

Partial Splenic Embolization for Gastroesophageal Variceal Bleeding: A Potential Long Waiting to be Tapped

Variceal bleeding with cirrhosis is a potentially calamitous clinical situation that has an overall mortality risk of 10–20% which reaches up to 40% in Child Pugh C patients within the first 6 weeks of bleeding.^[1] Despite controlling the acute bleeding, 60% of these patients are at risk of re-bleeding, and if left untreated will have a mortality risk of 33%.^[2] Multiple reports have emphasized the application of splenic artery embolization as an alternate potential treatment of sinistral variceal bleeding.^[1,3] Complete splenic infarction can impair the body's ability to protect against encapsulated microorganisms by limiting antibodies and thus predisposing patients to sepsis.^[3] Despite initial enthusiasm, severe complications of complete splenic infarction have prevented its global acceptance as a viable clinical treatment. Therefore, partial splenic arterial embolization (PSE) has been proposed because after the procedure; a portion of the splenic parenchyma is left viable to preserve the spleen's immunologic function.^[4]

Since Spigos *et al.*^[5] published the technique of PSE for hypersplenism, the evolution of technique expertise and experience of interventional radiologists over decades has resulted in a much safer and reliable procedure. The procedure can be now performed to embolize selective segments of the spleen, and accurate remnant splenic volume estimation can be achieved with the help of parenchymal phase angiography.^[6] Moreover, quantitative evaluation of embolized volume during PSE can be done; digital subtraction angiography can instantly calculate the flow reduction after each injection of embolic material and relative blood flow can determine splenic embolized volume using video dilution technique.^[7,8]

PSE helps gradual decrease in splenic volume over months; decreases blood flow in splenic artery and reduces splenic portal vein pressure without altering portal blood flow; and yields rise in platelet count within 12–24 h and restores thrombopoietin production in cirrhotics.^[9] The rise in platelet count can, thus, facilitate interferon therapy in cirrhotic patients, cirrhotic patients and minimize bleeding complications post invasive liver surgery or liver transplantation.

Endoscopic variceal ligation (EVL) is the best available initial management for esophageal and gastric variceal bleeding, however, early recurrence remains the Achilles heel. Tanai *et al.*^[10] published their case series comparing EVL and EVL + PSE for esophageal varices. The series demonstrated that EVL + PSE reduced the cumulative recurrence rate of varices to nearly half at 6 months, 1 year, and 2 year follow up. Cumulative recurrence rates of esophageal varices at 6 months,

1 year, and 2 years in patients undergoing PSE + EVL was 21.1, 37.0 and 58.1%, respectively, compared to those undergoing EVL alone 58.1, 70.7 and 80.4%, respectively. In the event acute gastrovariceal bleeding, PSE with balloon retrograde transvenous obliteration (BRTO) has been reported.^[11] Pathophysiologically, PSE unmasks the protective effect of reduction of portal flow and rise in platelet count; thus, yielding clinical improvement in terms of variceal re-bleeds.^[8]

In this issue of the Journal, Wang *et al.* performed a meta-analysis on the efficacy of partial splenic embolization on the management of gastroesophageal variceal hemorrhage.^[12] The recent interest in PSE will probably mirror in clinical practice after publication of this level 1 evidence base. The overall clinical validity of the results of the analysis can be argued as the total number of studies included are six. Despite heterogeneity I^2 being 0%, the true homogeneity of the studies also remains a question in context as only one RCT was available to the authors. The analysis includes two studies from the same center published during different time periods; even though authors have taken all the efforts to address this, an overlap bias of patient population cannot be statistically eliminated. Despite limited published data, authors have effectively utilized the meta-analytic tools to prove that, with current evidence, there is a statistically significant superiority of combinational therapies over conventional therapies in preventing variceal recurrence and variceal hemorrhage, as well as prolonging overall survival.

Despite the enthusiasm, a word of caution needs to be taken into account regarding the complications from PSE. Post-embolization syndrome characterized by intermittent pyrexia, abdominal pain, nausea and vomiting, loss of appetite, and abdominal fullness can be witnessed in most of the patients (75–100%).^[13]

We feel that with the new evidence, PSE might be utilized as an effective tool in the management of gastroesophageal variceal bleeding. Future evidence consolidates our belief or not, we shall follow it closely.

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DOI: 10.4103/1319-3767.195557