stent graft therapy.[3] Mortality rates after elective treatment of VAAs is estimated to be 5%. Covered stents provide another means of excluding VAAs from the circulation. These stents are reserved for major branches of the visceral or splanchnic arteries for which preservation of arterial perfusion is required.[5] Limitations of covered stents include delivery systems,the size and rigidity of which preclude stent placement in distal tortuous branches. Covered stents are usually reserved for arteries 6 mm or larger in diameter because of the risk of thrombosis when placed in smaller vessels.[2] Inflammatory aneurysms are rare but a serious complication of pancreatitis, having an incidence of 15% of all VAAs. Upon rupture, mortality rate of 37% is reported. Severity of pancreatitis does not correlate with the occurrence of major hemorrhage, emphasizing the unpredictable nature of this complication. The pathogenesis involves uncontrolled severe inflammation causing necrosis and autodigestion of the pancreatic or peripancreatic artery including splenic, hepatic, gastroduodenal, and pancreaticoduodenal arteries. [6] If an associated pseudocyst does not develop a thick wall, the pseudoaneurysm can rupture into the retroperitoneum or freely into the peritoneal cavity. Pancreatoduodenal artery constitute 6% of all VAAs. Boudghene et al [7] reported procedural success in all 32 pancreaticoduodenal aneurysms in which transcatheter embolization was attempted. It must be emphasized that, when treating aneurysms in the pancreaticoduodenal distribution, a careful search for and occlusion of collateral supply to these aneurysms is essential before ending the procedure.2When aneurysms are associated with pseudocyst formation, cyst decompression should be undertaken.[4]

CASE HISTORY

60 years old man who had 5 months back pancreatitis,managed conservatively, presented with vague abdominal pain and a pulsatile mass in right hypochondrial area. Abdominal ultrasonography showed an arterial aneurysm with pseudo pancreatic cyst. CT angiogram confirmed a large Gastroduodenalartery aneurysm measuring 6x5.5 cm. We planned for Coronary artery graft

Figure 1: CT angiogram showing Gastroduodenal artery aneurysm



stent occlusion under local anaesthesia after taking informed consent.

PROCEDURE

Right femoral artery route was used. A 6 F long arrow sheath was used due to tortousity of the abdominal aorta. Aortogram in PA and Lateral view below the diaphragm with pigtail catheter showed gatrodeudenal aterey with its feedind branch to pseudo aneurysm. Gastroduodenalatery engaged with help of JR4 guiding catheter. Then for full support the 6 F arrow sheath pushed Over JR 4 catheter to reached to the feeding vessel of aneurysm. Coronary wire .035mm used to cross the deudenal artery to its distal pancreatic branch. 3.5x19mm coronary artery graft stent used to stent Gastroduodenalartery bypassing the feeding vessel to aneurysm inflated at 12 atm pressure. Post stent deployment angiogram taken showing no flow to aneurysm good distal flow to Gastroduodenalartery branch. There was a small clot formation in common hepatic artery which was successfully aspirated with help of export catheter. Patient was given low molecular weight heparin. Soon after procedure the pulsatule right hypochondrail mass disappeared. Patient was observed for 24 hours in CCU and discharged home thereafter. No complication occur

DISCUSSION

Patients with VAA are often asymptomatic (72%).[8] The presentation may range from a palpable epigastric mass, pain or signs of gastrointestinal bleeding and anemia . Computed tomography with intravenous contrast material provides optimal visualization of these vascular abnormalities. The demonstration of a homogeneously enhancing structure within or adjacent to a pseudocyst or contiguous with a vascular structure in a case of pancreatitis is highly suggestive of an associated pseudoaneurysm. 9 A recent review suggests that 35% of GDA aneurysms are ruptured at presentation, carrying a mortality of 21%.10 Visceral artery aneurysms can be treated by revascularization, ligation or endovascular techniques depending on clinical presentation, hemodynamic status and location. Transarterial catheter angioembolization is an option that is much less invasive than surgery but patient selection for suitability for embolization is of utmost importance. Three recent studies have reviewed between 31 to 65 VAA to compare the mortality and morbidity of surgical versus endovascular treatment.[11-13] The first showed that VAA could be treated by ligation in most cases or by embolization if the hemodynamic status of the patient allows.[11] In unruptured cases, the morbidity rate associated with surgical treatment was 12%. The morbidity rate associated with endovascular treatment was 18% including cholecystitis and bile duct stenosis. The VAA recanalization rate following embolization was 9%. In the ruptured group, treatment was mainly ligation with resection of ischemic viscera in few cases. The morbidity rate associated with surgical treatment was 46% including bile duct stenosis, ischemic cholecystitis, duodenal fistula, pancreatic fistula, bile tract fistula and colonic ischemia. [11]It is thus important to follow-up on embolized patients as recanalization requiring repeat interventions has been documented in short-term follow-up. The second retrospective study reviewed 31 VAA in 28

