CHOLECYSTECTOMY

ESSAY

Submitted in partial fulfilment of
requirement of the Master Degree in
General Surgery
(M. Sc.)

By

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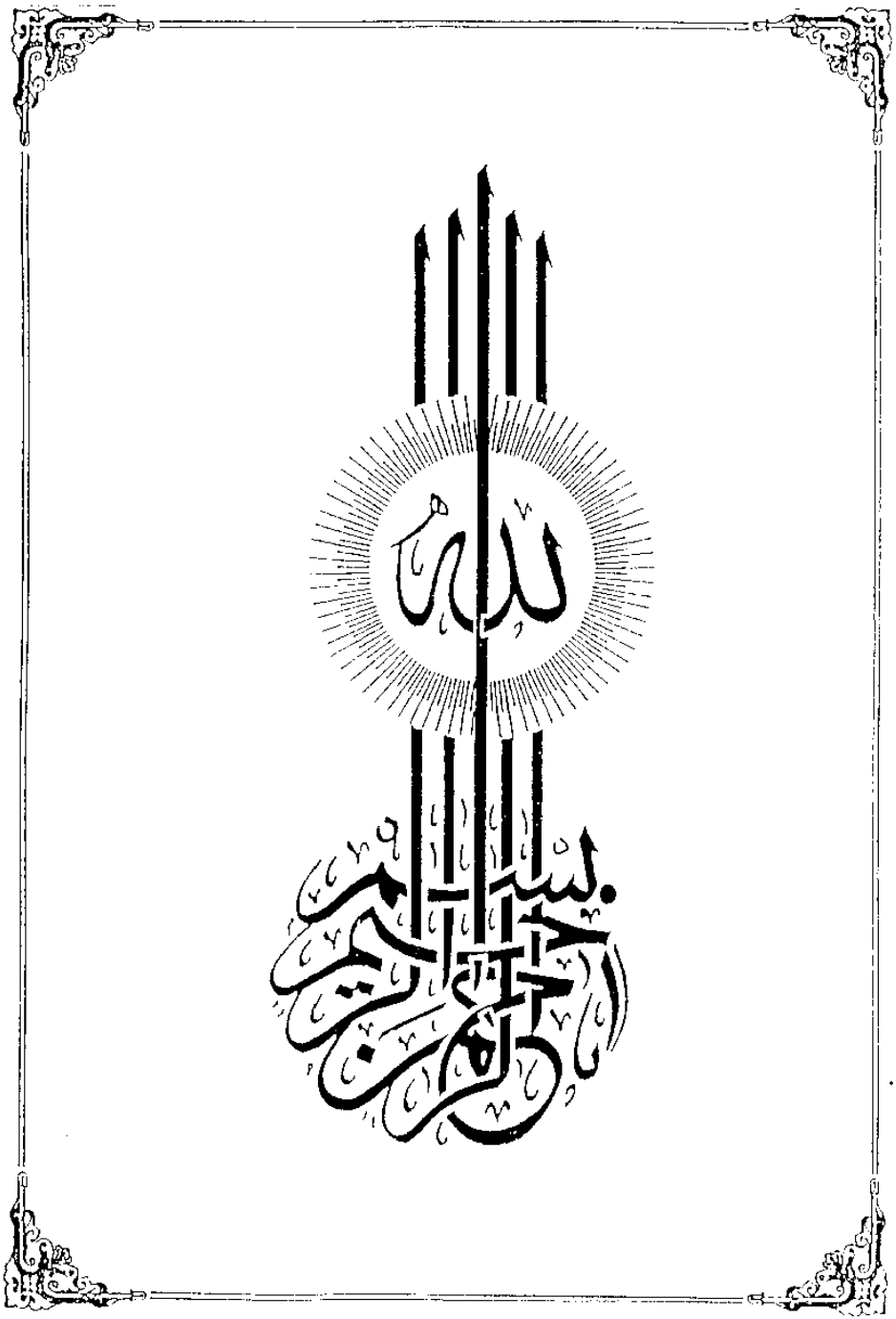

Firstly, I want to stand for a while to salute one of the pioneers of surgery in our country, Professor Halim Greiss, who offered me a great honour and wrote down a very beautiful chapter. He sincerely put his experience over long years, and made this paper a valuable one.

I wish to express my utmost gratitude to Professor Mouhamed Sameh Zaki for his generous advice on various difficulties. I have been most fortunate in having his continued guidance and supervision in every section of this Essay, his constant encouragement throughout the study and his sincere valuable advice were indespensible.

I am definitely indebted to him more than I can express.

I have also had the privilage of working under the expert guidance of Dr. Farouk Youssef to him I wish to express my deepest gratitude for his marvelous, inestimable support. In fact without his effort, this work could never have been completed.

INTRODUCTION

Only one hundred years ago, Langenbuch carried out the first cholecystectomy and shortly afterwards choledochotomy was performed.

