VasQ Device
An Innovative External Support Device Improves Functionality of Arteriovenous Fistulas: Clinical Study Updates

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Known Challenges of the AV Fistula

- 20-60% Primary Failure
- 4-9 Months Mean maturation time
- 17-25% Occlusion
Peri–Anastomotic Hemodynamics

- High wall tension
- Isolation zones with turbulent flow and low shear stress.
- The isolation zones have high correlation with the peri-anastomotic disease.

Serial analysis of lumen geometry and hemodynamics in human arteriovenous fistula for hemodialysis using magnetic resonance imaging and computational fluid dynamics
Yong He\textsuperscript{a,b,1}, Christi M. Terry\textsuperscript{c,1}, Cuong Nguyen\textsuperscript{t}, Scott A. Berceli\textsuperscript{a,b}, Yan-Ting E. Shiu\textsuperscript{c,d,e}, Alfred K. Cheung\textsuperscript{c,d,e,2}

Hemodynamic impact of anastomosis size and angle in side-to-end arteriovenous fistulae: a computer analysis
Koen Van Canneyt\textsuperscript{t}, Thierry Pourchez\textsuperscript{t}, Sunny Elsoet\textsuperscript{t}, Caroline Guillame\textsuperscript{t}, Alexandre Bonnet\textsuperscript{t}, Patrick Segers\textsuperscript{t}, Pascal Verdonck\textsuperscript{t}

Neointimal Hyperplasia in Early Arteriovenous Fistula Failure
Prabir Roy-Chaudhury, MD, PhD\textsuperscript{t}, Loïs Arend, MD\textsuperscript{t}, Jianhua Zhang, MS\textsuperscript{t}, Mahesh Krishnamoorthy, MS\textsuperscript{t}, Yang Wang, MD\textsuperscript{t}, Rupak Banerjee, PhD\textsuperscript{t}, Antoine Samaha, MD\textsuperscript{t}, and Rino Munda, MD\textsuperscript{t}
Holistic Approach

Turbulent Flow → Brace:
- Geometrical configuration – Controlled
- Angle & radius of curvature – Optimized
- Pressure at the heel of the artery – Directing flow

Laminar Flow → Braid:
- $\frac{dV}{dA}$ ratio – Optimized
- Vein dilatation – Controlled

Decreased Shear Stress & Increased Wall Tension → Increased Shear Stress & Decreased Wall Tension
Multi-National,
Randomized Controlled Study
60 Patients (40 Device, 20 Control)
6 Month Follow-up

End points:
› Safety
› Usability
› Maturation success
› Primary patency rate
VasQ™ Device

- Easy to implant
- No change to normal procedure
- No blood contact
- No known device related SAE
**Functional Maturation** (Patients on Active Dialysis)

- **3 Months**
  - Control: 38%
  - Device: 80%

- **6 Months**
  - Control: 50%
  - Device: 91%

*Functional Mature – Patient on dialysis Via Fistula*
6M Primary Patency Rate

USA – Schinstock, Mayo Clinic, Rochester, Minnesota (Clin J Am Soc Nephrol 2011)
Netherlands – Huijbregts, University Medical Center Utrecht (Clin J Am Soc Nephrol 2008)
UK – Field, University Hospital of North Staffordshire (Journal of Vascular Access 2008)
Thank You!
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