



Variant right hepatic artery forming Moynihan's hump — clinical relevance

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ABSTRACT

Variations in the arterial supply of extrahepatic biliary apparatus are known. In a study done on extrahepatic biliary apparatus on 60 cadavers at Seth G.S. Medical College and K.E.M. Hospital, Mumbai, India, during the period 2005–2008, we found a variant course of right hepatic artery forming a caterpillar hump (Moynihan's hump) on the undersurface of liver, before entering the porta hepatis. This unusual bend in the artery may make it prone to injuries during surgical procedures performed in this region like laparoscopic cholecystectomy, liver transplantation, etc., if due care is not taken. © *IJAV*. 2010; 3: 144–145.

Key words [extrahepatic biliary apparatus] [right hepatic artery] [Moynihan's hump] [cholecystectomy]

Introduction

The celiac trunk arises at the level of T12-L1, just below the aortic hiatus and divides into left gastric, common hepatic and splenic arteries. It supplies blood to structures derived from the foregut. The major branches from celiac trunk supplying liver and extrahepatic biliary apparatus are the common hepatic artery, which continues as proper hepatic artery after it gives off the gastroduodenal branch. The proper hepatic artery divides into right and left hepatic arteries, and the cystic artery arises from right hepatic artery.

Case Report

In the study done on extrahepatic biliary apparatus on 60 cadavers at Seth G.S. Medical College and K.E.M. Hospital, Mumbai during the period 2005–2008, a variant course of the right hepatic artery was found in an adult male cadaver. The celiac trunk was dissected and its branches were traced. It was found that the proper hepatic artery (PHA) arising from common hepatic artery was thick and tortuous as shown in Figure 1. The proper hepatic artery was anterior to the common hepatic duct. The proper hepatic artery branched into right and left hepatic arteries. The right hepatic artery threw itself into the configuration of a caterpillar hump which is also called as Moynihan's hump, before entering the undersurface of liver as shown in Figure 2. The convexity of the loop pointed downwards and to the right. The right hepatic artery gave rise to cystic artery at this point and

then it finally ran posterior to reach the right lobe of the liver.

Discussion

Literature reveals few reports of variant course of the right hepatic artery. In a study of 35 specimens by Johnston and Anson, a single specimen showed a tortuous right hepatic artery crossing the anterior surface of the common hepatic duct forming the Moynihan's hump [1].

In a study of 200 cases by Flint, the right hepatic artery was found to be tortuous and projected forward and to the right to form the caterpillar's hump (Moynihan's hump) during progression [2].

In a study done by Benson and Page, it was found that in 5 to 15% of individuals the right hepatic artery coursed through the hepatocystic triangle in close proximity to the cystic duct before entering the hilum of the liver. In this location, the cystic artery arises from the convex aspect of the angled or humped portion of hepatic artery. The caterpillar hump of right hepatic artery may be mistaken for cystic artery and inadvertently ligated.

If the cystic artery that arises from the caterpillar hump is typically short, it may get easily avulsed from the hepatic artery, if excessive traction is applied to the gallbladder. The presence of a 'caterpillar hump' should be suspected when an unusually large 'cystic artery' is viewed through the laparoscope [3].

A bend in the course of the right hepatic artery, throwing it into the caterpillar hump, invites injury unless

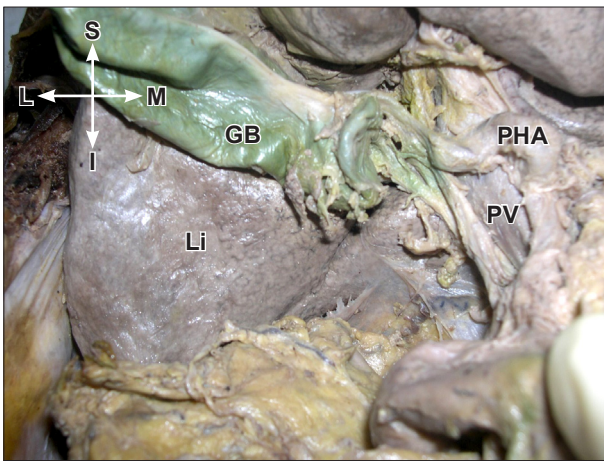


Figure 1. Dissection of the extrahepatic biliary apparatus shows thick tortuous proper hepatic artery. (*Li*: liver; *GB*: gallbladder; *PHA*: proper hepatic artery; *PV*: portal vein; *S*: superior; *I*: inferior; *M*: medial; *L*: lateral)

it is carefully dissected free [4]. The characteristic sinuousness of the right hepatic artery with the convexity pointing down and to the right is extremely vulnerable to injury during cholecystectomy as the cystic artery may arise from the proximal or from the distal portion of the loop [5].

Thus it is important for the surgeons to appreciate tortuous right hepatic artery forming Moynihan's hump, to dissect it and locate the origin of cystic artery and prevent damage to the right hepatic artery. This is crucial to avoid excessive bleeding from the injured right hepatic artery during surgery and prevent postoperative complications.

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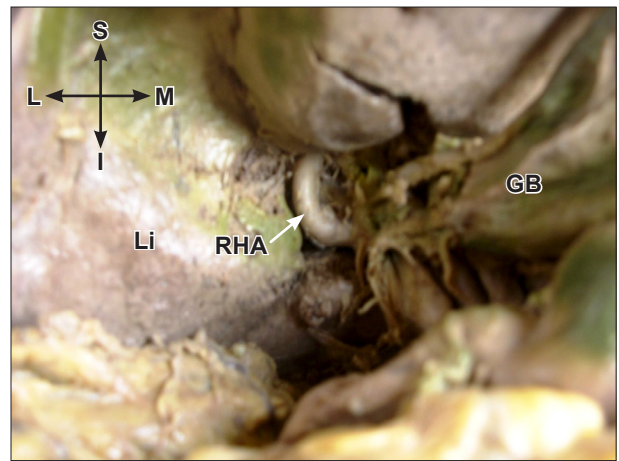


Figure 2. Dissection of the extrahepatic biliary apparatus shows the gallbladder is retracted, the right hepatic artery forming the Moynihan's hump. (*Li*: liver; *GB*: gallbladder; *RHA*: right hepatic artery; *S*: superior; *I*: inferior; *M*: medial; *L*: lateral)

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