

VARIATION IN THE ORIGIN OF CYSTIC ARTERY

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ABSTRACT:

In recent years, an extensive development in laproscopic surgery has made surgeons to obtain a clear appreciation and knowledge of variations in the blood supply of gall bladder. The study was done on specimens including 35 embalmed cadavers and 15 fresh postmortem specimens by dissection method at JSS Medical College. In the present study we observed that the cystic artery from right hepatic was seen only in 54% cases. Whereas from hepatic artery proper in 22%, from common hepatic in 12%, from gastroduodenal in 8%, and from superior mesenteric in 2% of cases. Cystic artery from superior mesenteric passes through head of pancreas. This variation is very important for surgeons during resection of pancreas. Because of very limited field of vision during laproscopic surgery, haemorrhage could be a problem if these variations are overlooked. Sound knowledge of cystic artery variations is helpful for surgeons while performing upper abdominal surgeries.

Key words: Cystic artery, Right hepatic artery, Superior mesenteric artery, Gastroduodenal artery

INTRODUCTION

The Cystic artery usually originates from Right hepatic artery in Calots triangle. It passes posterior to the Cystic duct to reach the neck of Gall bladder. After reaching the Gall bladder the Cystic artery divides into superficial and deep branches¹. In 25% of cases the superficial and deep branches arise separately, deep branch usually from Right hepatic and superficial from Superior mesenteric artery². Anatomical variations of the cystic artery are very common.. Variation of the origin could be from Common hepatic, left hepatic, Gastroduodenal or Superior mesenteric artery³. In the present scenario, laproscopic cholecystectomy is very popular, wherein the knowledge of variation of the Cystic artery is very essential and appreciated by the surgeons.

MATERIALS AND METHODS

50 specimens studied by dissection method 35 in embalmed cadavers and 15 in fresh postmortem specimens. **Result and Observation** were Contingency table analysis and Chi-square test were used to show the result and observation.

List of Abbreviations

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AHA- Accessory hepatic artery, CH- Common hepatic, CT - Celiac trunk, CY - Cystic artery, GD- Gastro duodenal, HP- hepatic artery proper LG-Left gastric, LH-Left hepatic, LIP-Left inferior phrenic, RH- Right hepatic, RIP-Right inferior phrenic, S-Splenic artery, SMA-Superior Mesenteric artery

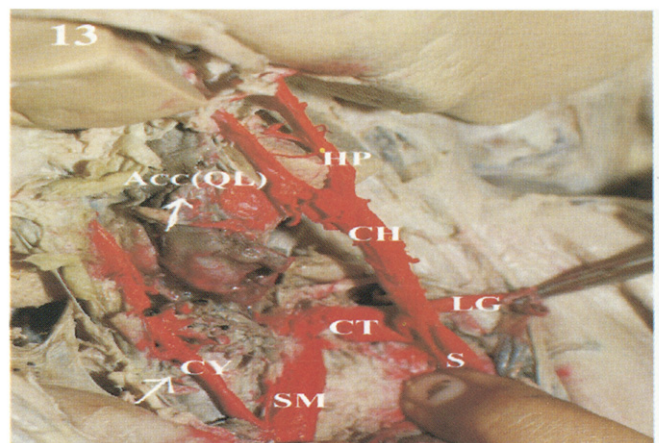


Fig -1 Cystic artery arising from Superior mesenteric artery.

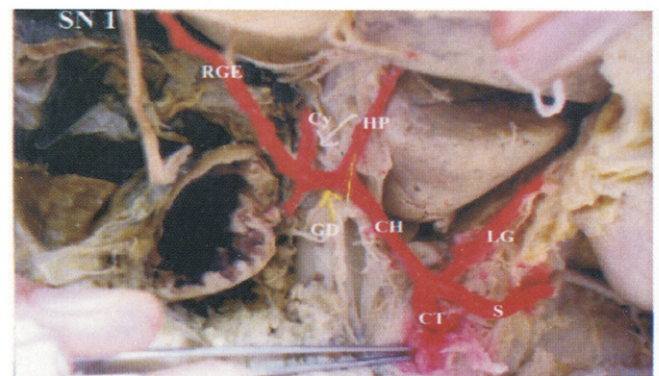


Fig 2 Cystic artery arising from Gastroduodenal

Table 1 Frequency in variation of Cystic artery in the present study

		Frequency	Percent	Cumulative Percent
Cystic	RH	27	54.0	54.07
	HP	11	22.0	76.0
	CH	6	12.0	88.0
	GD	4	8.0	96.0
	SMA	1	2.0	98.0
	AHA	1	2.0	100.0
	Total	50	100.0	

Chi-square = 58.48; P< .000 (Highly significant)

Table 2 Variation in the Origin of cystic artery compared with other's study

Origin	Anson	Michels	Moosman	Present Study
RH	74.7%	89%	87%	54%
LH	5.9%	4%	3%	0%
CH	14.9%	3%	5%	12%
GD	2.5%	4%	2%	8%
Others	1%	-	3%	0%
HP	0%	0%	0%	22%
SMA	0%	0%	0%	2%
AHA	0%	0%	0%	2%

A significant difference was observed in the frequencies of Cystic. Chi-square value of 58.48 was found to be highly significant (P< .000). Cystic artery from Right Hepatic artery was observed in 27cases, from Hepatic artery proper in 11 cases, from Common hepatic in 6 cases, from Gastroduodenal in 4 cases and from Superior Mesenteric artery in 1 case. Cystic artery from Superior Mesenteric artery was passing

through the head of the Pancreas to reach the Gall bladder (fig-1).

DISCUSSION

Typically cystic artery arises form Right hepatic in calots triangle. In the present study cystic artery from Right hepatic was seen only in 54% of cases, which is

less compared to previous study (Table 2). Cystic artery was arising from Hepatic proper and SMA in 22% and 2% of cases respectively. Previous workers have not observed this variation. Cystic artery from SMA passes through head of pancreas (fig 1). This variation is important during resection of Pancreas. Cystic artery from Gastroduodenal artery (fig-2) was seen in 8% in the present study and Michels observed in 4%, Anson in 2.5%, and Moosman observed in 2% of cases⁴.

During development, the extrahepatic biliary system arises from an intestinal diverticulum, which carries a rich supply of vessels from the aorta, coeliac trunk and superior mesenteric artery. Later most of these vessels are absorbed, leaving in place the mature vascular system. As the pattern of absorption is highly variable, it is not unusual for the cystic artery and its branches to derive from any other artery in the vicinity⁵. Uncontrolled bleeding from the cystic artery and its branches is a serious problem that may increase the risk of intraoperative lesions to vital vascular and biliary structures. On laparoscopic visualization anatomic relations are seen differently than during conventional surgery, so proper knowledge of the hepatobiliary triangle anatomic structures under the conditions of laparoscopic visualization is required. Uncontrolled bleeding from the cystic artery and its branches is a serious problem that may increase the risk of intraoperative lesions to vital vascular and biliary structures⁶.

. These days where laparoscopic cholecystectomy is very popular, the sound knowledge regarding variation of cystic artery origin is very essential. Because very limited field is magnified on the videomonitor, haemorrhage could be a problem if these variations are not noted.

CONCLUSION

The rare origin of cystic artery from superior mesenteric artery was observed in 2% of cases. Origin of the Cystic from accessory hepatic was observed in 2% of cases. This rare origin could lead to post operative hemorrhage is of importance to the surgeons. To facilitate the safe operative procedures on Gall bladder, there is a need of exact and

comprehensive knowledge of the varied patterns of Cystic arteries. Because the variations are common in Cystic artery.

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