INTRODUCTION

Tumors of the bile ducts have been recognized for over a century. Musser first reported 18 cases of primary extrahepatic biliary cancer. Sako et al. found 570 cases of extrahepatic bile duct cancer when reviewing literature from 1935-1954. Malignancy of the intrahepatic bile ducts, on the other hand, was described more recently by ***Altmeir, (1957)***, while Klatskin described cancer of the hepatic duct bifurcation in 1965 ***(Kamisawa, 2006)***.

Tumors of the bile duct are rare. They constitute about 2% of all cancers found at autopsy. Benign adenomas or papillomas are exceedingly rare compared to malignant tumors. Even benign tumors tend to recur after excision and have been reported to undergo malignant change ***(Chamberlain, 2000)***.

Over the past few decades, remarkable advances in imaging technology have been made that allow more accurate diagnosis of biliary tract diseases and better planning of surgical procedures and other interventions aimed at managing these conditions ***(Bernard Lerang, 2006)*.**

Ultrasound or computed tomography scans usually detect dilated intrahepatic bile ducts.Transhepatic cholangiography or endoscopic retrograde cholangiopancreatography clearly detect the lesion and both are indicated in most cases.Transhepatic cholangiography is of greater value,recently MRI cholangiography (MRCP) takes the upper hand as the most informative non invasive modality for diagnosis of bile duct tumors ***(Phatak and Kochman, 2004)***.

Operative techniques have also improved as a result of a better understanding of biliary and hepatic anatomy and physiology. Moreover, the continuing evolution of minimally invasive surgery has promoted the gradual adoption of laparoscopic approaches to these complex operations. Accordingly, biliary tract surgery, like many other areas of modern surgery, is constantly changing ***(Bernard Langer, 2006)***.

Recent studies show that the long-term success rate of endoscopic stenting is comparable to that of palliative surgery, with similar recurrence rates. Therefore, surgery should probably be reserved for those patients with complete ductal obstruction or those in whom endoscopic therapy has failed While surgical intervention is recommended for those patients who are otherwise healthy, whose disease appears to be localized, or in whom duodenal or gastric outlet obstruction is

present ***(Am J Clin Oncology, 2005)***.

Aim Of The Work

The aim of the work is to highlight, the recent trends in diagnosis and treatment of malignant CBD tumors.

EMBRYOLOGY OF GALL BLADDER AND BILIARY TREE

During the fifth week of intrauterine life (3mm stage) the embryo shows the beginning of an out pouching from the ventral surface of the primitive gastrointestinal tract just distal to the junction of the foregut and midgut. The outpouching penetrates the primitive ventral mesogastrium and ultimately results in the formation of the two lobes of the liver, the intra and extrahepatic biliary tree, the gall bladder and cystic duct, and dorsal (posterior) half of the head of' the pancreas and the uncinate process. Also at this time, dorsal sacculation leaves the primitive bowel tube at a slightly more superior level to become the analogue of the remainder of the pancreatic head as well a the neck, the body, and the tail of the pancreas. As the ventral sacculation pushes its way ventrally and superiorly between the two leaves of the ventral mesogastrium its distal or advancing tip divides into a superior and an inferior and growing from the inferior surface of the biliary diverticulum a third bud, the ventral pancreatic bud ***(Hahn.L 2000).***

The advancing superior bud divides into a right and a left cellular column each of which will form one of the lobes of the liver. The inferior head of the divided ventral sacculation develops into the gall bladder and the cystic duct

on those rare occasions when the inferior advances too far superiorly, and intrahepatic gall bladder will result nearly always within right lobe of the liver. With the embryo at the 7-mm stage, the common bile duct is seen to be still attached to the ventral surface of the duodenum, with the ventral pancreatic bud attached to its inferior wall. The rotation of the ventral pancreatic bud is to the left and dorsalward and encompasses an arc of about 180 degrees. Since the most proximal segment of the common bile duct is attached to the ventral pancreatic head, the combined rotation of the duodenum and the ventral pancreatic analogue serves finally to the place of the junction of the common bile duct and the duodenum on the posteromedial duodenal wall. By the beginning of the seventh week of intrauterine life, vaculation starts to take place within the future biliary tree within a week, a completely formed open lumen has been formed within the gall bladder,the cystic duct,the hepatic ducts and the common bile duct.Bythe end of the third month of fetal life, the liver begins to secret bile,and it flows into the duodenum via the recently canalized extrahepatic biliary tree ***(Last, 2000)***.

