

CASE REPORT**PARTIAL SPLENIC ARTERY EMBOLIZATION: AN ALTERNATIVE MANAGEMENT STRATEGY FOR RESISTANT THROMBOCYTOPENIA OF IMMUNE THROMBOCYTOPENIC PURPURA (ITP)**¹L.K.Dissanayake*, ^{1,2}P.B.Hewavithana, ³R.M.P. Manel Rathnayake, ⁴A.U.B. Pethiyagoda¹Department of Radiology, Teaching Hospital Peradeniya,² Department of Radiology, Faculty of Medicine, University of Peradeniya,³ Department of Pathology, Faculty of Medicine, University of Peradeniya⁴Department of Surgery, Faculty of Medicine, University of Peradeniya

Corresponding Author: Dr. L.K. Dissanayake

email: kish829@gmail.com <https://orcid.org/0000-0002-8409-0220>**Abstract**

A 69-year-old male presented with haematuria due to a recurrent carcinoma of the bladder in the background of resistant thrombocytopenia with immune thrombocytopenic purpura. He required frequent platelet transfusions and was a high risk surgical candidate. Partial splenic artery embolization was performed with selective catheterization of the splenic artery. The initial platelet count of $32 \times 10^9/L$ showed a marked increase after 48 hours, to $251 \times 10^9/L$. No complications such as post embolization syndrome were observed. This case report highlights that splenic artery embolization is a stand-alone alternative therapy, for selected patients with ITP having resistant thrombocytopenia, especially in nonsurgical candidates.

Keywords: Splenic artery embolization, resistant thrombocytopenia, ITP**Introduction**

Splenectomy has been the standard therapy for patients with immune thrombocytopenic purpura (ITP) who are resistant to steroids but non-surgical alternatives such as splenic embolization may be equally effective with fewer adverse-effects.

Case Report

A 69-year-old male was diagnosed with recurrent high grade invasive urothelial bladder carcinoma.

He was investigated for hematuria and was found to have low platelet counts due to immune thrombocytopenic purpura (ITP). Chemotherapy could not be commenced as it could have led to further reduction of the platelet count. Splenic artery embolization was considered to treat the thrombocytopenia in preference to splenectomy, as he carried an added risk for surgery due to his advanced age and other comorbidities, such as chronic liver cell disease, marginal renal impairment and diastolic cardiac dysfunction.



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His platelet count at presentation was $32 \times 10^3/\mu\text{L}$. The patient's condition was optimized via platelet transfusions and a level of $101 \times 10^3/\mu\text{L}$ was obtained. Intravenous (IV) cefuroxime and metronidazole were started prior to the procedure. Monitoring of vital parameters was done continuously during the procedure. The procedure was done under analgesia with IV fentanyl $25\mu\text{g}$. The right common femoral artery access was used for selective catheterization of the splenic artery via the coeliac trunk, using a 5F Cobra catheter. After mapping the branches of the splenic artery, 300- 500 μm Polyvinyl alcohol (PVA) particles were injected via a microcatheter positioned in the distal splenic artery, with 30 ml of iodinated contrast. Approximately 60% embolization of the spleen parenchyma was achieved. There were no intra or post procedure complications. As the patient had marginal renal impairment, his fluid balance was strictly monitored in the post procedure period. There was no contrast induced nephropathy or deterioration of hepatic dysfunction.

Follow up platelet count at 48 hours showed a marked increase in platelet count to $251 \times 10^9/\text{l}$. Follow up ultrasound scan at 48 hours confirmed that around 60% of splenic parenchyma was infarcted. The patient was discharged on antibiotics and followed up at the surgical clinic. At his 2 week follow up appointment, he did not have any post procedural complications.

Discussion

Splenic artery embolization was first described in the 1973¹ by Maddison in the treatment of bleeding oesophageal varices with hypersplenism, and has since been used in different clinical settings, including splenic trauma, portal hypertension, ITP, autoimmune haemolytic anaemia and splenic haemangioma. The rise in platelet count is thought to reflect the reduced

trapping capacity of thrombocytes in the embolized spleen.

The main disadvantage of removing all splenic tissue in an individual is sepsis as described by King and Shumacker in 1952². Total splenic infarction has been limited due to the high incidence of complications such as splenic rupture, splenic abscess, splenic vein thrombosis, pleural effusions, paralytic ileus, pancreatitis as a result of non- targeted embolization of the dorsal pancreatic artery and post embolization syndrome (30%), which consists of fever (94%), leukocytosis, and abdominal pain (82%)³. The indexed case did not have any of these complications.

Hematologic response and severity of complications correlate with the amount of infarcted splenic tissue and most interventionalists have attempted to achieve infarction in 60%–70% of the splenic mass, as in this case. Numerous studies have compared the efficacy of partial splenic infarction with splenectomy for hypersplenism. Kimira et al., reported results of partial splenic artery embolization in chronic ITP, with a response rate of 51% for initial partial embolization, and concluded that partial splenic arterial embolization with or without repeat embolization is an effective alternative to splenectomy in patients with chronic ITP⁴.

Polyvinyl alcohol (300-500 μm) and gelatin particles are the most commonly used materials. Partial splenic arterial embolization may be performed with one of two methods. With the first approach, selective partial embolization, a few distal branches of the splenic artery are selectively catheterized, and embolization is performed to achieve complete stasis in these branches while several other branches are left untreated. With the second method, nonselective partial embolization, the working catheter tip is positioned more

proximally in the main splenic artery but beyond the origin of major pancreatic branches. Embolic particles are injected until the parenchymal blush is reduced⁵. The latter method was used in our patient.

This case highlights that splenic artery embolization can be performed successfully in patients as a stand-alone alternative therapy or as a bridging therapy to surgery, especially in critically ill patients with resistant ITP.

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