

# Resection of Celiac Artery Aneurysm

with Bypass Grafting to the Splenic  
and Common Hepatic Arteries

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*Celiac artery aneurysms are rare and typically warrant surgical treatment. Atherosclerosis is their chief cause. Symptomatic patients usually present with abdominal pain. Surgical resection of celiac artery aneurysms is associated with low morbidity and mortality rates. We report the case of a patient whose 2.2-cm celiac artery aneurysm we resected, with subsequent saphenous vein bypass grafting from the celiac trunk to the splenic and common hepatic arteries. In addition, we briefly discuss other treatment options. (Tex Heart Inst J 2017;44(1):77-9)*

**C**ases of celiac artery aneurysm are very rarely reported. These aneurysms warrant treatment because of their propensity to rupture. In most cases, open surgery is recommended. We report the case of a woman who had a large celiac artery aneurysm.

## Case Report

In December 2015, a 68-year-old woman was evaluated for epigastric pain. Computed tomograms showed a 2.2-cm celiac artery aneurysm—larger than the abdominal aorta at that level (Fig. 1). No other aneurysmal abdominal vessels were apparent.

At surgery, the celiac artery was easily palpated. We incised the lesser sac and dissected the celiac, splenic, left gastric, and common hepatic arteries (Fig. 2). The left greater saphenous vein was harvested endoscopically. After the patient was given heparin systemically, we clamped the nonaneurysmal base of the celiac trunk, the splenic artery, and the common hepatic artery. We clipped and divided the diminutive left gastric artery, then excised the celiac aneurysm (Fig. 3). Using 6-0 Prolene suture, we fashioned one end-to-end anastomosis between a reversed saphenous vein graft and the base of the celiac trunk, and another end-to-end anastomosis to the splenic artery. Next, we created an anastomosis between the end of the common hepatic artery and the side of the saphenous vein graft, again using 6-0 Prolene suture (Fig. 4). After final reconstruction, we saw no kinking of any vessel, and blood flow was adequate as seen on intraoperative Doppler images. The patient recovered uneventfully and was discharged from the hospital on the 5th postoperative day. At a clinic visit 2 weeks later, she was doing well and reported eating a regular diet with no abdominal pain.

## Discussion

Marco Aurelio Severino wrote first about the celiac artery aneurysm, in December 1635—after his autopsy study of a young woman whose celiac artery was “dilated to the size of a clenched fist.”<sup>1</sup> The famed papal physician Giovanni Maria Lancisi reproduced that description and added his own observed case<sup>2</sup>; these were translated into English from a later edition of Lancisi’s work.<sup>3</sup> These early discoveries notwithstanding, fewer than 200 cases of celiac artery aneurysm have been reported. In the largest review to date, Graham and colleagues<sup>4</sup> divided 108 cases of celiac aneurysm into eras: historic (1745–1949) and contemporary (1950–1984). In the historic era, many of these aneurysms had an infectious cause: 31% of cases were related to syphilis. Abdominal pain was reported by 92% of patients in the historic era, versus 78% in the contemporary era. The increase in asymptomatic celiac artery aneurysms was

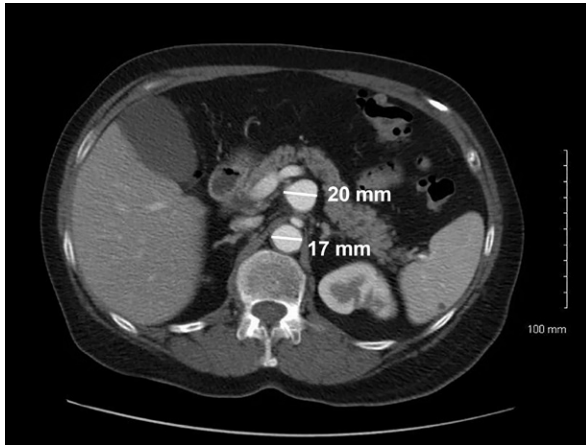
**Key words:** Anastomosis, surgical/methods; aneurysm/history/surgery; celiac artery/pathology/surgery; saphenous vein/transplantation; treatment outcome; vascular surgical procedures

