

Duplex Ultrasound Guidance: When Can It Replace Fluoroscopy for Endovascular Procedures: Requirements, Advantages, Limitation: Is Its Use Becoming Widespread?

Enrico Ascher, MD
Co-Chair
VEITH Symposium
Professor of Surgery (Clinical)
New York University

The Vascular Institute of New York
New York University

1

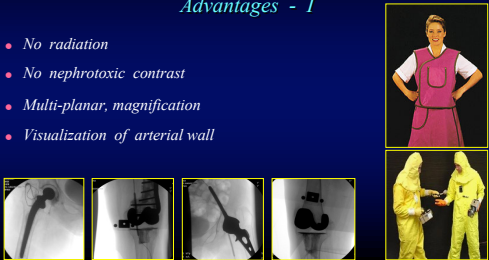
Nothing to disclose

2

Interventional Vascular Ultrasound

Advantages - I

- No radiation
- No nephrotoxic contrast
- Multi-planar, magnification
- Visualization of arterial wall

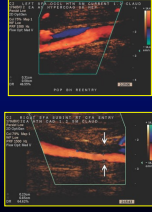


3

Interventional Vascular Ultrasound

Advantages - II

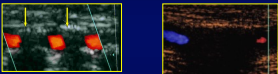
- Selection & placement of:
 - Balloon
 - Stent
- Treatment of complications
- Adequacy of the technique
 - Anatomical
 - Hemodynamic



4

Limitations

- Circumferential Calcification: ≥ 2 cm in length
- Depth: ≥ 4 cm (\downarrow resolution)
- Inexperienced Ultrasonographer



5

Duplex - Guided Balloon Angioplasty

1597 Cases

Femoral - popliteal	544
A-V access	761
Infrapopliteal	86
Infragainginal bypasses	67
Carotid artery	62
Popliteal aneurysm	51
Others	26

Duplex-guided endovascular treatment for occlusive and stenotic lesions of the femoral-popliteal arterial segment. Comparison with the use of the 200-µm catheter.

Duplex-guided balloon angioplasty and stenting for femoropopliteal arterial occlusive disease: An alternative to percutaneous transluminal angioplasty.

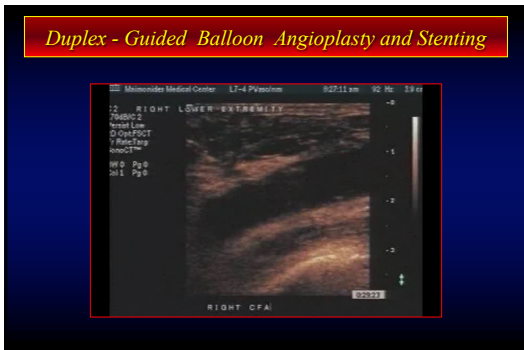
Duplex-assisted internal carotid artery balloon angioplasty and stent placement: A novel approach to minimize or eliminate the use of contrast material.

Duplex-assisted internal carotid artery balloon angioplasty and stent placement: A novel approach to minimize or eliminate the use of contrast material.

Duplex-Guided Endovascular Repair of Popliteal Artery Aneurysms (PAA): A New Approach to Avoid the Use of Contrast Material and Radiation Exposure.

Gray-scale median of the atherosclerotic plaque can predict success of lumbar re-entry during subintimal femoral-popliteal angioplasty.

6



7

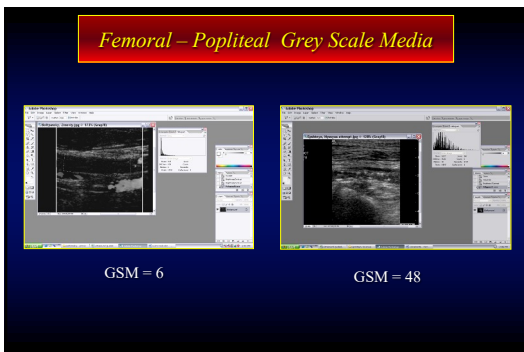
Duplex-Guided Balloon Angioplasty/Stenting Femoral/popliteal segment (402 cases)

Results

- **Technical success** 382 / 402 (95%)
 - **Stenoses** 259 / 260 (99.6%)
 - **Occlusions** 123 / 142 (87%)*

* P < 0.0001

8



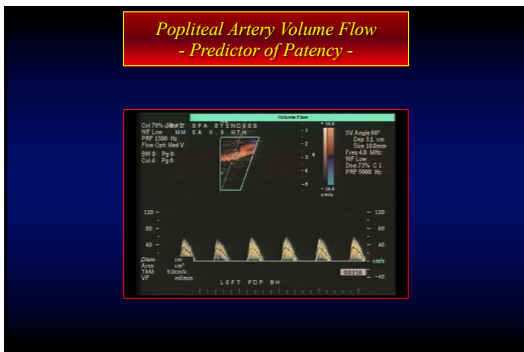
9

Femoral – Popliteal Gray Scale Median

Predictive value of plaque GSM to cross the lesion

GSM	N (Total)	N (Success)	Success rate
≤ 25	82	82	100 %
> 25	34	17	50 %
> 30	24	7	29 %
> 35	19	2	10 %
> 40	12	0	0 %

10



11

Correlation of Popliteal Artery Volume Flow & Acute Thrombosis (268 Patients)

PAVF	Cases	1 Mo Thrombosis	%
< 100 ml/min	21	4	19
≥ 100 ml/min	247	6	2.4

P < 0.01

12

*Duplex-Assisted Carotid Stenting
(60 Patients)*



13

Interventional Vascular Ultrasound



*Enrico Ascher, MD
Natalie Marks, MD*

THANK YOU!



14