



A Study of ducts of Extra Hepatic Biliary System

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Abstract

The Extra Hepatic Biliary Apparatus, its normal anatomy and variations of gall bladder, cystic duct, Common Bile Duct are forming an interesting study both anatomically as well as surgically.

About one half of patients presenting with gall stones show a substantial variations from what is considered to be the normal anatomical pattern of the extra hepatic biliary tree and associated arteries. Unawareness of such anomalies during surgery of the biliary system may result in iatrogenic injuries. We herein present a very rare but surgically important type of anomalies.⁷

Serious injuries to the ducts leading to bile leakage, peritonitis, shock etc, contributing to morbidity and mortality. This is because of failure to recognize at operations unusual anatomic relationships or the persistence in adult life as vestigial ductal structures like accessory ducts.

Keywords: *Accessory hepatic duct, Accessory cystic duct, Gall bladder.*

Introduction

The extra hepatic biliary tree is one of the most common site of operative intervention and also one of the most frequent areas of anatomic variation. Although many of these variations are clinically insignificant, lack of appreciation and recognition of them has often been cited as an important cause of morbidity and mortality in biliary surgery¹.

Human beings are singularly alike in their general anatomical construction, yet when we come to investigate one particular region with more detail;

it is surprising how frequently we meet with variations of one sort or another. More especially does this apply to the ductal system and vascular system, and in no region more than to the liver and Extra Hepatic Biliary Apparatus².

The Gall bladder and extra hepatic ducts are affected by a series of anomalies as a result of embryologic disorders, these are important to recognize because of their relevance to the clinical diagnosis and surgical treatment of biliary ductal disorders. Recognition of anatomical variations at the Extra Hepatic Biliary system is essential

before remedial procedures can be employed. Injuries to the bile ducts and accessory ducts can be best avoided by knowing their exact position before they are molested³.

Embryology

The hepatic diverticulum arises from the ventral side of developing duodenum during the 4th embryonic week. A maze of branching and anastomosing cell cords grow out from the ventral surface of the progressively enlarging hepatic diverticulum. These hepatic cords give rise to secretory ductules of the liver, while their proximal portions form the hepatic ducts. Most of the hepatic ducts joining the diverticulum are absorbed except the more proximal ones which coalesce to form the future common hepatic duct. Incomplete absorption of these multiple primordial extra hepatic ducts is thought to give rise to

In specimen No 3:

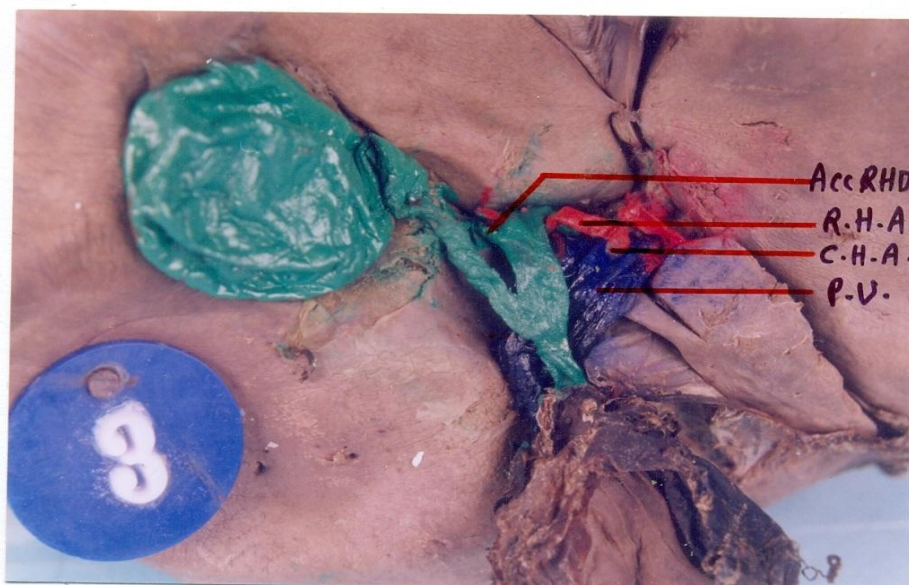
Accessory hepatic duct measures 1cm X 0.5cm arises from right lobe of liver runs downwards and to left joins the Common Hepatic Duct on right side

Accessory bile ducts and abnormalities in the pattern of the postnatal biliary duct system⁴.

