

CASE REPORT

Rare Origin of Accessory Left Gastric Artery from Splenic Artery and Its Clinical Significance: A Case Report

B. Prakash Babu^{1}, R. Huban Thomas¹, Aswathi C, Divya C¹*

¹Department of Anatomy, Kasturba Medical College, Manipal Academy of Higher Education, Manipal-576104 (Karnataka) India

Abstract:

During routine dissection of abdomen an accessory left gastric artery was found arising from the splenic artery in one out of 30 adult formalin fixed cadavers in the Department of Anatomy, Kasturba Medical College Manipal. The origin of left gastric artery was normal. The accessory artery was running upwards behind usual left gastric artery and run along lesser curvature of the stomach and also gave oesophageal branch supplying the lower part of esophagus. Before attempting any surgical procedure on stomach or lower end of oesophagus, preoperative evaluation of the arterial pattern and variations is desirable for correct surgical approach and to reduce postoperative complications. However, accessory left gastric origin from splenic artery becomes important to be noted when the patient undergoes angiography for diagnostic bleeding or during trans catheter therapy. Knowledge about these variations is also important to be noted prior to surgery in order to prevent postoperative complications which would be fatal.

Keywords: Splenic Artery, Accessory Left Gastric Artery, Left Gastric Artery

Introduction:

The smallest branch given off by the coeliac trunk is the left gastric artery. It courses to the left of midline and as it ascends it moves across the left crus of diaphragm below the posterior part of the lesser sac. It runs a course forward in the lesser omentum and runs along the lesser curvature of the stomach. At the summit of its course, it gives off an

oesophageal branch supplying lower end of oesophagus. As it runs in the lesser omentum in gives off many branches that supplies the anterosuperior and postero inferior part of stomach. Thereafter, it finally ends up anastomosing with the right gastric artery at the point of the incisura angularis.

There are reports of origin of accessory left gastric artery originating from left hepatic artery running along fissure for ligamentum venosum although the flow of blood is in the opposite direction [1]. The accessory left gastric artery is distributed on the gastric wall usually after dividing into two branches. An esophageal branch from it may supply a wide area over the gastric fundus or a small localized area around the cardiac part of stomach [2].

We report in an adult male cadaver normal origin of all three branches from coeliac trunk and origin of an accessory left gastric, originating from the splenic artery. Presence of this artery may affect both the diagnosis and treatment of lower end of oesophagus and proximal gastric hemorrhage and intra-arterial infusion of chemotherapeutic agents for hepatic neoplasms [2]. Despite its clinical importance, not many anatomy books describe this arterial variant. This study describes the incidence, anatomy and clinical significance of accessory left gastric artery from splenic artery.

Case Report:

Present study was carried out on 30 adult aged formalin fixed cadavers of both sexes during routine dissection of IMBBS students at Kasturba Medical College, Manipal. Abdomen region was opened as per the instructions of Cunningham's Manual of Anatomy. The lesser omentum was removed; coeliac trunk and its branches were exposed and were found to be normal (Fig.1).

Out of 30 cadavers, in one specimen accessory left gastric artery was arising from splenic artery and was running behind normal gastric artery in posterior wall of lesser sac which also gave additional branch to lower end of oesophagus (Fig.2). The accessory left gastric artery was painted and photographed.

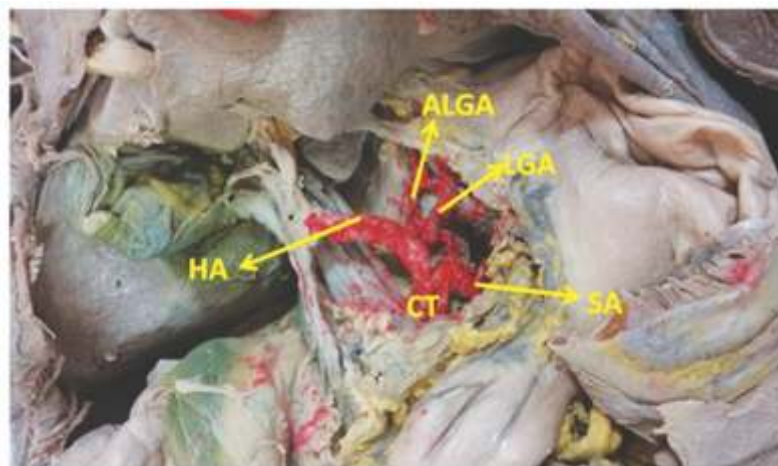


Fig.1: Showing Coeliac Trunk and Its Branches. CT: Celiac Trunk; SA: Splenic Artery; HA: Hepatic Artery; LGA: Left Gastric Artery; ALGA: Accessory Left Gastric Artery

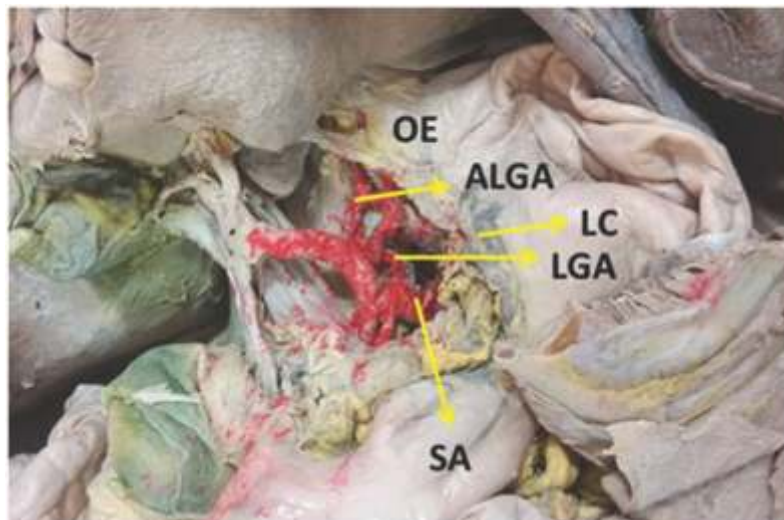


Fig.2: Showing Origin of Accessory Left Gastric Artery from Splenic Artery. LGA: Left Gastric Artery; ALGA: Accessory Left Gastric Artery; SA: Splenic Artery; LC: Lesser Curvature of Stomach; OE: Oesophagus

