Not So: Duplex Can Be Misleading and Angiography Harmful and Misleading: Completion Imaging Causes More Harm Than Benefit

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Disclosures
None

Intraoperative Completion Studies, Local Anesthesia, and Antiplatelet medication are associated with Lower Risk In CEA
Knappich, C … Eckstein, HH Stroke 2017

- German registry 142,074 Procedures
  Local vs General (RR .85)
- CEA w patch -Eversion (RR .71)
- Duplex Completion (RR .74)
- Angio Completion (RR .80)
- Antiplatelet Meds (RR .83)

What are the risks and benefits?

No Imaging
- Missing Lesions
- Potential for early events
- Earlier restenosis

Duplex/Angio
- False Positives
- Negative Explorations
- Causing more strokes
- Prolonged Anesthesia
- More Wound Complications

Intraoperative Imaging: Does it Really Improve Outcomes of CEA?

- 9,278 CEA’s
- No difference in stroke or death with regard to intraop use of imaging (2.8% with imaging and 2.4% without)
- Highest stroke/death rate with completion Angio (5.2% vs 3.8% p=ns)

The Effect of Intraoperative duplex on the management of postoperative stroke
Sheehan, MK … Baker JH Surgery 2002

- Of 32 patients with postoperative stroke, 31 had satisfactory intraoperative Duplex
- Other studies by Courbier and Panneton corroborated these results
- No significant protection or benefit from intraop imaging
Completion Imaging of CEA in the Vascular Study Group of New England

- Reexploration higher among routine users (7.6%) compared to 0.8% in selective and rare users
- 2.9% of patients reexplored
- (81%) of defects had handheld doppler as first test
- Duplex had 11% false positive (Negative exploration)
- Reexploration had a higher incidence of CVA

Intraoperative Assessment of Technical Perfection on CEA: A prospective Analysis of 1305 Completion Procedures

- Most completion by Angio(77%)
- In spite of surgical revision, patients with technical defects experienced a strikingly worse neurological outcome than those with no defects (odds ratio =11.5,p=0.0002)

ESVS Carotid Guidelines

- Evidence suggests that targeted monitoring and quality control strategies may reduce perioperative death/stroke, yet reliance on a single monitoring or quality control strategy is unlikely to make a difference, because of the multiple causes of perioperative stroke (hypoperfusion, embolism, thrombosis, intracranial haemorrhage, hyperperfusion syndrome).

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<tr>
<th>Class IIb</th>
<th>Usefulness/efficacy is less well established by evidence/opinion</th>
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<td>Level II Grade B</td>
<td>170,295</td>
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SVS Carotid Guidelines

- The routine use of completion imaging after CEA also remains an area of controversy. Although a number of authors have reported detecting abnormalities in 5% to 10% of patients using completion DUS imaging, and a cost-benefit analysis suggests completion DUS imaging increases quality-adjusted life-years by 2%, the clinical significance of many of these abnormalities is uncertain, and several series have reported excellent results without use of completion imaging. Like the choice of anesthesia and shunting, completion imaging remains a matter of personal preference.

Conclusions

Post CEA Imaging is:

- Time Consuming and cost inefficient
- Is Operator Dependent
- Can Be Unreliable
- Too Many False Positives
- Potentially Dangerous
- Results without Intraop imaging are as good
Bottom Line

- Completion Imaging requires equipment, experience and is complicated with interpretation issues
- Negative exploration is NOT benign
- Many times we don’t know what is “Abnormal”
- Is it really Duplex Imaging or Duplex Imagining?

Beware of What you think you see

THANK YOU!
Dr Veith and Dr Eckstein

THE VASCULAR GROUP