Radiation Free CERAB Procedures Are Possible Using FORS Technology (Philips) With Its 3-D Hub. How Is It Done And Technical Tips: Clinical Experience

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Faculty disclosures

Barend M.E. Mees

- **Consulting, research grants, scientific advisory board**
  Philips, Cook Medical Inc., Bentley Innomed
- **Course director**
  European Vascular Course
- **Intellectual property**
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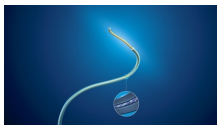
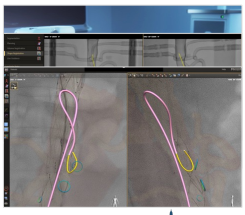
Fiber Optic RealShape technology

- Full-shape 3D device visualization
- Real-time and in distinctive colors
- In multiple and unrestricted viewing angles
- Using light instead of X-ray



LumiGuide, *powered by FORS technology*

- Glidewire works with regular, compatible, "familiar" catheters, thanks to **3D Hub**
- Has AI-based semi-automatic registration
- Able to visualize tight bends such as SOS-like catheters



Fiber Optic RealShape technology

Endovascular navigation with Fiber Optic RealShape technology

Giuseppe Panuccio, MD, PhD,[a] Andres Schanzer, MD,[b] Fiona Rohlffs, MD, PhD,[a] Franziska Heidemann, MD, PhD,[a] Bart Wessels, PhD,[c] Geert W. Schurink, MD, PhD,[d] Joost A. van Herwaarden, MD, PhD,[e] *and* Tilo Kölbel, MD, PhD,[a] *Hamburg, Germany; Worcester, MA; Best, Maastricht, and Utrecht, The Netherlands*

From the New England Society for Vascular Surgery

The effect of Fiber Optic RealShape technology on the reduction of radiation during complex endovascular surgery

Andrew P. Sanders, MD,[a] Nicholas J. Swerdlow, MD,[a,b] Gabriel Jabbour, MS,[a] *and* Marc L. Schermerhorn, MD, FACS,[a] *Boston, MA*

Editor's Choice — Radiation Dose Reduction During Contralateral Limb Cannulation Using Fiber Optic RealShape Technology in Endovascular Aneurysm Repair

Jurre Klaassen [a,*], Constantijn E.V.B. Hosenberg [a], Tijntje Bloemert Tuin [a], Suzan C.A. Wulms [a,b], Martin Teraa [a], Joost A. van Herwaarden [a]

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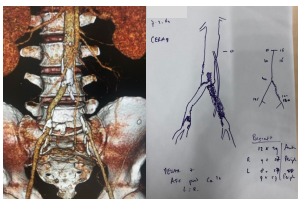
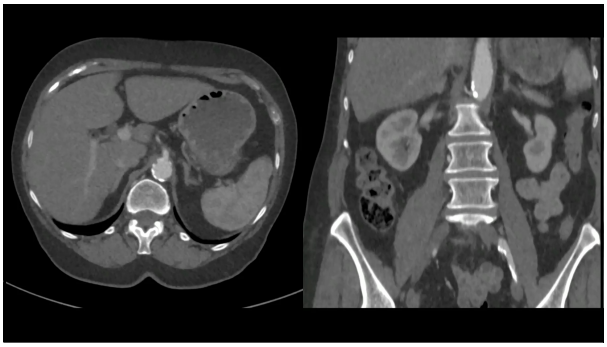
First use of FORS in AIOD

