



University Heart Center
Hamburg

GERMAN
AORTIC CENTER
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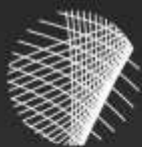


Fiber Optic RealShape (FORS) Technology 3D-Device Guidance in Practice

Tilo Kölbel, Joost van Herwaarden, Fiona Rohlffs, Giuseppe Panuccio

German Aortic Center Hamburg
University Heart Center
University Hospital Eppendorf

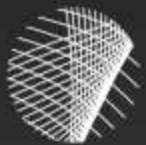
L I N C



Disclosures



- * Consultant: Cook Medical, Philips, Getinge, Terumo Aortic, Arterica, Medyria
- * Research-grants: Cook Medical, Philips, Terumo Aortic, Medtronic
- * Travel-grants: Cook Medical, Getinge proctoring speaking-fees,
- * Speaking fees: Cook Medical, Philips, Getinge
- * Shares: Mokita-Medical, Arterica, Medyria, Siemens, Philips
- * IP: Cook Medical, Terumo Aortic, Mokita Medical
- * Royalties: Cook Medical, Terumo Aortic



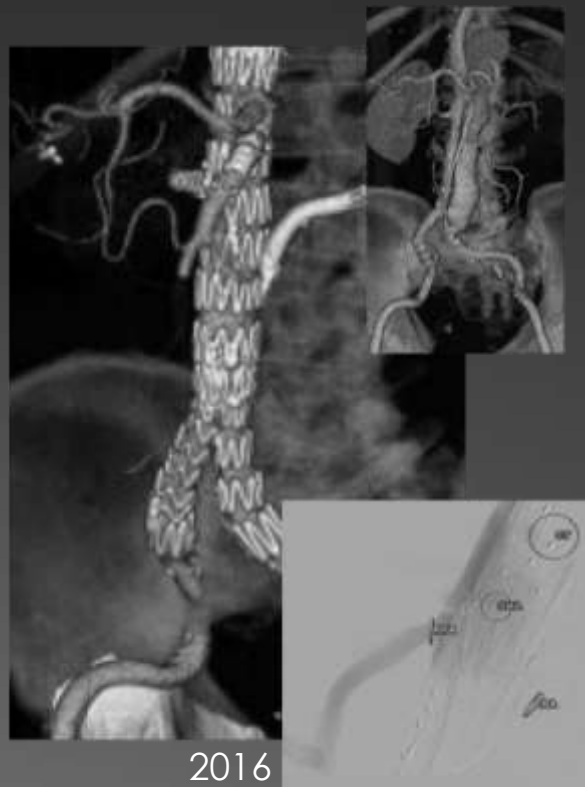
Aortic Interventions



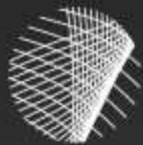
1934 - 2016



1987

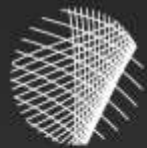


2016



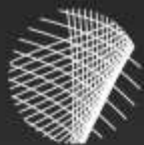
Times of Change





Radiation Hazard Persists





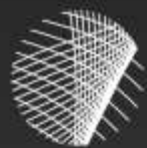
A long time ago.....



Thoracic Live X-Ray



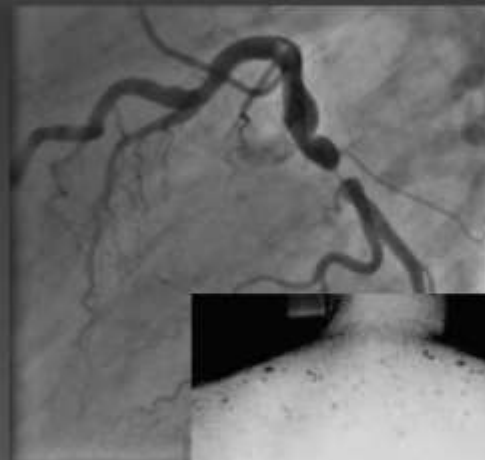
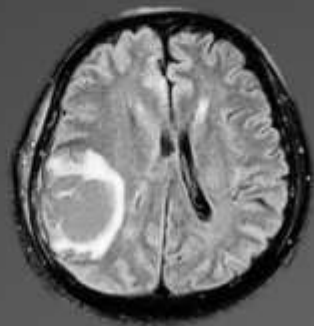
Radiologists hands

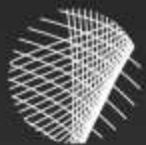


.....and today.



