

Treatment Options for Hepatic Venous Outflow Tract Obstruction: Is the Scale Tipping in Favor of TIPS?



Hepatic venous outflow tract obstruction or Budd-Chiari Syndrome (BCS) entails obstruction of the hepatic veins (HV) and/or the inferior vena cava (IVC), leading to a syndrome characterized by hepatic congestion and portal hypertension and its consequences.¹ The entity, by definition, excludes sinusoidal obstruction syndrome and similar changes arising as a result of right heart failure.² The vast majority of cases are primary, which arise as a result of occlusion arising from endoluminal causes, such as thrombosis or web, whereas secondary BCS resulting from external invasion or compression constitutes a minority of cases.² The clinical features, natural history and treatment choices are dependent on the anatomy and the acuity of presentation. There is a wide geographical variation in the anatomy and acuity of block as well as the accepted treatment strategies. In view of rarity of the disease and the absence of large prospective data comparing the various treatment strategies, these are often predicated on the basis of local expertise and available treatment options.³ In this issue of the *journal*, Wongjarupong *et al.* report the long-term outcomes and effect of the transjugular intrahepatic portosystemic shunt (TIPS) on liver function in patients with BCS from the west.⁴ To put the results of the study in appropriate perspective, we delve into the background of BCS.

In the west, isolated involvement of HV—more commonly a long-segment occlusion—is frequent, whereas in the east, HV and IVC combined involvement—often a short-segment block—is commonly seen.^{3,5,6} In the Indian subcontinent, an isolated intrahepatic IVC block attributed to IVC web (arising as result of multiple episodes of subclinical phlebitis and thrombosis secondary to infection) had been described previously. But this profile has changed over the last decade or so to resemble that seen in the rest of the Asia, probably related to better imaging of the HVs.^{5,7} Those with HV involvement are more likely to present with a shorter and acute course with jaundice, ascites, and variceal bleed, whereas those with IVC involvement often have a long history of pedal edema along with subcutaneous abdominal wall collaterals and are less likely to have jaundice or variceal bleed.⁸ There is much debate on the appropriate treatment of BCS, with different strategies proposed. A school of thought proposes the “step-up”

strategy comprising anticoagulation first followed by endovascular interventions in nonresponders and liver transplantation (LT) to those who do not respond to endovascular interventions.^{2,9} On the other hand is the opinion of “upfront” endovascular intervention along with anticoagulation and offering LT to nonresponders.¹ With evolving experience in endovascular interventions and data suggesting that less than 20% of patients do well with anticoagulation alone, the treatment paradigm is shifting toward upfront endovascular interventions.

Even among the endovascular interventions, there is a choice between native vein recanalization procedures such as angioplasty, with or without stenting, and TIPS. Owing to the differences in the anatomy of block in BCS in the east, a lot of centers prefer angioplasty, with or without stenting, as the preferred endovascular intervention.¹ TIPS is only considered for patients with inadequate response to these native vein recanalization procedures and those with long-segment occlusion of all three HVs.¹ However, in the west, there is more experience with TIPS, which remains the preferred endovascular approach to create a shunt between the IVC and portal vein.² At times, when the HV notch is not well visualized, a direct shunt between the IVC and the portal vein may be created using percutaneous assistance; this variation is called direct intrahepatic portosystemic shunt.³ Choice of one endovascular intervention over the other depends on local expertise apart from the anatomical concerns. Our data supports that 5-year survival rates are better in the native vein recanalization group compared with the TIPS group (89% vs 76%).⁵ The caveat in interpreting this is that we performed TIPS selectively for those who have failed native vein recanalization procedures and those with all the HVs involved, which by definition constitute a sicker group. The inherent advantage of native vein recanalization procedures is that they have been shown to have a similar survival and patency rate with lesser periprocedural complications and risk of hepatic encephalopathy when done for appropriately chosen patients with a short-segment HV and/or IVC block.¹⁰

With this backdrop, Wongjarupong *et al.*, in this journal issue, present their retrospective data on the long-term outcome of TIPS for BCS in 20 patients aged >20 years from a quaternary care medical center in North America.⁴ Furthermore, they did a time to event analysis at 6 months, 1 year, 2 years, 5 years and 10 years posttransplant with censoring for death, liver transplant or loss to follow-up. Of these 20 patients, 80% had a hypercoagulable state with HV block in 70%, HV with IVC block in 15%, and

Abbreviations: BCS: Budd-Chiari Syndrome; HV: hepatic veins; INR: international normalized ratio; IVC: inferior vena cava; LT: liver transplantation; MELD: model for end-stage liver disease; TIPS: transjugular intrahepatic portosystemic shunt

