Trauma Monthly 2022; 27(5): 611-615

10.30491/tm.2022.351483.1496

Trauma Monthly

Case Report

The Common Trunk of the Celiac and Superior Mesenteric as Celiacomesenteric Trunk: A Case Report

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Received 2022-07-12; **Accepted** 2022-09-04; **Online Published** 2022-11-20

Abstract

Background: The superior mesenteric and celiac arteries originate separately from the aorta. Developmental changes can lead to the formation of a united celicaomesenteric trunk.

Case presentation: An 83-year-old male with epigastric shooting pain radiating to the back was admitted to the hospital. Computed tomography angiography of the abdomen was performed to rule out dissection. Incidentally, a united celiacomesenteric trunk was observed. A long right renal artery directly originated from the aorta with a corkscrew appearance, and the left suprarenal and the left gastric arteries arose from the aorta with a common trunk.

Conclusion: A united celiacomesenteric trunk can put the individual at risk of surgical complications and ischemia due to the lack of dual supply.

Keywords: Celiacomesenteric Trunk, Abdominal Aorta, Anatomic Variation, Abdominal Vasculature.

Introduction

Comprehensive and detailed knowledge of the branches of abdominal aorta and their variations can decrease vascular injuries and intraoperative complications, especially in surgical procedures and interventions in the abdomen[1]. Classically, the superior mesenteric artery (SMA) arises from the anterior part of the aorta below the celiac trunk[2]. SMA is of great significance since it comprises the vasculature of the gastrointestinal tract along with the celiac trunk and inferior mesenteric artery[3].

Origination of the SMA from the celiac artery has been reported in 1.5% of cases[4]. The dual blood supply of the gastrointestinal tract decreases to one when there is a common celiacomesenteric trunk. This puts the abdominal viscera at risk of ischemia in case of atherosclerosis and vascular injuries during interventional procedures[5].

Developmental changes are responsible for this variation. A celicaomesenteric trunk is formed when the 10th and 12th vitelline arteries regress but a proportion of the ventral anastomosis remains[6-8]. Here, we present a case of common celiac and superior mesenteric trunk forming a united celiacomesenteric trunk.

Case Report

An 83-year-old male with epigastric shooting pain radiating to the back was admitted to the hospital. Computed tomography angiography (CTA) of the abdomen was performed to rule out aortic dissection. Incidentally, a united celiacomesenteric trunk was observed (Figures 1 and 2). A long right suprarenal artery directly originated from the aorta with a corkscrew appearance (Figures 3 and 4) and the left suprarenal and the left gastric arteries arose from the aorta with a common trunk (Figure 1).

