# MANAGEMENT OF BILIARY FISTULAE

*Essay*

**Submitted for partial fulfilment of**

**Master degree in general surgery**



***presented by***

*Hisham Adel Alaa El Din*

***(M.B., B.Ch)***



***Supervised by***

**Dr. Madbouli Emam Abd El Aziz**

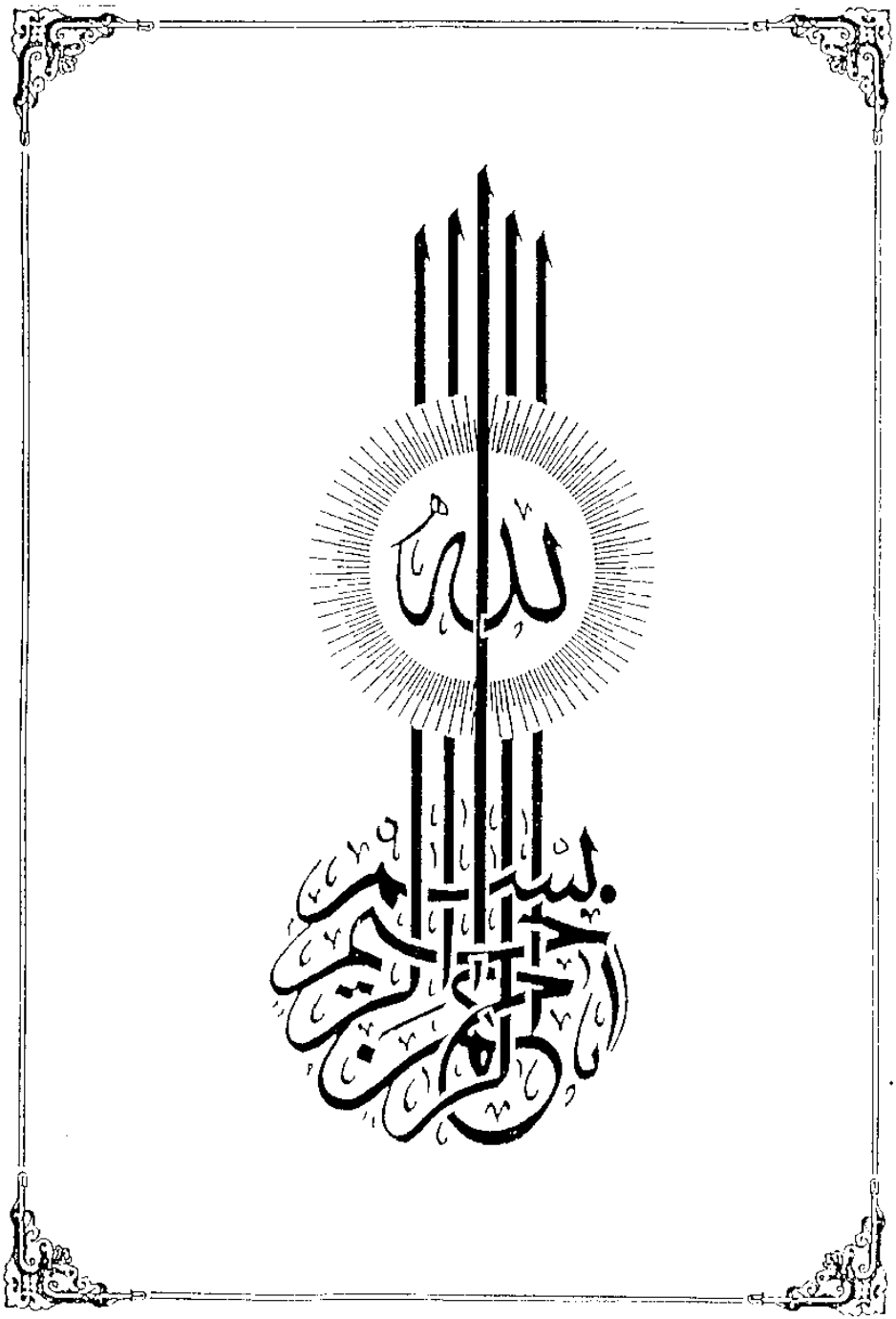
***Prof. Of general surgery***
***Faculty of Medicine***
***Ain Shams University***

**Faculty of Medicine**

**Ain Shams University**

**1995**

بسم الله الرحمن الرحيم



# ACKNOWLEDGMENTS

IT GIVES ME A GREAT PLEASURE TO EXPRESS MY SINCERE GRATITUDE AND DEEP APPRECIATION TO PROF. DR. MADBOULI EMAM ABDEL-AZIZ PROFESSOR OF GENERAL SURGERY, FACULTY OF MEDECINE, AIN SHAMS UNIVERSITY FOR HIS CONTINUOUS ENCOURAGEMENT AND SUPERVISION THROUGHOUT THE COMPLETION OF THIS WORK.

