Interventions in the chronic setting with post-thrombotic syndrome

Prof. Cees H.A. Wittens, MD PhD
Head of Venous Surgery
Maastricht University Medical Center
Uniklinik Aachen
Treatment of DVO

- Venous hypertension:
  - Deep venous insufficiency \( (< 90 \text{ mmHg}) \)
  - Deep venous \textbf{obstruction} !! \( (> 200 \text{ mmHg}) \)

- Internal causes
  - DVT
  - ICV atresia

- External causes
  - May-Thurner
  - Ext. compression

- Other causes:
  - Immobility
  - Thrombofilia
  - Pregnancy
  - Cancer
  - Lymphocele
  - Fibrosis
  - Aneurysm
Pressure results CFV:

Pressure CFV (healthy)

Pressure CFV (iliac obstruction)

European Venous Centre; Aachen-Maastricht
Diagnostics

- Clinical examination has to be performed groin and abdominal wall: especially in patients with:
  - Venous ulcers
  - also in:
    - C 4,5
    - Venous claudication
    - Fast recurrent Varicosities

- 10-15 % will show signs of central venous obstruction!!
Due to changed therapeutic options there is a need to change diagnostics in venous ulcer disease

Complete venous roadmap !!

- Full duplex examination
- MRV
- CTV
Diagnostics

- Literature search showed no comparable results because there are no reporting standards for deep venous pathology registration
  - LOVE score
Scoring systems

- **LOwer extremity VEnous pathology scoring system**
  - Each segment:
    - Post thrombotic lesions
    - Residual lumen
      - 0 % (occlusion)
      - 10-50 %
      - 50-90 %
      - 90-100%
    - Collaterals
    - External compression
Treatment options

- **Conservative:**
  - Compression
  - Anticoagulation

- **Invasive:**
  - PTA alone (obsolete)
  - PTA + stenting
  - Bypass
  - + or -
    - Endophlebectomy
    - AV fistulae
Indications for treatment:

- Improve QoL!!
  - Skin problems
  - Venous claudication!
  - Swollen legs
  - Pain
New Venous stents

- Cook
- Veniti
- OptiMed
  - Sinus Venous
  - Sinus XL flex
- Bard
- BS
- Medtronic
- Bolton
Aachen-Maastricht Experience:

- Patency rates of 314 patients

  - **PTS** (n=237)
    - Percutaneous procedure
  - **PTS** (n=77)
    - Hybrid procedure
      - Recanalization and stenting
      - Endophlebectomy
      - AV fistula
Patency rate after stenting (n = 237) for PTS (percutaneous):
Indications for Endophlebectomy

- Improved inflow measures
  - Endophlebectomy (CFV involvement)
  - AV fistula
Patency rate for PTS (Hybrid (n= 77))
Clinical improvement

- **VCSS**
  - Baseline: 8.0 ± 3.8 (2-21)
  - 6 months: 5.3 ± 3.6 (0-18)
  - 12 months: 4.8 ± 3.7 (0-15)

- **Villalta**
  - Baseline: 10.8 ± 4.8 (4-22)
  - 6 months: 5.2 ± 4.3 (0-15)
  - 12 months: 6.2 ± 3.9 (0-21)

- **Venous claudication**
  - Baseline: 62 (55.6%)
  - 12 months: 16 (11.1%)
VEINES-QOL/Sym overall

>6 increase is clinically relevant
QoL patency overall
Treatment options: miscellaneous

- Improved inflow measures / timing
  - AV fistulae
    - Surgical
    - Percutaneous (future)
  - Postoperative pneumatic compression !!

- Improved anticoagulation
  - Oral “Heparines”
Conclusion:

- **PTA and Stenting in PTS:**
  - Good patency (>90%)
  - QoL increase (>24 point (>6=clinical relevant)
  - In failure no significant QoL loss

- **In Europe (850 Million inhabitants)**
  - >1.600.000 people have a significant deep venous outflow obstruction.

- **All stent companies join forces**
  - Support research (standardization in diagnostics, treatment and outcome)
  - Create awareness

- **Major impact if this treatment become routine**
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