- Navigation
- Recanalization
- Re-entry

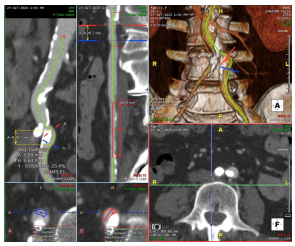


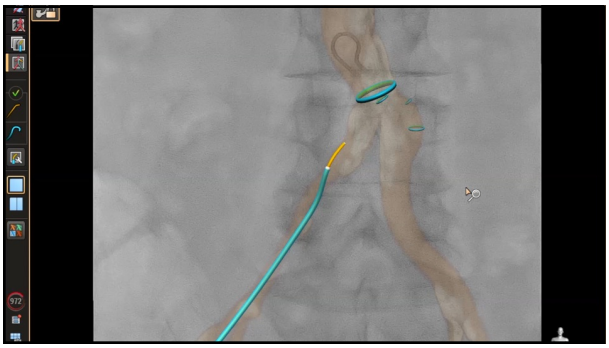
Patient 1

- 73-year-old female
- Intermittent Claudication R>L / Rutherford 3
- No improvement from SET
- ABI R 0.5 > 0.4 L 0.8 > 0.6
- CTA



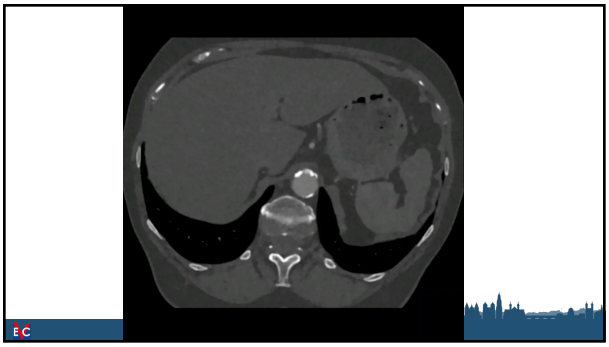
Sizing and Planning





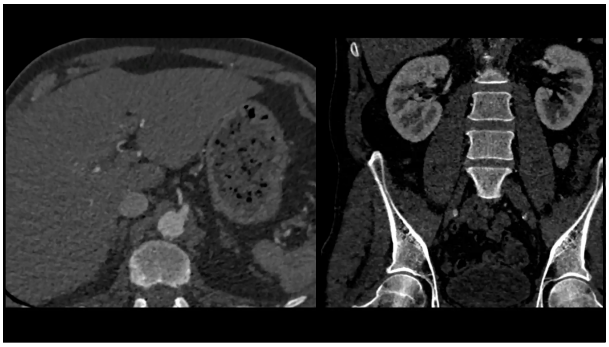
Patient 1

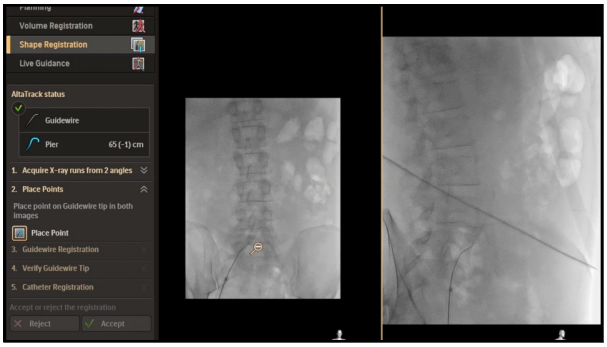
- Percutaneous CERAB and bilateral SES EIA
- No complications
- Postoperative ABI R 0.9 L 1.0
- Asymptomatic at 1 year FU
- CTA



Patient 2

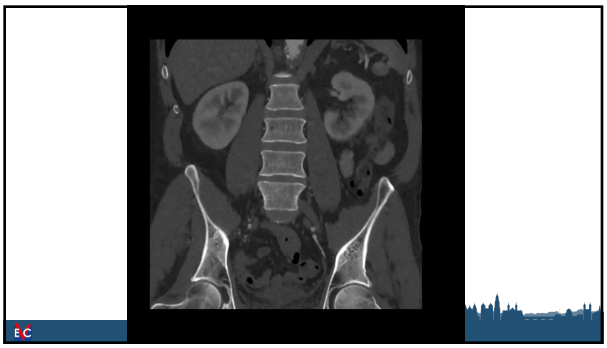
- 55-year-old male
- Rest pain L foot / Rutherford 4
- Intermittent claudication R / Rutherford 3
- Previous kissing stents aortic bifurcation
- ABI R 0.7 L 0.4
- CTA





