



## Clinical relevance of a rare variation in the origin of gastroduodenal artery

Published online July 8th, 2008 © <http://www.ijav.org>Ramasamy CHITRA <sup>+</sup>

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Received February 12th, 2008; accepted July 1st, 2008

### ABSTRACT

Knowledge of variations in the origin of gastroduodenal artery is important for the procedure of hepatic arterial chemotherapy. We describe a rare variation in the origin of gastroduodenal artery. In a male cadaver, the gastroduodenal artery originating from the celiac trunk passed anterior to portal vein over the upper border of head of pancreas and divided into the right gastroepiploic and superior pancreaticoduodenal arteries. These types of arterial variations require complete preoperative evaluation in various surgical procedures. © IJAV, 2009; 2: 69–70.

**Key words** [gastroduodenal artery] [celiac trunk] [portal vein] [right gastroepiploic artery] [superior pancreaticoduodenal artery]

### Introduction

Gastroduodenal artery is usually the first branch of common hepatic artery. Arising posterior and superior to the first part of duodenum, it is short and wide. At the lower border of the first part of the duodenum it divides into the right gastroepiploic and superior pancreaticoduodenal arteries [1].

### Case Report

We describe a rare variation in the origin of gastroduodenal artery from celiac trunk during routine educational dissection of a 50-year-old male cadaver of Asian origin in our department of Anatomy.

Celiac trunk apart from its usual three branches, the left gastric artery, common hepatic artery and splenic artery also gave origin to the gastroduodenal artery in the present case (Figure 1).

The gastroduodenal artery passed anterior to the portal vein over the upper border of head of pancreas, and divided into the right gastroepiploic and superior pancreaticoduodenal arteries. The proper hepatic artery was retro-portal and divided into right and left hepatic arteries.

### Discussion

The anatomical variations of the celiac trunk are due unusual embryological development of the ventral splanchnic branches of the aorta [2].

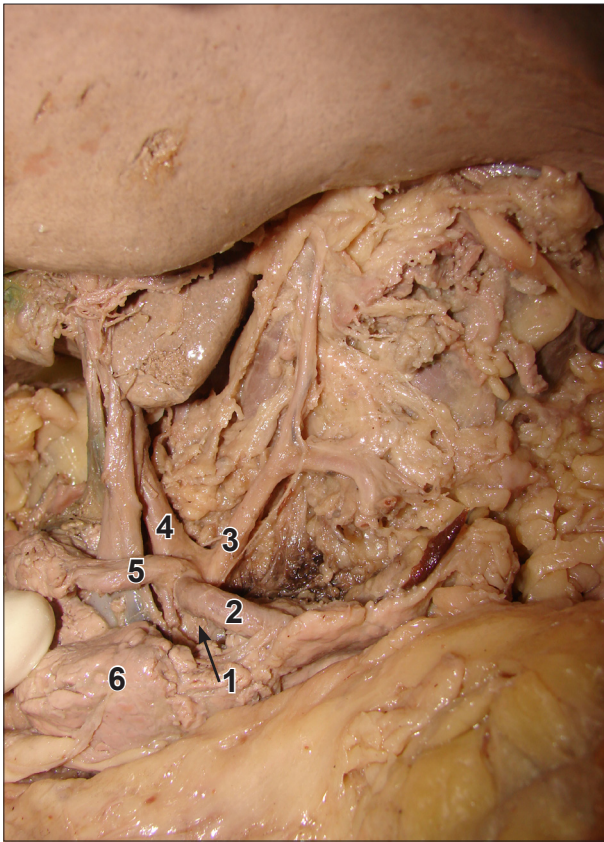
Lipshutz reported that the gastroduodenal artery was originated from the common hepatic artery in 92.3% of cases [3]. He observed the origin of the gastroduodenal artery as the celiac trunk in three (3.61 %) out of the 83 cadavers.

Michels reported five cases (2.5%) in 200 dissections with the gastroduodenal artery originating from the celiac trunk or the superior mesenteric artery, without specifying the number of origins from each artery [4,5].

In the cadaveric study of Petrella et al., a higher incidence of 6.74% was reported [6]. Daseler et al., observed a single case of gastroduodenal artery from the celiac trunk in 500 dissections [7]. Gastroduodenal artery arising from superior mesenteric artery has been reported by Huu et al. [8]. Gastroduodenal artery arising from right or left hepatic artery has been reported in a study of 125 CT angiograms by Rawat [9]. Peschaud et al. reported a retro-portal common hepatic artery [10].

The gastroduodenal artery steal syndrome during liver transplantation was reported by Nishida et al. [11]. Gastroduodenal artery is cannulated in the procedure of hepatic arterial infusion pumps in hepatic arterial chemotherapy and for liver and/or colon resection. If the cannulated artery is as in the present case, the chemotherapeutic agents may reach the left gastric or splenic arteries.

In a study of 256 patients who underwent hepatic arterial infusion pump placement by Allen et al., the cannulation



**Figure 1.** Gastroduodenal artery arising from celiac trunk. (1: celiac trunk; 2: splenic artery; 3: left gastric artery; 4: retroportal hepatic artery; 5: gastroduodenal artery; 6: pancreas)

of the vessels other than gastroduodenal artery resulted in increased pump complication rates and decreased pump survival [12]. Hence the knowledge of the variations in the origin of gastroduodenal artery is essential for the surgeons.

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