Dr. Edward Diethrich
Founder and Medical Director
Arizona Heart Foundation
1935-2017





1967: Introduction of Colour TV in Europe





1967: Introduction of Colour TV in Europe





2020: Introduction of FORS Technology

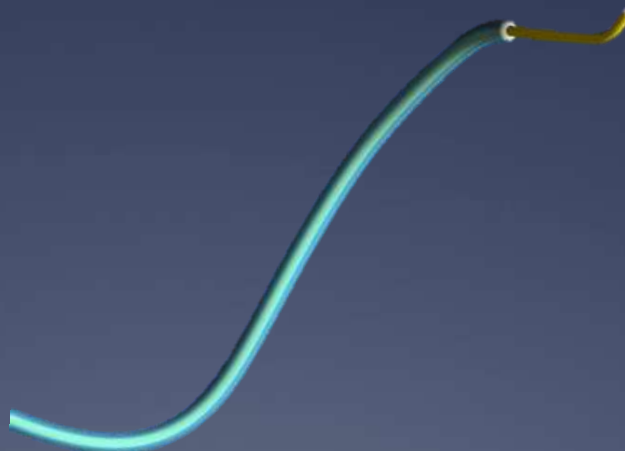
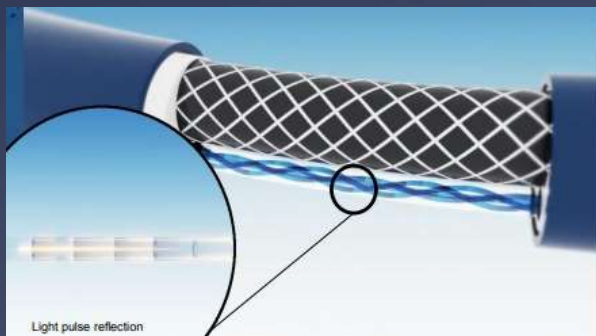




