WELCOME *To the*

2026 SYMPOSIUM

# Central Vein Stenting or HeRO Conversion for AV Access-associated Arm Swelling

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# AV Access Maintenance

# Disclosures

- Speaker: Siemens, Gore
- Consulting: Boston Scientific, Terumo

# Outline

- Physiologic problem
- Management strategies
  - Historical data
  - Limited comparative data
    - Limitations thereof
- Our current practice

# Background

- Central vein stenosis occurs in ~25-40% of hemodialysis patients
- AV dialysis access dramatically increases arterial inflow to an extremity
- When central venous stenosis/occlusion is ipsilateral to AV access, significant swelling results and can be morbid



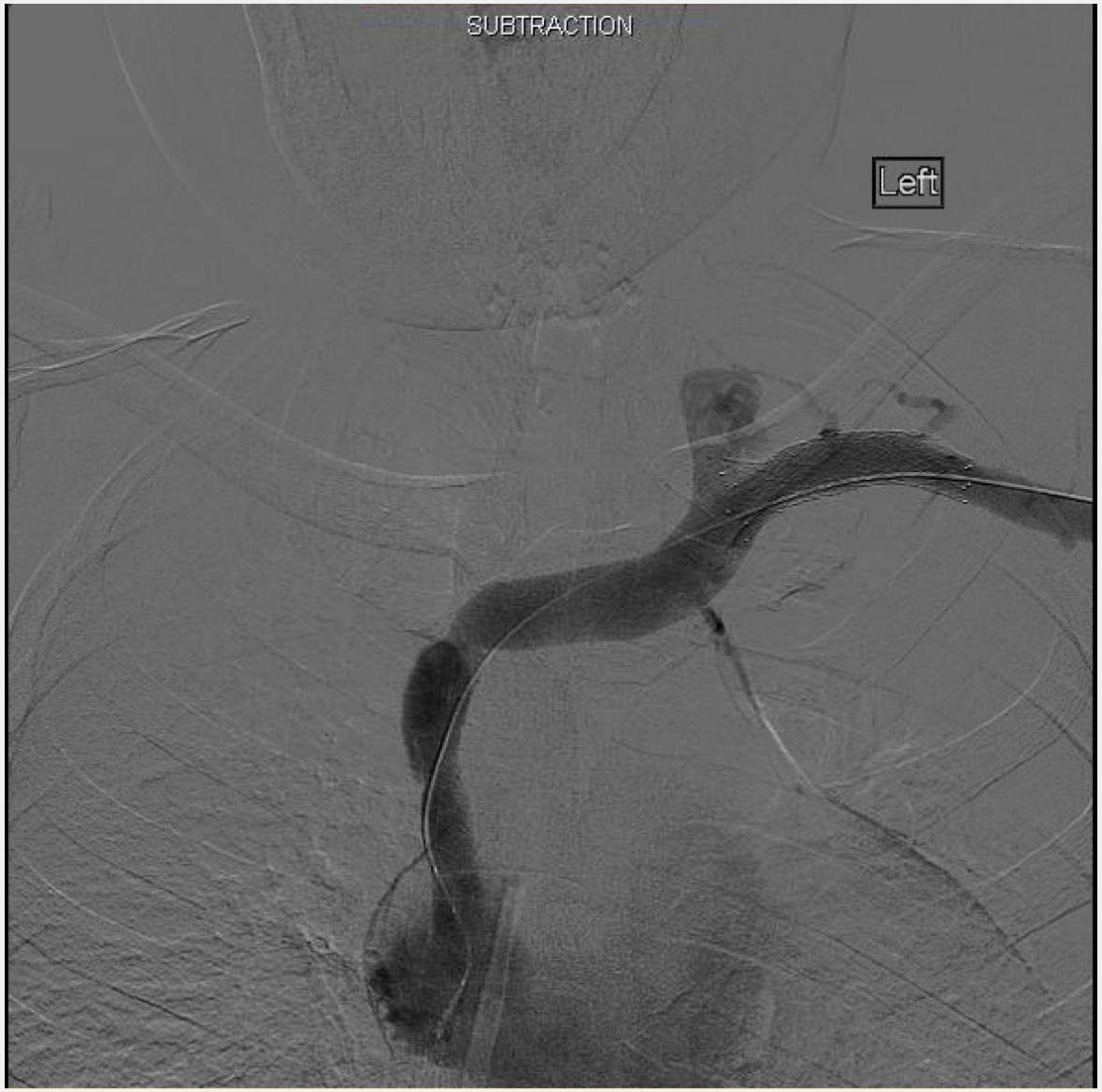
Modabber, M. and S. Kundu, *Central venous disease in hemodialysis patients: an update.* CVIR 2013; **36**:898-903.

