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Endovascular Shunt Creation for Patients with Chronic Portomesenteric Thrombosis: A Single Center Retrospective Study of Safety and Efficacy

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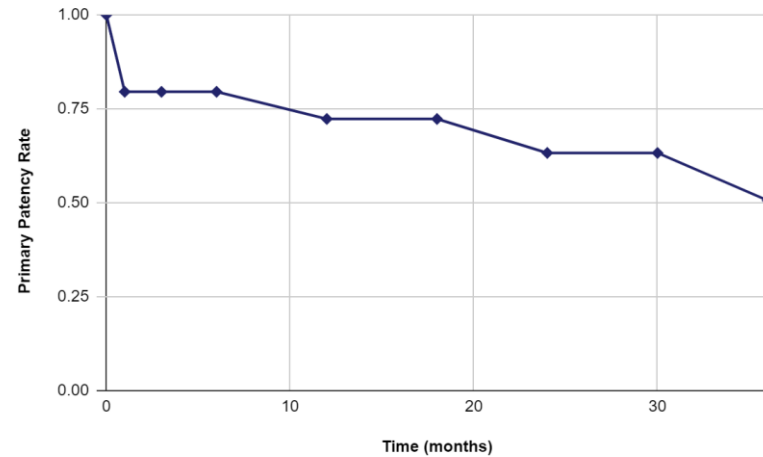
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Purpose

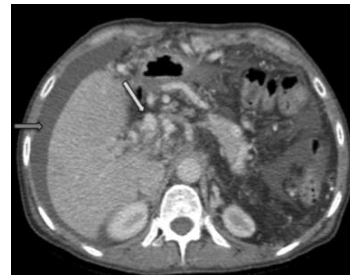
Portosystemic shunts are an important source for reducing portal pressure in patients with portal hypertension suffering from conditions such as recurrent variceal hemorrhage, ascites, and hepatic hydrothorax. Transjugular intrahepatic portosystemic shunt (TIPS) creation is the first-line endovascular treatment modality for symptomatic portal hypertension; however, portomesenteric thrombosis (PMT) - reported in 10-25% of patients with cirrhosis - is a commonly cited relative contraindication¹. The purpose of this study is to assess the safety and efficacy of endovascular shunt creation combined with indicated portomesenteric thrombectomy and/or thrombolysis for chronic PMT in patients who are refractory to standard-of-care therapy at a single tertiary care center.

Methods and Materials

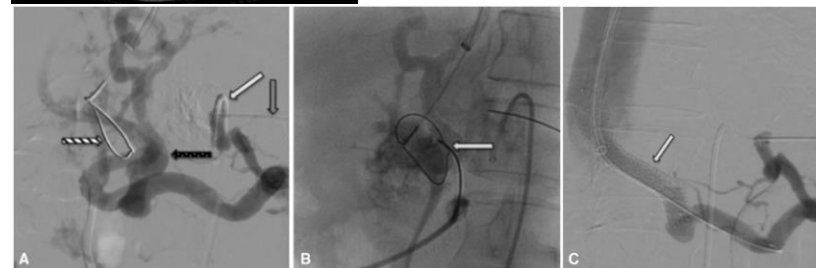
Chronic PMT patients evaluated by a multidisciplinary team of interventional radiology, liver medicine, and transplant surgery who subsequently underwent endovascular shunt placement between July 1, 2013 and November 15th, 2021 were identified. Baseline and follow-up laboratory, clinical and radiographic reports and images were reviewed. Primary outcomes included primary shunt patency and adverse events. Secondary outcomes were technical success, symptom resolution and mortality. Kaplan-Meier analysis was used to evaluate primary shunt patency and overall shunt patency (including secondary shunt re-interventions).



Kaplan-Meier survival curve. Primary shunt patency over time in months. Patients were included in analysis until the time of their last follow up imaging or reintervention. Mean follow up time was 13 months.



Preop. CT shows cavernous transformation of the portal vein (white arrow) with extensive collateralization due to PMT and ascites (gray arrow). **Intraop.** (A) Contrast injection shows relationship between an SMV collateral target (stippled black arrow) and IVC snare (striped white arrow). (B) Percutaneous needle (white arrow) is advanced through the SMV collateral and IVC snare. (C) Completion venography shows a patent mesocaval shunt.



Results

Forty-four patients with chronic PMT (46.6% women; median age 49 years) underwent endovascular shunt placement. Suspected precipitants of PMT were coagulopathy (44.4%), liver disease (37.8%), idiopathic (13.3%), and medication-related (4.4%). Occlusion extent was Yerdel Grade 2 (55.6%), 3 (17.8%) or 4 (26.6%). Indication for shunt included variceal bleeding (40%), chronic mesenteric ischemia (33.3%), refractory ascites (26.7%). Shunt was performed via “gun-site” technique in 82.2% of cases; mesocaval shunts were placed in 8.9% of cases. Trans-splenic (75.6%), transhepatic (13.3%), and mesenteric (11.1%) access sites were used. 13 patients (29%) experienced shunt thrombosis a median (range) of 5 (0.1-51) months following shunt placement. Thirty-day procedure-related adverse events included one groin hematoma (2.2%). Technical success was 100%. At 3-month followup, 77.8% of patients had resolution of symptoms. 3 year primary shunt patency rate was 61% and 5-year overall secondary shunt patency was 79% for patients with adequate followup. There were no long-term adverse events or deaths.

Conclusion

Endovascular shunt creation is safe with favorable long-term primary and overall patency rates, in addition to providing durable symptom relief for many patients with chronic PMT.

References

¹Tsochatzis, E. A., M. Senzolo, G. Germani, A. Gatt, and A. K. Burroughs. 2010. “Systematic Review: Portal Vein Thrombosis in Cirrhosis.” *Alimentary Pharmacology & Therapeutics* 31 (3): 366–74.