

# MDCT Appearance of An Unusual Asymptomatic Celiac Artery Aneurysm

TEJAS MOHAN TAMHANE, SUSHIL G.KACHEWAR, DILIP L.LAKHKAR

## ABSTRACT

Celiac artery aneurysms are the rarest forms of splanchnic artery aneurysms. They are usually detected incidentally, thanks to the advances in imaging technology. As the

mortality rate in ruptured celiac artery aneurysms is high, timely diagnosis and management are important. The present case highlights the multi detector computerized tomography imaging appearances in one such rare case.

**Keywords:** Aneurysm; Celiac artery; Imaging; Splanchnic Artery Aneurysm

## CASE REPORT

An elderly male of 62 years age visited the surgery outpatient department of this institute with complaint of vague pain in right hypochondriac region for the past ten days. Pain was associated with intermittent non projectile vomiting. One month ago the patient had undergone percutaneous transluminal renal angioplasty (PTRA) for left renal artery stenosis. On physical examination, the patient was afebrile and had a blood pressure of 138/94 mm Hg and a heart rate of 82/min. Abdominal examination was unremarkable. Hence, the patient was referred for advanced imaging.

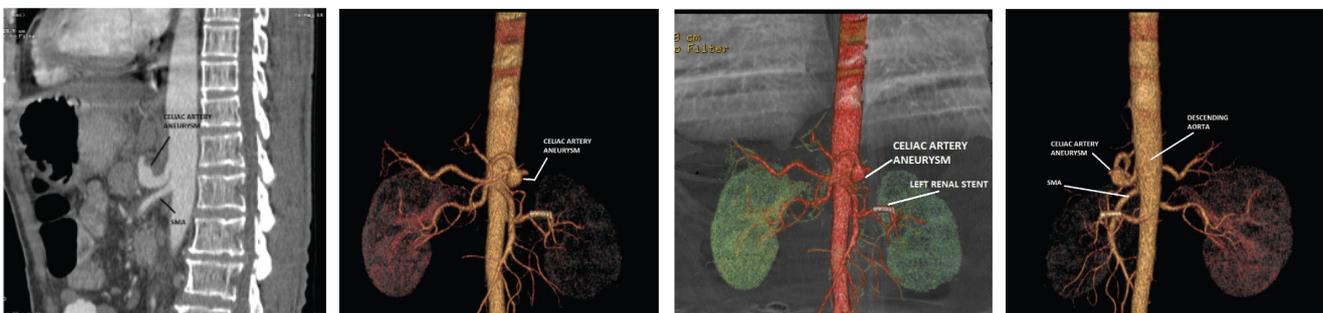
As plain radiograph too was unremarkable, a Multi detector computerized tomography (MDCT) was performed on patient's insistence. MDCT demonstrated a saccular aneurysm of celiac artery of width 1.5 cm located about 1.8 cm from its aortic end. Multiplanar reconstruction [Table/Fig-1], Shaded Surface Display (SSD) [Table/Fig-2,3] and Color Coded SSD images [Table/Fig-4], demonstrated the lesion well. Wall thickening and irregularity of this aneurysm was also noted which suggested

its atherosclerotic etiology. Patient was offered symptomatic medical management instead of surgical intervention and was counseled for regular follow-up considering the size of aneurysm (< 2cm) and debilitated condition of the patient. Informed written consent was obtained from the patient for publication of the data and images.

## DISCUSSION

Splanchnic artery aneurysms (SAA) are usually rare conditions which are characterized by various types of clinical presentations and wide range of final outcomes. Abnormal arterial dilatation also referred as aneurysm was first described in visceral vessels by the French Physician, Beaussier, in 1770 [1].

