

LAPAROSCOPY VERSUS  
ECHODOPPLERSONOGRAPHY  
IN PORTAL HYPERTENSION

Thesis

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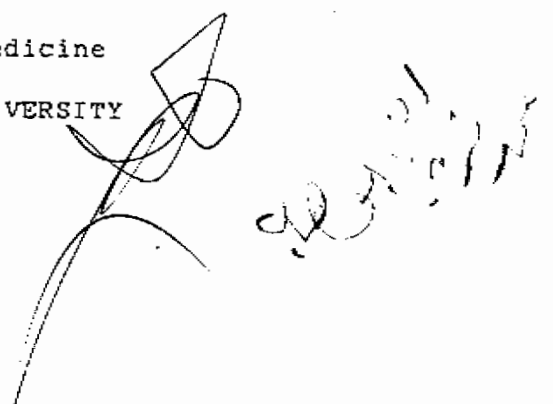
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ رَبِّ زِدْنِي عِلْمًا

صَدَقَ اللَّهُ الْعَظِيمُ

سورة طه ١١٤



TO MY MOTHER AND SOUL OF MY FATHER

AND

TO MY WIFE AND AHMED MY SON  
FOR THEIR FORBEARANCE IN ALLOWING  
ME THE TIME TO WRITE THIS WORK.

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# INTRODUCTION

**AIM OF THE**

**WORK**



## INTRODUCTION AND AIM OF THE WORK

The portal hypertension is accompanied with collaterals circulation which try to decompress the elevated portal pressure.

These collaterals either caudal or non caudal (variceal) having variable effect, some of it as oesophageal varices has dangerous effect if they bleed and other has protective effect as splenorenal shunt, paraumbilical vein (El-Chazli, 1984).

Colour doppler ultrasonography has been advocated as having the ability to provide meaningful information about the portal venous system in patients with liver cirrhosis (Zoli H et al., 1986).

Because frequent follow up of patients with portal hypertension is important, especially in those who have undergone a portosystemic shunt or sclerotherapy, a non-invasive screening technique would be advantageous.

On the other hand laparoscopy can asses the caudal collaterals of portal hypertension but can not asses blood flow rates (Beck et al., 1970).

The aim of the present study is to evaluate the

**REVIEW OF THE  
LITERATURE**

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## PORTAL HYPERTENSION

### Normal anatomy of the portal venous system:

The liver arises from the foregut and extends into the septum transversum, at which point the liver lobules develop. The blood supply to the liver arises from a separate anlage. The portal vein is a derivative of amphalomesentric veins. With regression of the yolk sac, the principal tributaries of the portal vein come from the intestine. Soon after birth, the umbilical vein is obliterated and normal adult circulation is established.

The portal system includes all veins which carry blood from the abdominal part of the alimentary tract "with exception of the lower part of the anal canal", the spleen, pancreas and gall bladder. From these viscera the blood is conveyed to the liver by the portal vein (Williams and Warwick, 1975).

### Portal vein:

The portal vein is formed by the union of superior mesenteric vein and the splenic vein just posterior to the head of the pancreas, at the level of the second lumbar vertebra and on the average extends for 6.4cm (4.8-8.8cm) before entering the liver, it ascends behind

the bile duct and the hepatic artery in the hepatoduodenal ligament where it receives a variable number of small veins before entering the portal fissure (Rappaport, 1987). It ends at the porta-hepatis by dividing into two branches, one to each of the corresponding lobes of the liver. The right branch is thick, short and is usually joined by the cystic vein before its entrance into the liver. The left branch is longer and smaller and gives branches to caudate and quadrate lobes and is also connected to fibrous cord "the ligamentum teres" which is a remnant of the obliterated left umbilical vein which may recanalise in portal hypertension providing porto-systemic communication from the left portal vein to the superficial epigastric veins and it is also connected to the I.V.C by another fibrous cord "the ligamentum venosum" (Kane and Katze, 1982).

**The splenic vein:**

It is 0.44cm in diameter. It originates at splenic hilum and joins near the tail of pancreas with the short gastric vessels to form the main splenic vein. This proceeds in a transverse direction in the body and head of the pancreas, lying below and in front of the

splenic artery. It receives numerous tributaries from the head of the pancreas and the left of gastro-epiploic vein enters it near the spleen.

**The superior mesenteric vein:** It is about 0.78cm in diameter (Rappaport 1987). It is very variable, having from 10-25 tributaries and collects blood from the small intestine, the coecum, the ascending and transverse parts of the colon. It usually begins in the right iliac fossa by the union of its numerous tributaries and ascends in the root of the mesentery until the neck of pancreas to meet the splenic vein to form the portal vein (Gardner et al., 1975).

**The inferior mesenteric vein:** it drains blood from rectum, the sigmoid and descending part of the colon. Starting as the superior rectal vein in the rectum and continues upward and ends in the medial third of the splenic vein but may sometimes enter the junction of the splenic and superior mesenteric veins (Rappaport, 1987).

**Definition:** Portal hypertension is a common syndrom characterized by a chronic pathological increase of portal venous pressure (Bosch et al., 1986). The normal portal venous pressure in man is about 7mmHg (Sherlock, 1989). Ranging between 5-10 mmHg (Schiff JB, 1993). In

portal hypertension, the gradient between portal pressure and inferior vena cava pressure increase above the normal range of 2-6mmHg and it is mandatory to express measurements of portal pressure, both as absolute and as the pressure gradient. Increased intraabdominal pressure for instance due to presence of ascites, increases both portal and I.V.C pressure without changing the gradient (Bosch et al., 1989). A direct portal system pressure at surgery over 30cm saline, a wedged hepatic venous pressure or direct portal venous pressure that is more than 5mmHg greater than the inferior vena cava pressure, splenic pressure of more than 15mmHg is abnormal and indicates the presence of portal hypertension (Reynolds 1987).

## **CLASSIFICATION AND AETIOLOGY**

Portal hypertension was classified practically by **Sherlock (1989)** into two main group

- (a) Presinusoidal "extra and intrahepatic"
- (b) Intrahepatic by which the prognosis can be suspected after haemorrhage as liver failure developed usually in cases of intrahepatic type after haemorrhage apposite to the extrahepatic type which have a relatively normal hepato cellular function.

### **1) Presinusoidal portal hypertension:**

It is also classified into extra and intrahepatic subdivisions

#### **A- The extrahepatic presinusoidal portal hypertension:-**

It is usually due to obstruction somewhere along the course of the splenic or portal veins and also may result from the causes of increased splenic blood flow. Congenital causes can occur any where along the line of the right and left vitelline veins from which the portal vein develop and the association with other congenital anomalies in the cardiovascular system and choledocal cyst support this possibility. Infections also like, umbilical vein sepsis or intraabdominal infections and portal pyelophlebitis as during splenectomy or