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Aberrant Ileo-Colic Artery: Case Report Of Anatomical Variation

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ABSTRACT

INTRODUCTION: The ileo colic artery branch of the superior mesenteric artery, supplies blood to the terminal ileum and proximal colon. Anatomical variations in this artery are less common and can have significant implications for surgical and radiological procedures.

CASE: An embalmed cadaver used for gross dissection during the gross anatomy dissection for undergraduate students at the Department of Sharir Rachana Alva's Ayurveda Medical College, Moodbidri. During the dissection of abdominal aorta, it was found that ileocolic artery is giving branch to right colic artery.

CONCLUSION: In our case, ileocolic artery originated from superior mesenteric artery giving branch to right colic artery. Awareness and knowledge regarding the variations in Superior mesenteric artery and ileocolic artery are important for surgeons to avoid both intraoperative and postoperative complications during surgical and diagnostic procedures involving intestines.

Keywords: Aberrant Ileocolic artery, Right colic artery, Superior mesenteric artery (SMA), Anatomical variation.

INTRODUCTION

Ileocolic artery is the major branch of superior mesenteric artery (SMA), supplying blood to the distal ileum, ileocecal valve, caecum, vermiform appendix[1]. The superior mesenteric artery is the artery of the midgut. It supplies all derivatives of the midgut, namely: Lower part of the duodenum below the opening of the bile duct, Jejunum, Ileum, Appendix, Caecum, Ascending colon, right two-thirds of the transverse colon, Lower half of the head of the pancreas.

The superior mesenteric artery arises from the front of the abdominal aorta, behind the body of the pancreas, at the level of vertebra L1, one centimetre below the coeliac trunk. It runs downwards and to the right, forming a curve with its convexity towards the left. At its origin it lies first behind the body of the pancreas and then Infront of the uncinate process. Then it crosses the third part of duodenum, enters the root of mesentery and runs between its two layers. It terminates in the right iliac fossa by anastomosing with a branch of the ileocolic artery.

It gives off five set of branches from both right and left sides:

Those arising from its right side are inferior pancreatico-duodenal artery, middle colic artery, right colic artery and ileocolic artery. From left side are 12-15 jejunal and ileal branches[2].

ILEO-COLIC ARTERY:

Ileocolic artery is mesodermal in origin, arises from the right side of the superior mesenteric artery. It runs downwards and to the right, and divides into superior and inferior branches. The superior branch anastomoses with the right colic artery, and the inferior branch anastomoses with the termination of the superior mesenteric artery. The inferior branch of the ileocolic artery gives off: An ascending colic branch to the ascending colon, Anterior and posterior caecal branches to the caecum, an appendicular branch which passes behind the ileum and reaches the appendix through its mesentery, The ileal branch to the terminal portion of the ileum[3].

The branches of the ileocolic artery take part in the formation of the marginal artery of Drummond, which is an anastomotic channel between the branches of the superior mesenteric and inferior mesenteric arteries. This channel gives off the vasa recta, a collection of small vessels that supply the major portion of the large intestine[4].

Types of anatomical variation in ileo-colic artery:

- **Accessory ileocolic artery**: An additional artery arising from the superior mesenteric artery or its branches, which supplies the ileocolic junction.
- **Replaced ileocolic artery**: The ileocolic artery arises from the inferior mesenteric artery instead of the superior mesenteric artery.
- Common ileocolic trunk: The ileocolic artery and the right colic artery arise from a common trunk.
- **Early bifurcation**: The ileocolic artery bifurcates early, giving rise to two or more branches that supply the ileocolic junction.
- **Absent ileocolic artery**: The ileocolic artery is absent, and the terminal ileum and proximal colon are supplied by other arteries.

The ileocolic artery is present in more than 95% of people. In roughly 50% of patients, the ileocolic artery travels anterior and superior to the superior mesenteric vein. The most common variations of the right colon vasculature include the common origin of the right and middle colic arteries, with separate vascular of the ileocolic, and the common origin of the right colic and ileocolic, with a distinct origin of the middle colic. An additional anatomic variation includes the absence of the right colic artery[5].