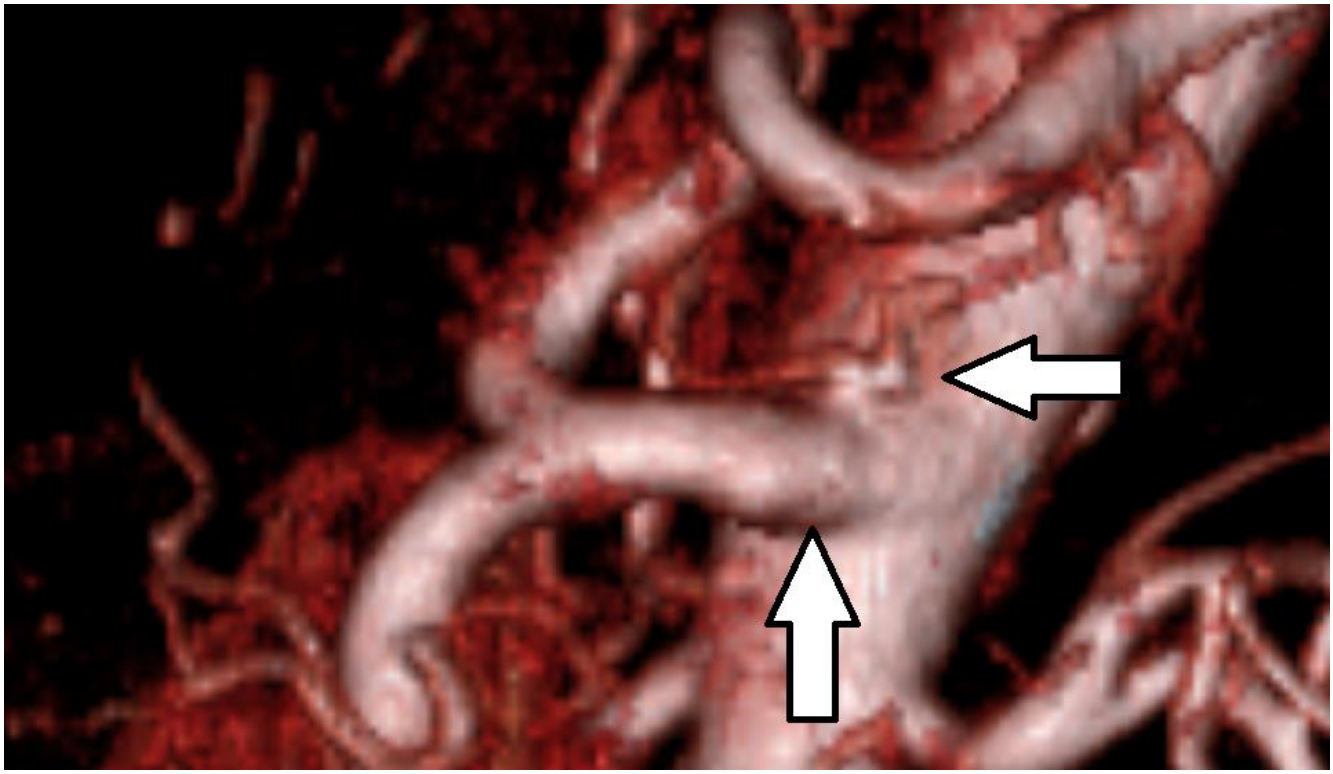

Figure 1: CT angiography; the common trunk of the celiac and superior mesenteric arteries (up arrow), the common trunk of the left gastric and left suprarenal arteries (right arrow).