# Background

- Traditional management – relatively poor patency rates in the literature
  - Angioplasty – 6-month primary patency 23-63%
  - Stenting – 6-month primary patency 14-73% (historical, primarily BMS)
  - Access ligation
  - Current data with covered stents and dedicated venous stents seems better (up to 85% primary patency at 6 months for covered stent)
- Hemodialysis reliable outflow (HeRO) graft has been reported as an alternative to stenting

Kundu, Sanjoy. Review of Central Venous Disease in Hemodialysis Patients. JVIR 2010; 21:963-968
Dillavou, EM et al. Report on the Hemodialysis Reliable Outflow (HeRO) experience in dialysis patients with central venous occlusions. J Vasc Surg 2013 Sep;58(3):742-7.


SUBTRACTION
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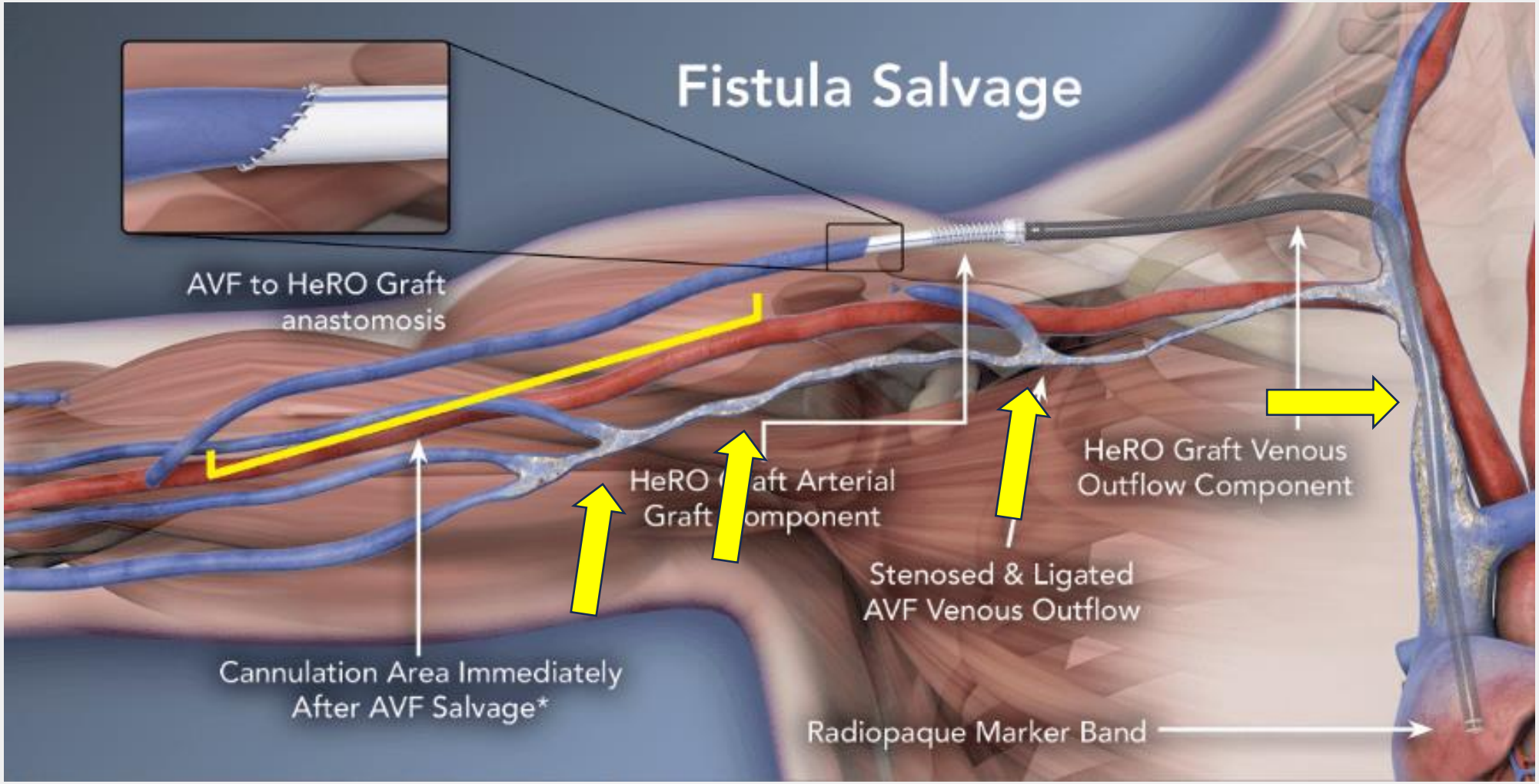

