Management of Benign Biliary Strictures

Essay

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of Master Degree in
General Surgery

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صدق الله العظيم

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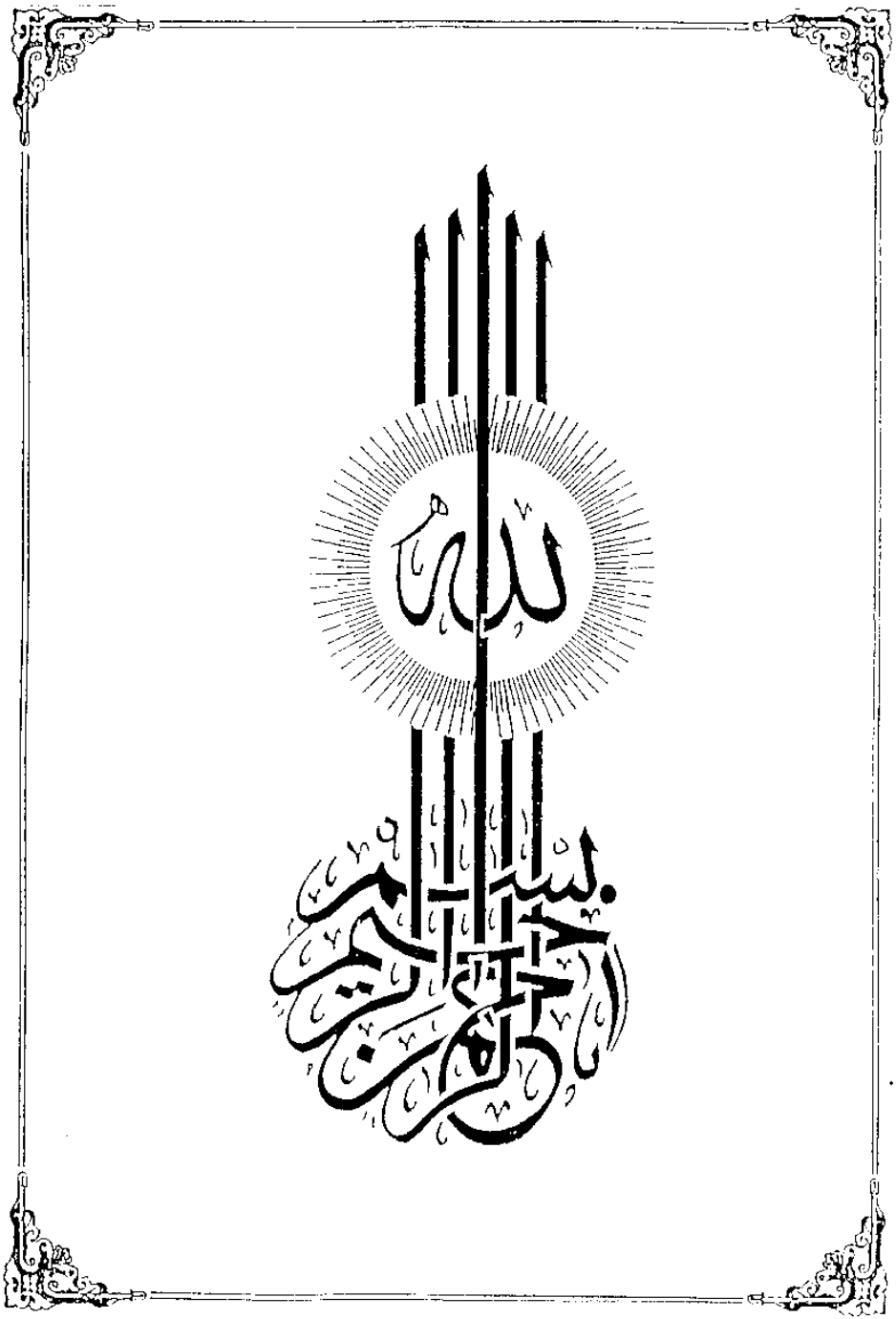

To My Parents

Acknowledgment

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Introduction

Benign biliary strictures represent a significant clinical problem despite technological development that facilitated diagnosis and management.

Imprecise treatment is associated with disastrous results, but early recognition and correct managment can lead to a successful outcome with a good prognosis.

On the other hand, the diagnosis is not a straightforward one, the reconstructive procedures are technically difficult, also recurrent stricture formation may occur in 10-30%.

Despite this, the picture is not that gloomy as the management policy recently depicted may bring complications of such a problem to a minimum.

This may be achieved by accurate patient assessment, pre-operative preparations, proper selection of the reconstructive procedures and lastly, post-operative follow-up to detect and treat recurrence as early as possible.

Finally, as the most common cause of benign biliary strictures is iatrogenic, its surgical management is grave; so prevention of operative injuries is the best treatment.

Aim of the Work

The aim of this work is to discuss the different causes, pathology, different methods of diagnosis, complications and ways of treatment of benign biliary strictures to achieve a better understanding of such a problem to enable arrival of its management protocol to near optimum.

Embryogenesis of the Biliary Tract

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Normal development

In the course of the fourth week of gestation, the embryonic foregut, at its junction with the midgut, gives rise to the hepatic diverticulum.

From the distal end of the diverticulum develops the parenchyma of the liver; the extra-hepatic biliary tract and the gall bladder from the proximal portion.

By the start of the fifth week, all the parts of the system are indicated. During this stage, the future duct system like the duodenum itself, is a solid cord of cells.

Toward the end of the fifth week, growth of the left side of the duodenum initiates a shift of the attachment of the liver and the two pancreatic diverticulae to their final position on the dorsal surface of the duodenum *(fig. 1)*.