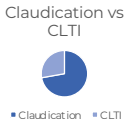
Patient 2

- Percutaneous CERAB
- No complications
- Postoperative ABI R 0.9 L 0.8
- Asymptomatic at 2 years FU
- CTA



Patients

Characteristics	n= 18
Age, years	66
Male	10
Female	8
BMI	26,8
Smoking status	
Never	1
Former smoker	11
Active smoker	6
COPD	3
CAD	7
ASA II	10
ASA III	8
CVA	5
Hypertension	12
Diabetes type 2	4
Primary intervention	14
Secondary intervention	4



Lesions

TASC score	Number
TASC A	0
TASC B	4
TASC C	2
TASC D	12

	Occlusion	Stenosis >50%
Aorta	1	0
AIC Left	4	9
AIC Right	6	7

Procedures

Access modality	Number (%)
Percutaneous	12 (66,7%)
Hybrid	
- Unilateral femoral endarterectomy	3 (16,7%)
- Bilateral femoral endarterectomy	3 (16,7%)

Other concomitant procedures

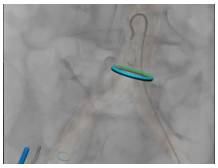
- Bilateral EIA stents (1)
- PTA IIA (1)
- SFA stent (1)
- Fem-tib bypass (1)

FORS strategy

- In all patients started procedure bilaterally with LumiGuide
- FORS Berenstein catheter in first 10 patients
- After 3D Hub: UF catheter (stenosis) and PIER catheter (occlusion)

4 LumiGuide exchanges

- Bilateral iliac occlusion; remote endarterectomy external iliacs; no retrograde recanalization, converted to arm access
- Aortic occlusion; no retrograde recanalization, converted to Terumo glidewire
- Unilateral iliac occlusion; no recanalization, converted to Terumo glidewire
- Unilateral iliac occlusion; no re-entry achieved, converted to contralateral antegrade approach with Terumo glidewire and UF



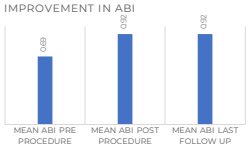
Results

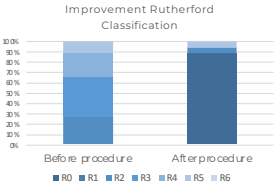
- 100% technical success
- No 30d mortality
- Intraoperative complication:
  Bleeding EIA treated with covered SES
- Mean hospital stay 2 days

Patients (n=18)	
Procedure time (min) [Std.Dev]	151,0 [114,7]
Total DAP (Gy*cm2) [Std.Dev]	78,7 [53,6]
Total CAK, (mGy) [Std.Dev]	387,5 [206,9]
Total fluoro time (min) [Std.Dev]	16,8 [12,3]

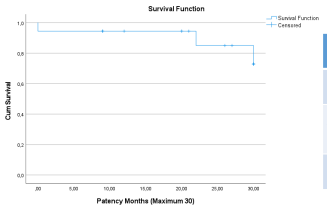
Clinical follow-up

- Mean follow-up: 21 months
- No mortality





Imaging follow-up



	Total N	N of Events	N	Percent
Primary patency	18	3	15	83,3%
Primary assisted patency	18	2	16	88,9%
Secondary patency	18	1	17	94,4%

Conclusions

- **LumiGuide,** powered by FORS, can **successfully navigate** in CERAB procedures through **iliac stenosis** and **successfully recanalize stenotic/occluded iliac stents.**
- Recanalization of **aorto-iliac CTO and aortic re-entry** can be **challenging** but is feasible in more than half of cases
- Innovation of guidewire properties will improve success rate
- **First steps towards radiation-free endovascular AIOD treatment**

Thank you for your attention

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