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# HeRO for fistula/graft salvage

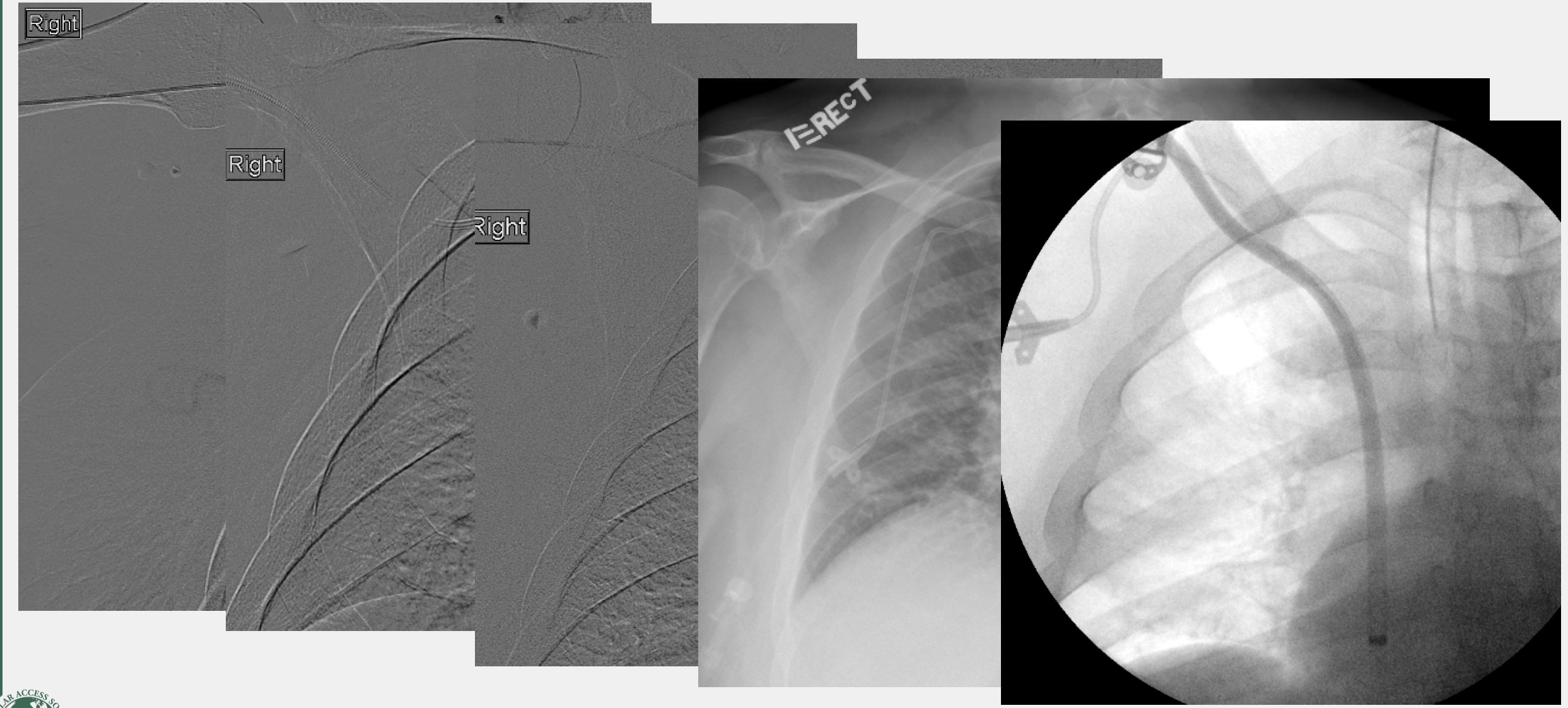
- Outflow component is inserted into the right atrium
  - Via EJ/IJ in setting of axillary/subclavian vein occlusion
  - Or after IR recanalization of BCV and/or SVC
  - Or after IR direct trans-mediastinal SVC access