During the sixth week, the lumina of the ducts become established, starting with the common bile duct (CBD) and progressively extending to

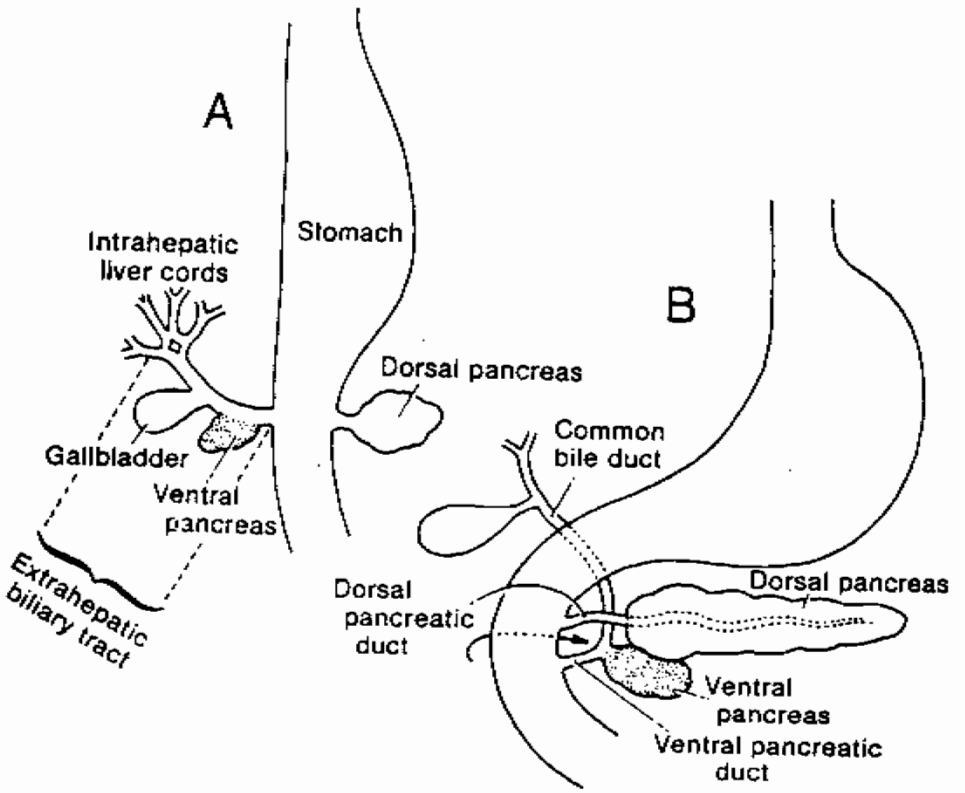

Fig. (1): The development of the extrahepatic biliary tract

A. The hepatic diverticulum. B. Rotation of the duodenum.

After Skandalakis JE., Gray S.W., et al., (1983).

the remainder of the system. The gall bladder remains solid until the twelfth week.

During the process of canalization, two or three lumina may appear and eventually coalesce. This pattern of solid stage followed by recanalization parallels the changes in the duodenum, but strangely, no solid stage appears in the pancreatic ducts.

More than one duodenal opening of the CBD is not unusual at the stage. The lower one usually vanishes, but a case in which a bifurcated CBD persisted was described by **Schwegler & Boyden, (1937).**

The proximal portion of the hepatic diverticulum, the future CBD, becomes absorbed into the expanding duodenum so that the bile and pancreatic ducts enter the wall together. In most individuals, the dividing septum between the two passages retracts to leave a common ampulla of variable length.

(Schwegler & Boyden, 1937).

The biliary tract is the site of great variations and even gross anomalies, some are fatal in postnatal life, while others, although physiologically functional, may result in operative catastrophes if they are recognized during surgical procedures later in life.

(Markle,1981).

Abnormal development:

I) Developmental anomalies of the Gall Bladder:

In contrast to the liver, the gall bladder (GB) is subject to many anomalies. It may be absent, vestigeal, double or triple.It may be displaced, deformed, and suffer intrusion of epithelia from other parts of the digestive tract.

(Gray & Skandalakis, 1972).

All these anomalies may be associated with atresia or duplication of other parts of the biliary tract. These defects are unusual and rarely fatal, but they may confuse the radiologist and baffle surgeon. So, congenital anomalies of the (GB) may be classified as follows:

(1) Anomalies of the number:

Agenesis of G.B; double or triple G.B., replacement by fibrous nodule.

(2) Anomalies of the form:

Partitioned, bilobed, septate, hourglass, diverticulum of G.B., kinking of G.B., and phrygian cap.

(3) Anomalies of position:

Intrahepatic, transverse, left sided G.B., double G.B. (one on each side), ptosis of the G.B.

II) Developmental anomalies of the extrahepatic biliary tract

(1) Extra-hepatic biliary atresia.

(2) Anomalous hepatic ducts "surgically significant sources of bile leakage".

An aberrant (accessory) hepatic duct is a normal segmental duct that joins the biliary tract just outside the liver instead of just within. It drains normal portion of the liver. Such a duct passing through the cholecysto-hepatic triangle is important because it is subject to inadvertent section with subsequent bile leakage *(fig. 2)*.

Moosman & Coller (1951) found accessory ducts in 16% of their 250 cadavers.

Such ducts usually, but not always arise from the right lobe and enter the right hepatic duct, the cystic duct. *(fig. 2 a&c)* or the point of junction of the main right and left hepatic ducts. *(fig. 2 b)*.

(Flint, 1923).

Occasionally, the right, left or even both hepatic ducts enter the G.B.

(Kihne, et al., 1980).