

Original Research Article

Surgical management in portal hypertension

Bhavin Baria¹, Nitin Parmar², Siddharth Kumar³, Hiren Parmar^{4*}

¹Assistant Professor, Department of Surgery, B.J. Medical College, Ahmedabad, Gujarat, India

²Associate Professor, Department of Surgery, B.J. Medical College, Ahmedabad, Gujarat, India

³PG Student, Department of Surgery, B.J. Medical College, Ahmedabad, Gujarat, India

⁴Associate Professor, GMERS Medical College, Gandhinagar, Gujarat, India

*Corresponding author email: drhirenparmar@gmail.com

	International Archives of Integrated Medicine, Vol. 3, Issue 9, September, 2016.	
	Copy right © 2016, IAIM, All Rights Reserved.	
	Available online at http://iaimjournal.com/	
	ISSN: 2394-0026 (P)	ISSN: 2394-0034 (O)
	Received on: 25-08-2016	Accepted on: 03-09-2016
	Source of support: Nil	Conflict of interest: None declared.
How to cite this article: Baria B, Parmar N, Kumar S, Parmar H. Surgical management in portal hypertension. IAIM, 2016; 3(9): 194-199.		

Abstract

Background: Portal hypertension commonly accompanies cirrhosis of liver and is a consequence of an increase in splanchnic blood flow secondary to vasodilatation and increased resistance to the passage of blood through the cirrhotic liver. Development of oesophageal varices (OV) is one of the major complications of portal hypertension. In present study we attempted to compare different surgical modalities in case of Portal Hypertension (PHT) by their indications, contraindications, complications and outcomes in a group of 50 patients.

Aim and objectives: To study the indications, contraindications, complications and outcomes in different decompressive shunt procedure and devascularisation procedure, to discuss the advantages and disadvantages of different surgical procedures in case of portal hypertension, to discuss role of shunt surgery in modern era of liver transplantation.

Materials and methods: During our work period from June 2008 to November 2010, all patient admitted in our institution were considered for study. Detailed history was elicited in each case. Various symptoms were noted and a detailed general, systemic and local examination was done in cases. Various operative surgery was done in the form of Distal Spleenorenal Shunt, Spleenectomy with Devascularisation, Side to Side Mesocaval Shunt, side to side lineorenal Shunt. All the patients were observed for post operative complications and managed accordingly. Regular follow up of patient was conducted till date. All the case was studied on the basis of following proforma.

Results: All patients were advised surgery. Out of this only 1 (2.56%) mortality were found which was with the DSRS. All patients with Child's Criteria B were selected for side to side portocaval

shunt of which there was no mortality, in all patients with Child's Criteria A in whom different surgical modalities were conducted have 3.12% mortality with DSRS and associated morbidity variceal bleeding, total rebleeding and shunt occlusion in both groups. Variceal bleeding was found in 2 cases of which 50% was with Grade A and 50% was with Grade B of Child's Criteria. Total rebleeding was found in only 1 (3.12%) patient with Child's Criteria Grade A. Shunt occlusion was found in only 1 (3.12%) patient with Child's Criteria Grade A. Encephalopathy was found in 5 (12.82%) patients out of which 4 (57.14%) patients were with Child's Criteria Grade B, and only 1 (3.12%) patient with Child's Criteria Grade A.

Conclusion: More studies are needed to established any conclusion as there are some shortcomings like; patients are lost in follow up, liver transplantation is yet in developmental stage and scarcity of grafts in government setup.

Key words

Portal hypertension, Esophageal varices, Cirrhosis of liver, Splenomegaly, Different surgical options.

