UW Medicine

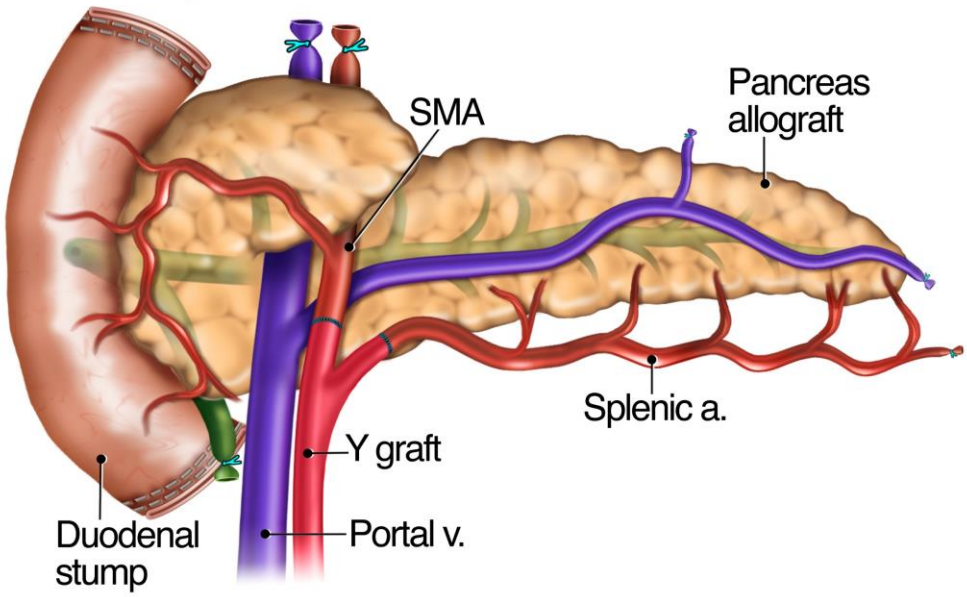
PANCREAS TRANSPLANT ULTRASOUND PROTOCOL (UPANCTX)

