Strategies for Dose Reduction in EVAR

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Disclosures

• William Cook Europe/Cook Inc.
  – Consultant & Research grants
• W.L. Gore & Associates
  – Consultant & Research grants
• Atrium
  – Consultant
• Siemens
  – Consultant
• Medtronic
  – Consultant
Hybrid OR has become the Standard of care in EVAR

- Sterile environment
  - Open access
  - Hybrid Procedures
  - Conversion
- Safer environment team
- Logistics
- OR-lights
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- Fusion Technology
Automated segmentation

Automatic centerline and surface extraction of

- Aorta
- Iliac arteries
- Renal arteries

*Clinical prototype Siemens Healthcare*
Automated detection of Landmarks

Help to mark the relevant anatomical landmarks
- Landing zone for stent / Renal arteries / SMA

Clinical prototype Siemens Healthcare
Risk of Hybrid OR with Modern Fixed Systems

• Potentially much higher Radiation!!!!
Fixed System
Do not forget Basic Rules....

• ALARA
  – Collimation
  – ↓↓ DSA
  – ↓↓ angulation
  – Protection shields
Reduced pulse rate during Fluoroscopy

65 % less dose when reducing from 10 to 4 pulses per second fluoro.
Collimation

Dose saving of 57% just by using collimation to the area of interest!
SIEMENS CARE Applications

- Low Dose Programs
- CAREposition
- Automap
- Fluorostore
CAREposition allows patient positioning without fluoroscopy while moving the table or C-arm.

CAREposition provides radiation-free patient positioning.
The c-arm can be moved to exactly the angulation of a reference Image.

This workflow is faster and reduces the need for additional radiation and contrast use.
CARE 2D Automap

Reference Image

C_arm moves automatically to the angulation of the reference image
High quality Fluoro only when really needed

4 pulses/sec 7.5 pulses/sec
High quality Fluoro only when really needed

High contrast Fluoro
32 mGy/min*

Low dose fluoro
2 mGy/min **

- 55 nGy/pulse, 10 Pulse / sec
- ** 23 nGy/pulse , 4 Pulse /sec
DSA only when really needed

Low dose DSA
321 mGy/min

Fluoro w. contrast
12 mGy/min
2D Guidance with Fluorostore

Fluoroscopy + contrast instead of DSA

Use as Overlay
Conclusions

• 3D imaging
  – Development
  – To be included in Standard of Care

• Do not forget
  – General ALARA principles
  – Use of SIEMENS CARE/CLEAR programs
  – 2D Automap
  – Fluoro w. contrast instead of DSA
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