FORS Technology

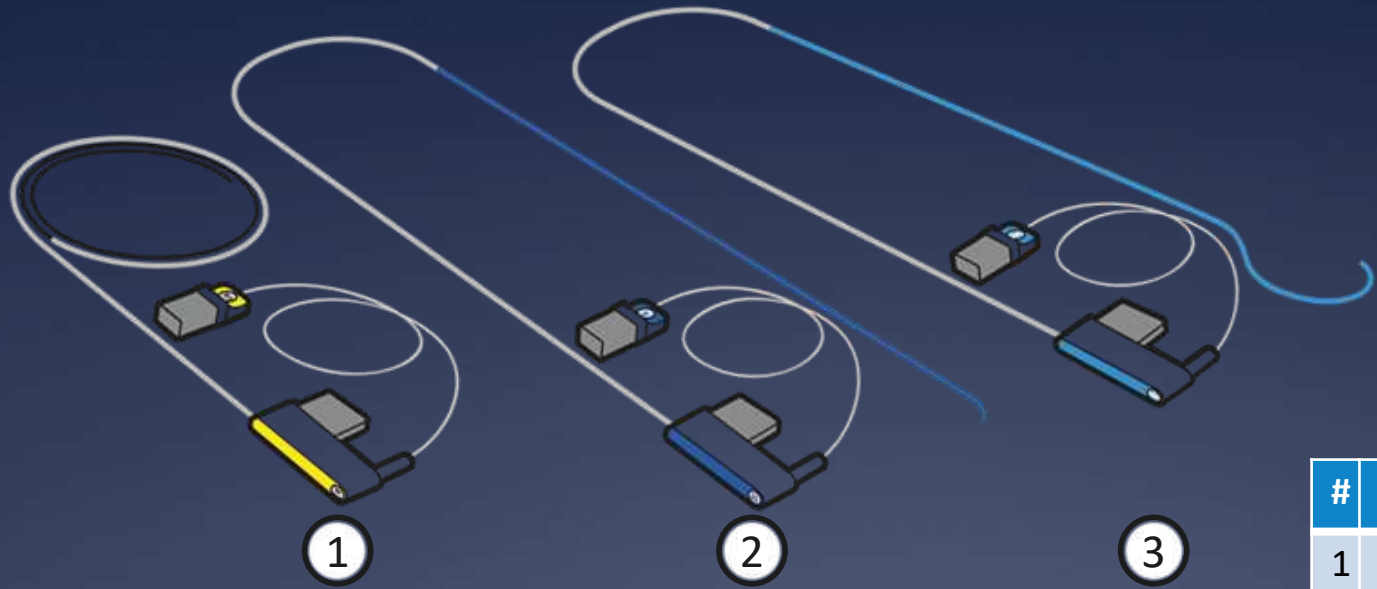


- * New Philips technology with CE-mark: two catheters and hydrophilic guidewire
- * Embedded optical fiber enables real-time 3D visualization of the full shape of devices inside the body without the need for fluoroscopy





Devices currently available



#	Devices
1	FORS guide wire
2	FORS Berenstein catheter
3	FORS Cobra catheter

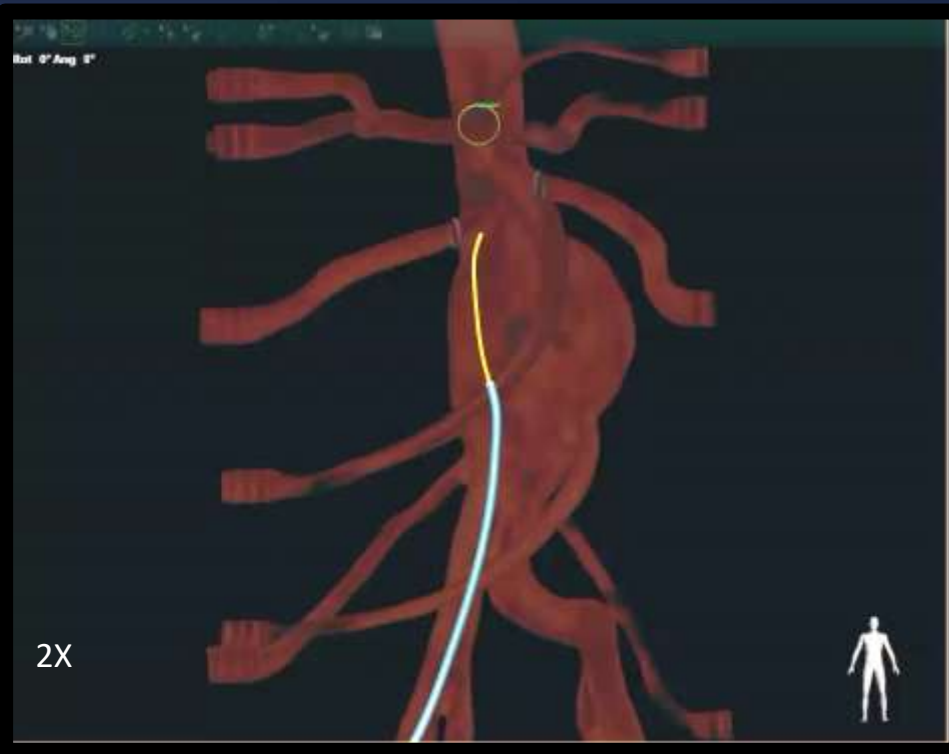




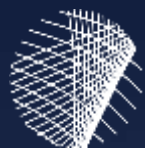
Bench-Top Comparison Fluoroscopy vs. FORS



