CASE REPORT

Aortoduodenal Syndrome : Rare case of Infrarenal Abdominal Aortic Aneurysm Causing Duodenal Obstruction

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ABSTRACT

Aortoduodenal syndrome represents a rare clinical condition causing symptoms of bowel obstruction secondary to an abdominal aortic aneurysm with a little less than 40 cases reported in the literature.

This is a case of a 54-year-old male presented with nausea, vomiting and abdominal pain. CT angiogram of the aorta showed a multilobulated infrarenal aortic aneurysm with an extrinsic compression to the duodenum causing proximal bowel obstruction. Intraoperatively they noted extrinsic compression of the 3rd and 4th portion of the duodenum by the infrarenal abdominal aortic aneurysm. The patient then underwent laparotomy, repair of infrarenal abdominal aortic aneurysm with repair of serosal duodenal tears. The patient was discharged improved.

Keywords: Aortoduodenal Syndrome, Abdominal Aortic Aneurysm, Infrarenal Abdominal Aortic Aneurysm, Bowel Obstruction, Duodenal Obstruction

INTRODUCTION

Patients with abdominal aortic aneurysms (AAA) are usually asymptomatic. Undiagnosed individuals may present with vague abdominal discomfort, low back pain and a pulsatile mass.[1] In fact, AAA rarely causes bowel obstruction due to its retroperitoneal location.

In 1905, William Osler first described a rare clinical entity called aortoduodenal syndrome, which is characterized by stretching of the third portion of the duodenum caused by an abdominal aortic aneurysm.[2] This specific type of condition is infrequently seen among patients with abdominal aortic aneurysm, with only a limited number of cases documented.

Hence, this case depicts the critical importance of recognizing rare diseases, initiating appropriate work up, and referral for a timely intervention.

CASE REPORT

A 54-year-old male with hypertensive atherosclerotic cardiovascular disease and type 2 diabetes mellitus presented with occasional nausea, vomiting of previously ingested food, and vague

abdominal pain about five months prior to admission. Patient was seen by his cardiologist in the clinic with an incidental finding of a pulsatile abdominal mass on physical examination. Patient was normotensive and non-tachycardic. All distal pulses were full and equal bilaterally. Further work up was then requested by the cardiologist.

A computed tomography angiogram of the aorta revealed a multilobulated infrarenal aortic dilatation measuring 6.7 x 6.8 x 6.7 cm, with associated thrombus formation and some minimal calcifications measuring 0.8 cm in thickness (Figure 1). There was no evidence of rupture. A markedly distended stomach and dilated duodenum with an abrupt transition point corresponding to the location of the third and fourth portion of the duodenum probably secondary to compression by the large abdominal pseudoaneurysm was also noted (Figure 2).

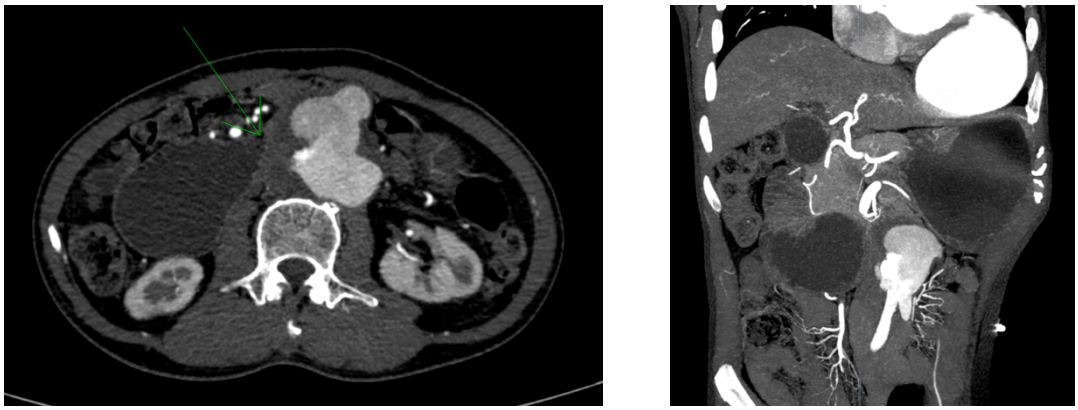

Figure 1. Computed tomography angiogram showing a multilobulated infrarenal aortic dilatation measuring 6.7 x 6.8 x 6.7 cm.