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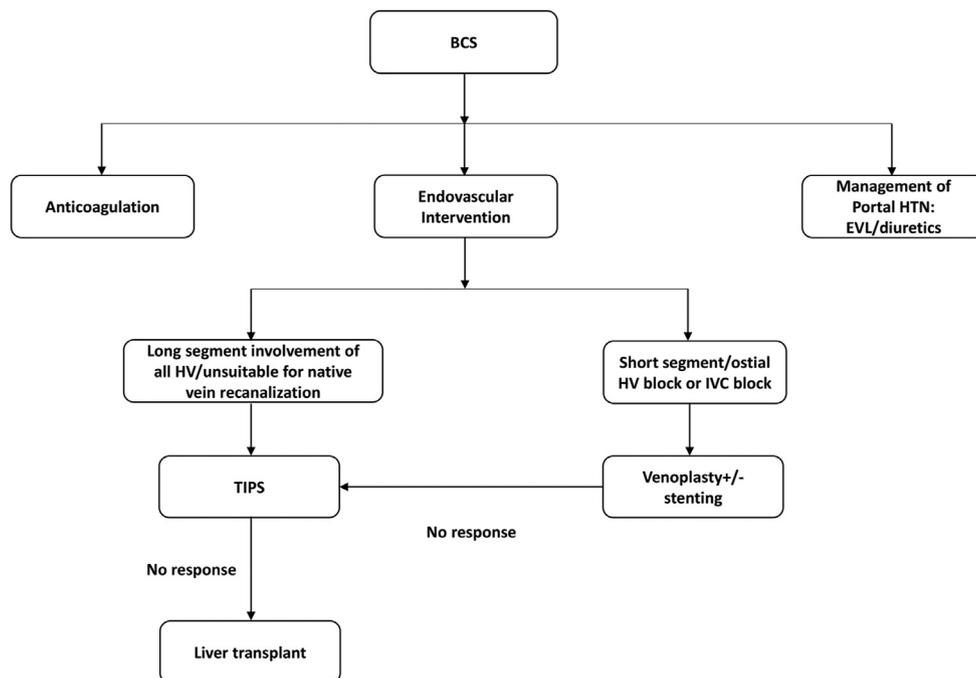


Figure 1 Management of BCS: an algorithmic approach. BCS, Budd-Chiari Syndrome; HTN, hypertension; HV, hepatic veins; IVC, inferior vena cava; TIPS, transjugular intrahepatic portosystemic shunt.

the rest had no information on the anatomy of the block. As the study extended over two decades, patients undergoing TIPS in the earlier part of the study (before 2004) presumably received uncovered stents, which are not the current standard of care. Because, as discussed, the management of BCS needs to be highlighted in the right perspective, it will be pertinent to know what number of patients sought treatment for BCS at the authors' institution during the study period and their management strategy for BCS—"step-up" versus "upfront" recanalization. Moreover, more clarity is needed about the detailed anatomy of the block: were the HV blocks long-segment or ostial? What was the number of HVs involved? Were some of these patients offered a native vein recanalization intervention initially?

About 75% of patients required a TIPS revision at follow-up, a quarter of them within 30 days from the first intervention. There was a definite decrease in severe ascites and improvement in serum albumin levels over the period of follow-up. At 10-year follow-up, there was no significant change in bilirubin, creatinine, international normalized ratio (INR), model for end-stage liver disease (MELD) and MELD-Na scores, probably because the INR was fallaciously raised due to oral anticoagulants and there was no effect of the procedure on serum creatinine. An important observation is that 40% of the patients still required LT after TIPS, most commonly due to symptom recurrence or TIPS block. We have previously published our retrospective data on long-term outcomes of TIPS in BCS of 80 patients

accrued over 7 years at our center.¹¹ Of these 80 patients, most had a long-segment block involving all the HVs (74%). The 5-year stent patency rate was 81%, and the 5-year post-TIPS survival was 84%. Post-TIPS survival was predicted by a decrease in symptoms and Child-Pugh stage after the intervention, even among those with Child-Pugh C cirrhosis. Hence, we had proposed TIPS as an effective treatment even for this subset of patients and advocated consideration of early LT for nonresponders. However, it is important to know that we offered TIPS only to patients with long-segment block of all HVs or those having failed previous native vein recanalization procedures at our center. Similar long-term outcomes post-TIPS have been reported from other centers also.^{12–15}

Notwithstanding the convincing data in support of TIPS from this study and others, its place in the management algorithm of BCS needs to be reassessed.¹⁵ The appeal of native vein recanalization procedures such as venoplasty and stenting lies in their less invasive nature, reduced costs, and reestablishment of physiological drainage of the hepatic parenchyma with a lesser rate of complications compared with TIPS, which entails a non-physiologic portosystemic shunt with risk of hepatic failure and encephalopathy.¹⁶ Hence, we believe that the way forward will be to offer venoplasty ± stenting as the endovascular intervention of choice in patients with a suitable anatomy and offer TIPS to those failing native vein recanalization procedures, as well as "upfront" in a subset of patients with anatomy not amenable to venoplasty/stenting.

Undisputedly, anticoagulation, management of portal hypertension-related complications and offering LT to those not responding to these endovascular interventions remain an equally important part of the management strategy (Figure 1).

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Anshuman Elhence and Shalimar drafted the article.

CONFLICTS OF INTEREST

The authors have none to declare.

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