Cannulation time: 5:45 min
Fluoro time: 5:45 min



Cannulation time: 2:20 min
Fluoro time: 0 min



Case: Pseudoaneurysm Visceral Aorta

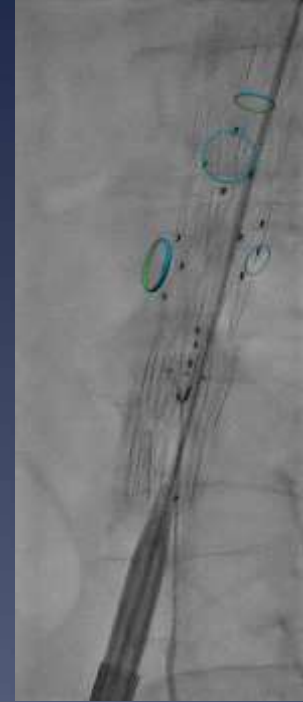
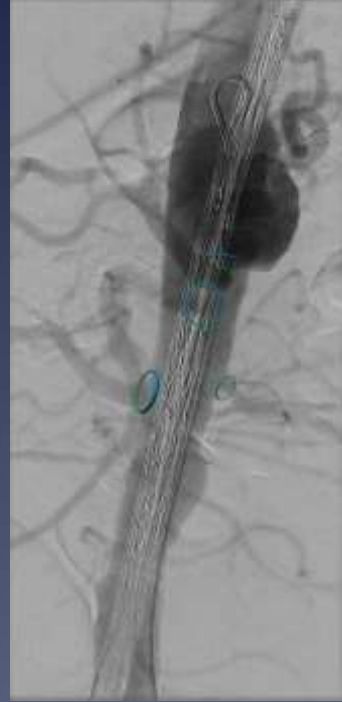
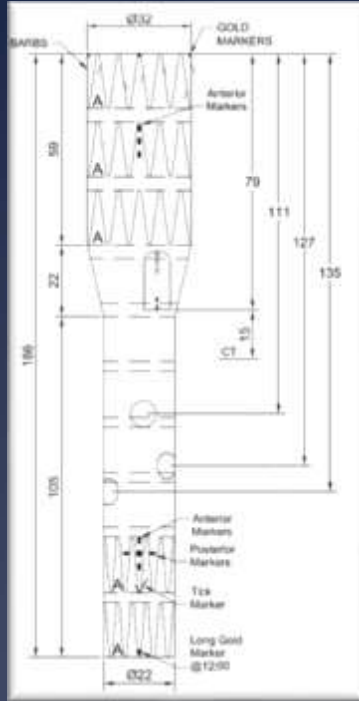