Introduction

Portal hypertension [1] commonly accompanies cirrhosis of liver and is a consequence of an increase in splanchnic blood flow secondary to vasodilatation and increased resistance to the passage of blood through the cirrhotic liver. Development of oesophageal varices (OV) is one of the major complications of portal hypertension. Its prevalence is 20-30% (some recent studies mention it up to 90%) in patients of cirrhosis [2]. A major cause of PHT-related morbidity and mortality is the development of variceal hemorrhage which occurs in 25-40% of patients. Each episode of active variceal hemorrhage is associated with 30 percent mortality. One-third of all patients die of bleeding gastro-oesophageal varices. Reported mortality from first episode of oesophageal varices in western studies is 17-57%. In addition, survivors of an episode of active bleeding have a 70 percent risk of recurrent hemorrhage within one year of the bleeding episode [3].

Variceal hemorrhage occurs in 25 to 40 percent of patients with cirrhosis [4]. While several modalities are available for primary prophylaxis of variceal bleeding, many are associated with significant adverse effects. According to a statement from the Baveno international consensus conference, the use of β -blocker therapy is not recommended for pre primary prophylaxis as it does not seem to prevent

formation of varices but adds to adverse reactions. However, it prevents progression of small varix to large one. Screening should be repeated every 3 years in patients without varices and every 2 years in those with small varices. Endoscopic follow-up should then relate to the initial size of detected varices. In case of large varices, endoscopic follow-up is not necessary, and primary prophylaxis with a non-selective β -blocker (propranolol or nadolol) should be started. Endoscopic band ligation is useful in preventing variceal bleeding in patients with medium or large varices. Accurate identification of patients at highest risk of bleeding allows stratification in an attempt to avoid potentially harmful preventive treatments in the 60 to 75 percent of patients who will never have variceal bleeding [5]. In order to reduce the increasing burden that endoscopy units will have to bear, some studies have attempted to identify characteristics that non-invasively predict the presence of any OV or of large OV. These studies have shown that biochemical, clinical, and radiological parameters alone or together have good predictive power for non-invasively assessing the presence of OV. Overall, the most common result of these studies was that parameters directly or indirectly linked to portal hypertension, such as splenomegaly and decreased platelet count, were predictors of the presence of OV. However, in patients with chronic liver disease the presence of decreased

platelet count may depend on several factors other than portal hypertension, such as shortened platelet mean lifetime, decreased thrombopoietin production, myelotoxic effects of alcohol or hepatitis viruses. On the other hand, the presence of splenomegaly in cirrhotic patients is likely the result of vascular disturbances that are mainly related to portal hypertension. With this in mind, in this study we used the platelet count/ spleen diameter ratio as a parameter linking thrombocytopenia to spleen size in order to introduce a variable that takes into consideration the decrease in platelet count which most likely depends on hypersplenism due to portal hypertension. At present, there is no satisfactory non endoscopic indicator to detect the presence of OV.

In present study we attempted to compare different surgical modalities in case of Portal Hypertension (PHT) by their indications, contraindications, complications and outcomes in a group of 50 patients.

Aim and objectives

- To study the indications, contraindications, complications and outcomes in different decompressive shunt procedure and devascularisation procedure.
- To discuss the advantages and disadvantages of different surgical procedures in case of portal hypertension.

- To discuss role of shunt surgery in modern era of liver transplantation.

Materials and methods

During my work period from June 2008 to November 2010, all patient admitted in our institution were considered for study. Detailed history was elicited in each case. Various symptoms were noted and a detailed general, systemic and local examination was done in cases. Laboratory investigations were carried out in all cases including blood and urine investigations and other specific investigation in the form of Barium Swallow, USG Abdomen and Upper GI Endoscopy. Various operative surgery was done in the form of Distal Splenorenal Shunt, Splenectomy with Devascularisation, Side to Side Mesocaval Shunt, side to side lineorenal Shunt. All the patients were observed for post operative complications and managed accordingly. Regular follow up of patient was conducted till date.

Results

In present study of 39 cases of portal hypertension, attempt was made to compare different surgical modalities in management of portal hypertension, as all the patients were subjected to surgery. Comparison of Operative Mortality was as per **Table – 1**. Comparison of Variceal Bleeding was as per **Table – 2**. Comparison of total rebleeding was as per **Table – 3**. Comparison of Shunt Occlusion was as per **Table – 4**. Comparison of Encephalopathy was as per **Table – 5**.