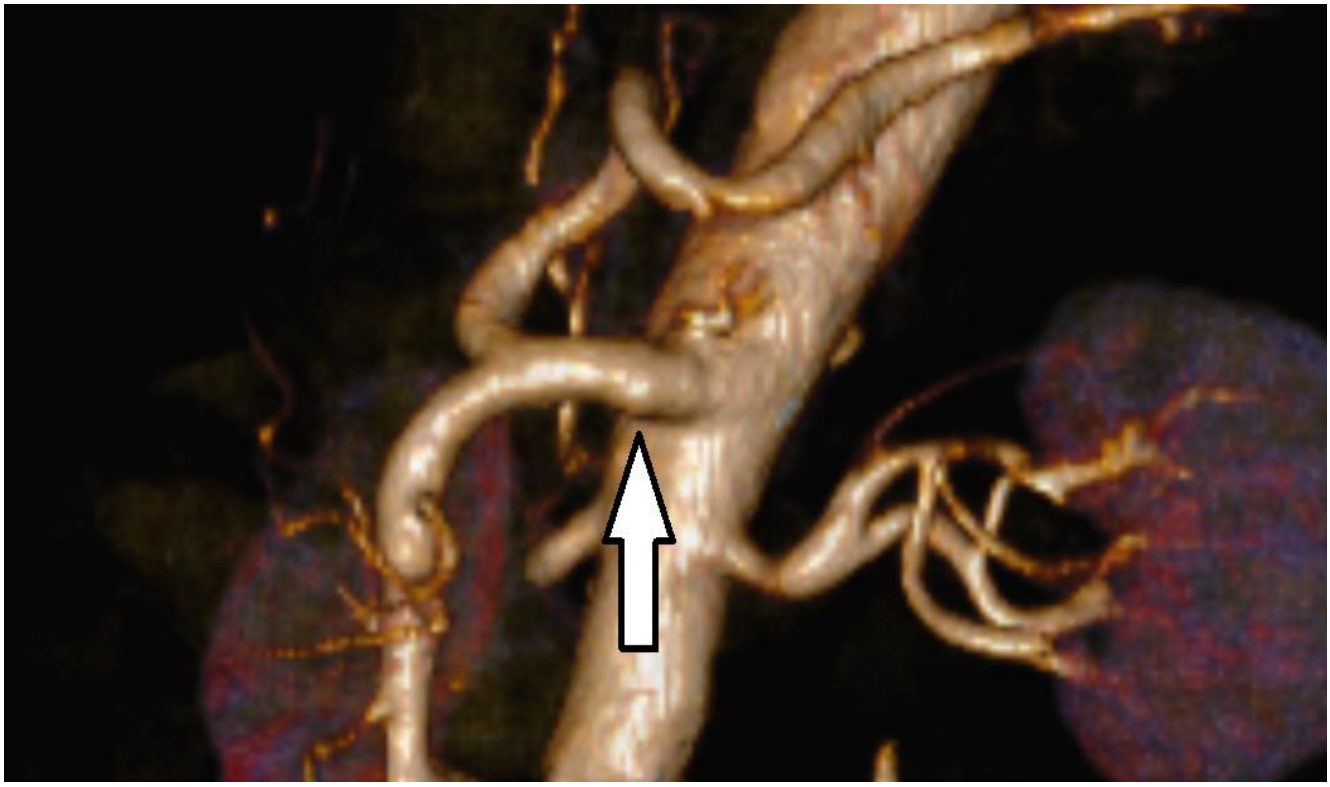

Figure 2: CT angiography; the celiacomesenteric trunk (common trunk of the celiac and superior mesenteric arteries.

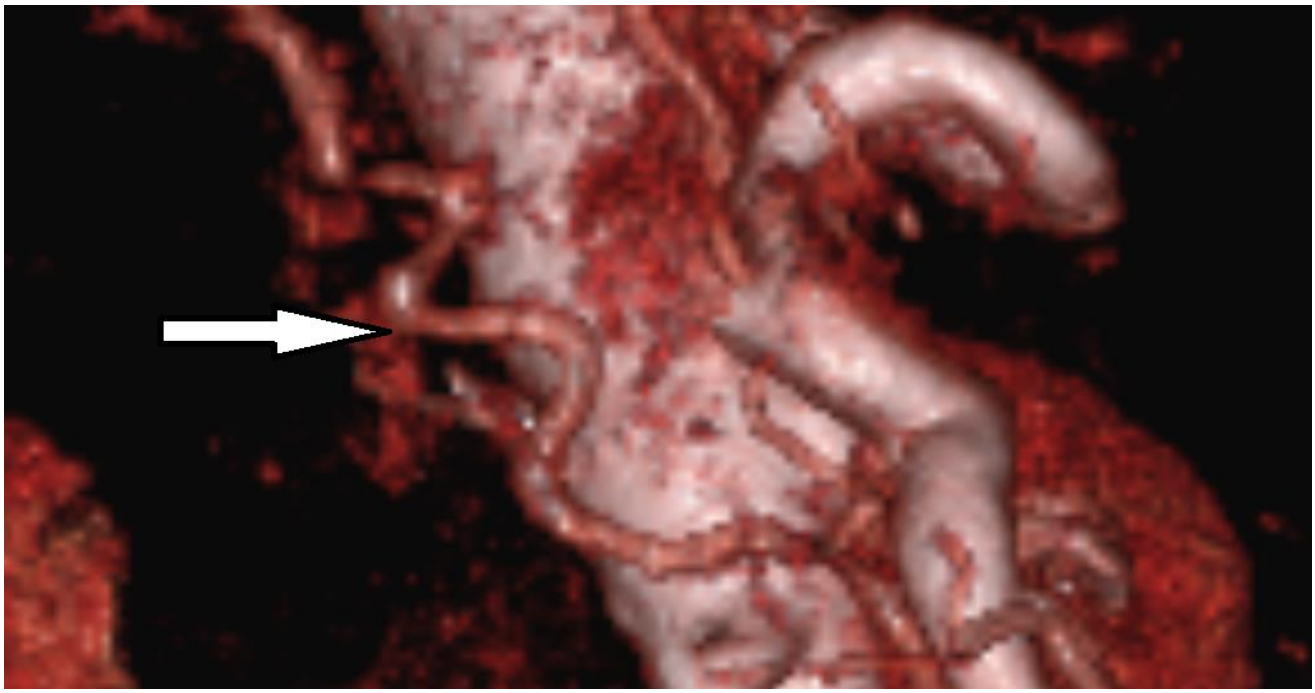

Figure 3: CT angiography; right suprarenal artery directly arising from the aorta.

