Original Article ISSN (O):2395-2822; ISSN (P):2395-2814

Proximal Splenorenal Shunts (PSRS) for Extrahepatic Portal Venous Obstruction (EHPVO) in a Tertiary Care Hospital in Odisha

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Received: August 2019
Accepted: August 2019

ABSTRACT

Background: EHPVO more commonly involves children from the lower socioeconomic strata in developing countries. Variceal bleeding is the most common presentation.. Management with endoscopic means provide temporary palliation. It is believed that surgery carries high mortality and rebleeding rates and is followed by portosystemic encephalopathy and postsplenectomy sepsis. However, a proximal splenorenal shunt is a definitive procedure that may be more suitable for children, particularly in those who have limited access to medical facilities.Our aim was to evaluate the results of proximal splenorenal shunts done in children with extrahepatic portal venous obstruction. **Methods:** Between Aug 2017 & Jan 2019, we performed 20 elective proximal splenorenal shunts for EHPVO in the Department of Surgical Gastroenterology, SCB Medical College, Cuttack. Outcome was evaluated in term of rebleeding, encephalopathy, and pneumococcal infection. **Results:** Rebleeding occurred in 4 cases, pneumococcal infection & encephalopathy was detected in one patient & one patient died during follow up. **Conclusion:** A proximal splenorenal shunt, a one-time procedure with a low mortality rate and good long-term results, is an effective treatment for children in India with extrahepatic portal venous obstruction.

Keywords: Extrahepatic portal vein obstruction(EHPVO), proximal splenorenal shunt (PSRS).

INTRODUCTION

Extrahepatic portal venous obstruction (EHPVO) is accompanied by replacement of the extrahepatic portal vein by a cavernoma with or without thrombosis of the intrahepatic portal, splenic, or superior mesenteric veins. In developing countries, EHPVO has been reported to be the most common cause of upper gastrointestinal bleeding (UGIB) in children (70% in some reports) and is also a common cause of variceal bleeding in adults.[1] In western countries, EHPVO is second only to cirrhosis as a cause of portal hypertension, but its relative incidence is much lower compared with that in the developing countries. Its aetiology is still not clear but has been attributed to umbilical sepsis after birth with thrombosis extending to the portal system via the patent umbilical vein or portal pyaemia following intra-abdominal sepsis. However, notwithstanding a lack of knowledge about its cause, most children and adults with EHPVO are generally from the so-called lower economic strata.[2] Variceal bleeding in EHPVO usually occurs in the first or second decade of life.[3] However, the outcome after a bleed is better compared to bleeding in cirrhotics (if adequate blood replacement facilities are, because patients with EHPVO have normal liver function which helps them to sustain bleeding episodes without decompensation.- However mortality rates of between 5 and 30% have been reported for a single bleeding episode because of the large volumes of blood lost in patients who do not have access to sophisticated medical facilities including blood transfusion.[5]

Till the middle of the 20th century, surgery was the only treatment available for these patients. However, with the advent of endoscopic therapy, this soon became the predominant treatment modality for the control of acute bleeding and also an important method for the prevention of a repeated bleeding episode. The main disadvantages of endotherapy are that it requires multiple sessions and a long-term follow up with a recurrence rate of up to 40% in some studies.[6] Because the prevalence of EHPVO is the highest in developing countries and the condition affects mainly the poor,[7] most of whom do not have access to blood transfusion facilities and are not treatment compliant, the benefits of using a less invasive procedure like endoscopic therapy must be weighed against surgery which, in the best centres

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carries an operative mortality of 1%, is a onetime treatment, is not associated with encephalopathy and followed by rebleeding rates of less than 10%.[8] Moreover, operations like a splenectomy and proximal lienorenal shunt eliminate a large painful spleen and hypersplenism and restore a normal growth pattern.[9] Our aim was to evaluate the results of proximal splenorenal shunts done in children with extrahepatic portal venous obstruction.

MATERIALS AND METHODS

Between Jan 2018 & Jan 2019, we performed 20 elective proximal splenorenal shunts for EHPVO in the Department of Surgical Gastroenterology, SCB Medical College, Cuttack. Among them 15 were male & 5 were female. Mean age was 19 yrs. All were elective operations for patients who had history of prior variceal bleed in form of melena &/or haematemesis. All patients had splenomegaly. Ascites was seen in 4 patients. No patient had jaundice. Preoperative evaluation included routine hematological investigations, liver function test, Ultrasonography and selectively CT scans. Size of the splenic vein was of paramount importance. Average size of splenic vein was 11mm (range: 6mm- 20mm). Procedure was performed by thoracoabdominal incision through left 7th or 8th intercostal space. Splenectomy was done meticulously taking care to avoid excessive bleeding. 3 -4 cm of splenic vein was dissected for end to side anastomosis with left renal vein.[3] All the patients were heparinised prior to anastomosis. Special attention was given to prevent any injury to the vessels. The anastomosis was performed with continuous 6-0prolene suture. Operation was completed with one intercostal & another abdominal tube drain in the splenic bed.[4] All the patients were followed up at interval of three months during the first year& six months in the second year. During the follow up, we performed routine hemogram, liver function test and Doppler ultrasound to access the shunt patency.

RESULTS

All the patients were operated with hemoglobin atleast 10 gm/dl. Average blood loss was about 500ml. Average duration of surgery was 5- 6 hours. Average hospital stay was 12 days.