Variations of the hepatic ducts, bile duct, and cystic duct are common and clinically significant. Accessory hepatic ducts may be present and awareness of their possible presence is of surgical importance. These accessory ducts are narrow channels running from the right lobe of the liver in to the anterior surface of the gall bladder. In some cases, the cystic duct opens in to an accessory hepatic duct rather than in to the common hepatic duct⁵

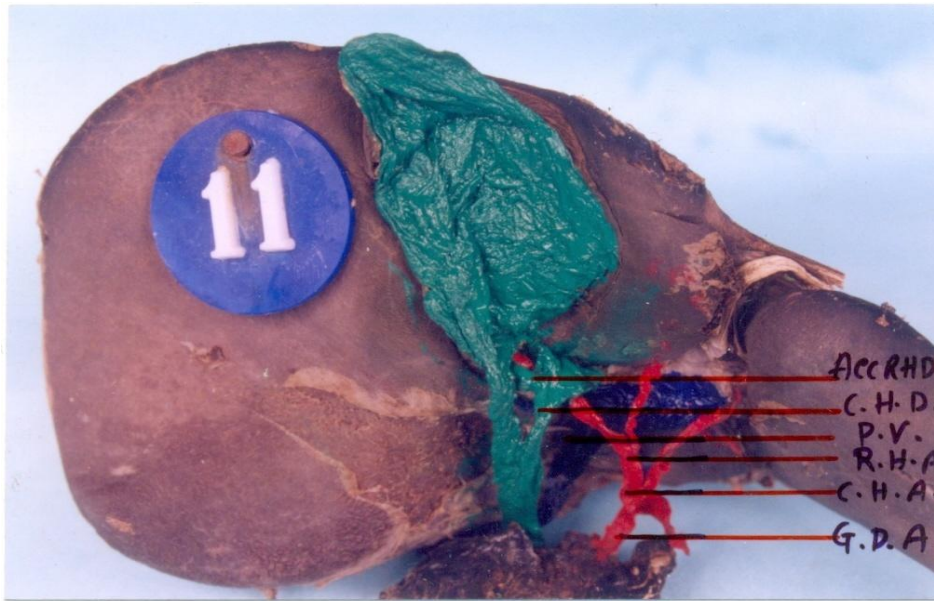
Methodology

We have studied total 40 specimens of liver with extra hepatic biliary apparatus by detailed dissection method in JJM Medical College Davangere and Karnataka Institute of Medical Sciences Hubli.

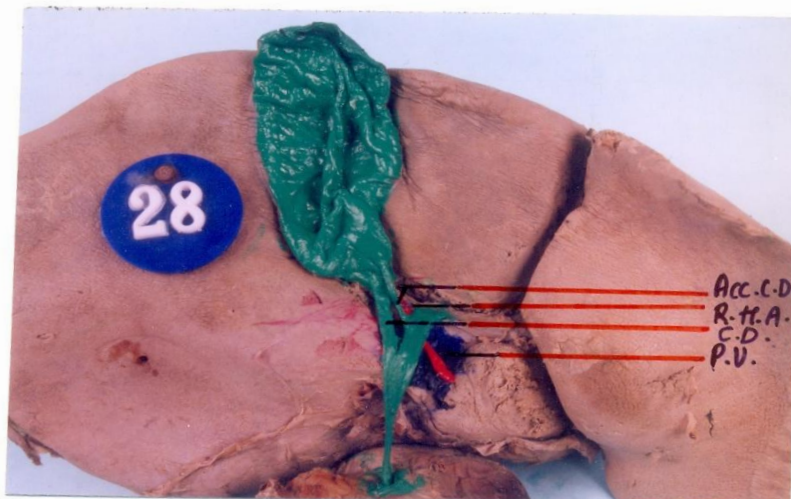


In specimen No 11:-

Accessory hepatic duct measures 1.2cm X 0.3cm arises from right lobe of liver joins the Common Hepatic Duct on right side.