Figure 2: CT angiogram showing Gastroduodenal artery aneurysm

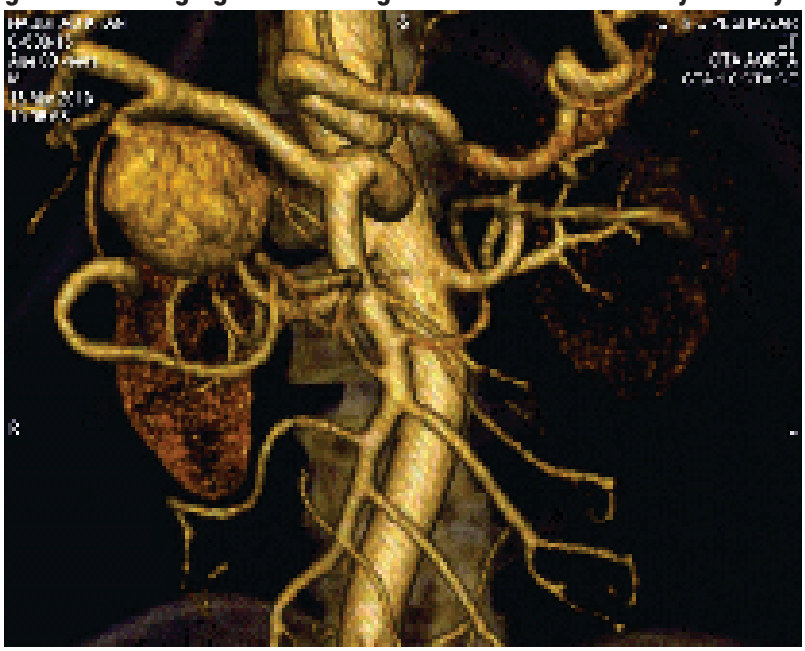


Figure 3: Aortogram showing gastroduedenal artery aneurysm

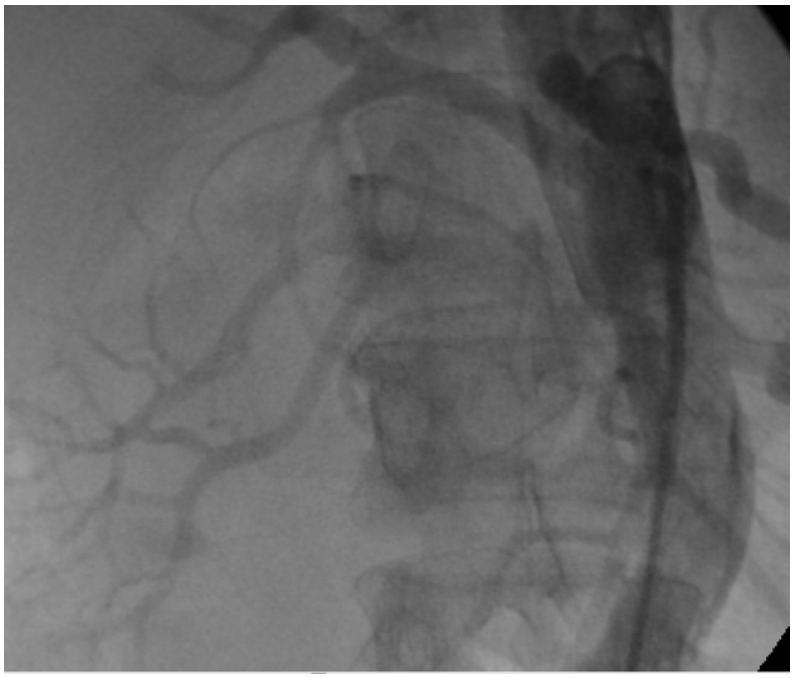