Clinical significance:

- Occlusion of the Superior mesenteric artery can lead to ischemia in the distribution of the Superior mesenteric artery in its entirety including ileo-colic artery.
- A thorough understanding of the vascular anatomy and anatomic variations of the right colon is essential for successful surgical intervention to ensure proper hemostasis and healing of bowel anastomosis.
- Anatomical variation in the ileocolic artery can have significant implication in radiological misinterpretation, potentially resulting in incorrect diagnosis and treatment.

Case presentation

An embalmed cadaver was used for gross dissection during the gross anatomy dissection for undergraduate students at the department of sharira Rachana Alva's ayurveda medical college Moodbidri. The abdominal region of male old cadaver was dissected following the steps outlined in the Cunningham practical manual.

During the dissection of ventral branches of abdominal aorta that is superior mesenteric artery was found behind the body of pancreas at the level of L1. Then while tracing its branches it was found that ileo-colic artery was running downwards towards right and giving off branch right colic artery which is the main branch of superior mesenteric artery. Usually, right colic artery arises near the middle of the concavity of SMA.In this cadaver it was found to be arising from ileocolic artery.

Fig 01: Branches of superior mesenteric artery

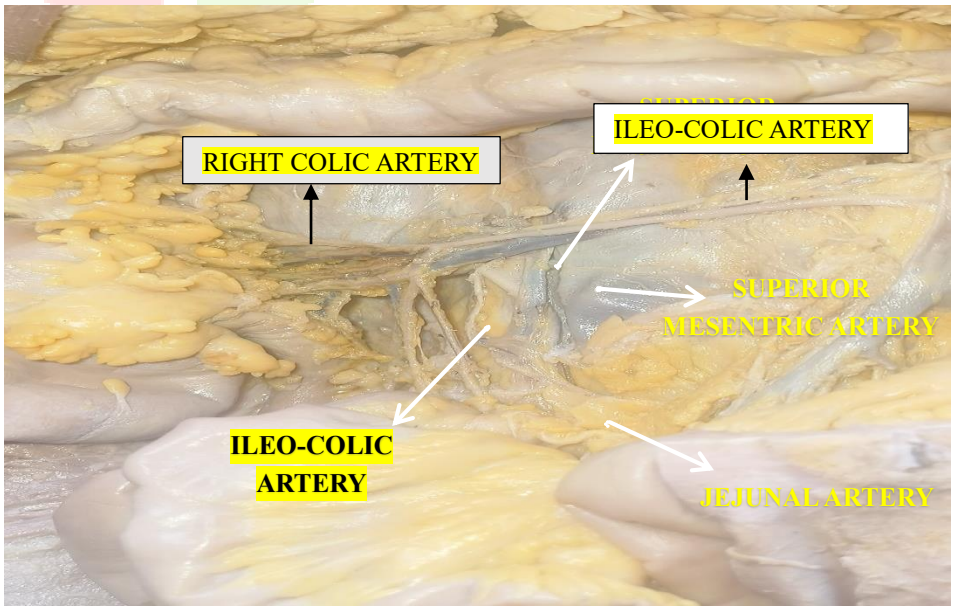

Fig 02: Right colic artery arising from ileo-colic artery

As per the previous studies, in approximately 30% of cases, the ileocolic artery gives off the right colic artery, which is usually a branch of the superior mesenteric artery. The right colic artery is then referred to as the accessory ileocolic artery[6].

Preceding cadaveric study conducted by Anaimalai Kandavadivelu et al reported higher origin of ileo colic artery and common trunk for right colic and ileocolic artery[7]. The Study conducted by Kunli Du et al. documented two branches of the ICA originating from the SMA[8].

The pattern of blood supply is important for the pathological conditions involving the colon. For carcinoma of the colon, accompanying arteries are to be ligated during resection of the involved colon. The ischemia of the involved colon may occur. Most of the lymphatic vessels draining the colon run along with the blood vessels, it is therefore important for surgeons to appreciate the variations in the blood supply of the colon for maximum possible lymphatic field excision in colonic resections done for carcinoma[9].

Conclusion

Superior mesenteric vessels are often encountered in various surgical and interventional procedures. In the present study, we have reported variation in the ileocolic artery giving branch to right colic artery. These variations may help surgeons performing laparotomy, laparoscopic procedures, angiographic procedures, and colonic resection for malignancies, particularly surgical resection of carcinoma of the head of the pancreas.

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