ADVANCES IN IMAGING AND ROBOTIC GUIDANCE FOR COMPLEX AAA AND TBE

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Conflicts

- Siemens: Research Support, personnel, Grant Support
- Corindus: Speaker, Stock Options, Advisory Board, Grant Support
- Boston Scientific: Speaker, Advisory Board, Grant Support
- Aneumed: Stock Options
- Intact Vascular: Investor

Topics.

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

CT IN HYBRID ROOM- NEXT REVOLUTION

- Review source CT
  - mark targets
- Position Patient
- Acquire Cone Beam CT scan (no contrast)

- Segment out aorta, relevant vessels
- Fuse old CT with contrast to new dyna CT
- Remove dyna CT
- Select overlay format for intervention

IMAGE FUSION

New Concept: calcification fusion: "Blood Vessel Bones"

SEGMENTATION, TARGETING
FUSION: USING PREVIOUSLY ACQUIRED DATASET.

Pre-Ripar  Post-Ripar

Ascending Aortic repair with Suture line Dehiscence: Failed Endovascular Approach.

Image Fusion
Targeting
Needle Guidance
Percutaneous embolization
No filling at 1 month follow up

MRA FUSION: FERAHEME (CONTRAST AGENT)

Any 3d DICOM Dataset can one fused. Case completed with no Gadolinium 10cc dye for completion angiogram
INTERRUPTED AORTA

WHAT HAS HAPPENED TO CATHETER ROBOTICS?

Hansen acquired by Auris
Endobronchial Robot now commercialized

AUTONOMOUS ROBOTIC NAVIGATION

Electromagnetic Generator under table, EM sensors built into catheter.

CORINDUS ROBOT

First remote Coronary Intervention this year
IS REMOTE INTERVENTION FEASIBLE?

• First Demonstration of intracranial robotic navigation using Corindus Robot
• Remote delivery of stroke therapy

SUMMARY

• Imaging, Imaging, Imaging
• Drives Diagnosis, Drives Therapy
• Integrating Imaging into Hybrid Room
• Fusion
• Segmentation
• Targeting
• Dynamic imaging for dynamic structures
• Integration of Robotics with Imaging
• Remote intervention
• Autonomous navigation

Conclusion.

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