

## P538

### Single-Session Direct Intrahepatic Portocaval Shunt and Portosplenomesenteric Thrombectomy Using Inari Flowtriever Large Bore Aspiration Catheter System: A Case Report

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**Background:** A 50-year-old male presented with a history of alcoholic and hepatitis C cirrhosis, complicated by esophageal varices, hepatic encephalopathy, and refractory ascites. The patient is status post-direct intrahepatic portocaval shunt (DIPS) for refractory ascites approximately 4 years prior, with resolution of symptoms until 1 month before current presentation. The patient was admitted for gradually worsening abdominal pain, distention, and shortness of breath. Abdominal ultrasound demonstrated occlusion of his DIPS which was patent at least 8 months prior. A computed tomography (CT) of the abdomen revealed complete DIPS thrombosis with thrombus extension into the portosplenomesenteric veins and associated portal enteropathy. Diagnostic paracentesis ruled out spontaneous bacterial peritonitis. Decision was made to pursue endovascular mechanical thrombectomy to restore patency of the DIPS and portosplenomesenteric veins. **Methods:** Single-session mechanical thrombectomy was chosen to avoid hemorrhagic risks associated with thrombolysis and escalation of care to the intensive care unit status. The DIPS was accessed via a right internal jugular vein approach. Initial digital subtraction portal venogram demonstrated thrombosis of the DIPS, portal confluence, superior mesenteric vein, and splenic vein with retrograde venous drainage into the inferior mesenteric vein and portal collaterals. Initial portosystemic pressure gradient was 20 mmHg. Initially, an 8 French Walk Vascular JETi aspiration thrombectomy catheter was deployed and multiple passes were made through the DIPS and portal venous vasculature with intermittent balloon angioplasty. Follow-up portal venogram demonstrated ineffective thrombus removal without change in portosystemic pressure gradient. Access was then upsized to a 22 French sheath, followed by passage of the 20 French Inari Trieriver20 aspiration catheter through the DIPS. Multiple aspiration passes were performed in the DIPS, main portal vein, and superior mesenteric vein. The DIPS and main portal vein were then angioplastied with 12 and 14 mm balloons, respectively. Completion digital subtraction portal venogram demonstrated restored patency of the DIPS and portosplenomesenteric veins with minimal residual intra-DIPS and portal vein thrombus. The portosystemic pressure gradient improved to 7 mmHg. Catheter and sheath were removed, venotomy closed, and procedure ended without immediate complication. **Results:** Postprocedure, the patient remained in clinically stable condition. A CT of the abdomen performed 2 days postprocedure confirmed wide patency of the DIPS and portosplenomesenteric veins. The patient was started on therapeutic enoxaparin and discharged on the postoperative day 3. **Conclusion:** Transjugular intrahepatic portosystemic shunt (TIPS) is a well-established procedure indicated in the patients with cirrhosis and refractory ascites requiring frequent paracentesis. A modified procedure the DIPS

was described as an alternative in patients with vascular anatomy not amenable to TIPS. Our patient was not a candidate for TIPS secondary to anatomically small and inaccessible hepatic veins. Therefore, a DIPS was placed for management of his refractory ascites with resolution of symptoms for nearly 4 years before gradual recurrence over 1 month before presenting with DIPS thrombosis. TIPS thrombosis is a well-described complication that can occur in the acute or chronic setting, with an incidence of 8% within the first 2 years reported by Tripathi *et al.* in their institutional experience. Literature on DIPS complications is relatively limited. In 2008, Petersen and Clark reported a primary patency of 100% over a follow-up period ranging from 2 days to 30 months in a consecutive cohort of 19 patients. A recent retrospective review of six patients that underwent DIPS was reported by Hatzidakis *et al.*, where two patients suffered acute thrombosis of their DIPS at 3 and 4 days postprocedure. Patency was restored in both instances, one by balloon angioplasty alone and the other by balloon angioplasty and mechanical thrombectomy with Angiojet combined with aspiration with a standard 8 French catheter. To our knowledge, our case report is the first demonstrating the use of a large bore aspiration thrombectomy system, the Inari FlowTrieriver, for the removal of large volume subacute to chronic thrombus from an occluded DIPS and portosplenomesenteric venous system. The Inari FlowTrieriver has recently been shown to be a safe and efficacious device for mechanical aspiration thrombectomy of acute central pulmonary embolism. Our case presentation proposes the potential for expanding the use of this device for the management of TIPS/DIPS and portosplenomesenteric thromboses.

## P539

### A Case of a Right Renal Artery Aneurysm Treated with a Stent Graft through a Stent Migrated into the Aneurysmal Sac: A Case Report

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We report a case of a right renal artery aneurysm treated with a stent graft through a previously placed stent. The patient was 30-year-old male presented with a renal artery aneurysm located in the right main renal artery. The saccular aneurysm was 2 cm in diameter and with a wide neck. Although coil embolization using a stent-assisted technique was performed in a previous hospital, proximal edge of the stent was migrated into the aneurysmal sac and the procedure was abandoned. The patient was referred to our institute to receive additional endovascular treatment. Exclusion of the aneurysm placing a balloon-expandable stentgraft on the parent artery through a stent cell was planned. A 7-French guiding sheath was introduced via the right femoral artery and advanced to the proximal right renal artery. A flexible guidewire was advanced to the distal renal artery through a stent cell, and it was exchanged for a stiffed guidewire using a catheter. A delivery system of the stent graft was inserted under the stiffed guidewire; however, a tip of the delivery system was caught in the edge of a stent strut and was not passed through the stent cell, even after