

An Innovative Method of Venous Reconstruction in Whipple's Procedure

Vedavyas Mohapatra, Swati Das, Abhijit Acharya, Mihir K Mohapatra

Department of Surgical Gastroenterology, Kalinga Institute of Medical Sciences, Bhubaneswar, India

Correspondence should be addressed to Acharya Abhijit, abhijitkirtika@gmail.com

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ABSTRACT

An 18-year-girl presented with complaints of lump abdomen since 1 year. Examination revealed 10 *10 cm firm lump in the upper abdomen. CECT abdomen revealed 77 mm* 78 mm* 67 mm mass in the head of the pancreas with calcification and septae suggestive of mucinous cystadenoma. Intra-operatively a 10*10 cm tumor was found arising from head of pancreas abutting the portal vein, spleno-portal confluence and SMV encasing distal SMV over length of 2 cm. Whipple's procedure was done, and specimen was removed with en-bloc resection of the involved SMV. Venous reconstruction was done using a collateral coursing over the tumor.

This method of venous reconstruction helped us avoid the use of prosthetic graft and dissecting a virgin site to harvest an autologous vein. Venous collateral in this case helped us to complete the vascular reconstruction with a single anastomosis avoiding luminal mismatch between PV and SMV.

KEYWORDS

Venous reconstruction; Immunotherapy; Neuroendocrine tumors of pancreas; Whipples

ABBREVIATIONS

PV: Portal Ven; SMV: Superior Mesenteric Ven; CECT: Contrast Enhanced Computed Tomography

CASE REPORT

An 18-year-girl presented with chief complaints of gradually increasing lump in upper abdomen since 1 year. 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 fixed lump in the epigastrium and right hypochondrium. The rest of general physical examination and systemic examination were 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 SMV over a length of 2 cm. Dilated collateral was seen draping over the cyst (Figure 1a & Figure 1b).

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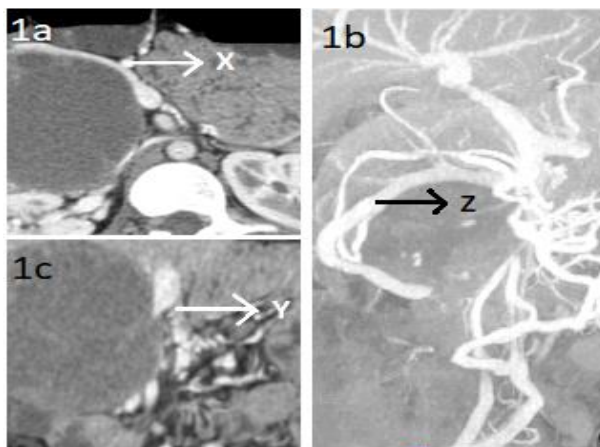


Figure 1(a): Picture marked “X” shows dilated collateral coursing over the tumor mass.

Figure 1(b): Picture marked “Z” shows coronal section of CT abdomen showing collateral used for anastomosis.

Figure 1(c): Picture marked “Y” shows completely encasement of distal Superior Mesenteric Vein.

Intraoperatively 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 1(c) and Figure 2(a)].

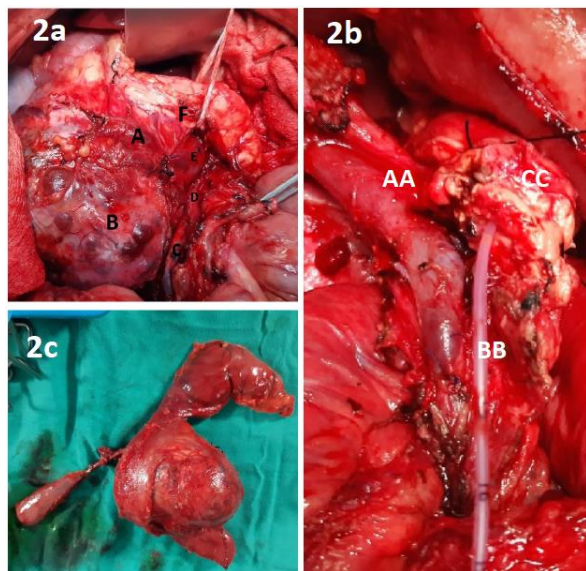


Figure 2(a): Intraoperative findings showing. **A:** Collateral coursing over the tumor; **B:** Mass arising from head and uncinate process of pancreas; **C:** Superior Mesenteric Vein; **D:** Superior Mesenteric Artery; **E:** Portal Vein; **F:** Pancreas;

Figure 2(b): shows; **AA:** Portal vein; **BB:** Side to end anastomosis between collateral and SMV; **CC:** Cut end of Pancreas; **Figure 2(c):** shows resected specimen after surgery.

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 2(b) and Figure 3).

Post operatively the patient had grade II post operative pancreatic fistula managed with injection octreotide. Post operatively the patient has normal hemogram and liver function test. The histopathology was consistent with neuroendocrine tumor of pancreas.

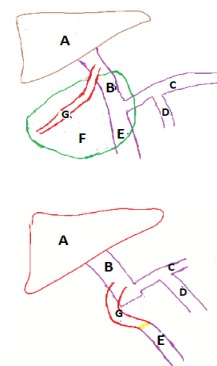


Figure 3a
A-Liver
B-Portal vein
C-Splenic Vein
D-Inf Mesenteric vein
E-Sup Mesenteric vein
F-Tumor Mass
G-Collateral draining into Portal vein

Figure 3b

Figure 3(a): Schematic representation of intra operative finding. **3(b):** Schematic representation of side to end anastomosis of collateral to SMV after resection of specimen.

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 Whipple’s procedure requires a suitable replacement for the vessel involved. In case of long segment (>4cm) of vein is resected then the reconstruction can be achieved by an 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].

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 vein graft.

By this innovative method the venous reconstruction could be completed with a single anastomosis. This collateral also avoided the 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 as a cost effective method of vascular reconstruction.

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