



Operative Technique

Spleen-preserving proximal splenic-left intrahepatic portal shunt for the treatment of extrahepatic portal hypertension in children



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ABSTRACT

Purpose: The Rex shunt has been employed successfully to treat patients with extrahepatic portal hypertension. In the conventional Rex shunt, the internal jugular vein is used as a venous graft. Inevitably, such a procedure requires neck exploration and sacrifice of the internal jugular vein. The authors describe a novel adaptation of spleen-preserving spleno-Rex bypass, successfully carried out in children with extrahepatic portal hypertension. **Methods:** The mean age of the four patients (1 boy, 3 girls) was 46 months at the time of operation. All children had a history of upper gastrointestinal bleeding, and suffered from splenomegaly and hypersplenism. Spleen-preserving proximal splenic-left intrahepatic portal shunt was performed in all patients. The splenic artery and vein were ligated at the splenic hilum, and the splenic vein was completely separated from the bed of the pancreas to its junction with the inferior mesenteric vein. The freed splenic vein was anastomosed to left portal vein. The short gastric and left gastroepiploic vessels were kept intact to supply and drain the spleen. All patients were followed-up for 7–33 months (median: 21.5 months).

Results: The spleen-preserving spleno-Rex bypass was successfully performed in all 4 patients. The median operative time was 225 min (range: 215–260 min). One patient received blood transfusion, and the postoperative length of hospital stay varied from 4 to 6 days (median: 4.5 days). Intraoperative portal venous angiography demonstrated the patency of the shunt in all patients. Postoperatively, the complete blood count normalized and the biochemistry tests were within normal range. Postoperative ultrasound confirmed shunt patency and satisfactory flow in the proximal splenic-portal shunt in each patient. The size of the spleen decreased and there was no recurrence of variceal bleeding.

Conclusions: The spleen-preserving spleno-Rex bypass is a viable option to treat EHPVO in children.

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Extrahepatic portal venous obstruction (EHPVO) is the most common cause of portal hypertension in children. Recently, the Rex shunt (meso-portal bypass) has been used successfully to treat patients with extrahepatic portal hypertension, thereby eliminating the risk of variceal haemorrhage and restoring normal anatomy and physiology of the portal system [1–4]. However, the conventional Rex shunt uses the internal jugular vein as a graft, which requires neck dissection and may lead to a risk of pseudotumor cerebri [5]. Therefore, the Rex shunt has constantly been modified, including splenic-left intrahepatic portal shunt [6], inferior meso-left portal shunt [7], autogenous saphenous vein [8] and gastro-portal shunt [9]. In the current study,

we report our experience of spleen-preserving spleno-Rex bypass as a viable option for treating children with EHPVO.

1. Materials and methods

Between June 2011 and August 2013, four patients (1 boy, 3 girls) with extrahepatic portal hypertension (caused by portal cavernoma) were treated in the Department of Pediatric Surgery, Capital Institute of Pediatrics, Beijing. The mean age was 46 months at the time of operation (range 20–70 months). All of patients had a history of upper gastrointestinal bleeding, and suffered from splenomegaly and hypersplenism.

1.1. Operative technique

The same surgeon carried out all the procedures on these children. A 16G venous catheter was first inserted into a branch of superior mesenteric vein to measure the portal pressure and perform mesenteric angiography. The selective mesenteric angiography was used to map out both extrahepatic and intrahepatic portal vessels (Fig. 1A).

