

Surgical treatment of a huge gastroduodenal artery aneurysm with superior mesenteric artery occlusion: A case report

Case Report

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ABSTRACT

To present a rare case of a huge gastroduodenal artery aneurysm with superior mesenteric artery (SMA) occlusion treated by open surgical means. A 62-year-old male patient presented with an abdominal mass and pain associated with new-onset vomiting. A computed tomography angiography revealed a fusiform gastroduodenal aneurysm with a maximum dimension of 11.9 cm, partial thrombosis and calcification, and associated orificial occlusion of the SMA. After multidisciplinary team discussion and patient consent, surgery was decided. An open midline incision was performed after the diagnosis was confirmed with intraoperative angiography. The aneurysm was opened, and the gastroduodenal artery was ligated. The SMA ostial occlusion was not repaired because of the absence of preoperative symptoms, signs of mesenteric ischemia, and rich collateral circulation. The patient was discharged 48 h later. Gastroduodenal artery aneurysms are rare pathologies with a high risk of rupture that require individualized therapeutic approaches to achieve optimal outcomes.

Key Words: Aneurysm; case report; rupture; surgery; visceral.

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INTRODUCTION:

Gastroduodenal aneurysms are extremely rare pathologies. According to the SVS, they are fatal, with a high risk for rupture and mortality. Therefore, recommendations are made to treat these aneurysms irrespective of their size. Common presentations include abdominal pain and dyspepsia. Chronic pancreatitis has been commonly associated, so patients need to be examined and assessed properly before treatment^[1].

Numerous case reports have been published with treatment by surgical or endovascular means. In addition, the coeliac artery was usually found to be diseased^[1-4]. Herein, we present a rare case of a huge gastroduodenal aneurysm and superior mesenteric artery (SMA) orificial occlusion treated by surgical means. The case report has been written following the CARE guidelines^[5].

CASE REPORT:

A 62-year-old male presented with an abdominal mass and pain with recent vomiting and rising serum creatinine. The patient had no prior medical or surgical history. A computed tomography angiography was performed using low-dose nonionic contrast that revealed a large arterial aneurysm arising from a branch that courses inferiorly off

the hepatic artery. The aneurysm measured 7.7×8.2×11.9 cm and was diagnosed as a gastroduodenal artery aneurysm. The scan showed an associated SMA occlusion at the orifice. This is shown in (Figs 1–3). A decision to intervene was made due to the high risk of rupture for these aneurysms. The patient opted for surgical treatment after a multidisciplinary team discussion.

The operation occurred in a hybrid operating room with a fixed imaging system, and the patient had general anesthesia. A long 6 Fr sheath was placed percutaneously via the left brachial artery to visualize the SMA and the aneurysm and confirm the diagnosis, as shown in (Fig. 4). The supplementary video demonstrates the large size of the aneurysm with transmitted abdominal pulsation. Subsequently, a midline abdominal incision was performed with dissection of the aneurysm in the lesser sac (Fig. 5). The aneurysm was punctured and accessed with a standard 12 cm 6 Fr sheath to confirm whether the offending vessel was truly the gastroduodenal or a branch of the SMA and assess the patency of the aneurysm as illustrated in Fig. 4. The aneurysm was also checked for major branches coming off, such as the ileocolic, middle colic, jejunal, and ileal branches. The intraoperative imaging and the aneurysm anatomy confirmed the diagnosis as a gastroduodenal artery aneurysm. The aneurysm sac was opened, and the gastroduodenal artery was ligated just after its take-off

of the hepatic artery. Extensive collateral vessels were found around the aneurysm that was attributed to the chronic ischemic condition presented by the SMA orificial occlusion. Since the patient showed no preoperative symptoms or signs due to mesenteric ischemia, a decision was made not to interfere with the orificial SMA occlusion.

The patient had a smooth, uneventful postoperative period with a regain of bowel movements and the ability to drink and eat within the first 24 h. The patient was discharged on postoperative day 2. The 30-day and 6 months periods were free from symptoms, reintervention, and mortality.

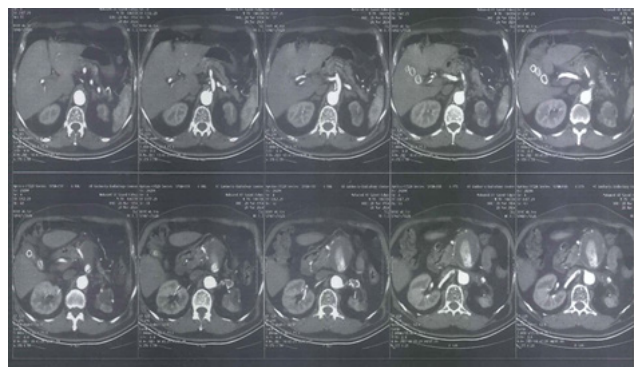


Fig. 1: CTA scan of the abdominal aorta and branches. The gastroduodenal artery aneurysm can be seen originating from the coeliac trunk. SMA shows occlusion at the orificial level. CTA, computed tomography angiography; SMA, superior mesenteric artery.