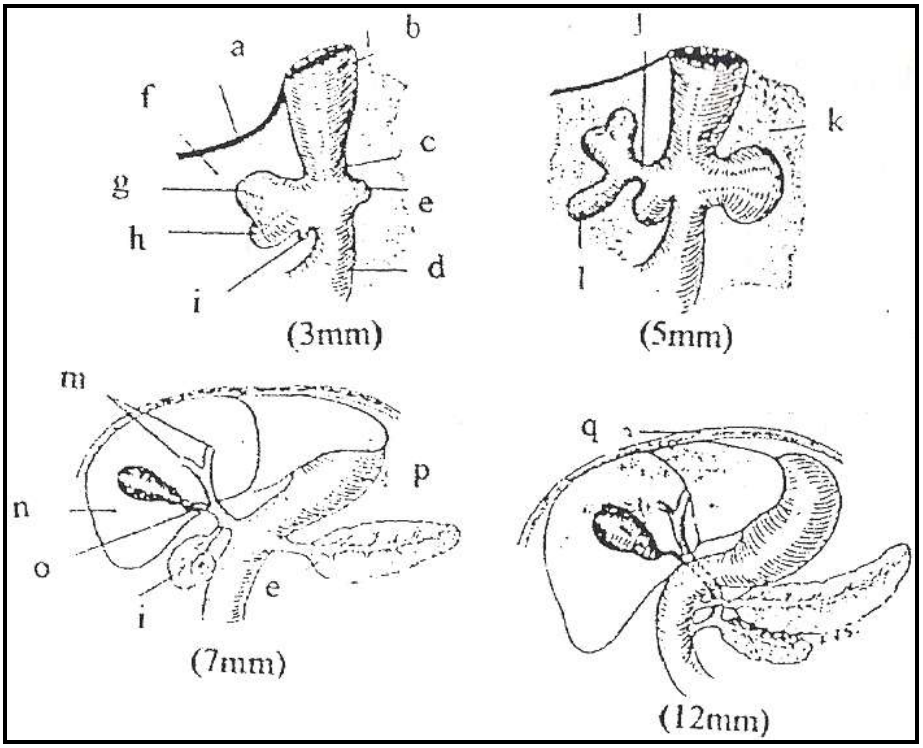

Fig. (1): Development of Extrahepatic biliary tract in the embryo from the 3mm to 12mm stages.

a) Septum transversum
b) Foregut
c) Midgut
d) Hindgut
e) Dorsal pancreas
f) Ventral mesogastrium
g) Cranial bud
h) Caudal bud
i) Ventral pancreas
j) Common duct.
k) Dorsal mesogastrium
l) GaH bladder.
m) Hepatic duct
n) Liver
o) Cystic duct
p) Stomach
q) Diaphragm

Anatomy of gall bladder and biliary tree

Anatomy of Gall Bladder:

It lies against the under surface of the right hepatic lobe. Its bulbous blind end (the fundus), projects a little

beyond the sharp anterior margin of the liver and touches the parietal peritoneum of the anterior abdominal wall at the tip of the ninth costal cartilage where the Trans-pyloric plane crosses the right costal margin at the lateral border of the rectus abdominus muscle ***(RMH Mcminn, 1994)***.

The body of the gall bladder, narrower than the fundus, passes backwards and upwards from this point towards the right end of the porta hepatis, here it narrows into a neck, from which the cystic duct lies against the porta hepatis to join the common hepatic duct between the two layers of peritoneum that form the free edge of the lesser (gastrohepatic) omentum***(Blumgart 2001).***

The cystic duct lies immediately infront of the right main branch of the hepatic artery the artery can be caught easily in a clamp placed on the cystic duct.

