Juxtaluminal Black Area (JBA) on duplex determines stroke risk in ACS patients
How to determine and quantitate it?
What other factors quantitate risk?

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Disclosures: None

Prerequisites for Ultrasonic Image Analysis
- **Equipment settings**
  - Linear array probe
  - Maximum dynamic range
  - Persistence: low
  - Frame rate high
  - Linear post-processing curve

- **Image acquisition**
  - Ultrasonic beam at right angles to arterial wall
  - TGC curve vertical through blood
  - Visualise whole plaque
  - Minimise but not abolish noise in blood
  - Visualise echodense section of adventitia close to plaque
  - Outline plaque with colour and callipers

**Equipment Settings and Image Capture (Words of Caution)**
For accurate measurements of plaque area and JBA:
Correct equipment settings
US beam at right angles to vessel wall
Adequate magnification
Image normalization (gain affects plaque area)

Note: Any vascular ultrasonographer can do it if asked

Plaque vs Grading of Stenosis
Outline Plaque by Color Flow by Selecting the Appropriate Frame from Cine Loop

1. Use appropriate software
2. Normalize Gray Scale Image
3. Enter 10 mm distance from scale
4. Crop plaque and save

5. Automatic contouring by software (Pixels with gray scale < 25 become black)
6. Outline JBA with mouse
7. Area in mm² is automatically produced by software

What Other Factors Quantitate Risk?

- Independent predictors of risk:
  1. JBA
  2. Degree of stenosis
  3. History of contralateral TIA's or stroke
  4. DWA
- Risk stratification is possible

Printed Report

Stenosis 90-99% ECST (83-99% NASCET) (n=325) and predicted annual stroke risk


Stenosis 70-89% ECST (50-82% NASCET) (n=598) and predicted annual stroke risk