PATIENT PREP: No Prep

GENERAL INFORMATION

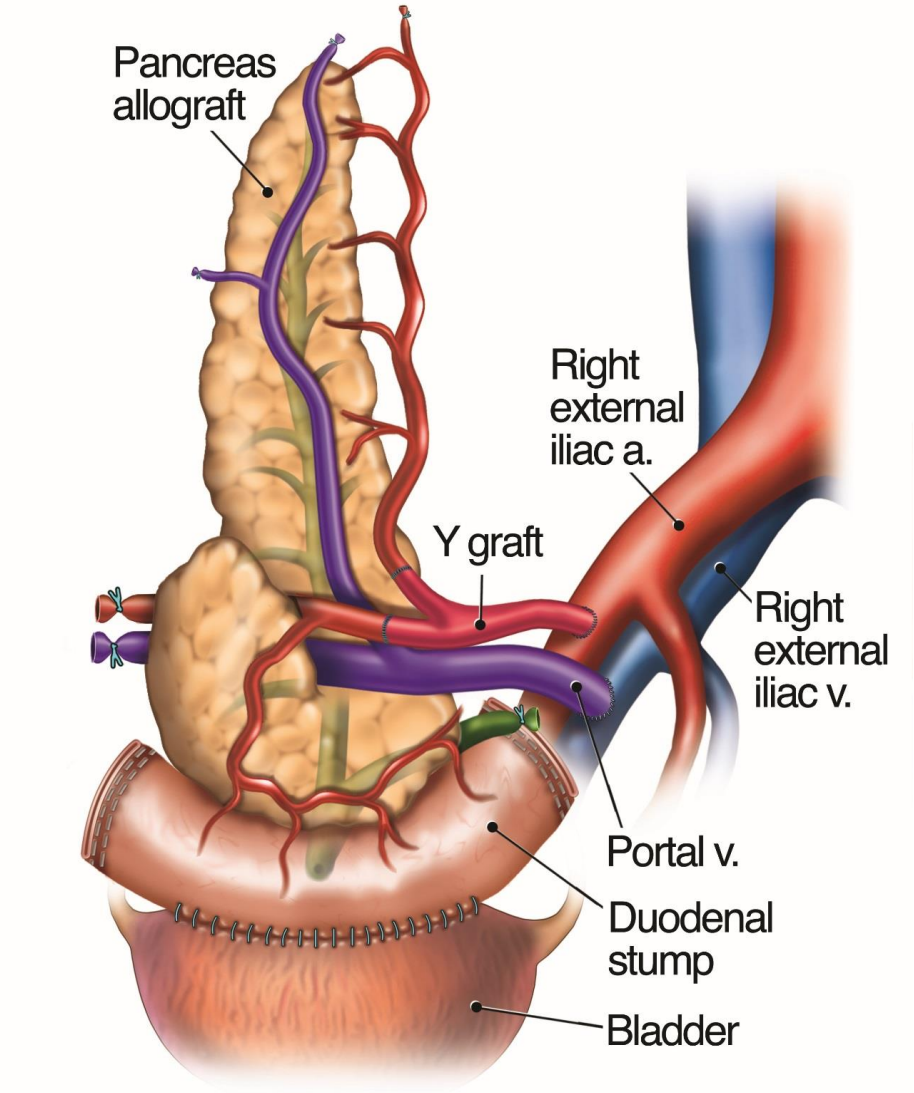
- A pancreatic transplant is usually placed in the RLQ unless the patient has had a previous renal transplant that is located in the RLQ.
- Pancreatic transplants are often done simultaneously with a renal transplant, in these cases the kidney will be placed in the LLQ and the pancreas in the RLQ.
- They are being done less often due to islet cell transplantation techniques.
- If placed in the retroperitoneum with portosystemic drainage, imaging by ultrasound is challenging and MRI may be more successful.
- 10%-20% overall complication rate.
- Technical failure rates- Thrombosis (50%), pancreatitis (20%), infection (18%), fistulas (6.5%), hemorrhage (2%).

Figure 1 – Anatomy as surgically removed from donor:



- Donor pancreas is removed en block with the duodenum and spleen.
- Stumps of the SMA, splenic artery, splenic vein and portal vein are preserved.
- Donor iliac vessels are recovered for reconstruction of Y graft.

Figure 2 – Anatomy as surgically attached to recipient:



Typical Orientation

Tail -Superior or lateral
Head-Inferior or medial

Include description in the report of how the anatomy was connected, especially if done unconventionally.

SURGICAL ATTACHMENTS:

- Duodenal stump can be attached:
  To bladder – Vesical exocrine drainage
  To bowel – Enteric exocrine drainage
- Arterial and venous drainage is to the iliac vessels similar to a renal transplant. Less commonly they can be directly to the portal system in the retroperitoneum with portosystemic drainage.
- The SMA/SMV supply the **head** of pancreas
- Splenic Artery/Vein supply the **body and tail** of pancreas

IMAGES TO ACQUIRE

2D IMAGING

1. **Parenchyma** - Evaluate echo texture and document all parts of organ - head, body, and tail
2. **Pancreatic duct** - Normal is < 3 mm
3. **Fluid collections** - Evaluate for collections around the transplant and surgical incision

COLOR DOPPLER

1. **Perfusion -** Document perfusion of the head, body, and tail with color flow set on a low scale. Use MFI imaging when available.
2. **Venous anastomosis** color image
3. **Arterial anastomosis** color image
4. **Y Graft** - color image of Y graft splitting to SMA and splenic artery
5. **Splenic Vein** - Evaluate for patency as far into the body and tail as visible with color doppler. Partial thrombosis may be seen and should be documented further with spectral doppler.

