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# Celiacomesenteric trunk: a case report

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## SUMMARY

A less common type of celiacomesenteric arterial trunk was noticed during a routine cadaver dissection in a 30-year-old male cadaver. The left gastric artery gave an additional accessory left hepatic branch to the liver, while the common hepatic branch gave rise to right and left hepatic arteries. Additionally, the superior mesenteric artery gave an accessory right hepatic branch, to the liver. Such arterial variations are of clinical and surgical significance, particularly in liver surgery.

**Key words:** Celiacomesenteric trunk – Accessory left hepatic artery – Accessory right hepatic artery – Celiac trunk – Superior mesenteric artery

## INTRODUCTION

The celiac trunk variations have been classified in three major patterns as follows: classical complete celiac trunk pattern (84% of cases), a celiac incomplete trunk (9% of cases) and a celiac trunk with common origin of the main branches (splenic, hepatic or left gastric) with superior mesenteric artery (7% of cases) (Lippert and Pabst, 1975). The second mentioned pattern, incomplete celiac trunk, has been reported in four different types with different incidences: 1, hepatosplenic trunk, the left gastric artery arises as a separate branch of the aorta (5%); 2, gastrosplenic trunk (3%); 3, gastrohepatic trunk (1%) and 4, non common trunk formation (less than 1%). The third pattern, or cases of common origin of main branches of the celiac trunk with superior mesenteric artery, has been reported in several ways: 1, hepatomesenteric trunk (3%); 2, gastrohepatosplenomesenteric or celiacmesenteric trunk (2%); 3, hepatosplenicmesenteric trunk (1%) and 4, splenomesenteric trunk (1%).

The classification and the figures were created after reviewing the most relevant studies previously published about arterial variations (Lippert and Pabst, 1975). Apart from the above-mentioned study, the incidence of the celiacomesenteric trunk has been reported by previous authors with different values: Rossi and Cova (1904) observed it in 1.4% of cases; Lipshutz (1917) found it in 1.96% of cases; Eaton (1917) in 2.4% of cases; Adachi (1928) in less than 0.5%, and Michells (1956) in a sample of 200 specimens did not find it. Here we present a case of celiacomesenteric trunk related with two accessory hepatic branches.

## CASE REPORT

During the routine educational dissection of an abdominal cavity of a 30-year-old male, and after dissecting the abdominal wall and interrupting the lesser omentum, a common celiacomesenteric trunk was observed (Fig. 1). Further inspection revealed that the left gastric artery (LGA) gave off an additional branch, an accessory left hepatic artery. This branch originated from the right side of LGA and passed just in front of the caudate lobe (Fig. 1). The superior mesenteric artery (SMA) also gave off a large accessory right hepatic artery (5 cm in length and 6mm in diameter). The accessory right hepatic artery had an ascending and oblique course located just posterior to portal vein (Fig. 2). The Inferior pancreaticoduodenal artery arose from the main trunk of SMA, and the right and media colic arteries arose as an ascending branch from the ileocolic artery.

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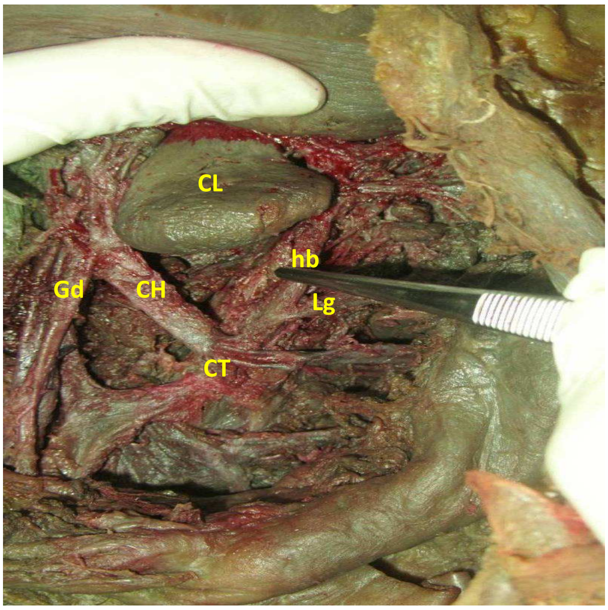