The gall bladder is located on the visceral surface of the liver at the plane dividing the right lobe from the medial segment of the left lobe. It is 7 to 10cm long with a capacity of 30 to 50mI. The gall bladder lie in a shallow fossa of the liver, separated from it and surrounded by connective tissue of the Glisson capsule. On the opposite side, the peritoneum of the gall bladder is continuous with that of the liver. After removal of the gall bladder, bile sometimes leaks from small bile ducts in the gall bladder bed. There has been disagreement as to

whether these ducts enter the gall bladder (hepato-cystic ducts) but Miches 1955 was unable to find such ducts in his 500 carefully dissected specimens. He found branches from the right hepatic duct in the gall bladder bed, but they did not communicate with gall bladder. They may cause post-operative bile leakage if they are injured***(Ronald S. Chamberlin 2001).***

The fundus of the gall bladder lies on the commencement of the transverce colon just to the left of the hepatic flexure while the body that lies behind it is in contact with the first part of the duodenum. The under surface of the liver is sloping, so the neck of the gall bladder lies at a higher level than the fundus. It lies against the upper part of the free edge of the lesser omentum ***(Last, 2000)***.

Anatomy of the biliary tree:

The anatomy of the biliary tract can be considered as extra and intrahepatic parts.

I- Intrahepatic bile duct anatomy

The liver is divided into two major portions and a dorsal lobe. The right liver and the left liver are respectively drained by the right and left hepatic ducts, whereas, the dorsal lobe (Caudate lobe) is drained by one or several ducts joining both the right and left hepatic ducts, they unite near the right end of the portahepatis to form the common hepatic duct ***(Blumgart, 2001).***

A) The left hepatic duct:

It drains the three segments (II, III, and IV) which constitute the left liver. The duct draining segment III is located slightly behind the left horn of the umbilical recesses, running backwards to join the duct of segment II at a point where the left branch of the portal vein turns forward and caudally at the recesses of Rex. The left hepatic duct traverses beneath the left liver at the base of segment IV, just above and behind the left branch of the portal vein and joins the right hepatic duct to constitute the hepatic ductal confluence. In its transverse portion it receives one to three small branches from segment IV ***(Ronald Chamberlain, 2003)***.

(B) The right hepatic duct:

It drains segments V, VI, VII and VIII and arises from the junction of two main sectoral ductal tributaries: the posterior or lateral duct and the anterior or medial duct each a satellite of its corresponding vein.

The right posterior sectoral duct has an almost horizontal course and is constituted by the confluence of the ducts of segments VI and VII. The duct then runs to join the right anterior sectoral duct as it descends in a vertical manner. The right anterior sectoral duct is formed by the confluence of the ducts draining segment V and segment VIII. Its main trunk is located to the left of the right anterior sectoral branch of the portal vein, which pursues an ascending course. The junction of these two main right biliary channels usually takes place above the right branch of the portal vein***(Blumgart 2001).***

The dorsal (Caudate) lobe (segment l):

It has its own biliary drainage. It comprises two portions; a caudate lobe proper located at the posterior aspect of the liver and a caudate process passing behind the portal structures to join the right liver .The caudate lobe proper is divided into right and left portions in 44%, three separate ducts drain, these three parts of the lobe while in 26% there is a common duct between the right portion of the caudate lobe proper and the caudate process. The site of drainage of these ducts is variable. In 18% of cases, drainage of the

caudate lobe is into both the right and left hepatic ducts, in 15% by the left duct only and in 7% in to the right duct only ***(Blumgart, 2001)***.