While developments of anaethesia, blood transfusion, and antibiotics have made surgical approaches to the abdominal viscera possible and safe, more specific advances and particularly in diagnostic radiology have opened the door to precise and ever advancing approaches to diseases of the biliary tree.

Approaches to the diagnosis of biliary tract disorders have undergone considerable change during the last decade. Currently available methods of diagnosed are outlined.

About 12% of the population have or have had gallstones.

Although there is agreement that cholecystectomy is the treatment of choice in patients with recurrent attacks of biliary colic, the management of patients with asymptomatic gall stones is still controversial.

Infection is still one of the most serious complications of operations on the biliary tract they may be trivial or serious as septicaemia.

Itatrogenic injuries represents the most frequent etiology of benign bile duct strictures. More than 90% of benign strictures of the common bile duct are secondary to previous operation.

ANATOMY OF THE BILIARY & SYSTEM

Bile is manufactured by the liver cells, collected in the bile canalicui in the lobules and flows along the portal canal in the bile duct tributaries and so reaches the right and left hepatic ducts which emerges at the porta hepatis.

Here they join and the common hepatic duct so produced, passes down between the 2 peritoneal layers at the free edge of the lesser omentum.

The common hepatic duct is soon joined by cystic duct from the gallbladder. The common bile duct is thus formed (Fig. 1) (Last, 1981).

Gall Bladder : (Last, 1981).

Lies against the undersurface of the right lobe. It is 7-10 cm long, 3 cm broad in its widest part, and its capacity is from 30-50 c.c.s. It's bulbous blind end; the fundus projects a little bdyond the sharp anterior margin of the liver and touches the parietal peritoneum of the anterior abdominal wall

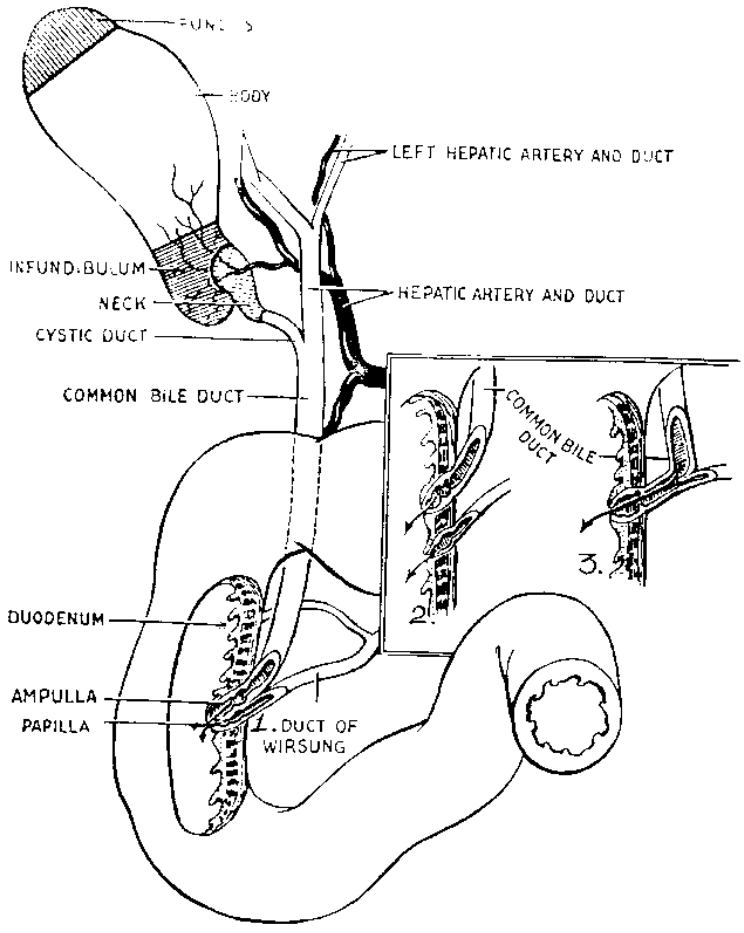

Fig. 1. Anatomical subdivisions of the gall bladder and biliary passages. Normal arrangement of the arteries.

at the tip of the 9th costal cartilage where the transpyloric plane crosses the right costal margin at the lateral border of the right rectus abdominis.

The body of the gallbladder, narrower than fundus passes backwards and upwards, to the left from this point towrds the right.

Here, it narrows into a neck from which the cystic duct lies against the porta hepatis to join the hepatic duct between the two layers of the peritoneum that form the free edge of the lesser omentum.

The mucous membrane which lines the neck projects into its lumen in the form of oblique ridges, forming a sort of spiral valve; when the neck is dislended. This valve causes the surface of the neck to presents a spiral constriction.