There are two types of aneurysms: True aneurysms and pseudoaneurysm. In true aneurysms abnormality in vessel wall affects all three layers, whereas in pseudoaneurysm injuries or erosions due to pancreatitis, autoimmune disorders, vascular intervention, laparoscopic cholecystectomy, hepatic transplantation cause focal abnormality such that all layers of



**[Table/Fig-1]:** Sagittal reformat CECT image showing the Celiac Artery aneurysm

**[Table/Fig-2]:** Post CECT SSD frontal view image showing the aneurysm in Celiac Artery and stent in left renal artery

**[Table/Fig-3]:** Post CECT SSD view from behind showing the aneurysm in Celiac Artery and stent in left renal artery

**[Table/Fig-4]:** Post CECT Color Coded SSD view image showing the aneurysm in Celiac Artery and stent in left renal artery

vessel wall are not affected but the vessel shows abnormal dilatation [2]. As all layers are not affected in pseudoaneurysm, the risk of rupture is.

Celiac artery aneurysm is one of the rarest forms of splanchnic artery aneurysms (approx. 4% of all visceral artery aneurysms). The incidence of occurrence ranges from 0.005% to 0.01%. This rare entity was first described in 1745 by Lancissi and since then less than 200 cases are reported worldwide [3-5].

The most common etiological factors for celiac artery aneurysm include infection, atherosclerosis, tuberculosis or syphilis, fibro-muscular dysplasia, trauma and polyarteritis nodosa [6].

Arteriosclerosis and medial degeneration are one of the most important pathological changes encountered in celiac artery aneurysms. Traumatic aneurysms due to penetrating injuries are uncommon. Post-stenotic dilatation and mycotic celiac artery aneurysms are also very rare. Most celiac artery aneurysms are asymptomatic with no sex predilection hence the detection tends to be incidental as it was in our case. Abdominal discomfort localized to the epigastrium accompanies in more than 60% of symptomatic celiac artery aneurysms [7].

The most serious complication of celiac artery aneurysmal disease is rupture. When celiac artery aneurysms rupture and an operative intervention is planned, high mortality rate to the tune of almost 40% has been reported [8-10]. When a rupture occurs, there is intra-peritoneal hemorrhage, which when communicates with alimentary tract can even manifest as haematemesis [6]. Reported rate of rupture is 5% for aneurysmal size 15–22 mm and 50% to 70% for a size more than 32 mm [11]. About 80% mortality rate has also been reported in cases of rupture. It has been concluded that a size of 2 cm is an indication for intervention [12].

Considering the high mortality rate after rupture, early recognition and accurate characterization with proper intervention are crucial. The definitive diagnosis of such aneurysms is made with contrast angiography, but it also can be made with high-quality MDCT (as it was done in our case) and MRI. Angiography localizes and defines the size of the aneurysm and detects other aneurysms as well as vasculitides. It offers the advantage of therapeutic intervention. Therefore, angiography is usually performed when radiologic or surgical therapy is planned.

Treatment of celiac artery aneurysm depends on the presentation, location, and size of the aneurysm. Generally, even if patient is asymptomatic but the diameter of the aneurysm is larger than 2 cm then active treatment is to be considered. Elective surgical repair is safe and effective. If the patient presents with a ruptured aneurysm then rapid resuscitation and surgical or radiologic intervention is of

prime importance. In situations of emergency, one may ligate the aneurysm without spending time on reconstruction of the vessel; as abundant collateral circulation of the viscera ensures adequate blood supply.

Metallic coils can be used for percutaneous transcatheter embolization and has been successful in upto 85% cases [13]. Aneurysms which are difficult to manage surgically and for high-risk surgical patients, embolisation is to be considered [14]. Endovascular stent-graft placement is a new promising treatment modality but long-term results are yet to be evaluated.

## CONCLUSION

Celiac artery aneurysms are although rare and asymptomatic most of the times, but important to recognize because of their high chances of being rupture and resulting consequences. Due to advancements in imaging technology such as MDCT, MRI and selective angiography it is easy to detect such asymptomatic aneurysms. Rupture is one of the most dreaded complications. On detection, management must be individualized according to the size and characteristics of the aneurysms. Usually, elective intervention is required for all symptomatic aneurysms and for most aneurysms which are larger than 2 cm in diameter in order to reduce the risk of rupture and hence mortality.