Table – 1: Comparison of Operative Mortality.

Operative Mortality	Selective Shunt Surgery	Total Shunt Surgery	Splenectomy with Devascularisation	Total
Yes	1	0	0	1
No	4	18	16	38
Total	5	18	16	39

Discussion

39 patients with portal hypertension, most of the patients have hematemesis; few of them have

developed other complications of portal hypertension such as malena, jaundice, ascites, and splenomegaly and caput medusa [6]. All were subjected to undergo investigations such as

routine blood investigations, ultrasonography of abdomen and upper GI scopy. Based on which they were classified into Child's Criteria Gradings.

Table – 2: Comparison of Variceal Bleeding.

Variceal Bleeding	Selective Shunt surgery	Total Shunt surgery	Splenectomy with Devascularisation	Total
Yes	1	1	0	2
No	4	17	16	37
Total	5	18	16	39

Table – 3: Comparison of total rebleeding.

Total Rebleeding	Selective Shunt surgery	Total Shunt surgery	Splenectomy with Devascularisation	Total
Yes	1	0	0	1
No	4	18	16	38
Total	5	18	16	39

Table – 4: Comparison of Shunt Occlusion.

Shunt Occlusion	Selective Shunt surgery	Total Shunt surgery	Splenectomy with Devascularisation	Total
Yes	1	0	0	1
No	4	18	16	38
Total	5	18	16	39

Table – 5: Comparison of Encephalopathy.

Encephalopathy	Selective Shunt surgery	Total Shunt surgery	Splenectomy with Devascularisation	Total
Yes	0	4	1	5
No	5	14	15	34
Total	5	18	16	39

All patients were advised surgery. Out of this only 1 (2.56%) mortality were found which was with the DSRS. All patients with Child's Criteria B were selected for side to side portocaval shunt of which there was no mortality, in all patients with Child's Criteria A in whom different surgical modalities were conducted have 3.12% mortality with DSRS and associated morbidity variceal bleeding, total rebleeding and shunt occlusion in both groups. Variceal bleeding was found in 2 cases of which 1 (50%) was with Grade A and 1 (50%) was with

Grade B of Child's Criteria. Total rebleeding was found in only 1 (3.12%) patient with Child's Criteria Grade A. Shunt occlusion was found in only 1 (3.12%) patient with Child's Criteria Grade A. Encephalopathy was found in 5 (12.82%) patients out of which 4(57.14%) patients were with Child's Criteria Grade B, and only 1 (3.12%) patient with Child's Criteria Grade A [7].

Only 1 out of 5 patients operated for selective shunt surgery had variceal bleeding, similarly

only 1 out of 18 patients operated for Total Shunt Surgery and none of the patients operated for Splenectomy with Devascularisation had variceal bleeding resulting in P Value of 0.2076 which is statistically insignificant. In study of Fischer, et al. [8] variceal rebleeding rate was 14% in selective shunt surgery and 5% in total shunt surgery. Only 1 out of 5 patients expired who was operated for Selective shunt surgery with mortality being 20%. However there was no mortality in the group of patient operated for Total Shunt Surgery or Splenectomy with Devascularisation. The P Value being 0.0305 which is statistically significant. In study of Fischer, et al. mortality rate was 4% in selective shunt surgery and no mortality in total shunt surgery. Only 1 out of 5 patients operated for selective shunt surgery had rebleeding with no such incidence in patient operated for Total Shunt surgery or Splenectomy with Devascularisation, resulting P Value is 0.0305 which is statistically significant. In study of Fischer et al total rebleeding rate was 18% in selective shunt surgery and 16% in Total Shunt surgery. No patient operated for Selective Shunt surgery had encephalopathy while 4 out of 18 patient operated by Total Shunt surgery and 1 out of 16 patients operated for Splenectomy with Devascularisation had encephalopathy, resulting P Value of 0.2278 which is statistically insignificant. In study of Fischer et al rate of developing encephalopathy was 14% in Selective Shunt surgery and 21% in Total Shunt surgery.