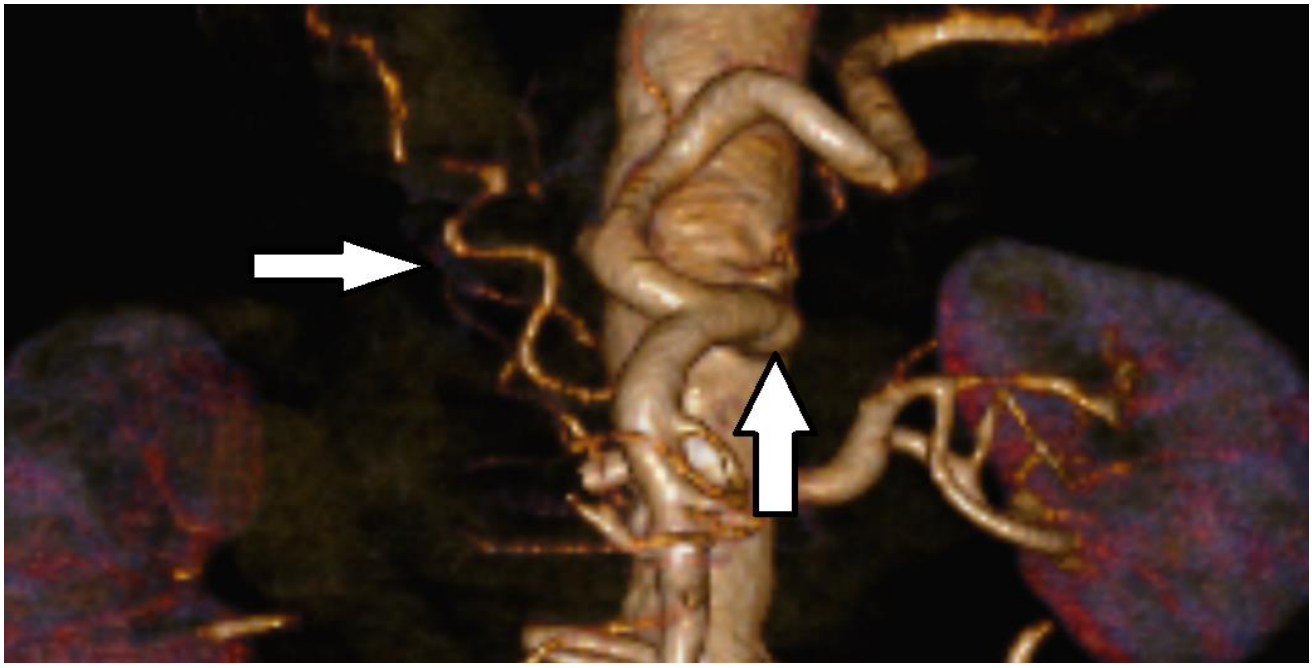

Figure 4: CT angiography; the common celiacomesenteric trunk (up arrow) and the right suprarenal artery (left arrow).

Discussion

The common origin of the SMA and the celiac artery, which can be referred to as the celiacomesenteric trunk makes up less than 1% of the abdominal vascular anomalies, with an incidence of less <2.5% in the general population[9, 10]. In general, SMA variations are not uncommon. In a recent review of 18 studies, the most common variation of SMA was its origination from the right hepatic artery in 6.13% of cases. Nevertheless, sharing the same origin of the celiac trunk and the inferior mesenteric artery arising from the SMA were also reported[3]. Embryological and developmental alterations are responsible for such variations. The roots of the 10th and 13th vitelline arteries are the origins of the celiac and superior mesenteric arteries, respectively. Normally, both the ventral anastomosis and the 10th and 12th vitelline arteries regress. Persistence of the ventral anastomosis leads to the formation of the celiacomesenteric trunk and is the reason behind the communication of the SMA to the celiac trunk itself or its branches[6-8].

In line with our findings, other case reports have demonstrated the common origin of the celiac artery and SMA[11, 12]. Interestingly, in one case, the celiacomesenteric trunk was associated with SMA aneurysm[12]. The clinical significance of this variation lies in the contribution of SMA and celiac artery to the oxygenation of a large proportion of the gastrointestinal tract. SMA is responsible for the blood supply of the jejunum, ileum, cecum and the appendix, which are derivatives of the midgut[13]. The three branches of the celiac trunk, namely the common hepatic artery, the splenic artery, and the left gastric artery supply foregut abdominal derivatives[14]. When the two arteries are united, the individual with such anatomical variation can suffer from ischemia in multiple organs due to intraoperative iatrogenic vascular injury or extensive atherosclerosis of a single arterial trunk. Therefore, knowledge of the detailed abdominal vasculature, especially the presence of a celiacomesenteric trunk is critical in abdominal interventional procedures or surgeries.

