



# Whipple's Procedure and Variations in the Anatomy of the Vasculature: A Report of a Rare Case

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## Abstract

Variations of celiac trunk vascular anatomy is common. We report a very rare case in which the middle colic artery was originating from the gastroduodenal artery. This variation was identified intraoperatively during a Whipple's procedure for a tumor located in the pancreatic head of a 72 years-old male patient.

**Keywords:** Anatomic variation; Middle colic artery; Gastroduodenal artery

## Introduction

Deviations from the common vascular anatomy of the celiac trunk is frequently identified during hepaticopancreaticobiliary operations [1]. Approximately one fourth of patients are considered to have an anomalous hepatic artery. Failure to recognize such anatomic variations could potentially lead to devastating bleeding complications, particularly, in very common procedures, namely laparoscopic cholecystectomies. In this case report we sought to present our experience in regard to an extremely rare case, in which an anomalous Middle Colic Artery (MCA) was arising from the Gastroduodenal Artery (GDA) [2].

## Case Presentation

We present a case that underwent pancreaticoduodenectomy (Whipple's procedure) for adenocarcinoma of the pancreatic head. As far as the patient's demographic are considered, he was a 72 years-old male, with past medical history of Chronic Obstructive Pulmonary Disease (COPD) and well-controlled hypertension. He was admitted in our clinic because of worsening anorexia and weight loss over a month with associated recent onset of painless obstructive jaundice. Further clinical exam, laboratory and imaging investigation revealed an operable space-occupying mass with dimensions 1.6 cm × 1.8 cm in the area of the pancreatic head that was obstructing the extrahepatic biliary tree. Further scan for staging of the disease was negative for distant metastases. The patient was initially subjected to Endoscopic Cholangiopancreatography (ERCP) and plastic stent placement. Cytology report was compatible with pancreatic adenocarcinoma. The patient ultimately went to the operative room for the resection of his tumor. During the abdominal exploration the GDA were identified and dissected. Further dissection distally, revealed that the middle colic artery was originating from the GDA (Figure 1). The pancreaticoduodenectomy was performed successfully and the patient recovered uneventfully.

## Discussion

We presented a very rare case of vascular anatomy variation. Review of the current literature revealed one similar case report and another case series in cadavers [2,3]. Other origins of the middle colic artery that have previously been reported include the splenic artery, common hepatic artery, inferior mesenteric artery, inferior pancreaticoduodenal artery, the aorta or a combination of the right colic and/or ileocolic arteries [3-5]. As far as we are aware, this was the second case of the specific vascular anomaly that was discovered intraoperatively in the entire literature. We retrospectively reviewed the abdominal CT scan of the patient multiple times and, thanks to the instrumental contribution of the radiology department, the anomalous vessel was eventually detected and marked (Figure 2).

## Conclusion

Anomalous middle colic artery, originating from the gastroduodenal artery is an extremely rare anatomic variation of the vasculature and very few surgeons will have the opportunity to encounter

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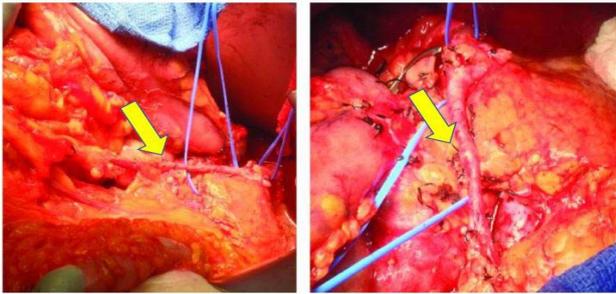
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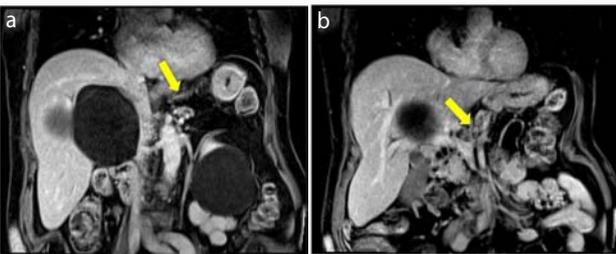
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**Figure 1:** Middle colic artery originating from the gastroduodenal (picture from the operative room).



**Figure 2:** a. Up: Gastroduodenal artery (arrow). b. Down: Middle colic artery originating from GDA (arrow).

it through their entire career. However, it is definitely worth being well described in the literature and surgeons should be aware of it.

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