Patients who with Child's Criteria Grade A benefits by prophylactic pharmacological therapy. Pharmacological therapy also reduces chances of hematemesis in surgical failures. Patients who with Child's Criteria Grade A and Grade B have benefited from prophylactic operations for portal hypertension. Those having only hematemesis, hypersplenism and no other complications of portal hypertension with Grade 2 or Grade 3 of oesophageal varices should undergo Splenectomy with Devascularisation, as it's morbidity are less and less incidence of mortality [9]. Young patients with hematemesis, without interactable ascites and without massive

splenomegaly with non plaqued splenic vein should undergo DSRS, but it proves to be a time consuming surgery and technically challenging. In patients with other comorbid conditions and of old age with ascites and symptomatic splenomegaly with no encephalopathy and if adequate mobilization of splenic vein is possible then consideration to PSRS should be given. In cases if adequate mobilization of splenic vein is not possible and in whom spleen is to be preserved or with mild splenomegaly then lineorenal shunt (SSLR shunt) also proves to be an effective shunt in decreasing complications associated with portal hypertension as lack of no. of morbidities associated with the procedure. In patients with ascites, side to side portocaval shunt proves to be bad option as it increases chances of encephalopathy and if one is to be operated as a bridge to Liver Transplantation then also it hampers adequate exposure of hilum for the future procedure. Patients who develop hematemesis even after surgery were controlled by endoscopic banding or sclerotherapy. As compared to cirrhotic patients non-cirrhotic patients are much benefited by surgery.

Conclusion

More studies are needed to established any conclusion as there are some shortcomings like; patients are lost in follow up, liver transplantation is yet in developmental stage and scarcity of grafts in government setup [10].

References

1. Peck-Radosavljevic M, et al. Austrian consensus on the definition and treatment of portal hypertension and its complications (Billroth II). *Wien Klin Wochenschr*, 2013; 125: 200-19.
2. Horne PM. Portal hypertension and risk of esophageal bleeding. *Nurse Pract.*, 2016; 41: 1-3.
3. Pimenta JR, et al. Factors Associated with Bleeding Secondary to Rupture of Esophageal Varices in Children and Adolescents with Cirrhosis. *J Pediatr*

- Gastroenterol Nutr., 2016 Aug 4. [Epub ahead of print]
4. Svoboda P, et al. Acute upper gastrointestinal bleeding in liver cirrhosis patients. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub., 2012; 156: 266-70.
 5. Wang AJ, Li BM, Zheng XL, Shu X, Zhu X. Utility of endoscopic ultrasound in the diagnosis and management of esophagogastric varices. Endosc Ultrasound, 2016; 5: 218-24.
 6. Garcia-Tsao G. Current Management of the Complications of Cirrhosis and Portal Hypertension: Variceal Hemorrhage, Ascites, and Spontaneous Bacterial Peritonitis. Dig Dis., 2016; 34: 382-6.
 7. Antil N, et al. Hepatic Venous Waveform, Splenoportal and Damping Index in Liver Cirrhosis: Correlation with Child Pugh's Score and Oesophageal Varices. J Clin Diagn Res., 2016; 10: TC01-5.
 8. Nussbaum MS, Schoettker PJ, Fischer JE. Comparison of distal and proximal splenorenal shunts: a ten-year experience. Surgery, 1993; 114: 659-65.
 9. Garbuzenko DV. Current approaches to the management of patients with liver cirrhosis who have acute esophageal variceal bleeding. Curr Med Res Opin., 2016; 32: 467-75.
 10. Orozco H, Mercado MA. The evolution of portal hypertension surgery: lessons from 1000 operations and 50 Years' experience. Arch Surg., 2000; 135: 1389-93.