

Mesocaval Interposition Shunt for Portal Vein Thrombosis and its Follow-Up by Sonography

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Portal hypertension is caused by multiple reasons but one variety has recently been highlighted after the improvement in diagnosis by ultrasonography and Doppler Imaging that is portal vein thrombosis. We in Jinnah Hospital, Lahore have operated upon fourteen such patients with excellent results so far. With regular follow up of 2-3 years we have not found any rebleed. We have used standard mesocaval interposition shunting with PTFE Graft in all patients and have followed them up with regular 3-6 monthly ultrasound / Doppler studies. All the patient have shown immediate portal venous pressure fall from 37 mm Hg (Av.) to 16 mm Hg (Av.) intra-operatively. All the patients showed decrease in the size of spleen from 17 cm (Av.) to 11.7 cm (Av.). Only one patient developed oesophageal varices grade-III but he did not bleed as well. We recommend this procedure for all portal hypertension patients who bleed from oesophageal varices despite at least two attempts to control by sclerotherapy / banding or who bleed from gastric varices. This modality of treatment is recommended both for elective and emergency cases.

Key words: Mesocaval shunt, portal vein thrombosis, sonography

Since the introduction of a graft for performing an interposition mesocaval shunt (H-graft) by Lord in 1970, and independently by Drapanas in 1972, this type of shunt has gained popularity all over the world⁴.

However the long term survival and shunt patency results have been controversial. Drapanas have shown 95% graft patency over 5 years. Low encephalopathy (11%) and overall survival of 72% in cirrhotics⁴.

With the introduction of PTFE (Polytetra flouore-ethylene) graft not only the graft survival has improved considerably, but it has allowed to reduce the diameter of graft as well³.

Sclerotherapy failure has been universally defined and concept of selection of patient for surgery has developed accordingly. Sclerotherapy failure has been defined as two early or late recurrences of bleeding after sclerotherapy of esophageal varices or one recurrence of gastric varices after sclerotherapy, during the regular endoscopic surveillance².

In this paper we have presented the experience of portal vein thrombosis induced varical hemorrhage and its management with interposition mesocaval shunt (H-graft) with radiological surveillance in follow up of our patients.

Patients and methods

Fourteen patients have been traced in Jinnah Hospital / Allama Iqbal Medical College, Lahore between August 1998 and August 2000 by Mesocaval interposition shunt. All the patients were initially treated by sclerotherapy on the medical floor and were switched over to surgical floor when at least two attempts of sclerotherapy of esophageal varices failed or gastric varices started bleeding.

All the patients were diagnosed by ultrasound examination for liver volume, presence of ascites and

Doppler sonography for portal flow and conversions formations.

Varices were graded by endoscopy and liver biopsy was performed to evaluate the liver status. All the patients were thus confirmed to have portal vein obstruction with normal liver and normal liver function tests. In six out of fourteen patients a clot in portal vein was demonstrable.

All the patients came from poor socioeconomic status and no demonstrable cause of portal vein thrombosis was found except one who had a benign gall bladder mass pressing upon portal vein.

Intra-operative Pressure

Average portal vein pressure was 37.6 mm Hg (35-40 mm Hg) which promptly fell to 16 mm Hg (Gr) post shunt.

Technique

The superior mesenteric vein was exposed and duodenum was mobilized to accommodate the PTFE graft which was anastomosed end to side to ant surface of IVC below the renal vessels and end side to SMV through a window in mesentery.

Clinical Assessment and Follow-up

All the patients underwent regular assessment jointly in the surgical OPD and Radiology department with regular coagulation profile monitoring, color Doppler sonography for graft flow and patency and size reduction of spleen as a double check by ultrasound monitoring.

Results

There was no intra or post operative mortality. Mean requirement of blood transfusion was 4 units (3-7) intraoperatively. All patients developed mild to moderate ascites which recovered in two weeks (av) in all the patients. No patients developed encephalopathy.

Table 1. Morbidity

	n=
Ascites	14(100%)
Wound infection	01(7.1%)
Recurrence of varices	01(7.1%)
Shunt Thrombosis	02 (14.2%)
G.I. Ulcer	01 (7.1%)

Table 2. Patients date

Age (years)	8-35 (mean 21)
Sex (M / F)	8:6
Portal vein thrombosis	13
Ext. Pressure on P.V.	1

Discussion

Portal venous flow has always been shown by the early workers to be vitally important for liver metabolism. This idea has led to the development of partial shunting like Warren et al.

Recently it was shown that shunts do not increase or even maintain adequate portal flow over a long period. Secondly it is known that when portal flow is decreased arterial flow to liver increases almost 100%. This led to the concept of interposition graft shunting.

Initial experience with this type of shunting was not good as the rate of obstruction was quite high but with the advent of PTFE grafts and especially externally supported grafts have revolutionized the use of H-graft shunting and graft patency rate is 95% in 5 years^{4,5}.

Ultrasonography is an excellent non-invasive modality for demonstrating and verifying flow in this type of shunt. The shunt visualization is almost 100%².

We have studied the flow especially because we ligate the collateral during operation as well.

Apart from shunt patency ultrasonography and color Doppler sonography also demonstrates the flow pattern of mesenteric and portal flow and hence the liver perfusion.

We also use ultrasonographic measurement of spleen with relation to reduction in tits size as a favourable post of marker (Table 3)

Table 3

Pre-operative spleen size (cm)	15-19 (17.5%)
Post operative spleen size (cm)	11-13 (11.7%)

Present series shows no mortality. One patient developed varices grade-iii but did not bleed after 2 years post surgery.

This kind of shunting does not require the binding restrictions of Warren shunt like no ascites, no bleeding, splenic vein diameter of 7 mm and we perform this shunt in emergency as well¹.

Finally as other present day parameters are concerned this shunt does not compromise the cirrhotic patients ever, who need to undergo liver transplantation as do other types of shunts. Rather this shunt helps performing OLTx, contrary to other shunts which need to be undone or they make dissection very difficult^{1,2}.

References

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