THE CURRENT ROLE OF DECOMPRESSIVE SHUNTS AND LIVER TRANSPLANT IN PORTAL HYPERTENSION

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INTRODUCTION

Surgical rescue has become a catch phrase for the Surgeon's role in management of variceal bleeding¹. This is largely because of the current popularity of pharmacologic portal pressure reduction and the widespread use of endoscopic sclerotherapy. These two therapies both reduce the risk of rebleeding from varices by approximately 50%, but even then 30–40% of patients will rebleed through propranolol and/or sclerotherapy. Surgical options are reserved for patients who rebleed through these therapies or alternatively for patients in whom the high rebleeding risk is unacceptable.

This paper addresses the current role of decompressive shunts and liver transplantation in management of variceal bleeding.

Patient Evaluation

Acute variceal bleeding can usually be stopped by endoscopic sclerotherapy. When stabilized the patient should be evaluated for the risk of further bleeding and the underlying cause of the portal hypertension. Emphasis of the latter should be on the severity of the underlying liver disease. Most deaths in patients with variceal bleeding are from liver failure.

History, physical examination, and standard laboratory tests of biochemical and haematologic indices provide the basis of evaluation. Ascites, encephalopathy and poor nutritional status indicate advanced disease, and when supported by elevated bilirubin, coagulopathy and hypoalbuminaemia suggest to a surgeon that the patient is a poor candidate for any operation other than a liver transplant. Endoscopy, vascular imaging techniques, liver biopsy and quantitative liver function testing can all be useful in evaluating the patient with more subtle disease, and in making therapy choices.

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Decompressive Shunts

These fall into three groups: total portal systemic shunts, partial portal decompression, and selective variceal decompression.

Total shunts are either the classic end-to-side portacaval shunt or a variety of side-to-side shunts such as portacaval, mesocaval, central splenorenal². The latter decompress the hepatic sinusoids in addition to relieving splanchnic hypertension. All control variceal bleeding, but loss of portal perfusion accelerates liver failure.

Current data suggest that patients with alcoholic cirrhosis tolerate total shunts better than nonalcoholic patients³. Continued massive variceal bleeding can be stopped by a total shunt: if subsequent transplant is a consideration a mesocaval shunt is preferred as it does not disturb the liver hilus. A further indication for a total portal systemic shunt is acute Budd-Chiari Syndrome when a side-to-side shunt decompresses the obstructed sinusoids and can stop the progression of hepatocyte necrosis⁴.

Partial Portal Decompression can be achieved with an 8mm interposition portacaval H-graft⁵. At this diameter of shunt portal pressure is reduced to approximately 12 mm Hg, which is similar to the level of portal pressure below which no bleeding occurs in the pharmacologic studies. Portal perfusion is maintained in 82% of patients with this diameter of shunt.

Currently, more data needs to be collected on these shunts, and controlled studies are required to confirm their haemodynamic efficacy and clinical role.

Selective variceal decompression is most commonly achieved by distal splenorenal shunt (DSRS)⁶. Control of variceal bleeding is as good with selective shunt as a total shunt, and is achieved in approximately 90% of patients². The physiologic goal of maintaining portal perfusion is significantly better achieved in nonalcoholic (90%) patients than alcoholic (50%) after standard DSRS⁷. Addition of splenopancreatic disconnection, taking the entire splenic vein out of the pancreas, improves maintenance of portal flow in alcoholics to 84%⁸. Survival parallels these portal perfusion differences, being significantly better for non-alcoholics compared to alcoholics after standard DSRS^{9,10}, and being improved in alcoholic patients by splenopancreatic disconnection⁸ (Figure 1.)

Prospective randomized clinical trials comparing DSRS to a variety of total shunts in predominantly (83%) alcoholic patients shows similar control of bleeding, operative mortality and longterm survival^{2,3,11}.

Sclerotherapy Versus Shunt

Five prospective randomized trials have compared endoscopic sclerotherapy to shunt surgery¹²⁻¹⁶. The common finding to these studies was improved control of variceal bleeding with shunt surgery. The data on survival is less clear.

The first study¹² compared sclerotherapy to emergency portacaval shunt in patients with alcoholic cirrhosis and acute variceal bleeding. Both early and late control of bleeding was better in the shunt group. Survival was not significantly different between groups, but a feature of this study was the role of surgical rescue of patients with persistent or late rebleeding from varices.

The other four studies compared sclerotherapy to distal splenorenal shunt. The consistent feature was significantly better bleeding control in the DSRS group. Three studies¹⁴⁻¹⁶ showed no significant difference in survival in the two groups,

Figure 1 Alcoholic versus nonalcoholic cirrhosis survival patterns after distal splenorenal shunt. On the right, alcoholic cirrhotic patients have significantly poorer survival than nonalcoholic patients after standard DSRS, while on the left this difference is not seen after DSRS with splenopancreatic disconnection. (Reproduced with permission from *Annals of Surgery*, 1989; 210:332–341.

while one showed improved survival in the group randomized to sclerotherapy¹³. This latter study¹³, from our group, again emphasizes the importance of appropriate surgical rescue therapy in patients who fail sclerotherapy. Thirty five percent of patients failed sclerotherapy, and it was the successful surgical salvage of these patients who made the difference in survival between these groups. Further, this survival advantage was seen only in patients with alcoholic cirrhosis (Figure 2) supporting a treatment strategy of initial sclerotherapy with decompressive shunt reserved for those with rebleeding. In the nonalcoholic patients, the similar survival in the two groups combined with the significantly better bleeding control with DSRS, favors shunt as primary therapy.

Liver Transplantation

The evolution of liver transplantation to a viable clinical therapy¹⁷ in the past decade means that it must always be considered in management decisions. The indication for this therapy is end-stage liver disease. Variceal bleeding is certainly one of the more lethal complications of cirrhosis and portal hypertension, but not all patients with variceal bleeding have end-stage disease. Several papers or reviews have addressed the role of liver transplant in management of variceal bleeding^{18–21}.

Clearly, not all patients with variceal bleeding can or should be managed by liver transplantation. While the concept of a curative rather than a palliative procedure for such patients is attractive, the risk: benefit ratio must be weighed for each patient. The decision to transplant a patient with variceal bleeding is easy if they are Child's Class C and otherwise fulfill transplant criteria. Equally, the decision to *not* transplant should be easy for good risk Child's A patients in whom lesser therapies effective in control of variceal bleeding can be offered, with a relatively low risk of rapid progression to liver failure. More problematic are the middle risk

Survival: Alcoholic / Nonalcoholic

Figure 2 The different survival pattern of alcoholic and nonalcoholic patients in the Emory prospective randomized trial¹³ comparing DSRS and sclerotherapy. The group with significant survival advantage are the alcoholic cirrhosis patients who receive initial sclerotherapy with surgical rescue of the 35% who ultimately fail sclerotherapy.

Figure 3 Algorithm of management for prevention of recurrent variceal bleeding.

patients in whom the course of their liver disease may be less predictable: these patients should perhaps be the target of more objective hepatic function studies to facilitate making this decision.

What treatment should be used in patients in whom transplant is a likely ultimate step? Opinions vary. A lesser (and nonoperative) therapy will make subsequent transplant technically easier, but should a patient be offered transplant early because of variceal bleeding if their own liver is adequate when their bleeding has been controlled? If surgery is required urgently as a life saving measure, or indicated in an elective (and at this time, good risk) patient the two preferred choices are mesocaval shunt or DSRS.

Summary

Based on our current management of many patients with variceal bleeding and the availability of all treatment options at our institution, the algorithm of management given in Figure 3 has evolved.

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