- * 79y old Patient
- * Previous TEVAR





Main-Body with Fluoro/Vesselnavigator





Set-up in Hamburg





Left Renal with FORS Catheter and Wire



Catheter In **Blue**
Hydrophilic wire in **Yellow**





Right Renal with FORS Catheter and Wire



Catheter In **Blue**
Hydrophilic wire in **Yellow**





Right Renal with FORS Catheter and Wire



DSA as road map





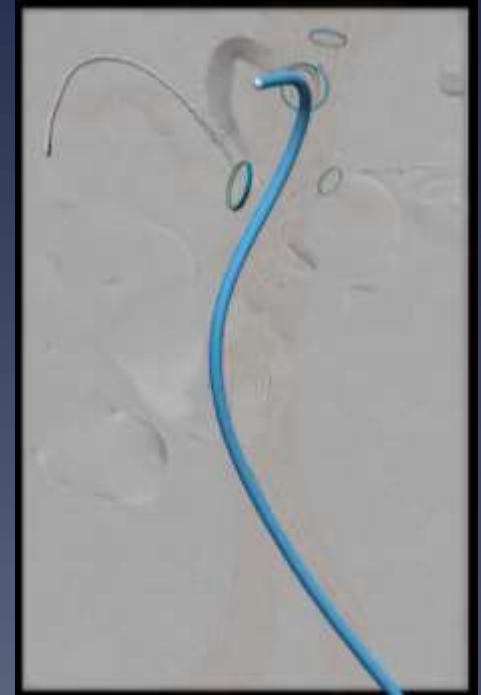
SMA with FORS Catheter and Wire



Virtual Biplane helpful to avoid lateral projection with high radiation

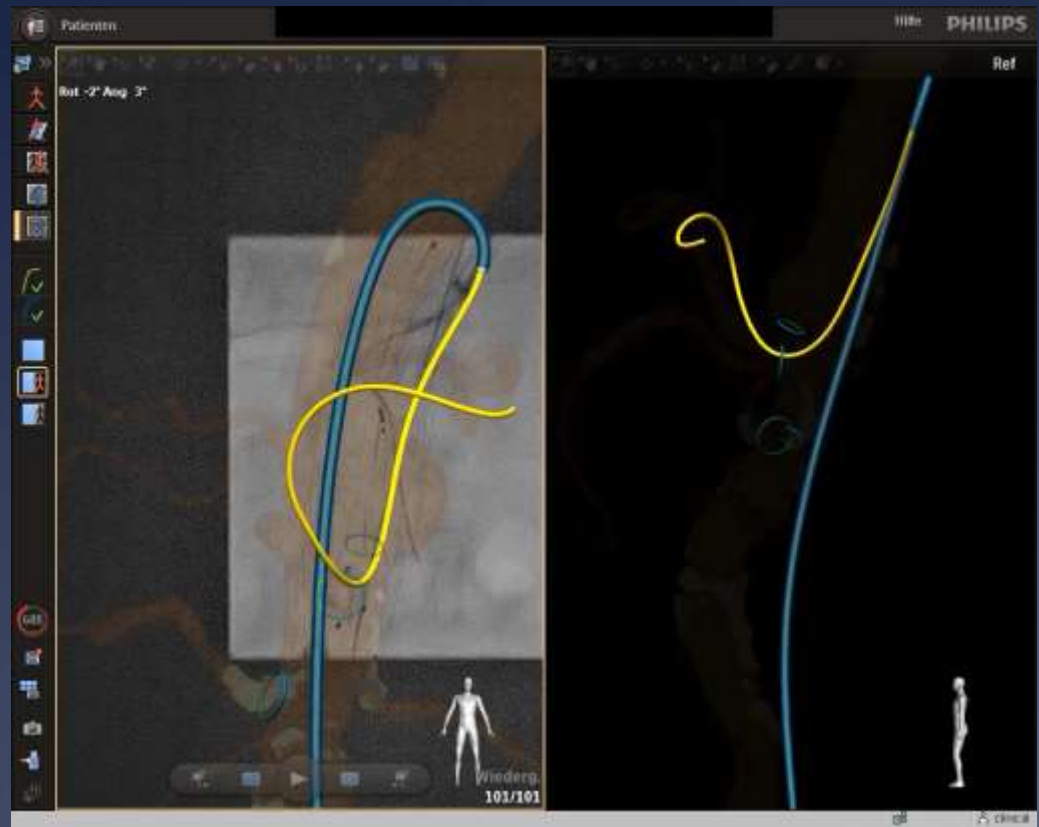


SMA with FORS Catheter and Wire





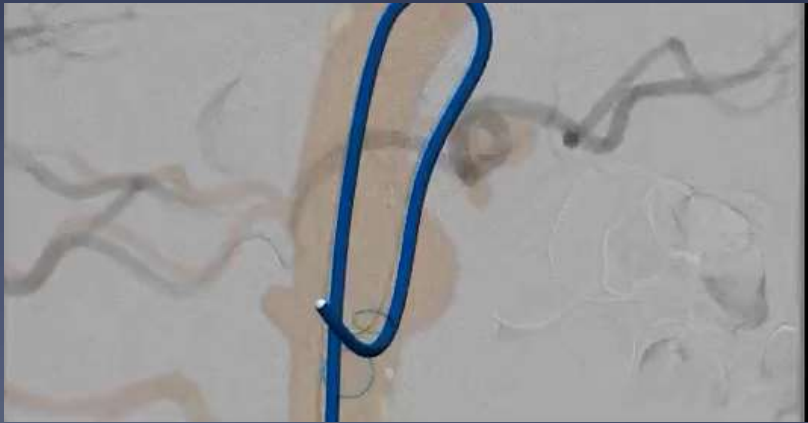
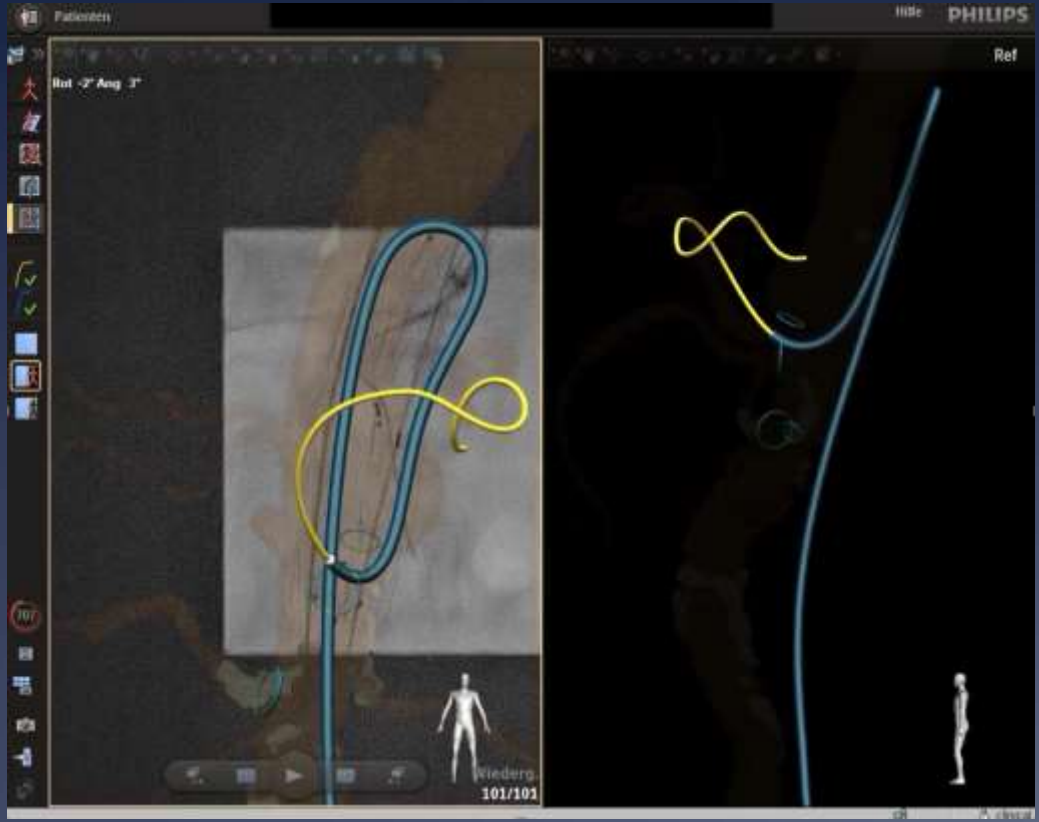
Celiac with FORS Catheter and Wire



Optical fiber tolerates 180° bend from steerable sheath use in transfemoral BEVAR



SMA with FORS Catheter and Wire





Case: Pseudoaneurysm Visceral Aorta



Result:		(Reference 2016)
Operating time:	201 min	(305min)
Fluoroscopy time:	22,2 min	(65min)
DAP:	6440 cGycm ²	(18948cGycm ²)
• DSA:	4370 cGycm ²	
• Fluoro:	2070 cGycm ²	



Conclusions



- * FORS technology allows 3D navigation by visualizing catheters and guidewires in full shape 3D using laser light.
