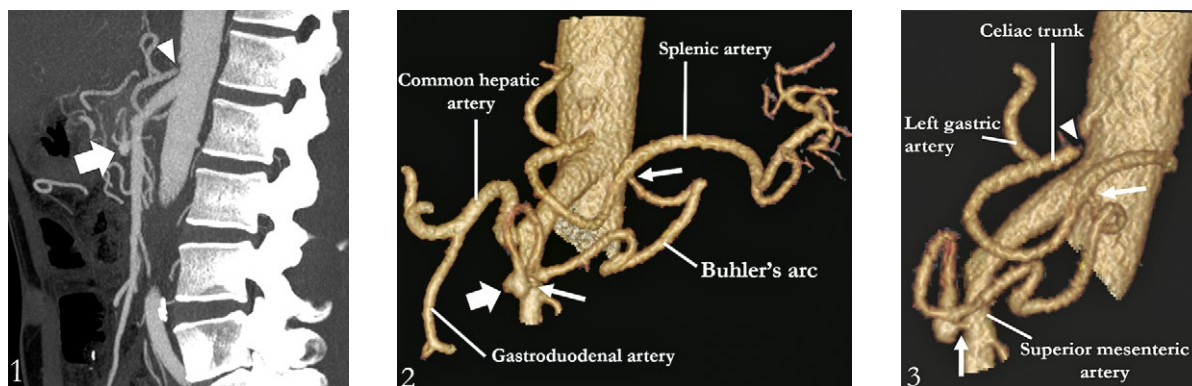


# Buhler's Arc: an Unexpected Finding in a Case of Chronic Abdominal Pain

Radu Octavian Baz<sup>1</sup>, Cristian Scheau<sup>2</sup>, Radu Andrei Baz<sup>1</sup>, Cosmin Niscoveanu<sup>1</sup>

1) Department of Radiology, Sf. Apostol Andrei County Hospital, Constanța; 2) Department of Physiology, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania



A 38-year old male patient was admitted to our hospital for postprandial abdominal pain with increasing intensity over the last two months. He had non-specific clinical history and no weight loss. The physical examination showed no remarkable findings. No biochemical or functional tests were modified. The patient was referred for an abdominal multidetector computed tomography (MDCT) angiography to rule out mesenteric ischemia. The axial images and sagittal maximum intensity projections (MIPs) showed a low insertion of the median arcuate ligament which markedly compressed the origin of the celiac trunk (Fig. 1, arrowhead). Volume rendering (VR) images depicted an abnormal communication between the superior mesenteric artery (SMA) and splenic artery (arrows pointing to origins), known as the Buhler's arc (Figs. 2,3). A saccular aneurysm was identified at the mesenteric origin of the arc (thick arrow). While the common hepatic artery originated from the upper 3rd of the SMA, an accessory left hepatic artery was identified arising from the left gastric artery. The case was diagnosed as a Dunbar syndrome, compensated by the persistence of Buhler's arc, which allowed for retrograde flow through the splenic artery and most likely relieved the symptoms of celiac trunk occlusion, at least partly.

Buhler's arc is a rare anastomotic anomaly between the celiac trunk and SMA, caused by the failure of regression of ventral segmental anastomoses between the 10th to 13th segmental arteries during embryogenesis [1, 2]. It has an incidence that ranges between 0.4 and 4% [2, 3]. There are also studies reporting aneurysms of Buhler's arc [4].

MDCT abdominal angiography employing MIP and VR reconstructions is a very powerful diagnostic tool in identifying and correctly depicting arterial anomalies. Accurately

reporting abdominal vascular variations may contribute to supporting some diagnoses of rare conditions with indistinct clinical symptoms and can prevent many complications during abdominal interventions [5, 6].

**Corresponding author:** Cristian Scheau, [cristian.scheau@umfcd.ro](mailto:cristian.scheau@umfcd.ro)

**Conflicts of interest:** None to declare.

## REFERENCES

1. Bühler A. Über eine Anastomose zwischen den Stämmen der Art. coeliaca und der Art. mesenterica superior. *Gegenbaurs Morphol Jahrb* 1904;32:185-188.
2. Bertelli E, Di Gregorio F, Civeli L. Various cases of direct connections between the celiac artery and the superior mesenteric. *Arch Ital Anat Embriol* 1991;96:281-289.
3. Saad WEA, Davies MG, Sahler L, et al. Arc of Buhler: Incidence and Diameter in Asymptomatic Individuals. *Vasc Endovascular Surg* 2005;39:347-349. doi:[10.1177/153857440503900407](https://doi.org/10.1177/153857440503900407)
4. Jayia P, Hosney S, Subramanian A, Onnie C. Arc of Buhler aneurysm: a rare cause of obstructive jaundice. *Vasc Endovascular Surg* 2011;45:92. doi:[10.1177/1538574410379652](https://doi.org/10.1177/1538574410379652)
5. Kageyama Y, Kokudo T, Amikura K, Miyazaki Y, Takahashi A, Sakamoto H. The arc of Buhler: special considerations when performing pancreaticoduodenectomy. *Surg Case Rep* 2016;2:21. doi:[10.1186/s40792-016-0149-2](https://doi.org/10.1186/s40792-016-0149-2)
6. McNulty JG, Hickey N, Khosa F, O'Brien P, O'Callaghan JP. Surgical and radiological significance of variants of Bühler's anastomotic artery: a report of three cases. *Surg Radiol Anat* 2001;23:277-280. doi:[10.1007/s00276-001-0277-6](https://doi.org/10.1007/s00276-001-0277-6)