Endovascular techniques for treating deep vein obstruction

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Disclosure

Speaker name:
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I have the following potential conflicts of interest to report:

- Consulting: Medtronic, Cook, Optimed, Volcano, Veniti
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
Venous Stenting is not as simple as it seems

• attention to details is important
• It is not the arterial system.
• Experience acquired from arterial dilation and stenting may not necessarily be extrapolated to the venous system.
“The Landing Zone”

The central and peripheral extent of the disease has to be assessed before the intervention is scheduled using DUS, venogram, CTV, MRV etc.

1. Central “landing zone”
   a. Is the IVC patent?
   b. Does the disease involve the IVC?
   c. Is the potential outflow of the stent system appropriate?
   d. Is the contralateral venous outflow compromised?

2. Peripheral “landing zone”
   a. Is the CFV involved?
   b. Is there a potential landing zone in the CFV above the profunda-femoral vein confluence?
   c. Is there a sufficient inflow from the periphery to sustain patency of a stent placed in the pelvic outflow?
Access and Traversal

- Popliteal/Femoral
- GA
- 9 to 11F sheath
- Combination of stiff and semi-stiff Terumo wires usually sufficient
- May need access from above or contralateral side
Deciding lesion stenosis – EIV, CFV

Occluded
Area % stenosis = 100%
Min diam % = 100%

Size of patent distal CFV
Min diam = 7.6mm
Max diam = 13.6 mm
Area 85.7 mm$^2$
Deciding the Landing Zones

With IVUS:
- Use the cm marking on the IVUS catheter to indicate extent of stenting
- Use IVUS head for exact positioning

With venogram:
- May need several injections
- Contralateral CFV injection
- Oblique views

Appr. 24 cm on the IVUS catheter
Sizing of the Stent

“Normal” CIV
Max diam 14.1mm
Min diam 9.5 mm

“Normal” CFV
Max diam 7.6mm
Min diam 13.6 mm
Pre-dilation

- Directly to final size balloon
- In stages with increasingly larger balloons
- Keep highest inflation pressure until pressure stable

In the words of Gerry O’ Sullivan:
“Go Ugly Early”

12-16 mm Atlas Balloon
Identifying Peripheral “Landing Zone”

Pre-dilation IVUS

Occluded Proximal CFV

Overlap 5cm

Stent lower limit

9cm stent will end land if placed with 5 cm overlap

The distal landing zone has priority over extent of overlap
IVUS – Post-stenting

To look for residual narrowing at the vessel crossing and part of CIV
Re-dilation as necessary

16mm Atlas Balloon, length 6cm
Final Venography

Before Stenting

After Stenting
Conclusion

• Pay attention to detail - be obsessive
• Learn from those who have gone before (Neglen/Raju/Hartung/Kucher/O’Sullivan/De Graaf)
• Getting the technical bit right is the first step
• Follow the patients up