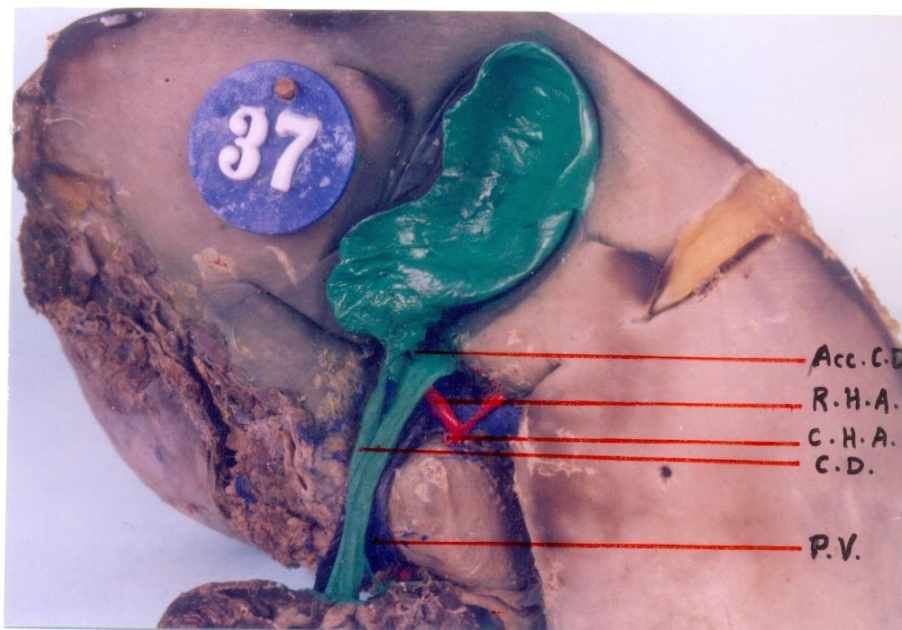
**In specimen No 28:-**

Accessory cystic duct measures 1.9cm X 0.2cm arises from the neck of gall bladder runs obliquely above the cystic duct proper, and joins common hepatic duct of right side.



In specimen No 37:-

Accessory cystic duct measures 0.5cm X 0.3cm arises from the neck of gall bladder runs above and parallel to cystic duct, and joins common hepatic duct on right side.

**Results**

Sl no	Author	Year	No of Cases	No of Accessory hepatic ducts	% of Accessory hepatic ducts
1	Descompos	1910	50	10	20%
2	E R Flint	1923	200	29	15%
3	Beaver	1929	57	5	9%
4	Gerald Dowdy	1962	100	15	15%
5	Present Study	2003	40	02	5%

We have observed Accessory Cystic ducts in 02/40 (05%) seen in specimen no 28 & 37

Common Hepatic Ducts:**In specimen no 03:**

The formation of common hepatic duct is extrahepatic. Which measures 2.8cm X 0.6 cm CHD begins at the right end of porta hepatis runs downwards for about 2.8 cm and on the right side it is joined by cystic duct to form common bile duct.

In specimen no 11:

The formation of common hepatic duct is intrahepatic. Which measures 2.7cm X 0.5 cm CHD begins at the right end of porta hepatis runs downwards for about 2.7 cm and on the right side it is joined by cystic duct to form common bile duct.

In specimen no 28:

The formation common hepatic duct is at the porta hepatis. Which measures 2.3cm X 0.6cm, CHD begins at the right end of porta hepatis runs downwards for about 2.3 cm and on the right side it is joined by cystic duct to form common bile duct.

In specimen no 37:

The formation of common hepatic duct is intrahepatic. Which measures 3.2 cm X 0.5cm, CHD begins at the right end of porta hepatis runs downwards for about 3.2 cm and on the right side it is joined by cystic duct to form common bile duct.

Discussion

The present study is confine mainly to the variations met in the duct system of Extra hepatic biliary apparatus in south Indian people. The available reports of studies and litetatures are mainly based of the study of dissected specimens of south Indian and western population.

In the present study 02 out of 40 specimens are showing accessory hepatic ducts (5%) and accessory cystic ducts in 02 out of 40 specimens (5%). the incidence of accessory ducts are less as compare to other authors.

We have not come across any authors who have described accessory cystic ducts to compare.

Conclusion

The abnormal arrangements were factors in the development of inflammation and stones. In the dense adhesions the discovery of the abnormality is difficult, and serious damage to the continuity of the biliary tract can result in spite of great care⁸. The concomitant presence of other anomalies, or severe inflammation in the porta hepatis should prompt suspicion of biliary anomalous anatomy. In that case, dissection of the gall bladder from the fundus downward will allow timely discovery of such an anamoly.⁷

Failure to recognize at operation unusual anatomic relationships or the persistence in to adult life of vestigial ductal structures as accessory ducts may impair the results obtained by operative treatment of biliary tract disease, either by direct injury or post operative bile seepage⁶.

It is axiomatic that better knowledge of normal biliary anatomy and a more complete awareness of its multiple variations will prevent many surgical errors during cholecystectomy.

With this knowledge it is possible for surgeons to prevent ductal trauma, ductal fistula, peritonitis, abscess, and stricture.

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Abbreviations

Accessory Right Hepatic Duct	Acc R H D
Right Hepatic Artery	R H A
Common Hepatic Artery	C H A
Portal Vein	P V
Common Hepatic Duct	C H D
Gastro Duodenal Artery	G D A