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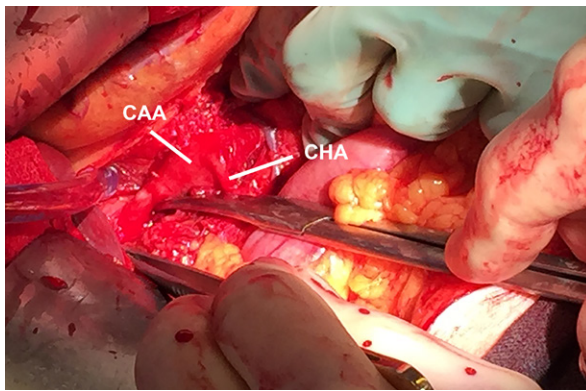
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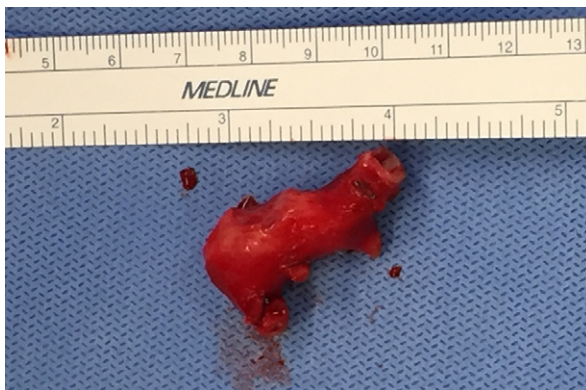
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**Fig. 1** Computed tomogram shows that the celiac artery aneurysm is larger than the abdominal aorta.



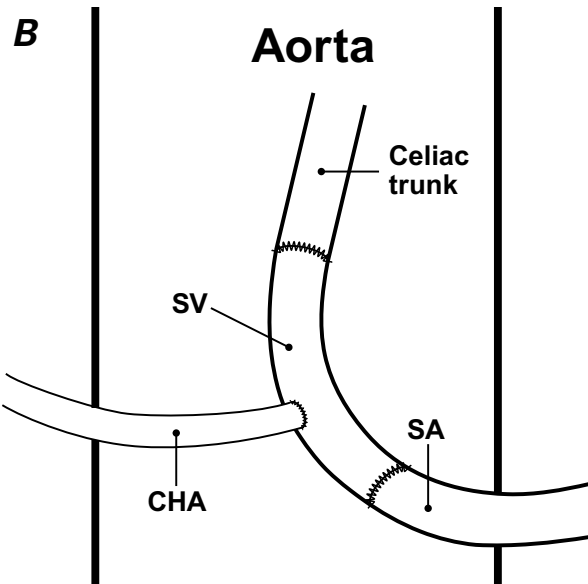
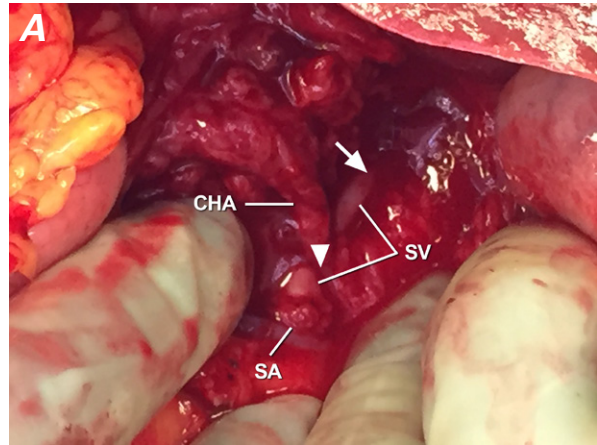
**Fig. 2** Intraoperative photograph shows the celiac artery aneurysm (CAA). The common hepatic artery (CHA) originates from the aneurysmal celiac artery. The patient's head is toward the left of the image, and the liver is toward the bottom of the image.



**Fig. 3** Photograph shows the resected celiac artery aneurysm.

attributed to incidental findings during clinical imaging for other indications. The surgical mortality rate in the latter era was 5.3%.<sup>4</sup>

Open surgery is the usual choice for treating celiac aneurysms. Saphenous vein bypass from the supracereliac aorta to the hepatic and splenic arteries was used at our



**Fig. 4** **A)** Intraoperative photograph shows the completed reconstruction after aneurysm resection. The reversed saphenous vein (SV) graft anastomosis (arrowhead) is to the nonaneurysmal celiac trunk and the splenic artery (SA); the common hepatic artery (CHA) anastomosis (arrow) is to the side of the reversed saphenous vein graft. **B)** Drawing shows the completed process.

institution to treat a patient with celiac aneurysm.<sup>5</sup> In the current case, we sutured the proximal anastomosis not to the aorta, but to the origin of the celiac artery, to avoid clamping the potentially atherosclerotic aorta. Surgery usually involves aneurysm resection with reconstructive bypass grafting from the aorta or celiac trunk to the hepatic arteries, splenic arteries, or both; rarely, mobilization and end-to-end anastomosis are performed.<sup>6-8</sup> Because of the risk of ischemia, ligation without reconstruction is not recommended.

An endovascular approach might be suitable when at least part of the hepatic arterial flow comes from an anatomic variation, such as restored right hepatic artery flow from the superior mesenteric artery. Endovascular options include embolization of the aneurysm or its exclusion from the systemic circulation with use of a

covered stent-graft.<sup>9-11</sup> Hybrid procedures have involved open anastomosis of the splenic artery to the left renal artery followed by splenic-to-common hepatic artery stenting and coil embolization of the celiac artery.<sup>12</sup> Resection with saphenous vein bypass grafting to the splenic and common hepatic arteries yielded good results in our patient.

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