Rebleeding- Rate of rebleeding is very low, only 4 patients presented with rebleeding during the first year of follow up and were managed conservatively with EST.[Table 1] Encephalopathy developed in 1 patient after operation. Wound infection- 1 patients had wound infection, and was managed with dressing and antibiotics. One patient died during follow up.

Table 1: Details of patients

Patient No.	Age	Sex	UGIH	U/S	SV Size(mm)	Rebleed	Sepsis	Encephalopathy
1.	12	M	Yes	EHPVO	10	No	No	No
2.	38	M	Yes	EHPVO	6	Yes	No	No
3.	23	M	Yes	EHPVO	10	No	No	No
4.	75	M	Yes	EHPVO	9	No	No	No
5.	24	M	Yes	EHPVO	10	No	No	No
6.	15	F	Yes	EHPVO	11	No	No	No
7.	17	F	Yes	EHPVO	10	No	No	No
8.	15	M	Yes	EHPVO	9	No	No	No
9.	16	M	Yes	EHPVO	10	No	No	No
10.	18	M	Yes	EHPVO	11	No	No	No
11.	24	M	Yes	EHPVO	9	No	No	No
12.	16	F	Yes	EHPVO	10	No	No	No
13.	32	M	Yes	EHPVO	10	No	No	No
14.	22	M	Yes	EHPVO	10	No	No	No
15.	26	F	Yes	EHPVO	7	Yes	No	No
16.	38	F	Yes	EHPVO	20	No	No	Yes
17.	16	F	Yes	EHPVO	10	No	No	No
18	15	M	Yes	EHPVO	9	Yes	No	No
19	18	M	Yes	EHPVO	10	No	No	No
20	22	M	Yes	EHPVO	10	Yes	No	No

DISCUSSION

Surgery is the definitive treatment modality for EHPVO. We believe that it should be recommended as the treatment of choice for secondary prophylaxis in developing countries where the disease is more common and the accessibility to health care resources is poor.[10] Surgical intervention in variceal bleeding in EHPVO is indicated if there is (i) failure of endoscopic management in acute variceal bleeding, (ii) bleeding not amenable to endoscopic treatment such as portal hypertensive gastropathy and ectopic varices, (iii) as a onetime treatment for secondary prophylaxis in those who have difficult access to specialized centres (iv) for associated complications like portal biliopathy, growth retardation, hypersplenism, and massive splenomegaly leading to poor quality of life.[11] A

PSRS is the most commonly performed shunt along with a splenectomy. In 1947, Dr. Robert Linton first reported splenectomy with PSRS.[12] Since then it has gained more popularity in developing countries where EHPVO is a major cause of portal hypertension with associated symptomatic hypersplenism.[13] PSRS in EHPVO is established as the one time procedure that prevents variceal bleeding with rebleeding rate of 0–2%, no mortality and no encephalopathy in the postoperative period, and low incidence of post splenectomy infection.[14] Additionally PSRS also cures EHPVO related problems other than variceal bleed like portal hypertensive gastropathy and portal biliopathy in majority of patients. PSRS is found to be more effective in relieving any associated hypersplenism and it does not need any use of natural or synthetic grafts unlike mesocaval shunt. Post splenectomy infection rates in developing world is low as compared to western countries possibly because children living in poor hygienic conditions develop immunity against serious infections after recurrent attacks of gastrointestinal infections. It is advantageous in that, along with diversion of blood flow to decrease portal pressure and control bleeding, it also relieves the patient from symptomatic enlarged spleen and the effects of hypersplenism. PSRS has shown good long-term results. In a study by Prasad et al., the 15 yr survival was 95% in 160 patients of EHPVO treated with PSRS with a rebleeding rate of 11%.[15] The rebleeding rates after shunts are also lower than that after endoscopic therapy. In a recent prospective randomized study by Wani et al. in which the authors compared endoscopic sclerotherapy and shunt surgery revealed that rebleeding rates were significantly lower in the shunt surgery group (3.3% versus 22.6%).[16] Treatment failure rates were also much less in the surgery group (6.7% versus 19.4%).[17] Shunt procedures may also result in an improved quality of life (QOL). A study by Krishna et al. evaluating QOL after endoscopic or surgical treatment of EHPVO showed that endoscopic variceal eradication had no significant effect on QOL, but the postsurgery group had improvement in physical, psychosocial, and total QOL scores.[18] However, the differences were not statistically significant

CONCLUSION

EHPVO more commonly involves children from the lower socioeconomic strata in developing countries. Variceal bleeding is the most common presentation.. Both endoscopy and shunt surgeries have shown good long-term results in secondary prophylaxis. However, treatment should take into account the socioeconomic status of the patient and facilities available locally. Proximal lienorenal shunt being a one-time procedure with, if performed by experienced surgeons, low mortality and occlusion rates and an absence of post procedure encephalopathy should be considered as the main treatment in patients with difficult access to sophisticated medical facilities.

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How to cite this article: Mohapatra V, Jayasingh SC. Proximal Splenorenal Shunts (PSRS) for Extrahepatic Portal Venous Obstruction (EHPVO) in a Tertiary Care Hospital in Odisha. Ann. Int. Med. Den. Res. 2019; 5(5):MC12-MC15.

Source of Support: Nil, **Conflict of Interest:** None declared