COELIAC TRUNK AND ITS ANATOMICAL VARIATION: A CASE REPORT

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Received on: 31/12/18 Accepted on: 08/02/19

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DOI: 10.7897/2277-4343.100239

ABSTRACT

A unique variation was noted in the Coeliac Trunk of a 65 years old male cadaver, during a routine dissection class for Under Graduate Students. In this case, the Coeliac Trunk was replaced by two separate arterial trunks. The first arterial trunk directly originated from the abdominal aorta, which was the Left Gastric Artery. The second arterial trunk was bifurcated to form the Common Hepatic Artery and the Splenic Artery (Hepatosplenic Trunk). Knowledge of such variations is important for gastroenterological surgeons and interventional radiologists, while performing major surgeries such as the Liver Transplantation. The clinical correlation and differential diagnosis of the above mentioned variation of Coeliac Trunk is discussed.

Keywords: Coeliac Trunk, Cadaver, Abdominal Aorta.

INTRODUCTION

The Coeliac Trunk is a short and wide vessel (approximately, 1.25 cm long), which arises from the ventral aspect of the abdominal aorta, just below the aortic orifice of the diaphragm at the level of T12 and L1 vertebras1. It runs forwards and towards right and gets divided into three branches- Left Gastric, Splenic Artery and Common Hepatic Artery2. This trifurcation was first described by ‘Von Haller’ and is considered as the classic presentation of the Coeliac Trunk, which is known as “Tripus Halleri”.

About 15% of the population displays significant variations in the typical branching pattern of the Coeliac Trunk. Identifying variations of the Coeliac Trunk and its branches are important due to the surgical perspective because of the relationship it shares with the surrounding structures. Different reported variations of the Coeliac Trunk include- congenital absence, bifurcation and presence of collateral branches.

In 1928, ‘Adachi’ classified the branching pattern of the Coeliac Trunk into 6 major types, namely-

Table 1: Classification of Branching Pattern of Coeliac Trunk

<table>
<thead>
<tr>
<th>Type</th>
<th>Branching Pattern of Coeliac Trunk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal branching – Trifurcation</td>
</tr>
<tr>
<td>2</td>
<td>Hepatosplenic Trunk</td>
</tr>
<tr>
<td>3</td>
<td>Hepatosplenicomesentric Trunk</td>
</tr>
<tr>
<td>4</td>
<td>Hepatogastric Trunk</td>
</tr>
<tr>
<td>5</td>
<td>Splenogastric Trunk</td>
</tr>
<tr>
<td>6</td>
<td>Coeliacomesentric Trunk</td>
</tr>
</tbody>
</table>

Procedure

Following the Cunningham’s Manual of Dissection, the abdomen was opened and the anterior abdominal wall was reflected. The Stomach, Right Gastric and the Right Gastroepiploic Vessels were cut through and the Peritoneum was removed to reveal the Coeliac Trunk3.

It was noted that the Coeliac Trunk was actually replaced by two separate arterial trunks. The first arterial trunk directly originated from the abdominal aorta, which was the Left Gastric Artery and the second arterial trunk was bifurcated to form the Common Hepatic Artery and the Splenic Artery (Hepatosplenic Trunk). Photograph of the same was taken and documented, and the specimen was preserved in the departmental museum.

Case Report

During a routine practical class for the Under Graduate students, we encountered a variation in the Coeliac Trunk of a 65 years old male cadaver, in the Department of Rachana Sharir (Anatomy), Parul Institute of Ayurved, Parul University, Vadodara (Gujarat).

Abdominal Wall was reflected followed by which the Peritoneum was removed to reveal the Coeliac Trunk. In the present case, a well-defined Coeliac Trunk was absent, and was replaced by two separate arterial trunks. The variation was situated at the ventral aspect of the Coeliac Trunk, at the level of T12 vertebra. The Left Gastric Artery directly originated from the abdominal aorta, forming the first arterial trunk of this variation and the second arterial trunk got bifurcated into the Common Hepatic Artery and the Splenic Artery, forming the Hepatosplenic Trunk. The Left Gastric Artery after taking origin directly from the abdominal aorta runs upwards towards the left; behind the lesser sac, to reach the cardiac end of the stomach4. Approximately, a centimetre prior to reaching the cardiac end, it gave a branch to the Liver. We named it as an ‘Accessory Hepatic Artery’. The Left Gastric Artery entered into the lesser sac and further ran along the lesser curvature and got terminated by anastomosing with the Right Gastric Artery. The course of the Common Hepatic Artery and the Splenic Artery was traced further, and was found to be normal.
DISCUSSION

The Coeliac Trunk is the first ventral branch of the abdominal aorta. In majority of the cases (50 – 76 %), the Coeliac Trunk presents itself as a trifurcation to form the classical branches, i.e. Left Gastric, Spleenic and Common Hepatic arteries. However, in the present case it presented two separate arterial twigs, which is a rare phenomenon. The Left Gastric Artery directly originated from the abdominal aorta, forming the first arterial trunk and the second arterial trunk got bifurcated into the Common Hepatic Artery and the Spleenic Artery, forming the Hepatosplenetic Trunk. According to ‘Yildirim M’, the occurrence of such a variation can only be seen in 0.5 % - 15 % of the cases. The same was photographed and documented4.

Past researches have shown that anatomy of Coeliac Trunk is not identical for all human beings, and about 15 % of the population displays significant variations from the typical branching pattern. The left gastric artery, the smallest of the entire coeliac branches may originate directly from the abdominal aorta in about 1.9 % - 15 % of the cases5.

There are certain disorders that are specifically related to the Coeliac Trunk, such as- ‘Coeliac Trunk Compression Syndrome’ which is a rare disorder characterised by compression of the Coeliac Trunk by the Median Arcuate Ligament and Coeliac Ganglion, and the symptoms include chronic, recurrent abdominal pain and weight loss and obstruction of the Hepatic Artery proper may lead to necrosis of the liver depending on the site of the block6.

In the present case, other than the two arterial twigs mentioned above, an Accessory Hepatic Artery was also noted originating from the Left Gastric Artery (first arterial trunk), which itself is a very rare sighting, with approximately 3 % of the population living with this variation.

CONCLUSION

A comprehensive knowledge of the Coeliac Trunk and its variations will prove beneficial in planning various abdominal surgeries and image guided interventions. The success of the procedures such as the Liver Transplantation, Intestinal Anastomosis and Intra Arterial Chemotherapy etc, requires detailed knowledge of the Coeliac Trunk and its anatomical variations. The Coeliac Trunk is given so much importance since; it is the sole artery which supplies the upper abdominal viscera. There are specific disorders which are only related to Coeliac Trunk, such as- ‘Coeliac Trunk Compression Syndrome’ in which, the obstruction of Hepatic Artery proper may lead to necrosis of the liver. This particular condition can also prove fatal if not treated in time.

Hence, to counter such ailments; detailed knowledge of Coeliac Trunk and its variations is required.

ACKNOWLEDGEMENT

The variation in the Coeliac Trunk was noted by me, while conducting a routine dissection for Post Graduate Scholars in Parul Institute of Ayurved, Vadodara (Gujarat). I would like to pay my sincere gratitude to Dr. Hemant Toshikhane, Dean and Principal, Parul Institute of Ayurved, Vadodara for his valuable support.

REFERENCES


Cite this article as:
http://dx.doi.org/10.7897/2277-4343.100239

Source of support: Nil, Conflict of interest: None Declared

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