Because of the findings in the CT angiogram of the aorta, the patient was advised admission for definitive intervention. He was placed on *nil per os*, IV fluids started, IV antibiotics given and a nasogastric tube was inserted for decompression with a bilious nasogastric tube output amounting to 800 mL, the nasogastric tube was kept open to drain.

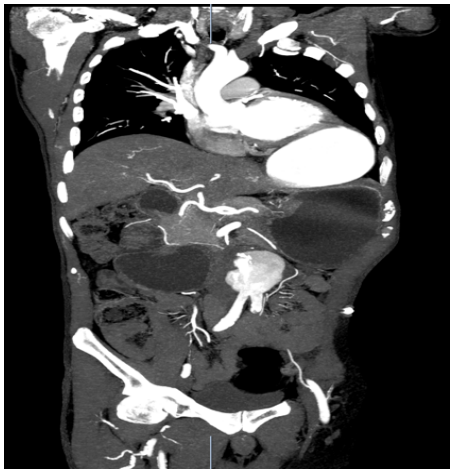

Figure 2. Markedly distended stomach and duodenum with abrupt narrowing as it crosses over the Aneurysm on CT angiogram.

After discussing the risk and benefits of the surgery, the patient underwent laparotomy, repair of abdominal aortic aneurysm. Intraoperatively, the proximal portion of the aneurysm was adherent to the third and fourth portion of the duodenum causing extrinsic compression at the transition point. The duodenum was mobilized off the aneurysm and repair was performed using a uni-graft straight 16 mm. The main body of the graft was anastomosed to the proximal abdominal aorta within the aneurysmal sac using polypropylene 3-0 sutures. The aortic cross clamp was moved to the main body of the vascular graft. Distal anastomosis was performed using polypropylene 3-0 with soft felt to the distal abdominal aorta. The aneurysmal sac was closed above the graft using polypropylene 3-0 suture. Bowel run was then performed and primary repair of serosal tear on the duodenum was done.

Postoperatively, patient was wheeled in to the surgical intensive care unit (SICU). He was then eventually transferred to a regular room to recover from the surgery. His diet was progressed as tolerated. He was shortly discharged in stable condition, tolerating rehabilitation with an unremarkable postoperative course.

DISCUSSION

Aortic aneurysms were first recognized by the ancient Egyptians in the fourteenth century B.C., but it was Galen, the Greek physician, who was considered the first to define and treat the disease.[3] As stated in the Journal of Vascular Surgery (July 2024), there was an overall increase of 82.1% in the number of global observed deaths attributed to aortic aneurysm in 2019.[4]

An abdominal aortic aneurysm is a life-threatening condition affecting millions of people worldwide. It usually remains unnoticed, hence it is often referred to as a ‘silent killer.’ In some cases, when symptomatic, patients with abdominal aortic aneurysm present with a diffuse non-specific abdominal and/or lower back pain and a pulsation in their abdomen.

Aortoduodenal syndrome, first described by Osler, a founding professor of Johns Hopkins Hospital is a rare condition causing duodenal obstruction due to an abdominal aortic aneurysm. In order to establish the diagnosis of an aortoduodenal syndrome, CT with intravenous contrast should be done followed by an upper GI endoscopy to further investigate other causes of gastrointestinal obstruction.

Management of aortoduodenal syndrome varies from conservative treatment to surgery. Surgical intervention is the treatment of choice unless patient is a high-risk candidate. Options for surgery may include EVAR or an open approach with a higher failure of relief from obstruction in the former approach.[5]

CONCLUSION

The management of cases with aortoduodenal syndrome is multidisciplinary and requires a stepwise approach. Given the rarity of this clinical condition, it is imperative that surgeons maintain a high index of suspicion to enhance the probability of a successful outcome in the management of such cases.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any associated images.

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