Leading article

Transjugular intrahepatic portosystemic stent shunts

Numerous treatments have been advocated for controlling variceal haemorrhage of which the most recent addition is transjugular intrahepatic portosystemic stent shunting (TIPSS). This is an interventional radiological technique whereby a portosystemic shunt is created within the liver by passing a needle or stylet from an hepatic vein into the portal vein branch by a transjugular approach. Once the connection is made the tract is dilated by balloon angioplasty and a metallic stent inserted to maintain patency. Without such stents the tract rapidly closes and was the problem when the method was first described in 1969.¹ The published data confirm that this technique does reduce portal pressure and reduces rebleeding at least in the short term. Numerous reports, based largely on small numbers of patients have been published and radiology departments are often being asked to undertake the procedure. Enthusiasm for the technique has reached a peak long before substantial information is available. Now is a good time to review the available information and define the therapeutic goals and progress.

TIPSS has been used mainly to prevent recurrent variceal bleeding but also to stop active bleeding. As it is essentially a portocaval anastomosis it is perhaps surprising that TIPSS has been so enthusiastically received when disillusion with surgical portosystemic shunt operations is widespread. The main difference between TIPSS and surgical portosystemic shunting is that it avoids surgery and the shunt created is intrahepatic.

The operative mortality associated with surgical portosystemic shunts is about 10% (range 1-20%) and closely related to the severity of underlying liver disease.² The average figure for recurrent variceal bleeding after portosystemic shunting is 6% (range 0-16%), postshunt encephalopathy 28% (range 9-46%), and five year survival 50% (range 29-72%).² Selective shunts produce similar results to total portosystemic shunt operations with a lower initial incidence of encephalopathy. The number of reported studies and the short duration of follow up is inadequate to discover if TIPSS is superior to shunt surgery. Deaths related to the procedure are unusual (about 1-2%) although reporting is possibly incomplete.³⁻¹⁹ Intraperitoneal bleeding, potentially a life threatening complication, occurs more frequently.¹⁶ It is related to the technical difficulty so that this figure should fall with increased operative experience. Many patients in these studies have advanced liver disease and would not have been candidates for surgical intervention. It is probable that TIPSS will prove a safer and more widely applicable procedure than surgical shunting.

Encephalopathy is more difficult to assess, particularly because of the short duration of follow up in many studies. It occurs in about 20%³⁻¹⁹ of the procedures but seems to respond to simple medical measures or to reducing the diameter of the shunt by inserting a smaller diameter stent into the shunt. Experience based on surgical shunts suggests that the incidence of encephalopathy will rise as the duration of follow up increases. Chronic disabling encephalopathy characteristic of the postsurgical shunt condition has not yet proved a problem after TIPSS.

If encephalopathy proves to be less common or less severe than after surgical shunts this may be related both to the small diameter of the portosystemic anastomosis (about 1 cm)

compared with surgical shunts,²⁰ and also to the intrahepatic position of the shunt, which encourages continued flow of portal blood into the liver and may protect against encephalopathy.²¹

Rebleeding after TIPSS occurs in 10-20%^{5 8 13 17 22 23} and is usually associated with shunt narrowing or thrombosis.^{13 17 22} One of the advantages of TIPSS is that the function of the shunt can be assessed readily with monitoring of the portal pressure. Such problems as shunt occlusion and hepatic vein stenosis associated with recurrent bleeding, are accompanied by an increase in portal pressure gradient of more than 15 mm Hg. This can be identified and treated either by further angioplasty or the introduction of additional stents.

There is an inverse relation between the degree to which the portal pressure is reduced and the incidence of encephalopathy, related to the diameter of the shunt. Shunt dysfunction is probably commoner with the larger Palmaz stents, because of its lack of flexibility, reducing the potential advantage of the larger shunt. The introduction of larger diameter wall stents would be welcomed as optimal pressure reduction cannot yet be achieved in all patients.¹⁷ The optimal shunt diameter will almost certainly vary between patients and the staging of the liver disease.

Longterm survival after TIPSS will be determined mainly by the severity of liver disease so that any improvement in survival because of reduced mortality from bleeding will probably be difficult to detect even in large control trials. This problem has been encountered in studies of sclerotherapy and propranolol.^{24 25} Treating the portal hypertension rather than the cirrhosis, however, will probably not have an important influence on survival.

The lesson to be learnt from surgical portosystemic shunting is that careful evaluation of the technique and more particularly the indications are required. At present TIPSS has a place in preventing rebleeding from oesophageal varices after sclerotherapy or banding has failed, in the treatment of bleeding from gastric varices, to arrest active variceal bleeding uncontrolled by sclerotherapy, and to control haemorrhage in portal hypertensive gastropathy refractory to propranolol. TIPSS is also being used for the treatment of ascites. This can only be appropriate when conventional treatment has failed in patients who still have reasonable liver function. Inclusion of patients with ascites because of terminal liver failure will do nothing either to relieve their distress or for the reputation of TIPSS. The alternative is to establish trials comparing TIPSS with standard treatment. Such trials should be undertaken and include sufficient patients to provide clear answers.

In conclusion, TIPSS is a new and powerful weapon in the therapeutic armoury of those treating patients with the complications of portal hypertension but needs careful evaluation in controlled trials.

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