Figure 4: Angiogram showing deployment of cover stent

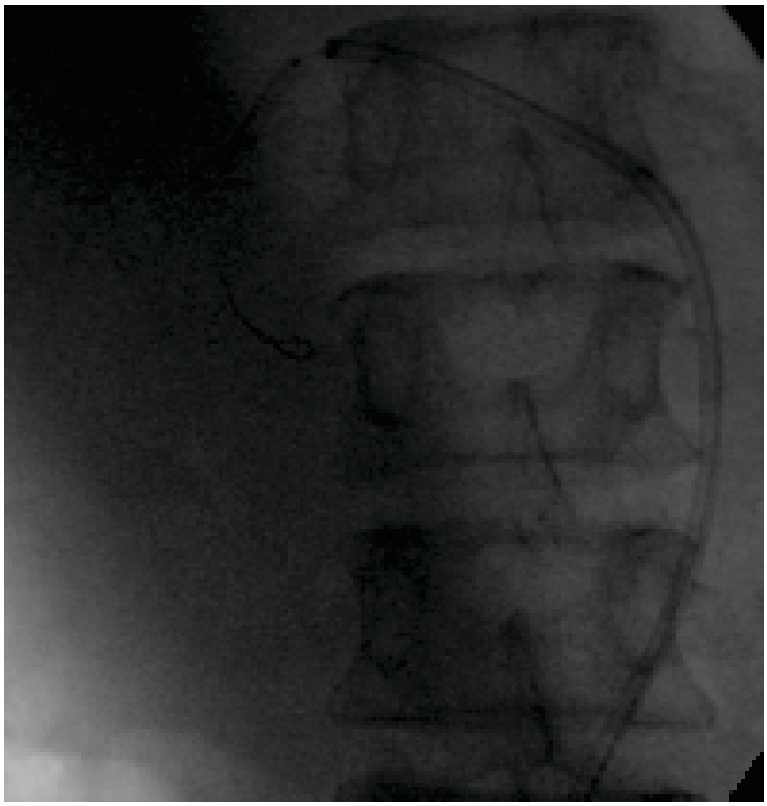
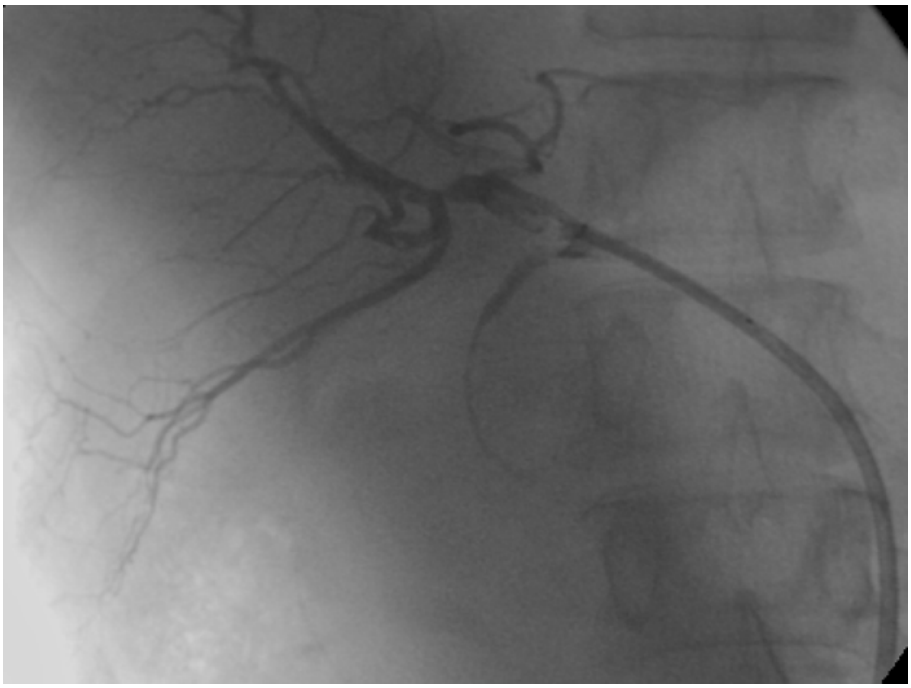


Figure 5: Post stent deployment angiogram showing successful occlusion of the aneurysm.