Conclusion

A united celiacomesenteric trunk can put the individual at risk of surgical complications and ischemia due to the lack of dual supply.

Abbreviations

None

Authors' contributions

Concept and idea: Mersad Mehrnahad; Data gathering: Mohamad Mosahar Mehrnahad, Mersad Mehrnahad; Preparing the manuscript: Mohamad Mosahar Mehrnahad1, Mersad Mehrnahad.

Acknowledgements

None.

Funding Sources

None.

Disclosure statement

We declare that there is not conflict of interest.

Ethical Statement

None.

References

1. Tsai R, Raptis D, Raptis C, Mellnick VM. Traumatic abdominal aortic injury: clinical considerations for the diagnostic radiologist. Abdominal Radiology. 2018;43(5):1084-93.

2. Santos PVd, Barbosa ABM, Targino VA, Silva NdA, Silva YCdM, Barbosa F, et al. Anatomical variations of the celiac trunk: a systematic review. ABCD Arquivos Brasileiros de Cirurgia Digestiva (Sro Paulo). 2018;31.

3. Silva NGOd, Barbosa ABM, Silva NdA, Arabjo DN, Assis TdO. Anatomical variations of the superior mesenteric artery and its clinical and surgical implications in humans. ABCD Arquivos Brasileiros de Cirurgia Digestiva (Sro Paulo). 2020;33.

4. Yi S-Q, Terayama H, Naito M, Hayashi S, Moriyama H, Tsuchida A, et al. A common celiacomesenteric trunk, and a brief review of the literature. Annals of Anatomy-Anatomischer Anzeiger. 2007;189(5):482-8.

5. Petscavage JM, Maldjian P. Celiomesenteric trunk: two variants of a rare anomaly. Australasian radiology. 2007;51: B306-B9.

6. Walker TG, editor Mesenteric vasculature and collateral pathways2009 2009: © Thieme Medical Publishers.

7. Nonent M, Larroche P, Forlodou P, Senecail B. Celiac-bimesenteric trunk: anatomic and radiologic description—case report. Radiology. 2001;220(2):489-91.

8. Song S-Y, Chung JW, Yin YH, Jae HJ, Kim H-C, Jeon UB, et al. Celiac axis and common hepatic artery variations in 5002 patients: systematic analysis with spiral CT and DSA. Radiology. 2010;255(1):278-88.

9. Michels NA, Siddharth P, Kornblith PL, Parke WW. Routes of collateral circulation of the gastrointestinal tract as ascertained in a idssection of 500 bodies. International surgery. 1968;49(1):8-28.

10. Fontaine R. Angiographic study of the anatomical variations of the hepatic arteries based on 402 specialized examinations. Angiology. 1970; 21:110-3.

11. Jesrani A, Sethar S. Common Origin of Celiac and Superior Mesenteric Arteries as Celiacomesenteric Trunk: Case Report of Rare

Vascular Anatomic Variation. OSP Journal of Cancer Biology and Clinical Oncology. 2020;1(1):1-2.

12. Alam W, Kamareddine MH, Geahchan A, Ghosn Y, Feghaly M, Chamseddine A, et al. Celiacomesenteric trunk associated with superior mesenteric artery aneurysm: A case report and review of literature. SAGE Open Medical Case Reports. 2020; 8:2050313X20938243.

13. Fakoya AOJ, Aguinaldo E, Velasco-Nieves NM, Barnes E, Vandeveer ZT, Morales-Marietti N, et al. A unique communicating arterial branch between the celiac trunk and the superior mesenteric artery: a case report. Open access Macedonian journal of medical sciences. 2019;7(13):2138.

14. Pinal-Garcia DF, Nuno-Guzman CM, Gonzalez-Gonzalez ME, Ibarra-Hurtado TR. The celiac trunk and its anatomical variations: a cadaveric study. Journal of Clinical Medicine Research. 2018;10(4):321.