



## Surgery for Portal Hypertension in the Era of TIPSS: Our Experience

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### ABSTRACT

**Background and Aim:** Surgery for portal hypertension can be either shunt surgery or the life saving devascularisation procedures. With the advent of interventional radiology procedures like TIPSS these are now performed less often. We aim to analyse whether surgery for portal hypertension does have a role in the current era of TIPSS and endotherapy. **Materials and Methods:** This is a retrospective observational study with sample accrual done between 2012 and 2015. A total of 17 patients have undergone surgery for portal hypertension. Among these 10 cases were having Non-cirrhotic Portal Hypertension (NCPH) and the rest had decompensated liver disease with portal hypertension. All the NCPH cases underwent shunt surgeries. Devascularisation with splenectomy was done as a life saving measure for bleeding gastroesophageal varices with failed endotherapy in the 7 cases with cirrhosis. The age ranges of the patients were 16-42 years. The median age was 22.5 years. The indication for surgery was analysed among these patients. The morbidity and mortality were also analysed as primary outcome measures. **Results:** 7/10 cases with NCPH had extrahepatic portal vein obstruction. Among these 2 had portal cavernoma cholangiopathy. 3/10 cases had NCPF. The indication for surgery was failed endotherapy with recurrent bleeding in 6 cases, symptomatic hypersplenism in 3 cases and symptomatic splenomegaly with large varices and rare blood group in 1 case. All the 10 NCPH cases underwent proximal splenorenal shunt as an elective procedure. The indication for surgery was recurrent variceal bleed with hemodynamic instability among the 7 patients with DCLD related portal hypertension. The morbidity was 40% among the NCPH group with nil mortality. There was 80% morbidity with 2 mortality among the 7 patients with DCLD related portal hypertension.

**Conclusion:** There is still a role for shunt surgeries in the era of endotherapy in cases of NCPH as a therapeutic measure. Devas with splenectomy is a salvage surgical procedure for patients with portal hypertension in general, in an emergency setting with hemodynamic instability. These surgeries have a role especially in centres where TIPSS is not available.

### INTRODUCTION

Portal hypertension secondary to cirrhosis of the liver and vascular diseases of the liver is a major cause of morbidity and mortality worldwide. While alcohol induced cirrhosis of the liver is the major cause in adults, vascular diseases causing prehepatic or posthepatic portal hypertension accounts for the majority of cases in children. Variceal hemorrhage as a result of portal hypertension is a medical emergency accounting for 10-20% mortality in spite of the recent advances in management. Most of the cases are managed by endotherapy and refractory cases with TIPSS. Surgery remains the sheet anchor in patients with NCPH and a life saving salvage measure in patients with cirrhosis with PHT not amenable to endotherapy or TIPSS. We here report our experience with 17 cases managed over a 3 year period with surgery following failure of endotherapy or because of non availability of TIPSS.

### MATERIALS AND METHODS

This is a retrospective observational study with sample accrual done between 2012 and 2015. A total of 17 patients have undergone surgery for portal hypertension. Among these 10 cases were having Non-cirrhotic Portal Hypertension (NCPH) and the rest had decompensated liver disease with portal hypertension. All the NCPH cases underwent shunt surgeries as an elective procedure.

Devascularisation with splenectomy was done as a life saving measure for bleeding gastroesophageal varices with failed endotherapy in the 7 cases with cirrhosis. The age ranges of the patients were 16-42 years. The median age was 22.5 years. The male to female ratio among the patients with NCPH was 6:4 and 4:3 among those with cirrhosis with portal hypertension. The indication for surgery was analysed among these patients (Table.1). The morbidity and mortality were also analysed as primary outcome measures.

## RESULTS

7/10 cases with NCPH had extrahepatic portal vein obstruction. Among these 2 had portal cavernoma cholangiopathy. 3/10 cases had NCPF. The indication for surgery was failed endotherapy with recurrent bleeding in 6 cases, symptomatic hypersplenism in 3 cases and symptomatic splenomegaly with large varices and rare blood group in 1 case (Table.1). All the 10 NCPH cases underwent proximal splenorenal shunt as an elective procedure. One of the patients with EHPVO had portal biliopathy with hilar stricture with obstructive jaundice and cholangitis (Fig.1). He underwent staged management with PSRS done as the first procedure followed by Roux-en-Y hepaticojejunostomy after 4 months (Fig.2). The initial cholangitis episode was managed by PTBD in this patient. The other patient with portal biliopathy was asymptomatic and underwent PSRS.

The indication for surgery was recurrent variceal bleed with hemodynamic instability among the 7 patients with DCLD related portal hypertension. All the 7 had undergone prior EVL. There were 12 EVL sessions done altogether. In all these patients it was recurrent variceal bleed. Among these 4 underwent Modified Sugiura's procedure and the rest Hassab's procedure. Of the 7 patients 5 were Childs grade A and the rest Childs grade B. The MELD score of 2 patients was above 15. There was 80% morbidity with 2 mortality among the 7 patients with DCLD related portal hypertension. Both the mortality was in the patients with MELD score above 15. Ascites was the most common post operative complication followed by liver failure.

