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# Spontaneous Celiac Artery Dissection: A Rare Cause of Abdominal Pain

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## INTRODUCTION

Arterial dissection is typically defined as the cleavage of the arterial wall by an intramural hematoma between two elastic layers.<sup>1</sup> Spontaneous isolated arterial dissection has been reported in the carotids and renal arteries frequently. However, spontaneous visceral artery dissections are a rare occurrence and currently only fifty five cases have been diagnosed. Of these cases, only eleven cases of spontaneous celiac artery dissection have been observed.<sup>1-3</sup> Although the exact cause of visceral artery dissection is unknown, hypertension has been implicated as a predisposing factor.<sup>2-4</sup> We report a case of spontaneous celiac artery dissection observed in the emergency department as part of the work up of abdominal pain. The diagnostic modalities, treatment and follow-up will be discussed.

## CASE PRESENTATION

A 49 year old male presented to the emergency department following a four day history of intermittent abdominal pain. According to the patient, the pain occurred while driving and was noted to be a sharp feeling in the epigastric region. Over the past two days the patient stated that the pain had been a dull ache with intermittent periods of sharp pain. He stated that he had some nausea and vomiting during his episodes of pain. His past medical history was significant for hypercholestermia and borderline hypertension but denied any recent abdominal trauma. Currently, the patient was only taking Lipitor and was controlling his hypertension with diet and exercise. Both family history and past operative history were negative.

Physical examination revealed an obese male in no acute distress. His vital signs included a blood pressure of 138/84, pulse 80, respiratory rate 20 and a temperature of 98.1. Both cardiovascular and pulmonary examinations were within normal limits. However, abdominal examination revealed positive bowel sounds in all four quadrants with moderate tenderness in the upper quadrants with localization of pain to the epigastric region. There was no mass appreciated nor were there any rebound, rigidity or guarding.

Routine laboratory revealed a white blood cell count of 9.9 thou/cumm (normal 3.1-8.5), hemoglobin 15.5 gm/dL (normal 11.5-13.0), hematocrit 41.2% (normal 37-47) and platelet count 215 thou/cumm (normal 140-440). Chemistry panels showed a sodium of 140 meQ/L (normal 136-145), potassium 3.8 meQ/L (normal 3.5-5.3), a chloride 108 meQ/L (normal 98-107), blood urea nitrogen (BUN) 19, creatine 0.9 and glucose of 100. Abdominal labs revealed a lipase of 27, AST 18 and ALT 24. Computer aided tomography of the abdomen and pelvis revealed an irregularity of the celiac axis with surrounding haziness which could be secondary to focal dissection (see figure 1 and 2). An immediate CT angiogram was ordered which confirmed the diagnosis (see figure 3 and 4).

A vascular surgery consult was obtained upon admission. Recommendations included aggressive blood pressure control with intravenous metoprolol in order to keep the systolic blood pressure less than 160 mmHg. During his stay, the patient received several more CT scans which showed no progression of the dissection as well as being started on intravenous heparin. Over the next several days the patient's pain resolved without intervention and was eventually discharged in good condition. He was instructed for close follow-up by vascular surgery ever six months as well as tight blood pressure control with atenolol 25mg twice a day in order to prevent any further dissection.



Figure 1 and 2: Multi Slice CT of the abdomen pelvis showing an irregularity of the celiac axis (left) and a double lumen of the celiac artery (right).

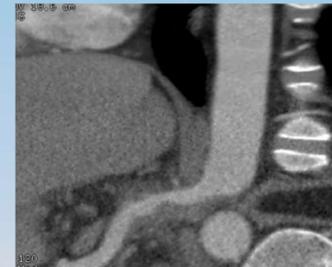


Figure 3 and 4: CTA depicting a filling defect at the celiac axis.



## DISCUSSION

An isolated celiac artery dissection is rare and has been historically associated with a poor prognosis. The initial manifestation is typically abdominal pain with males being five times more likely than women to be diagnosed.<sup>2,3</sup> It has been reported that the most common risk factor for development was hypertension but pregnancy, fibromuscular dysplasia, and previous abdominal surgery have all been linked to several cases.<sup>2,3</sup> Also, research has proposed that any disease state in which there is an increase in arterial flow rate may be a predisposing factor.<sup>5,6</sup>

Clinically the diagnosis is difficult to differentiate due to the relative vagueness of symptoms. However, a pathognomic triad has been discussed with includes sudden epigastric pain, weight loss and an epigastric systolic bruit.<sup>1</sup> Due to the non-specific symptoms, the diagnosis is usually made by imaging of the abdomen. Abdominal angiography has long been considered the gold standard for diagnosis but recently CT of the abdomen and pelvis has grown into favor.<sup>2,3,6</sup> The new high resolution CT scanners allow for high quality 2 and 3 dimensional reconstructions to be created which can visualize not only the extent of the disease but also its progression over several days.<sup>2,3,6</sup> Also, research has shown that CT diagnosis and follow-up has a significant decrease in morbidity as compared to angiography.<sup>2,3,6</sup>

The management of celiac artery dissection has been varied throughout the literature. If the patient is hemodynamically unstable at any point or if the CT shows active hemorrhage from the celiac axis, emergent laparotomy is the treatment of choice.<sup>2,3,6</sup> Unfortunately, even with prompt surgical management those with active hemorrhage from a mesenteric artery due to dissection have a 50% mortality.<sup>7</sup> If the patient is hemodynamically stable, a conservative medical management model may be employed. The goals of medical management are to not only prevent progression of the dissection axis through tight blood pressure control but also to prevent thromboembolic complications by using anticoagulants.<sup>2,3</sup> Due to the scarcity of reports, no research has been conducted on the long term outcomes of comparison of those treated surgically or those with conservative medical management.

In conclusion, acute abdominal pain accounts for 10% of all emergency department visits each year.<sup>8</sup> Most diagnosis's can be teased out through a complete history and physical examination. A spontaneous mesenteric artery dissection is a diagnosis that must be on the differential of all physicians despite its rarity due to its historically high mortality rate. As our case demonstrated, surgical intervention for a mesenteric dissection is not always necessary in the hemodynamically stable patient. However, a low threshold for immediate surgical intervention must be considered if any signs of instability arise.

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