



# An Innovative Method of Venous Reconstruction in Whipple's Procedure

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## Abstract

An 18 year old girl presented to us with chief complaints of lump in upper abdomen since 1 year. Examination per abdomen revealed 10 cm × 10 cm firm, non-tender globular lump in the epigastrium and right hypochondrium not moving with respiration. CECT abdomen revealed a 77 mm × 78 mm × 67 mm SOL (Space Occupying Lesion) in the head of pancreas with calcification and septa with few peripancreatic nodes suggestive of Mucinous cystadenoma of the head of the pancreas. The patient underwent Whipple's procedure. Intra-operatively a 10 cm × 10 cm tumor was found arising from head of pancreas which was abutting the portal vein, spleno-portal confluence and SMV whereas the distal part of SMV was completely encased over a length of 2 cm. The specimen was removed with en-bloc resection of the involved SMV. Venous reconstruction was done using a collateral coursing over the tumor but not infiltrated by it.

By this indigenous method of reconstruction we were able to avoid use of prosthetic graft as well as dissecting a virgin site to harvest an autologous vein. The collateral in this case helped us to complete the vascular reconstruction with a single anastomosis avoiding luminal mismatch due to unequal size of PV and SMV.

**Keywords:** Space occupying lesion; SMV; Prosthetic graft; PV

## Case Presentation

An 18 year girl presented with chief complaints of gradually increasing lump in upper abdomen since 1 year with mild pain. She had no other suggestive history. Her past and menstrual history was unremarkable. Examination per abdomen revealed a 10 cm × 10 cm firm non tender lump in the epigastrium and right hypochondrium not moving with respiration. The rest of general physical examination and systemic examination was normal. CECT abdomen revealed a 77 mm × 78 mm × 67 mm cystic lesion at the head of pancreas with multiple septations with small solid component likely Mucinous cystadenoma. The lump was abutting the PV, SMV and spleno-portal confluence <1800 with complete encasement of distal SMA over a length of 2 cm. Dilated collateral was seen draping over the cyst (Figure A). Intraoperatively there was a 10 cm × 10 cm mass of variable consistency was found involving the head and uncinate process of pancreas along with abutment of PV, spleno-portal confluence and SMV, with complete encasement of distal SMV over a length of 2 cm (Figure B). The tumor was resected en-bloc with the encased part of SMV. Vascular reconstruction was done using the collateral coursing over the tumor in a side to end manner between PV and SMV (Figure C). Post operatively the patient had grade II POPF managed with injection Octreotide.

## Discussion

Pancreatic cancer is a leading cause of death in the present era. While surgical resection remains the only cure, upfront resection is possible in few patients [1]. Surgical Resection of either portal vein or SMV during whipples procedure requires a suitable replacement for the vessel involved. In case of long segment (>4 cm) of vein is resected then the reconstruction can be achieved by a interposition graft [2]. Venous Grafts used are: Autologous:- (a) Saphenous or superficial femoral vein (b) Internal Jugular vein (c) Left Renal vein & Artificial: PTFE [3].

## What' new in this surgery

By this indigenous method of venous reconstruction we were able to avoid the use of synthetic heterologous graft and also avoided dissecting a virgin site to harvest an autologous graft. It helped us complete the procedure with only one vascular anastomosis. This collateral also avoided the

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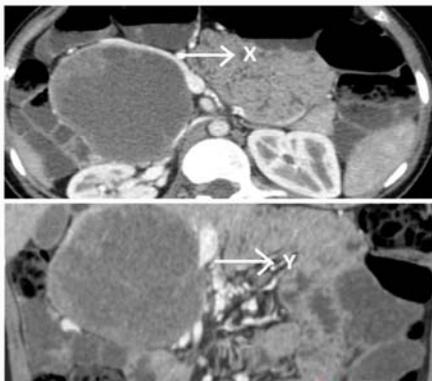
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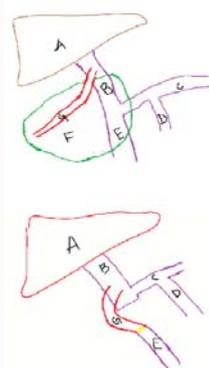
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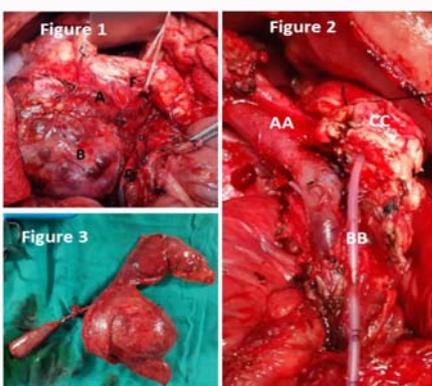
**Figure A:** Picture marked "X" shows dilated collateral coursing over the tumor mass, Picture marked "Y" shows completely encasement of distal Superior Mesenteric Vien.



**Figure 1:**  
 A-Liver  
 B-Portal vein  
 C-Splenic Vein  
 D-Inf Mesenteric vein  
 E-Sup Mesenteric vein  
 F-Tumor Mass  
 G-Collateral draining into Portal vien

**Figure 2:**

**Figure C:** Figure 1 shows that schematic representation of intra operative finding, Figure 2 shows that schematic representation of side to end anastomosis of collateral to SMV after resection of specimen.



**Figure B:** Picture marked "Figure 1" intraoperative findings showing that  
 A-Collateral coursing over the tumor  
 B-Mass arising from head and uncinate process of pancreas  
 C-Superior Mesenteric Vien  
 D-Superior Mesenteric Artery  
 E-Portal Vien  
 F-Pancreas  
 Picture marked "Figure 2" shows that  
 AA-Portal vien  
 BB-Side to end anastomosis between collateral and SMV  
 CC-Cut end of Pancreas  
 Picture Marked "Figure 3" shows resected specimen after surgery.

luminal mismatch arising out of different sizes of PV and SMV which at times causes problems while using interposition vascular grafts. We feel this technique can be used as a method of venous reconstruction in selective cases.

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