- HeRO graft is surgically anastomosed directly to existing graft or fistula

# HeRO for fistula/graft salvage



# Two-stage HeRO for fistula/graft salvage stage



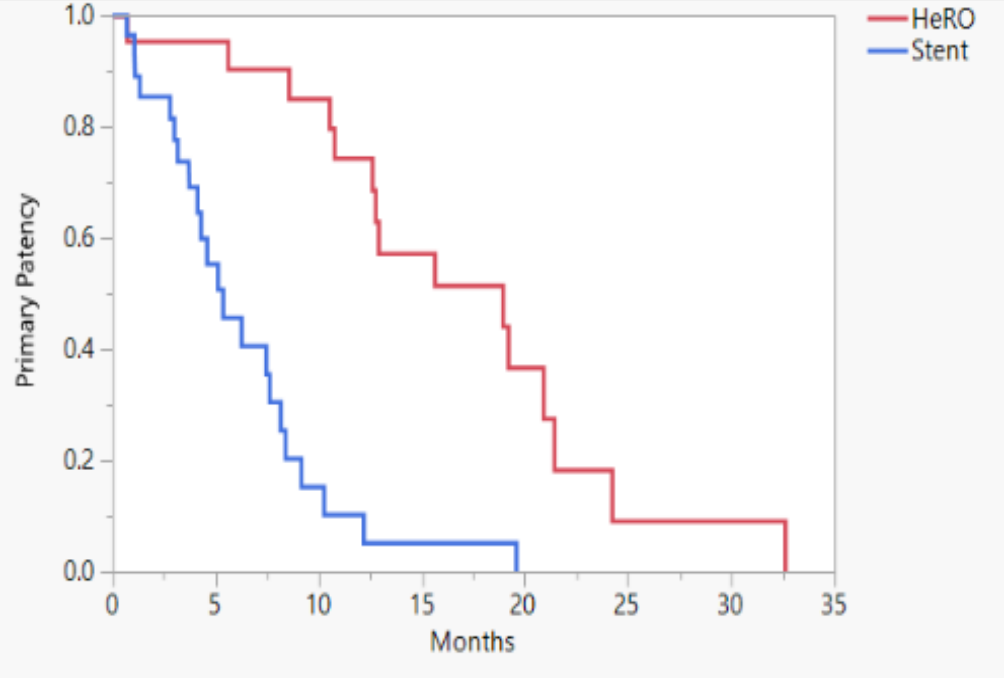
# Our Data

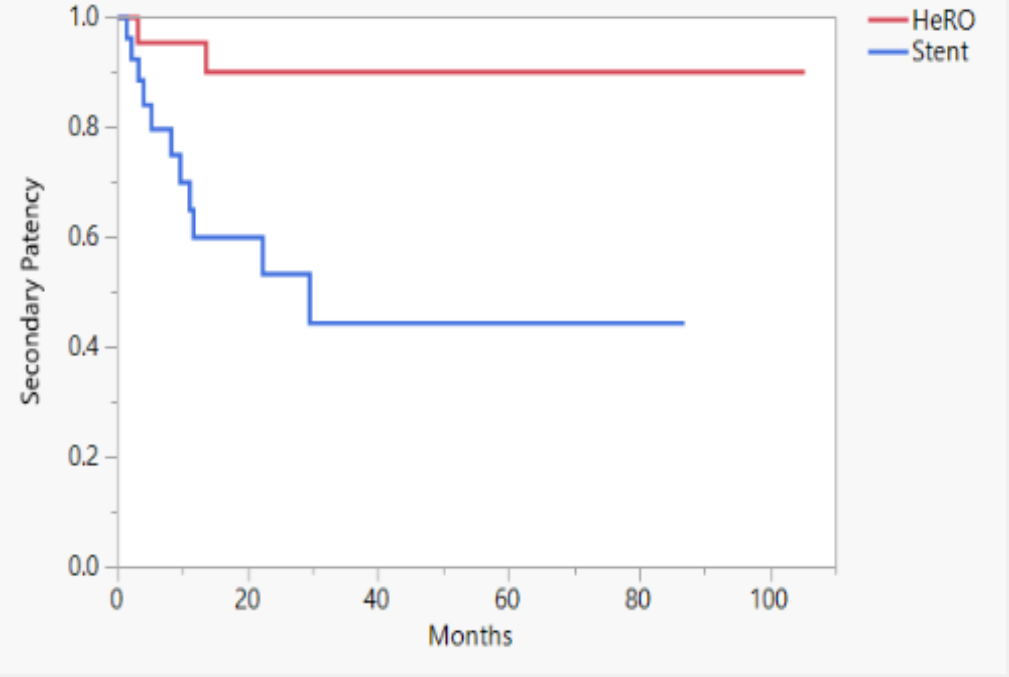
- 51 patients with severe arm swelling due to AV access ipsilateral to central stenosis/occlusion

- Initially treated from 2006-2015
  - 28 underwent stent deployment (68% Smart, 21% iCast)
  - 23 underwent HeRO conversion

- Outcomes were primary and secondary ***access circuit*** patency, and improvement in swelling

# Our Data - Results




| | Months | HeRO | Stent |
|---|---|---|---|
| Primary Patency | 6 | 78% | 29% |
| | 12 | 57% | 7% |
| | 24 | 9% | 0% |

| | Months | HeRO | Stent |
|---|---|---|---|
| Secondary Patency | 6 | 91% | 61% |
| | 12 | 74% | 43% |
| | 24 | 43% | 25% |

# HeRO For Everyone?

- Our data reflect *access circuit* patency, rather than primary lesion patency
  - Much of the comparison stent data is based on target lesion patency
  - In patients with multifocal or long-segment stenosis, bypass of all native central veins with HeRO conveys significant advantage

- Patients with limited disease are better served with stents than those with multifocal disease