I AM DEEPLY GRATEFUL TO ALL SURGICAL STAFF MEMBERS FOR THEIR GENEROUS HELP, ADVICE AND CONSTANT SUPERVISION.

HISHAM ADEL ALAA EL DIN

1995.

# Contents

# INTRODUCTION

# INTRODUCTION

A biliary fistula is, with occasional exceptions, a complication of long standing and advanced biliary tract disease.

Unless created intentionally to direct stagnant bile, it represents a clinical problem potentially encompassing fluid and electrolytes disturbances, dehydration and malnutrition, acid-base imbalance, infection (both local and systemic), intestinal obstruction, haemorrhage and death. *(Peskin G.W. , 1987).*

The relative rarity of this condition in any individual practice coupled with the strong possibility of inflicting harm with inappropriate therapy, may explain the bewildement of clinician as they approach the management of this complication. *(Peskin G.W. , 1987).*

Meticulous dissection in a bloodless field and absolute identification of anatomical landmarks are laudable principles in any surgery but never are they so vital as in gall bladder and biliary tract operations. *(Soper , 1985).*

Most injuries involve direct trauma to ductal structure while 2%-7% are non traumatic resulting from necrosis of the duct caused by adjacent abscess, inflammation or elecctrocautery injury. *(Braasch , 1985).*

The aim of this essay is to review the whole subject.

# Review of literature

Chapter 1

# DEVELOPMENT OF THE EXTRAHEPATIC BILIARY SYSTEM

The extrahepatic biliary duct system and the gall bladder as well as the ventral anlage of the pancreas arise from the hepatic diverticulum, the distal portion of which also gives rise to the biliary system of the liver. By late in the fourth week (23 somites), the cystic duct and gall bladder primordium is visible as a bud from the side of the diverticulum. By the beginning of the fifth week, the gall bladder, cystic duct, hepatic ducts, common bile duct, and the pancreatic duct are all demarcated. During the fifth week, the proximal portion of the liver diverticulum elongates but does not increase greatly in diameter, in contrast to the tremendous growth of the distal end, which forms the liver cords within the septum transversum. During this stage of elongation, the future duct system becomes, like the dudenum itself, a solid cords of cells. *(Morecki R et al., 1983).*

Toward the end of this week, growth of the duodenum, apparently limited to the left side of its wall, initiates a shift of the base of the liver diverticulum, together with the ventral pancreatic anlage, to their

eventual position on the dorsal side just below the origin of the dorsal pancreatic diverticulum. *(Morecki R et al.,1983).*

Reestablishment of the lumina of the ducts starts in the sixth week with the common duct and progresses slowly distal. The lumen extends into the cystic duct by the seventh week; but the gall bladder remains solid until the 12th week. Recanalization of a duct frequently results in the temporary appearance of two or three lumina, which will eventually coalesce. Two or more openings of the duct into the dudenum are frequent. The lower one usually is suppressed, but occasionally both may persist, leaving a bifurcated common bile duct. The solid stage and recanalization of the biliary system parallel the changes in the dudenum itself, but strangely no solid stage seems to occur in the pancreatic ducts. *(Shwegler R.A. , 1937)*