patients.[12] In the surgical group the perioperative mortality rate was 3.6%. The perioperative morbidity rate was 7.1%. In the endovascular group none of the patients died; the perioperative morbidity rate was 14.3% (one case of hepatic artery thrombosis after failure of gastroduodenal artery aneurysm embolization). The last study reviewed 65 patients with VAA.[13] Management consisted of 18 (27.7%) endovascular interventions,[9](13.9%) open surgical repairs, and 38 (58.5%) observations. The initial technical success rate of the endovascular procedures was 94.4%. There were no endovascular procedure-related deaths. Reasons for performing open surgical repair included 3 splenic artery aneurysms ruptures diagnosed at laparotomy and complex anatomy not amenable to endovascular intervention (6 patients). One surgical patient had a postoperative small bowel obstruction treated nonoperatively; and there was one perioperative death in a patient operated on emergently for rupture. Endovascular management of visceral artery aneurysms is a reasonable alternative to open surgical repair in carefully selected patients. Individual anatomic considerations play an important role in determining the best treatment strategy if intervention is warranted. Similarly our reported case was selected one and successfully occluded. There was a small thrombus formation as reported in many studies but was successfully aspirated.

CONCLUSION

Visceral artery aneurysms and pseudoaneurysms can be successfully treated with endovascular means with low periprocedural morbidity.

REFRENCES

1. Huang YK, Hsieh HC, Tsai FC, Chang SH, Lu MS, Ko PJ. Visceral artery aneurysm: risk factor analysis and therapeutic opinion. Eur J Vasc Endovasc Surg 2007;33:293-301.
2. Nosher JL, Chung J, Brevetti LS, Graham AM, Siegel RL. Visceral and renal artery aneurysms: a pictorial essay on endovascular therapy. Radiographics 2006;26:1687-704.
3. Sachdev U, Baril DT, Ellozy SH. Management of aneurysms involving branches of the celiac and superior mesenteric arteries: a comparison of surgical and endovascular therapy. J Vasc Surg 2006;44:718-24.
4. Chiesa R, Astore D, Guzzo G, Frigerio S, Tshomba Y, Castellano R, et al. Visceral artery aneurysms. Ann Vasc Surg 2005;19:42-8.
5. Pulli R, Dorigo W, Troisi N, Pratesi G, Innocenti AA, Pratesi C. Surgical treatment of visceral artery aneurysms: a 25-year experience. J Vasc Surg 2008;48:334-42.
6. Hyare H, Desigan S, Brookes JA, Guiney MJ, Lees WR.

Endovascular management of major arterial hemorrhage as a complication of inflammatory pancreatic disease. J Vasc Interv Radiol 2007;18:591-6.

7. Boudghene F, L'Hermine C, Bigot JM. Arterial complications of pancreatitis: diagnostic and therapeutic aspects in 104 cases. J Vasc Interv Radiol 1993;4:551-8.
8. von Flue M, Kocher T, Herzog U, Looser C, Schuppisser JP. Hemorrhage from pseudocysts caused by pseudoaneurysms in chronic pancreatitis. Diagnosis and management. Helv Chir Acta 1993;59:785-9.
9. Burke JW, Erickson SJ, Kellum CD, Tegtmeyer CJ, Williamson BR, Hansen MF. Pseudoaneurysms complicating pancreatitis: detection by CT. Radiology 1986;161:447-50.
10. Moore E, Matthews MR, Minion DJ, Quick R, Schwarcz TH, Loh FK, et al. Surgical management of peripancreatic arterial aneurysms. J Vasc Surg 2004;40:247-53.
11. Sessa C, Tinelli G, Porcu P, Aubert A, Thony F, Magne JL. Treatment of visceral artery aneurysms: description of a retrospective series of 42 aneurysms in 34 patients. Ann Vasc Surg 2004;18:695-703.
12. Chiesa R, Astore D, Guzzo G, Frigerio S, Tshomba Y, Castellano R, et al. Visceral artery aneurysms. Ann Vasc Surg 2005;19:42-8.
13. Saltzberg SS, Maldonado TS, Lamparello PJ, Cayne NS, Nalbandian MM, Rosen RJ, et al. Is endovascular therapy the preferred treatment for all visceral artery aneurysms? Ann Vasc Surg 2005;19:507-15.