From the right wall of the neck of the gallbladder, a small pouch may projects downwards and backwards towards the duodenum. This pouch, often termed "Hartman's pouch", has been widely regarded as a constant feature of the normal gallbladder, but investigations have shown that it is always associated

with pathological conditions especially dilatation (Davies and Harding, 1942).

When the pouch is well marked, the cystic duct arises from it's upper and left wall and not from what appears to be the apex of the gallbladder.

The fundus and the body of the gallbladder are normally bound to the undersurface of the right lobe by connective tissue, many small cystic veins that pass from the gallbladder into the liver substance.

The peritoneum covering the liver passes smoothly over the gallbladder. Occasionally, the gallbladder hangs free on a narrow mesentry from the undersurface of the liver, a condition that greatly facilitates the operation of cholecystectomy.

The fundus of the gallbladder lies on the commencement of the transverse colon just to the left of the hepatic flexure, while the body that lies behind it is incontact with the 1st part of the duodenum.

The undersurface of the liver is sloping, so

the neck of the gallbladder lies at a higher level than the fundus. It lies against the upper part of the free edge of the lesser omentum.

Histological Structure :

The wall of the gallbladder has three layers; serous, filiromuscular, and mucous. The serous layer is derived from the peritoneum. It completely invests the fundus but covers only the inferior surface and sides of the body and neck. Beneath it, lies a sub-serious layer of areolar tissue. (Warwick and Williams, 1973).

The fibromuscular layer is a thin layer of fibrous tissue mixed with non-striated - muscular fibres; these are arranged in loose bundles disposed in longitudinal, circular, and oblique directions.

The mucous layer is loosely connected with the fibrous layer. It is generally of a yellowish brown colour and is elevated into minute rugae which give it a honeycomb appearance. The epithelium is formed of a single layer of columnar cells which vary in size with species.

Electron microscope investigations of the gallbladder epithelium shows the presence of microvilli of the apical surface (Chapman et al 1966).

The basal intercellular spaces show considerable dilatation and many capillaries lie close to the basement membrane. These features indicate active absorption of water and solutes from the bile, rendering it more concentrated the basal intercellular spaces are particularly large when active water absorption is occuring (Kaye et al, 1966).

Mucus granules are present in the apical half of some cells, particularly those near the duct; these are secreted into the lumen (Johnson et al 1962).

There is no glands in the gallbladder. In pathological conditions, the mucus is secreted by the columnar epithelium itself. The cells becoming goblet cells, such as found throughout alimentary canal (Last, 1981).

The arterial supply of the gallbladder is by the cystic artery, a branch of the right hepatic artery, and passes behind the common hepatic and cystic

ducts to gain the upper surface of the neck of the gallbladder on which it runs downwards and forwards before dividing into superficial and deep branches. The formes ramifies on the lower and the latter on the uppersurface of the gallbladder.

The cystic artery supplies branches to the hepatic ducts and the upper part of the common bile duct.

The veins draining the gallbladder vary considerably. Those from the upper surface lie in the areolar tissue between the gallbladder and the liver and usually run directly to the liver through the fossa for the gallbladder to join the hepatic veins.

Those from the rest of the gallbladder join to form one or two cystic veins on its neck,(to form one or two cystic veins on its neck)and these commenly enter the liver either directly or after joining with veins draining the hepatic ducts and the upper part of bile duct.

Only rarely, does a single or double cystic vein drain directly into the right branch of the

portal vein.

Lymph drainage:(Warwick and Williams, 1973)

Numerous lymph vessels run from the mucous and subserous plexuses on all surfaces of the gallbladder and cystic duct.

Those on the upper surface communicating sparsely with vessels in the liver. They pass to the hepatic nodes, especially, the cystic node, and the node of the anterior border of epiploic foramen. These nodes also collect the lymph vessels of hepatic ducts and the upper part of bile duct, while those of the lower part of the bile duct drain into lower hepatic nodes and the pancreaticosplenicodes.

The cystic duct :

It is from 3 to 4 cm long passes downwards, backwards, and to the left and joins the common hepatic duct to form the bile duct. It runs parrellel with and adheres to the common hepatic duct for a short distance before joining with it.

The mucous membrane of the interior is thrown

into a series of crescentic folds from five to twelve in number, similar to those found in the neck of the gallbladder forming the spiral valve.

The common bile duct :

It is formed near the porta hepatis by the junction of the cystic and common hepatic ducts. It is usually about 7.5 cm long and 6 mm in diameter.

It's first inch lies in the free edge of the lesser omentum, is the most accessible position for surgery. It lies in front of the portal vein to the right of the hepatic artery.

It's second inch is behind the first part of the duodenum.

The third inch slops down to the right behind the head of the pancreas. It lies in the deep groove, sometimes in a tunnel on the posterior surface of the pancreas, in front of the right renal vein.

It has been pointed out that the bile duct may lie close to the left border of the desending part of