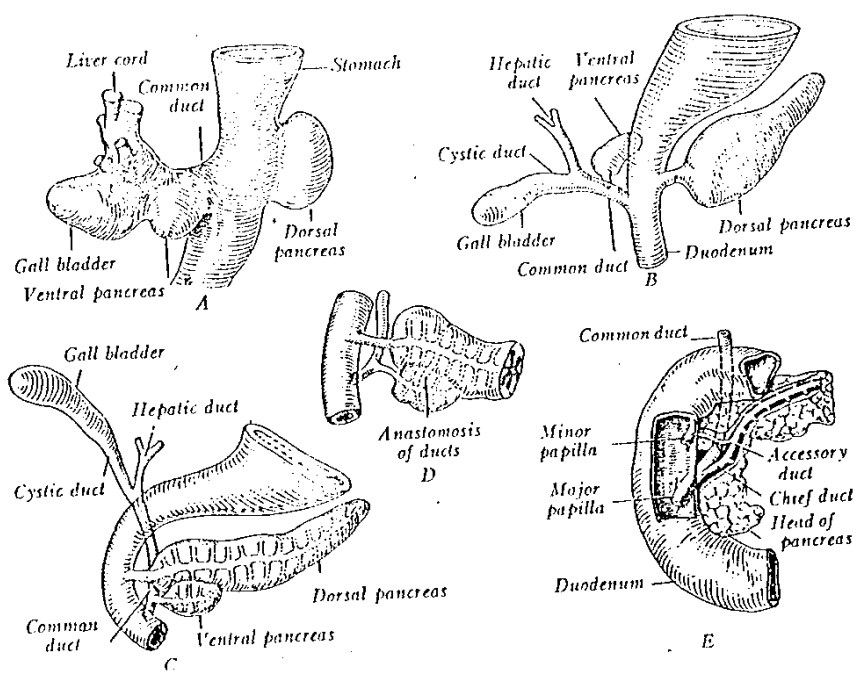
Rudimentary accessory hepatic ducts are found at this stage, emptying into the hepatic or cystic ducts. One or more of these may occasionally persist, with a connection to a small portion of the liver. At the junction of the hepatic, cystic and common ducts, a dilated region - the antrum - may be present. In 1926 Boyden interpreted it as

the residual hepatic diverticulum, which vanishes as the ducts elongate. *(Muller G F , 1960)*

Indications of the muscular coats of the gall bladder appear during the ninth week and develop progressively from the gall bladder toward the dudenum. An unconfirmed report stated that the gall bladder becomes completely enveloped by the liver during the second month and arrives at its final position by subsequent atrophy of the overlying tissue. In cases of intrahepatic gall bladder, which may produce diagnostic problems for the operating surgeon, this report holds true. If a gall bladder series or sonography are positive for gall stones and if the gall bladder is not visible during open or laparoscopic procedures, the surgeon must entertain the possibility that there is an intrahepatic gall bladder and act accordingly. Whether or not this report is always true, the cystic fossa appears to form independently of the gall bladder and frequently is present when the gall bladder is absent. *(Mueller G F , 1960).*

The proximal portion of the hepatic diverticulum is usually absorbed by the intestinal wall so that the common duct and pancreatic duct enter the dudenum side by side. This arrangement will persist in

about 25% of adults. In the remainder, the septum will withdraw between the ducts to the level of the submucosa during the eighth week. In Boyden's view the muscle fibers of the sphinter of Oddi are derived from the mesenchyme around the common duct during the 11th week. *(Boyden E A , 1926).*




Development of the gallbladder, pancreas and biliary tract. A , At five weeks (6 mm). B, sixth week (8 mm). C, At the end of the sixth week (12 mm). D, At the end of the seventh week (16 mm). E, At birth. Note : Right to left migration of the common bile duct and the ventral pancreatic primordium. (From Arey LB. Developmental anatomy, 7th ed. Philadelphia : WB Saunders, 1965).

Chapter 2

# SURGICAL ANATOMY OF THE BILIARY SYSTEM

The anatomy of the biliary system has been the subject of extended research for many years. The biliary tract includes both intra and extra-hepatic biliary ducts.

**Intra-hepatic biliary ducts :**

The intra-hepatic ducts are enclosed with the portal vein and hepatic artery and their branches in a connective sheath derived from the fibrous capsule (Glisson) of the liver. The ducts run with other components of the hepatic pedicle to drain the different eight segments of the liver. Thus, on the right, segments V and VIII are drained by anterior descending and ascending branches, and segments VI and VII by posterior descending and ascending branches which join to from the right hepatic duct (Ger, 1989). On the left, segments II and II are drained by two lateral branches and segment IV by one medial branch. The two lateral ducts unit so formed being joint by the medial branch to form the left hepatic duct. The caudate lobe drains by one duct, and

the process by two ducts into the right and left hepatic ducts *(Ger, 1989)*.

**Extra-hepatic biliary ducts :**

Extra-hepatic ducts consist of the hepatic or excretory duct of the liver, the gall bladder, a reservoir in which bile accumulates and is concentrated before passing through the cystic duct which is the continuation of the gall bladder and the common bile duct which is union of the hepatic and cystic ducts. *(Mcvay, 1984)*

**The hepatic ducts :**

The intra-hepatic segmental bile ducts unite to form lobar ducts, which in turn, coalesce to form the right and left ducts that represent the beginning of the extra-hepatic biliary system.

**The right hepatic duct :**

It measures approximately 1 cm and enters the liver with a sharp curve which accounts for the fact that extra-hepatic biliary calculi are less commonly found in this segment. *(Schwartz, 1990)*.