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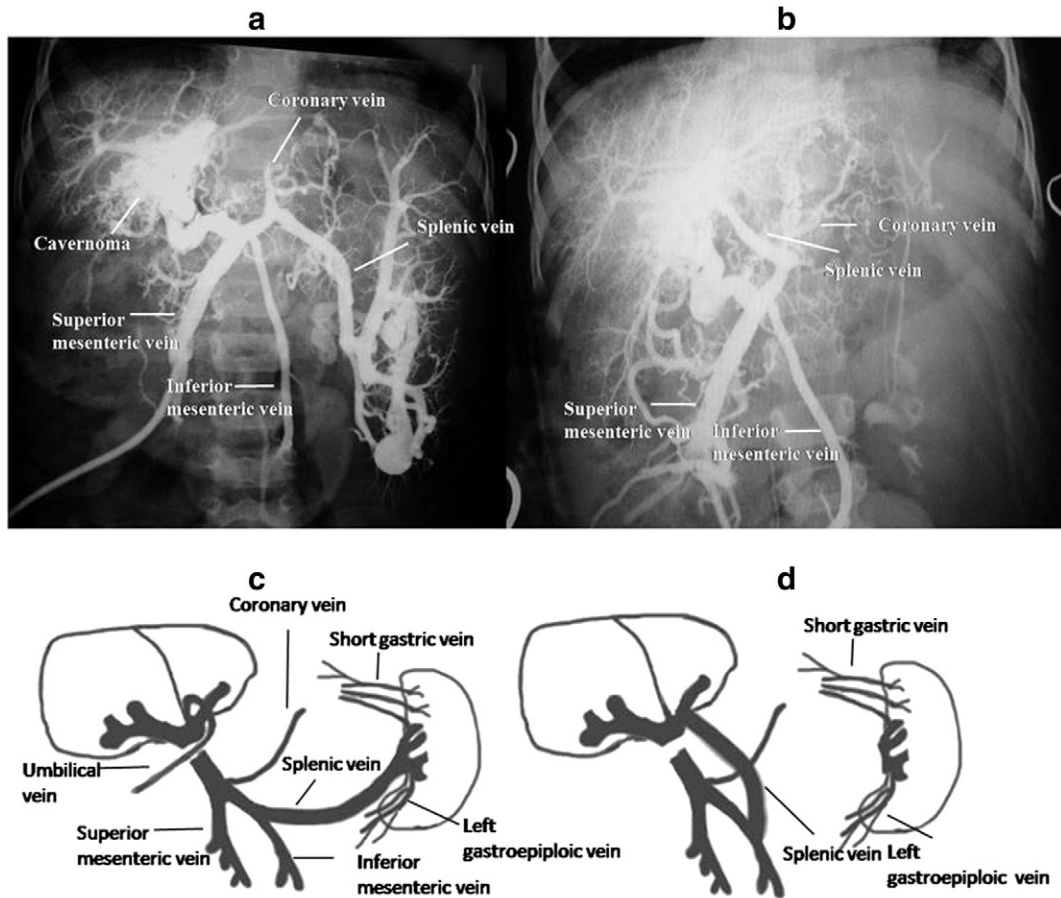


Fig. 1. The preshunt selective superior mesenteric angiogram (A); the postshunt selective superior mesenteric angiogram (B), which showed the patent bypass (splenic vein); the preshunt portal venous system (C); the postshunt portal venous system (D).

The umbilical vein was recanalized. A catheter was inserted to measure intrahepatic portal pressure and obtain direct portography to evaluate the anatomy of the intrahepatic portal system (Fig. 2). The surgical technique involved dissection of the falciform ligament toward the distal part of the left portal vein, exposure of left branches of the portal vein, and placement of a lateral clamp on this part of the portal vein. The gastrocolic ligament was divided to the hilum of the spleen. The stomach was retracted anteriorly and superiorly. The tail and body of the pancreas were then dissected out of the retroperitoneum. The splenic

vein and artery were first ligated at the splenic hilum. Then, the splenic vein was completely separated from the bed of the pancreas to its junction with the inferior mesenteric vein, and the small venous branches were ligated along the pancreatic bed. The splenic vein was more likely to be extrapancreatic owing to its dilatation, which facilitated the dissection. The short gastric and left gastroepiploic vessels remained intact for splenic perfusion and drainage. The splenic vein was advanced superiorly behind the neck of the pancreas to the Rex recessus. The vascular anastomosis was performed between the proximal end of the splenic

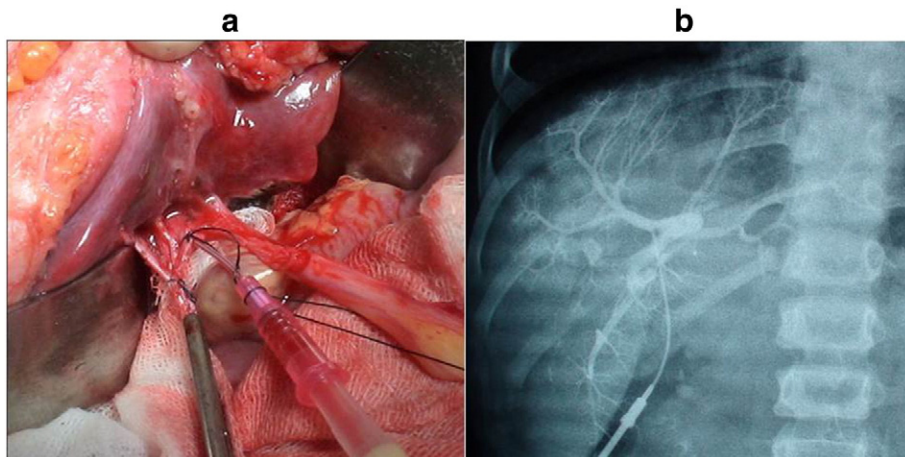


Fig. 2. The portography by inserting a catheter into the recanalized umbilical vein (A); the intrahepatic angiogram before shunting (B), which showed the patency of left portal vein.

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