SPECTRAL DOPPLER

1. **Intra-pancreatic vasculature** –
    a. Arterial waveforms in the head, body, and tail, velocity is not needed.
    b. Venous waveforms in the head, body, and tail, velocity is not needed.
2. **Y graft anastomosis at Iliac-** Arterial waveform with angle corrected velocity. Peak velocity should be <250cm/s.
3. **SMA beyond Y graft -** Arterial waveform with angle corrected velocity.
4. **Splenic artery beyond Y graft -** Arterial waveform with angle corrected velocity.
5. **Splenic vein -** waveform to be obtained as distal as possible. If thrombus is seen- evaluate before, at and after the thrombus.
6. **Portal vein anastomosis -** Document patency with spectral doppler. Velocity should be between 15cm/s -100cm/s
7. **Iliac artery -** Arterial waveform with angle corrected velocity, sampled superior to anastomosis
8. **Iliac vein -**Waveform with peak velocities sampled superior to area of anastomosis.

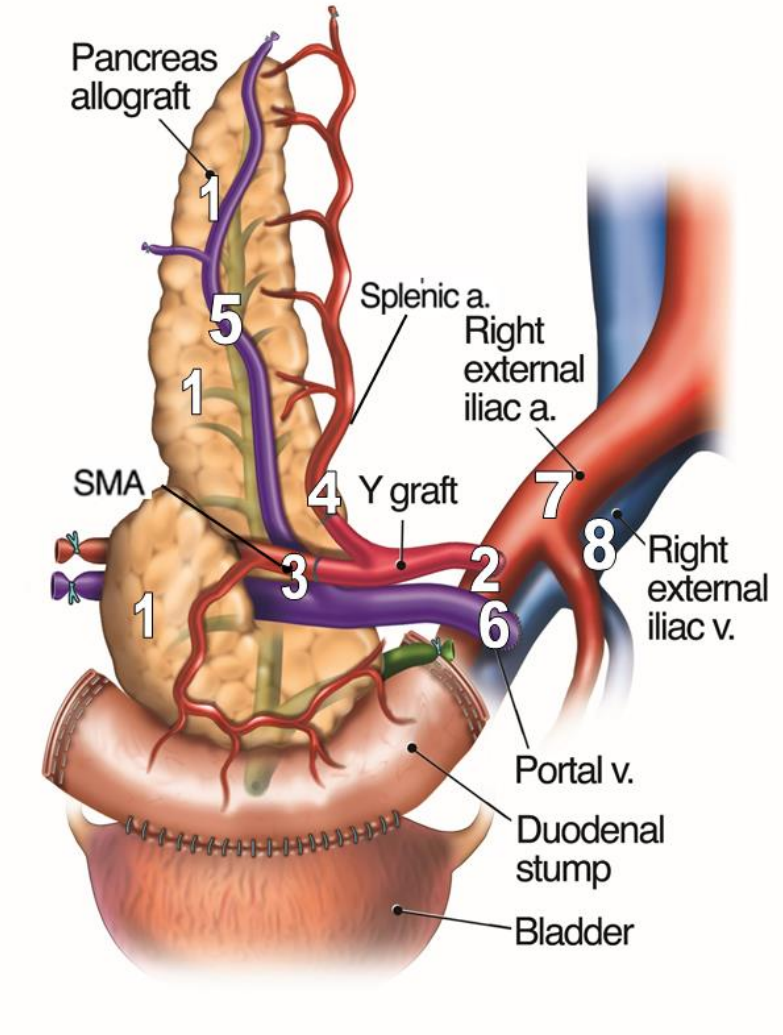


Figure 3 -Spectral doppler protocol locations

Pancreas Transplant Protocol History

	Date	Changes made	By whom
Updated	09/2015		
Updated	10/2022	-Added Surgical info -Added MFI for perfusion when available -Added Splenic Vein with Spectral Doppler -Removed Y Graft mid, dist, prox requirements and will just be Y graft anastomosis, SMA and Splenic artery requirements -Added -include surgical orientation/attachements to history section of report	Protocol Meeting 9/22/2022 Manjiri Dighe, Shaun Bornemeier, Becky Marion, Katie Toth, Renee Betit Fitzgerald