## REFERENCES

- [1] Beaussier M. The Study of an aneurysm from the splenic artery whose walls have ossified. *Journal Medical Toulouse*.1770; 32: 157.
- [2] Iyori K, Horigome M, Yumoto S, Yamadera Y, Saigusa Y, Iida F, et al: Aneurysm of the gastroduodenal artery associated with absence of the celiac axis: report of a case. *Surg Today*. 2004; 34(4): 360–62.
- [3] Stanley JC, Wakefield TW, Graham LM, Whitehouse WM, Zelenock GB, Lindenaure SM. Clinical importance and management of splanchnic artery aneurysms. *J VascSurg*. 1986; 3(5): 836-40.
- [4] Carr SC, Pearce WH, Vogelzang RL, McCarthy WJ, Nemcek AA, & Jr Yao JS. Current management of visceral artery aneurysms. *Surgery*. 1996; 120(4): 627-33.
- [5] Schanley CJ, Shah NL & Messina LM. Common splanchnic artery aneurysms: splenic, hepatic, and celiac - review. *Ann Vasc Surg*. 1996; 10(3): 315-22.
- [6] Ozbülbul NI. CT angiography of the celiac trunk: anatomy, variants and pathologic findings. *Diagn Interv Radiol*. 2011; 17(2):150-57.
- [7] Carrel D, Cohle SD, Chapman AJ, et al. Fatal hemothorax from mycotic celiac artery aneurysm. *Am J Forensic Med Pathol*. 1992; 13(3): 233-237.
- [8] Graham LM, Stanley JC, Whitehouse WM Jr, Zelenock GB, Wakefield TW, Cronenwett JL, et al. Celiac artery aneurysms: historic (1745-1949) versus contemporary (1950-1984) differences in etiology and clinical importance. *J Vasc Surg*. 1985; 2:757-64.
- [9] Stanley JC, Whitehouse WM Jr. Splanchnic artery aneurysms. In: Rutherford RB ed. *Vascular surgery*. 6<sup>th</sup> ed. Philadelphia: Elsevier Saunders. 2005; 1565-81.

- [10] Chong WW, Tan SG, Htoo MM: Endovascular treatment of gastroduodenal artery aneurysm. *Asian Cardiovasc Thorac Ann.* 2008; 16(1):68-72.
- [11] McMullan DM, McBride M, Livesay JJ, Dougherty KG, Krajcer Z. Celiac artery aneurysm: a case report. *Tex Heart Inst J.* 2006; 33(2):235-40.
- [12] Stone WM, Abbas MA, Gloviczki P, et al. Celiac arterial aneurysms: a critical reappraisal of a rare entity. *Arch Surg.* 2002; 137(6):670-74.
- [13] McDermott VG, Shlansky-Goldberg R, Cope C. Endovascular management of splenic artery aneurysms and pseudoaneurysms. *Cardiovasc Intervent Radiol.* 1994; 17(4):179-84.
- [14] Arepally A, Dagli M, Hofmann LV, Kim HS, Cooper M, Klein A. Treatment of splenic artery aneurysm with use of a stent-graft. *J Vasc Interv Radiol.* 2002; 13(6):631-33.

**AUTHOR(S):**

1. Dr. Tejas Mohan Tamhane
2. Dr. Sushil G. Kachewar
3. Dr. Dilip L. Lakhkar

**PARTICULARS OF CONTRIBUTORS:**

1. PG Student, Department of Radiology, PDVVPF's Medical College, Ahmadnagar, India.
2. Professor, Department of Radiology, PDVVPF's Medical College, Ahmadnagar, India.
3. Professor and HOD, Department of Radiology, PDVVPF's Medical College, Ahmadnagar, India.

**NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Tejas Mohan Tamhane,  
Department of Radiology, PDVVPF's Medical College, At-  
Viladghat, Ahmadnagar, Maharashtra-414111, India.  
E-mail: drtejastamhane88@gmail.com

**FINANCIAL OR OTHER COMPETING INTERESTS:**

None.

Date of Publishing: Oct 01, 2015