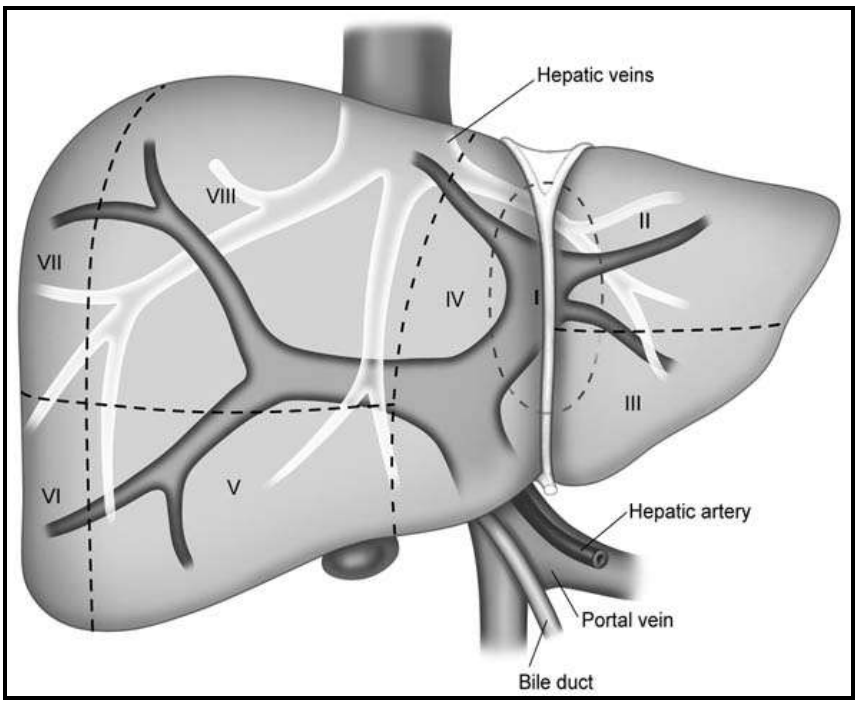

Fig. (2): Diagram showing the segmental anatomy of the liver(Hahn 2001).

Extrahepatic biliary anatomy:

It includes the extrahepatic segments of the right and left hepatic ducts joining to form the biliary confluence and the main biliary channel which is draining in the duodenum as well as the accessory biliary apparatus, which constitutes a reservoir, comprises the gall bladder and cystic duct.

The confluence of the right and the left ducts takes place at the right of the hilum of the liver anterior to the portal venous bifurcation and overlying the origin of the right branch of the portal vein. It is separated from the posterior aspect of the quadrate lobe (segment IV) of the liver by the hilar plateer. The junction lay between 0.25 and 2.5cm from the surface of the liver. The left duct is longer (average 1.7cm) than the right duct (average 0.9cm). i.e., the left duct has a much longer extrahepatic course***(gaeme J Poston 2003).***

(A)The main bile duct:

It is divided into two segments: the upper segment is called the common hepatic duct joined with the cystic duct to form the second segment, the common bile duct. The measurements of the common hepatic duct are highly variable. In most individuals, the duct is between 1.5-3.5cm long, the length of the common bile duct varies from 5-15cm (mean value of 7.5cm) depending on the position of the entrance of

the cystic duct, and 6mm in diameter. The duct is divided arbitrarily into four portions:

1. *Supraduodenal part*: Its average length is 2cm. It lies between the two leaves of the hepatoduodenal ligament, in front of the foramen of Winslow, to the right of the hepatic artery and anterior to the portal vein. It may be crossed anteriorly by one or more of the following: right gastric, right hepatic, Supra-duodenal, or even gastro-duodenal artery, the hepatic artery may lie to the right, left anterior or posterior to the common bile duct ***(Hahn and Blumgart, 2000)***.

2. *Retroduodenal portion:* Its average length is 1.5cm. It lies between the superior margin of the first part of the duodenum and the superior margin of the head of the pancreas. It passes behind the first (superior) part of the duodenum, with the gastro-duodenal artery on its left and then, runs in a groove on the supralateral part of the posterior surface of the head of the pancreas anterior to the I.V.C. and sometimes embedded in the pancreatic tissues, It may be free or partially fixed to the posterior duodenal wall.

A pancreatico-duodenal artery crosses first anterior to the bile duct and then posterior to the duct just before it enters

the duodenum, also the middle colic artery is in this neighborhood.

3. *Pancreatic portion:* Its average length is 3cm.

There are many variations as regards this part as follows:

- 44% partly covered by a tongue of pancreas.
- 30% completely within the pancreatic substance.
- 16.5% uncovered on the pancreatic surface.
- 9% completely covered by two tongues of pancreas.

Even when completely covered, the groove or tunnel occupied by the duct may be palpated by passing the fingers of the left hand behind the second part of the duodenum the groove may be round anterior to the right renal vein ***(Kawarda Y.1986).***

4. *Intramural portion:* Its average length IS 1.1cm. It passes obliquely through the duodenal wall together with the main pancreatic duct. The two ducts usually lie side by side with a common adventitia for several millimeters. The diameter of both ducts decreases within the duodenal wall. The septum between the ducts is reduced to a thin mucosal membrane before the ducts become confluent. The common bile duct and the pancreatic