- * High potential for reduction of radiation exposure and workflow-improvement by intuitive virtual biplane visualization.
- * Revolutionary new tools on the horizon to reduce radiation and facilitate complex endovascular procedures.





Welcome to Hamburg !




AORTIC | 2020
LIVE 6 | 26–27 October 2020
 Curio-Haus, Hamburg, Germany
 6th Aortic Live Symposium

save the date

Dept. of Vascular Medicine
University Heart & Vascular Center Hamburg

Main topics

Endovascular, hybrid, and open aortic surgery:

- Aortic valve reconstruction
- Ascending aorta
- Aortic arch
- Thoracoabdominal aorta
- Aortoiliac disease



Course directors



Tilo Kölbl
Hamburg, Germany



Konstantinos Tsagakis
Essen, Germany



Founding Director
Heinz Jakob
Essen, Germany

Co directors

Joseph Bavaria
Philadelphia, United States

Michael Borger
Leipzig, Germany

Sebastian Debus
Hamburg, Germany

Christian Detter
Hamburg, Germany

Arjang Ruhparwar
Essen, Germany

Stéphan Haulon
Paris, France

Gustavo Oderich
Rochester, United States

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CongO GmbH, Ruffinistrasse 16,
80637 Munich, Germany
www.cong-o.com

Phone: +49.89.23 75 74 - 65
Fax: +49.89.23 75 74 - 70
Home: www.cong-o.com





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LINC

28-31 January 2020