Discussion:

Ishigami *et al.* [3] have reported the incidence of origin of accessory left gastric artery from left hepatic artery varying from 1.8-21.2% in their study. The incidence was found to be more in Japanese (11.1%) than in Europeans (2%) in autopsy series as cited by Das [4]. Kavitha *et al.* [5] have reported origin of left gastric artery arising from left hepatic artery in three out of 33 cases (9.09%). Two out of three variant arteries gave esophageal branches supplying lower end of oesophagus. Presence of such variation may affect the angiogram normally taken resulting in mal-imaging of the vessels and also in patients with gastric bleeding. There are also reports of occurrence of gastric cancer by the presence of accessory gastric artery as cited by Suzuki *et al.* [6]. Branches supplying gastric fundus have special clinical importance in surgical procedures performed on stomach, in particular on its fundus, especially the bariatric procedure in pathological obesity, fundoplication in esophageal hiatus hernia and gastroesophageal reflux, proximal gastrectomy in gastric tumors, esophageal reconstruction with utilization of stomach after esophagostomy. A precise anatomical description of the arterial supply of the operated organ reduces the number of complications due to gastric fundus ischemia after the above procedures [7]. It is very important to have a clear picture about the differences in the arterial pattern during surgeries such as regional lymphadenectomy during oncologic gastrectomies [8].

The variant anatomy of the accessory left gastric artery observed during cadaveric dissections offers a good learning potential which may provide an alternative perspective to view

common morphology and its structural and functional importance which in turn may impart the concept of patient individuality and subsequent individualization during Medical and Surgical therapies [9].

The primitive splanchnic arteries located in the dorsal mesentery of the gut, which gradually fuse to form the arteries of the foregut, midgut and hindgut as celiac trunk, superior and inferior mesenteric arteries respectively as cited by Sadler [10]. The persistence or unusual development of ventral splanchnic arteries may result in the variations of coeliac trunk. The vascular anomalies are usually asymptomatic. Most of the vascular variations are been identified during the clinical diagnostic evaluations or cadaveric studies. The branching pattern of coeliac trunk and origin of variant accessory left gastric artery from splenic trunk as found in our case may provide additional information for the clinical procedures of diagnostic angiography, trans catheter orchemoembolization therapy and other surgical procedures.

Conclusion:

A precise anatomical description of the arterial supply of the operated organ reduces number of complications like ischemia of gastric fundus after the surgical procedures performed on stomach. Hence, it is of utmost importance to note all these variations before doing any surgical procedures or during any radiological interventions such as diagnostic angiography or gastrointestinal bleeding in order to prevent postoperative complication which might be very fatal.

References

1. Weiglein AH. Variations and topography of the arteries in the lesser omentum in human. *Clin Anat* 1996; 9:143-50.
2. Nakamura H, Uchida H, Kuroda C, Yoshioka H, Tokunaga K, Kitatani T, et al. Accessory left gastric artery arising from left hepatic artery: an angiographic study. *AJR Am J Roentgenol* 1980; 134(3): 529-32.
3. Ishigami K, Yoshimitsu K, Irie H, Tajima T, Asayama Y, Hirakawa M, et al. Accessory left gastric artery from left hepatic artery shown on MDCT and conventional angiography: correlation with CT hepatic arteriography. *AJR Am J Roentgenol* 2006; 187(4):1002-9.
4. Adachi B. Das Arteriensystem der Japaner. Tokyo: Kenkyusha Press, 1928:11-68.
5. Kavith KB, Usha V. Study of accessory left gastric artery from left hepatic artery and its clinical importance. *Anat Karna* 2013;7(3):43-7.
6. Suzuki S, Ueki T, Okamoto M, Fukuda M, Miyauchi T, Ishida M. Carcinoma of the gastric remnant fed by accessory left gastric artery: A case report [in Japanese]. *Nippon Geka Gakkai Zasshi* 1991; 92(1):89-92.
7. Gregorczyk M, Dabkowska A, Tarka S, Cizek B. The anatomy of the fundic branches of the stomach: preliminary results. *Folia Morphol (Warsz)* 2008; 67(2):120-5.
8. Guadagni S, Gola P, Marsili L, Catarci M, Mancini E, Agnifili A, et al. Arterial vasculature of the stomach and oncologic gastrectomies. *Surg Radiol Anat* 1995; 17(3): 269-76.
9. Saeed M, Ahmad RA. Duplication of hepatic artery. *Saudi J Gastroenterol* 2001; 7(3):103-8.
10. Sadler TW. Digestive System. Langman's Medical Embryology. 8th ed. Philadelphia, Williams & Wilkins, 2000:270-30.

***Author for Correspondence:** B. Prakash Babu, Department of Anatomy, Kasturba Medical College, Manipal Academy of Higher Education, Manipal-576104 (Karnataka) India Email: billakantibabu@yahoo.co.in Cell: 9880780271