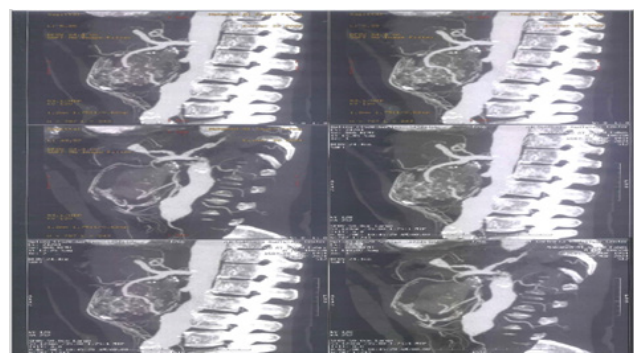


Fig. 2: Sagittal view of the aneurysm where a downward branch of the coeliac artery (gastroduodenal artery) can be seen as the source and the origin of the aneurysm.

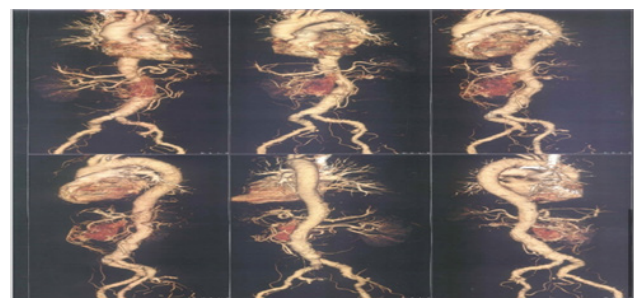


Fig. 3: Three-dimensional reconstruction of gastroduodenal artery aneurysm.

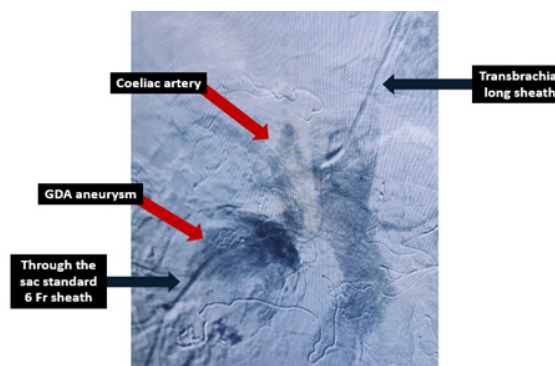


Fig. 4: A transbrachial long sheath and a short 6 Fr sheath into the aneurysm sac were introduced to confirm diagnosis and assess patency and feeders.

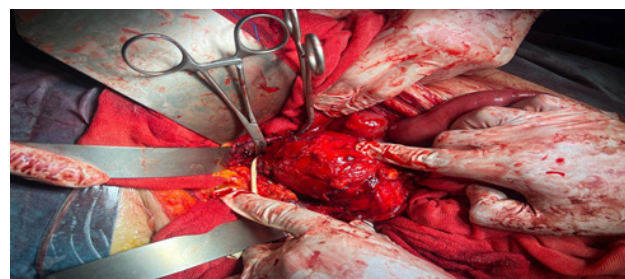


Fig. 5: Intraoperative images of the aneurysm.

DISCUSSION

Visceral aneurysms are extremely rare pathologies with a high risk of mortality due to an increased risk of rupture. According to the 2020 SVS, gastroduodenal aneurysms should be repaired regardless of size^[1]. While many have reported the common association of the gastroduodenal aneurysm with coeliac artery stenosis, we herein present a rare case of gastroduodenal aneurysm associated with SMA occlusion that has been treated by surgical ligation and remained asymptomatic during follow-up.

Several methods have been proposed to treat such pathologies. Endovascular procedures have been increasing in popularity with variations in the form of simple coil embolization, covered stents, and stent-assisted coil embolization^[1]. As for surgical treatment, it has been the traditional gold standard in cases of associated organ obstruction, other simultaneous operative procedures, diseased coeliac and/or mesenteric arteries, and complicated endovascular interventions^[4].

Although strong evidence exists that endovascular treatment provides an effective solution with minimal operative risk to patients^[1], it is still an expensive solution in middle and low-income nations. Hence, a surgical solution was sought. It is necessary to individualize treatment protocols for each patient to achieve optimal outcomes. Our patient was fit for general anesthesia and had an acceptable cardiovascular condition.

CONCLUSION

Gastroduodenal artery aneurysms are rare pathologies with a high risk of rupture that require individualized therapeutic approaches to achieve optimal outcomes.

CONFLICT OF INTEREST

There are no conflicts of interest.

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