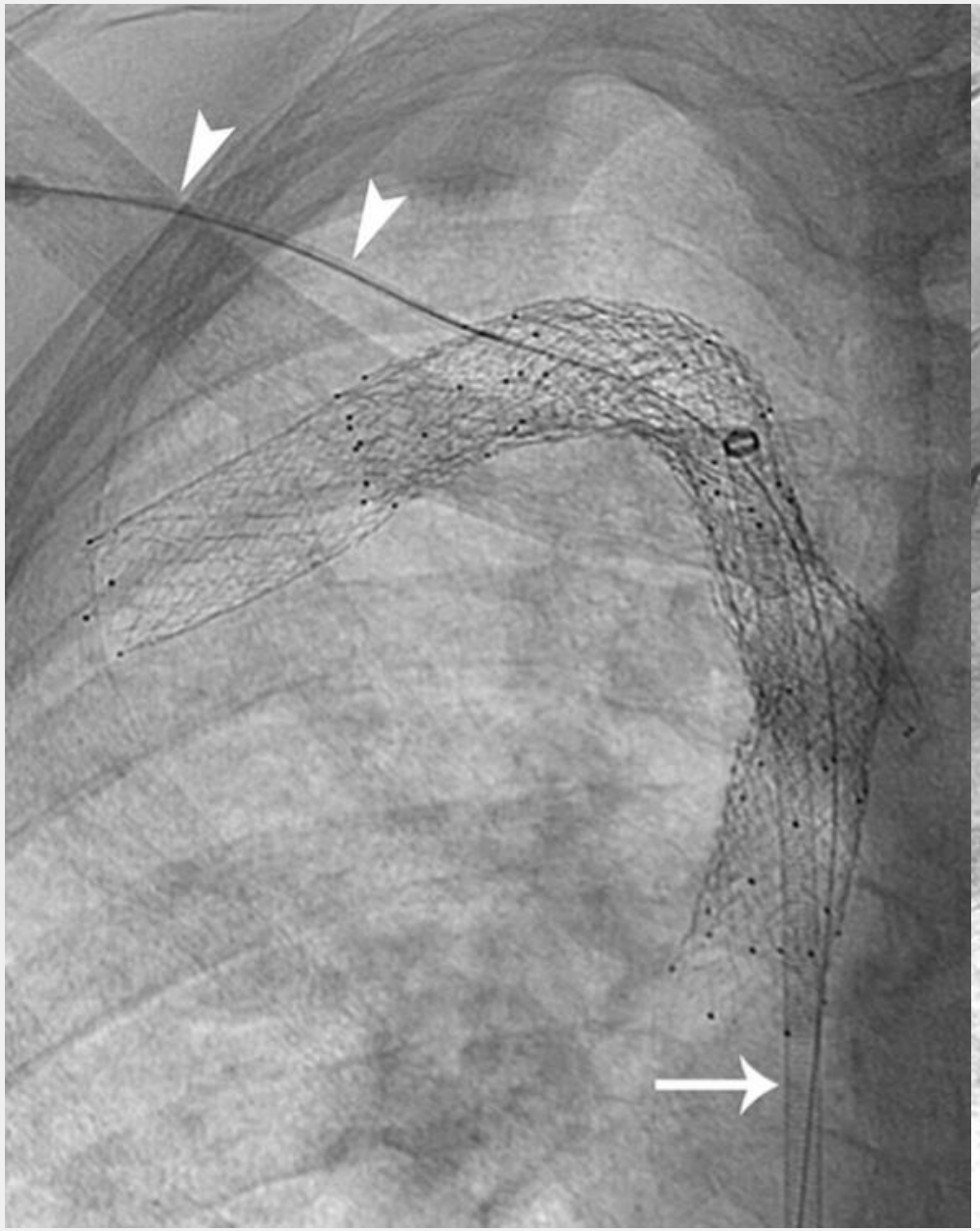
# Counterpoints

- This data was generated prior to modern venous stents with better data
  - Also relatively few covered stents, which have been reported to have better patency
  - Many of these patients were outside referrals for very complex central occlusive disease, potentially poor stent candidates

- HeRO conversion, while effective, is not universally available
  - ***Stent placement also does not preclude future HeRO placement***

Ghasemi-Rad M, Do L, Collard M, Cui J, Irani Z. The Use of Viatorr Stent at the Thoracic Outlet to Maintain Hemodialysis Access Function. Vasc Endovascular Surg. 2023 Nov;57(8):901-904. doi: 10.1177/15385744231183490. Epub 2023 Jun 13. PMID: 37310358; PMCID: PMC10543124.

Akkakrisee S, Hongsakul K. Venous stent versus conventional stent for the treatment of central vein obstruction in hemodialysis patients: a retrospective study. Acta Radiol. 2022 Jan;63(1):59-66. doi: 10.1177/02841851211005163. Epub 2021 Mar 27. PMID: 33779305.







# Our Current Practice

- For most patients with central stenosis in access side resulting in swelling, will start with angioplasty -> stent
  - For patients with very complex central vein disease will consider HeRO graft immediately

- For many, particularly with limited availability for HeRO placement, trial of modern stent placement prior to HeRO conversion (which remains an option)
  - Often effective with current devices



# Thank you

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