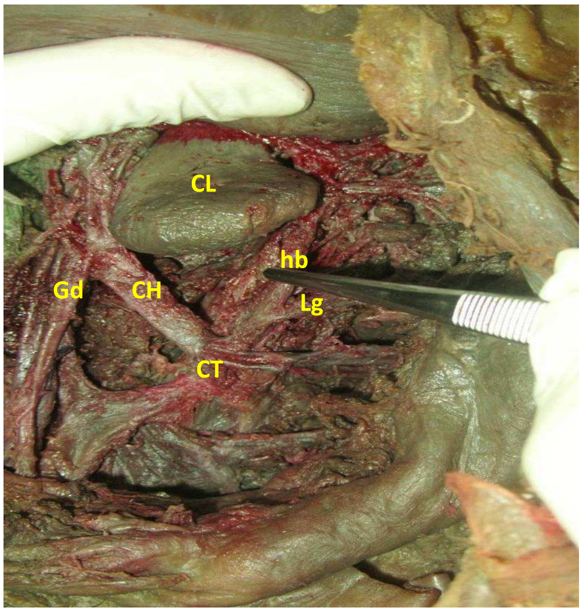


**Fig. 1 (left).-** Anterior view: Lesser omentum has been removed and liver elevated. Celiac trunk (CT) branching pattern shows left gastric artery (Lg) give an additional branch hepatic branch (hb) to liver which runs to the left side of caudate lobe (CL). Common hepatic artery (CH) gives Gastro duodenal artery (Gd) descending inferiorly.

**Fig. 2 (Right).-** From right side view: Superior mesenteric artery (SMA) gives a relatively thick hepatic branch (hb) which passes behind the gastroduodenal artery (Gd). CH: common hepatic artery; CL: caudate lobe.

## DISCUSSION

The anatomical variations of the celiac trunk were first classified by Adachi in 1928 based on 252 dissections of Japanese cadavers. Posteriorly, Michells in 1956 classified the celiac trunk into seven different types. The celiacomesenteric trunk is the rarest one of his classification; he did not observe any case in 200 cadavers examined. Different combinations associated with the celiac trunk have also been reported, including inferior phrenic arteries arising from the celiac trunk (Yuksel et al., 1988), common trunk of the left gastric artery (LGA) and the left inferior phrenic artery (Cavdar et al., 1998). Separate aortic origin of all the 3 branches of celiac trunk, include the presence of a celiac-mesenteric trunk, a hepato-gastric trunk and a hepato-splenic trunk (Bordei and Antohe, 2002). Moreover, in this case the liver received its arterial supply from four different sources: both "normal" right and left hepatic arteries and two accessory right and left hepatic arteries. Michells (1956) described two types of aberrant hepatic arteries, replacing and accessory. An aberrant replacing hepatic artery is a substitute for the normal (usual) hepatic artery that is absent. An aberrant (a variable) accessory hepatic appears in addition to one that is normally (usually) present. The replacing or accessory artery occurs in approximately 42% of individuals. He found in 26% of cases "aberrant" hepatic arteries and in 8% accessory hepatic arteries. The origin of a right accessory hepatic artery has been reported, with an incidence of 5% of cases from the superior mesenteric artery and the origin of an accessory left hepatic artery originated from the left gastric artery has been reported with an incidence of 12% of cases (Lippert and Pabst, 1975). Other origins for the accessory hepatic arteries reported are: gastroduodenal (2%); deep pancreatic (0.5%); right gastric (0.5%) and celiac trunk (0.5%) (Michells, 1956). Obviously, an additional arterial branch can affect of the ratio and oxygenated blood and influence on liver function. Additionally, an aberrant arterial pattern is of surgical importance particularly during liver arterial ligation, transplantation, infusion therapy and chemoembolisation of neoplasm in the liver (Wadhwa and Soni, 2011). Although at present we cannot explain the consequences of such aberrant vascular patterns on liver function, it seems that the aberrant arterial patterns may have influence on the hemodynamic factors, and subsequently on the physiology of the liver.

## REFERENCES

ADACHI B (1928) Das Arteriensystem der Japaner. Kyoto vol. 2, pp 18-71.

BORDEI P, ANTOHE DS (2002) Variations of the celiac trunk branches in the fetus. *Morphologie*, 86: 43-47.

CADAVR S, GURBUZ J, ZEYBEK A, SEHIRILI U, ABIK L, OZDOGMUS O (1998) A variation of coeliac trunk. *Kaibogaku Zasshi*, 73: 505-508.

EATON PB (1917) The celiac axis. *Anat Rec*, 13: 369-374.

LIPSHUTZ B (1917) A composite study of the coeliac axis artery. *Ann Surg*, 65: 159-169.

LIPPERT H, PABST R (1985) Arterial Variations in Man. JF Bergmann Verlag, München, pp 30-53.

MICHELLS NA (1956) Blood supply and anatomy of the upper abdominal organs. JB Lippincott Co, Philadelphia, Montreal, pp 139-141.

ROSSI G, COVA E (1904) Studio morfologico delle arteria delle stomaco. *Arch Ital Anat Embriol*, 3: 485-526.

YUKCEL M, YALIN A, WEINFELDA B (1988) Concurrent anomalies of the abdominal arteries: an extremely long coeliac trunk, and inferior phrenic trunk, and an aberrant right hepatic artery. *Kaibogakv Zasshi*, 73: 497-503.

WADHWA A, SONI S (2011) A composite study of coeliac trunk in 30 adult human cadavers - its clinical implications. *G J MR*, 11 (1) 1.0.