The Future of Vascular Imaging and guidance.  
Where are they going?
A CT in the OR? Really!

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Topics.

1. The Dicom Data set (MRI, CT)
2. The portable Data Set
3. Acquiring a CT in the OR
4. Importing and fusing a CT scan
5. Segmentation of the Data
6. Registering on the patient
7. Electronic guidance and targeting systems
8. Robotic Navigation

Imaging and Navigation — bread and butter of endovascular procedures.

» Siemens: Research Support, personnel
» Hansen Medical: consultant, research support.

» Importing and merging 2 imaging data sets
  » CT to cone beam CT
  » MRI to cone beam CT
  » TEE to Fluoro
  » TCCD to MRI
  » Optical to CT
  » PET, CT to CT

Technology now allows us to perform this in the operating room.

Ultimate Vascular Trauma Room.

CT Angio Combination
MR Angio Suites.
Cone Beam CT vs. multi-detector CT Imaging

Truncation due to Limited Detector Width

Terminology Designed to Confuse
dyna CT
xper CT
fluoro CT
cone beam CT

Vascular Wall Calcification

Optical Scanning: CT registration

Dynamic Imaging
CT
MRA
3D Volume Rendering of MRA Images
- Landmarking of relevant vessels

Overlay of landmarks on real-time fluoroscopy

Image Guidance Systems.
Translumbar Embolization of Endoleaks

Pushing Coil Forward

DICOM DATA set Drives 3D Printing
» Remarkable expansion of capabilities
» massively improve accuracy
» minimize dye and radiation
» may permit Fluoro-less navigation
» Develop procedures not currently envisioned
» Open surgery:
» decrease incision size
» optimize use of incision

These platforms can now all be applied in the Hybrid Operating Room.