## DISCUSSION

Portal hypertension due to various causes are a major cause of morbidity and mortality worldwide. Due to the difficulty in conducting well framed randomised clinical trials there is no clear cut level I evidence regarding various aspects in the management of portal hypertension. This led to the organisation of a series of consensus meetings. The first one was organised in Netherlands in 1986 [1]. Following this other meetings followed in Italy and one in USA [2-13]. The latest was called Baveno VI workshop and was held on April 10-11, 2015.

The Baveno consensus workshops laid the foundation for the development of management guidelines for portal biliopathy. With the advent of interventional radiological procedures like TIPSS and advances in endotherapy for varices, surgery for portal hypertension has become an occasional event.

According to the Baveno VI consensus patients with acute variceal hemorrhage should be managed initially with blood volume restitution. PRBC transfusion should be done conservatively at a target haemoglobin level between 7-8 gm/dl. Antibiotic prophylaxis is an integral part of therapy for patients with upper GI bleed and cirrhosis. Vasoactive drugs (terlipressin, somatostatin, octreotide) should be started as early as possible before endoscopy and continued for up to 5 days. Sodium levels must be monitored in patients receiving terlipressin as hyponatremia has been reported with this drug. Following hemodynamic stabilisation patients with cirrhosis should undergo OGD scopy within 12 hours. In the absence of contraindications pre-endoscopy infusion of erythromycin should be considered. The availability of emergency endoscopy services is mandatory to tackle the emergent situation. Esophageal varices must be managed with endoscopic variceal ligation. For GOV1 either EVL or glue injection is advocated. GOV2 and IGIV should be managed with glue injection.

According to this consensus early TIPSS placement must be considered with PTFE-covered stents within 72 hours (ideally within 24 hours) in patients bleeding from EV, GOV1 and 2 at high risk of treatment failure after initial pharmacological and endoscopic therapy. Balloon tamponade with Sengstaken Blakemore tube should only be used in refractory esophageal bleeding as a temporising measure until definitive treatment can be instituted. Non selective beta blockers must be started as secondary prophylaxis to prevent a recurrent bleed.

In our series all the 7 cases were taken up for surgery only after failure of initial endoscopic measures and due to the non availability of TIPSS in an emergent setting. The morbidity of these patients were high at 80%. The MELD score above 15 is a good predictor of mortality as both of our patients died post operatively. Surgery still has a role in patients with hemodynamic instability refractory to resuscitative measure and in centres where TIPSS facility is not available at the cost of high morbidity and risk of mortality.

The drawbacks with TIPSS are the following :

1. Hepatic decompensation is unacceptably common after TIPS
2. The "bridge" to transplantation built by this procedure is seldom crossed; less than 10% of patients who undergo TIPS undergo liver transplantation
3. TIPS has proven to be more expensive than pharmacologic, endoscopic, or surgical shunt treatments, owing to the number of interventions necessary to maintain patency. The DIVERT study, a randomised controlled trial by Henderson JM, et al[14] has proved the superiority of DSRS in comparison to TIPSS in patients with refractory variceal bleed and who have limited access to health care. Compared with TIPS, survival after HGPCS was superior for patients with better liver function (eg, Child's class A or B) [15]. Shunt failure after HGPCS occurred later than after TIPS.

Rather than TIPS, application of HGPCS is preferred for patients with complicated cirrhosis and better hepatic function.

In patients with NCPH and with absolute indications for surgery, shunt surgery plays a definitive role[16]. Rex shunt is popular in the Latin America where it was originally developed. The majority of the Indian series report their experience with proximal splenorenal shunt. In our center our preference is to do a PSRS. In patients without a shuntable vein an on table decision for devascularisation with splenectomy is made.

## CONCLUSION

There is still a role for shunt surgeries in the era of endotherapy in cases of NCPH as a therapeutic measure. Devas with splenectomy is a salvage surgical procedure for patients with portal hypertension in general, in an emergency setting with hemodynamic instability. These surgeries have a role especially in centres where TIPSS is not available.

## Current role of surgical shunts

Less frequent than in the previous era

- In the emergency setting when other modalities-including medical therapy, endoscopic control, or TIPS-have failed to control an acute variceal bleed.
- In the elective setting as a long-term bridge to liver transplantation.
- In the elective setting as definitive therapy for patients with noncirrhotic portal hypertension or CTP class A cirrhosis.
- Beneficial treatment for Budd-Chiari syndrome.

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**Table.1**

Sl. No	AGE	SEX	Diagnosis	Recurrent Bleeding	Symptomatic Hypersplenism	Symptomatic splenomegaly	Portal biliopathy	Rare blood group	Remote place
1.	16	M	EHPVO	+		+			
2.	18	M	EHPVO	+	+		+		
3.	20	F	NCPF		+				
4.	21	M	EHPVO	+	+				
5.	22	F	EHPVO			+		+	+
6.	23	M	NCPF	+	+				
7.	23	M	EHPVO		+		+		
8.	23	F	EHPVO		+				
9.	35	M	EHPVO	+	+				
10	42	F	NCPF	+		+			

Fig.1. MRCP picture showing stricture of the CHD just below the confluence of the RHD and LHD.



Fig.2. Intraoperative picture showing proximal splenorenal shunt being done.

