Technical Tips in Crossing the Occluded Central Vein

Robert K. Kerlan Jr., M.D.
Professor of Clinical Radiology and Surgery
UCSF Vascular Symposium 2016
Park Central Hotel
San Francisco, California

Crossing Central Venous Occlusions

1. Is it indicated?
2. Is it safe?
3. Is it possible?
4. Technical “tricks”

Is Treatment Always Necessary?

Levit et al. *Radiology* 2006;238:1051

- 35 patients with 86 CVS
  - No patients had arm swelling
  - All patients had access dysfunction
- 24/86 CVS were not treated
  - These patients had peripheral lesions treated to improve access function
- 62/86 CVS were treated
- Follow-up venograms of CVS were analyzed
Is Treatment Always Necessary?

Levit et al. *Radiology* 2006;238:1051

- Untreated group
  - 12/24 (50%) CVS’s had no f/u venography
  - 12/24 (50%) CVS’s had repeat venograms
    - 4 improved, 4 stable, 4 progression (mean diameter reduction improved)

- No untreated CVS progressed to
  - Symptoms
  - Occlusion

Is Treatment Always Necessary?

Levit et al. *Radiology* 2006;238:1051

- Treated group
  - 36/62 (58%) CVSs had no follow-up venograms
  - 26/62 (42%) had repeat venograms
    - 3 improved, 0 stable, 23 progression (mean diameter reduction reduction)

- Treated CVS progressed to
  - Arm swelling (1)
  - Additional CVS (4)
  - Lesion requiring stent placement (4)

Is Treatment Always Necessary?

- No

- In patients who are minimally symptomatic and have other identifiable causes for access failure, the peripheral lesions should be treated and the CVSO should not be treated.

Is Treatment Always Necessary?

Crossing Central Venous Occlusions

1. Is it indicated?
2. Is it safe?
3. Is it possible?
4. Technical "tricks"
Is it Safe?

1. Is it indicated?
2. Is it safe?
3. Is it possible?
4. Technical "tricks"

Crossing Central Venous Occlusions

You never know what you can cross until you try
Is It Possible?

1. Is it indicated?
2. Is it safe?
3. Is it possible?
4. Technical “tricks”

Technical “Tricks”

1. Use a co-axial system to provide support
2. Look for the string sign
3. Always advance sheath to point of maximum progress
4. Sharp re-canalization when blunt fails
5. Consider IVUS with sharp recanalization

Crossing Central Venous Occlusions

1. Is it indicated?
2. Is it safe?
3. Is it possible?
4. Technical “tricks”

Use a Co-axial System to Provide Support
Look for the String Sign

Always Advance Sheath to Point of Maximum Progress

Sharp Re-canalization When Blunt Fails

Sharp Re-canalization When Blunt Fails
Sharp recanalization technique with Chiba needle
- 65 cm Chiba (21G)
- Curve at tip for directionality
- 6 French sheath (25 cm)
- 5 French Kumpe catheter (40 cm)

Consider IVUS with Sharp Recanalization
Thank you!