



**Radiofrequency ablation of the spleen versus
partial splenic artery embolization in the
management of hypersplenism.**

Essay

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degree in **Radio Diagnosis**.

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Introduction

Hypersplenism is a condition where the spleen is enlarged for any reason and causes various cytopenias⁽¹⁾. Hypersplenism needs to have an appropriate hematopoietic response by the bone marrow, because otherwise the cytopenia is due to a bone marrow problem⁽²⁾.

Hypersplenism may be primary without underlying disease which is a rare condition or secondary associated with underlying problem such as Portal hypertension, congestive heart failure, malignancy (leukemia), chronic inflammatory diseases (Systemic lobus erytherematosus, sarcoidosis), myeloproliferative diseases, amyloidosis, and AIDS⁽²⁾.

Many patients with hypersplenism are asymptomatic and do not require treatment. The most common problem of hypersplenism is bleeding either from esophageal varices or epistaxis. Hypersplenism may also limit treatment options in some liver disease⁽³⁾.

Total splenectomy may be an effective treatment of hypersplenism but it impairs the body's ability to produce antibodies against encapsulated micro-organisms, predisposes patients to sepsis and increases the incidence of portal vein thrombosis in about 25% of the cases after splenectomy⁽⁴⁾.

Incomplete or partial splenic arterial embolization (PSE) is an effective treatment for hypersplenism, in which portion of the splenic parenchyma is left viable to preserve the splenic immunologic function. Partial splenic arterial embolization may be proximal or distal. Proximal splenic arterial occlusion proved unsuccessful treatment. Failure is attributed to abundant collateral circulation via short gastric and gastroepiploic arteries that reestablish the splenic blood supply around the occluded segment of the splenic artery⁽⁵⁾.



Distal splenic embolization with occlusive particles results in substantial reduction of the splenic parenchyma and increase in the platelet count, however serious complications related to splenic infarction may be produced such as; splenic rupture, acute pancreatitis, septicemia, splenic abscess and bacterial peritonitis ⁽⁶⁾.

Radiofrequency ablation (RFA) has been widely used to treat tumors of solid organs. Recent advancement of RF equipment has extended its utility to such splenic conditions as metastases of colonic and renal malignancies, hypersplenism, splenic injury, and partial splenectomy. Recent studies proved that RFA is a safe, effective, and minimally invasive approach for the management of splenomegaly and hypersplenism in patients with liver cirrhosis and portal hypertension. ⁽⁷⁾

The ablation is performed either intraoperatively or percutaneously. Between 20% and 43% of splenic volume is ablated. White blood cell count, platelet count, liver function, and hepatic artery blood flow show significant improvement after ablation. Minor complications including; hydrothorax and mild abdominal pain are observed. No mortality or other morbidity occurs ⁽⁸⁾.



Aim of The Work

The aim of this work is to study the safety, efficacy and complications of partial splenic embolization (PSE) in comparison with radiofrequency ablation (RFA) in the treatment of hypersplenism.



Summary and Conclusion

Hypersplenism is a pathologic condition seen in many disorders, the most common is liver cirrhosis with portal hypertension. It is characterized by increased pooling or destruction of the corpuscular elements of the blood by the spleen. Splenectomy is the preferred treatment procedure in patients with hypersplenism, whereas in cases of secondary hypersplenism therapy should be directed to the underlying pathology. With awareness of the role and importance of the spleen in the immune system, conservative methods have gained prominence in the treatment of benign conditions of the spleen. Splenic interventions as RFA and PSE are increasingly performed to treat various clinical conditions, including abdominal trauma, hypersplenism, splenic arterial aneurysm, blood diseases, portal hypertension, and splenic neoplasm. When clinically appropriate, these procedures may provide an alternative to open surgery. They may help to salvage splenic function in patients with posttraumatic injuries or hypersplenism and to improve hematologic parameters in those who otherwise would be unable to undergo high-dose chemotherapy or immunosuppressive therapy. PSE is the most commonly used interventional method for treatment of hypersplenism. It is done by injection of embolic material to occlude the artery either proximal or distal to produce ischemic changes of the hypersplenic tissues but serious complications may be produced as splenic abscess, rupture, and post embolization syndrome.

RFA has been widely used to treat tumors of solid organs. Recent advancement of RF equipment has extended its utility to such splenic conditions as metastases of colonic and renal malignancies, hypersplenism, splenic injury, and partial splenectomy. Previous animal experiments confirm that RFA is a safe and feasible treatment for splenomegaly. In current



Summary and Conclusion

studies, RFA is used to treat hypersplenism due to various disorders especially liver cirrhosis with portal hypertension. It is done either laparoscopic, intraoperative or percutaneous through US guidance. It exerts its effect via thermal ablation and coagulative necrosis of the splenic tissues.

In comparing with PSE on hypersplenism, both procedures have similar therapeutic principles. However, RFA has significant advantages, such as more confined lesion, less frequent and milder complications, convenient performance, and cheaper equipment requirements. This study demonstrates that RFA is a promising therapeutic approach for patients with hypersplenism.

Conclusion:

PSE and RFA procedures have similar therapeutic principles. However, RFA has more significant advantages, less complications and short hospital stay. Further studies are required to fully elucidate the role of radiofrequency ablation of the spleen and to determine how best therapeutic benefit can be obtained with minimal ablation of splenic tissue in the management of hypersplenism.