



The Effect Of Partial Splenic Artery Embolization In The Control Of Hypersplenism

Thesis

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LIST OF ABBREVIATION

SAE..... Splenic arterial embolization

PSE..... Partial splenic arterial embolization

HCV.....Hepatitis C Virus

US.....Ultrasound

CT.....Computed Tomography

MRI.....Magnetic Resonance Imaging

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INTRODUCTION

Hypersplenism is a pathological condition characterized by increased pooling or destruction of the blood corpuscular elements by the spleen, which is often managed by surgical removal or trans-catheter ablation of the spleen. **(Peck-Radosavljevic, 2001).**

Many disorders may lead to hypersplenism, including cirrhosis with portal hypertension, hematologic abnormalities such as idiopathic thrombocytopenic purpura, thalassemia major, and hereditary spherocytosis ; and diffuse splenic infiltration from primary malignancies such as leukemia and lymphoma **(Athale et al., 2000).**

Symptoms of hypersplenism may include abdominal discomfort, pain and respiratory distress, while signs include splenomegaly, thrombocytopenia, leukopenia and anemia **(Dwivedi et al., 2002).**

An effective treatment for hypersplenism may be total splenectomy however; it impairs the ability of the body to produce antibodies against encapsulated microorganisms and predisposes patients to sepsis.

After splenectomy, a second surgical operation or additional transfusion may be required as the condition that is treated with this surgery may recur **(Madoff et al., 2005)**.

The use of splenic artery embolization is used for the intentional infarction of splenic tissues to reduce their consumptive activity. In 1973, Maddison reported the initial clinical trial with splenic arterial embolization, but severe complications of complete splenic infarction including splenic abscesses formation and other grave complications, such as splenic rupture, septicemia and pneumonia, have prevented its acceptance as a viable treatment option. Since then, many authors advocated incomplete or partial splenic arterial embolization (PSE), in which a portion of the parenchyma of the spleen is left viable to preserve its immunological function **(Madoff et al., 2005)**.

Partial splenic arterial embolization, if adequately performed, is a safe and useful alternative to splenectomy with improvement in anemia, leukopenia and thrombocytopenia **(Hong et al., 2014)**.

AIM OF THE WORK:

The aim of the present work is to investigate the effect of partial splenic artery embolization in the control of hypersplenism.

ANATOMY OF THE SPLEEN

Spleen is the largest organ derived from mesenchyme and lies in the mesentery. It consists of masses of lymphoid tissue located around fine terminal branches of veins and arteries. These vessels are connected by modified capillaries called splenic sinuses **(Brehdolan et al., 2010)**.

The spleen is located just below the diaphragm in the left upper abdomen behind the stomach. It measures normally about $125 \times 75 \times 50$ mm ($5 \times 3 \times 2$ inches) in size, with an average weight of 150 grams **(Brehdolan et al., 2010)**.

Development:

The spleen appears about the fifth week as a localized thickening of the mesoderm in the dorsal mesogastrium above the pancreatic tail. Then it is carried to the left with the change in position of the stomach, where it lies behind the stomach and in contact with the left kidney. The part of the dorsal mesogastrium between the spleen and the greater curvature of the stomach forms the gastrosplenic ligament **(Brehdolan et al., 2010)**.

Relations:

The diaphragmatic surface is convex, smooth, and is directed upward, backward, and to the left. It is related to the under surface of the diaphragm, the ninth, tenth, and eleventh ribs of the left side, and the intervening lower border of the left lung and pleura **(Gray's, 2010)**.

The visceral surface is divided by a ridge into an anterior or gastric and a posterior or renal portion.

The gastric surface is in contact with the posterior wall of the stomach and the tail of the pancreas. The hilum is present at its medial border. **(Gray's, 2010)**.

The renal surface is directed downwards and medially. It is related to the upper part of the anterior surface of the left kidney and occasionally with the left suprarenal gland **(Gray's, 2010)**.



Figure (1): Shows the normal spleen with its vessels at the hilum (**Imaging Atlas of Human Anatomy 2013**).

The anterior border is free, sharp, thin, and is often notched; it separates the diaphragmatic from the gastric surface. The posterior border, more rounded and blunt, separates the renal from the diaphragmatic surface; it corresponds to the lower border of the eleventh rib. The intermediate margin is the ridge which separates the renal and gastric surfaces. The inferior border separates the diaphragmatic from the colic surface (**Gray's, 2010**).

The spleen is almost entirely surrounded by peritoneum, which is adherent to its capsule firmly. It is held in position by two folds of this membrane. One, the phrenicolienal ligament, is derived from the peritoneum; the lienal vessels pass between its two layers. The other fold, the gastrolienal ligament, is also formed of two layers, where they meet between the spleen and stomach. The short gastric and left gastroepiploic branches of the lienal artery run between its two layers. The lower end of the spleen is supported by the phrenicocolic ligament (Gray's, 2010)

Blood vessels of the Spleen:

The Splenic artery:

It is the largest branch of the coeliac trunk. It extends along the superior margin of the pancreas. It is composed of 4 anatomic divisions, including suprapancreatic, pancreatic, prepancreatic and prehilum segments (Arinci and Elhan, 2012).