Hybrid Rooms With Fixed Fluoroscopy Units, Fusion And CBCT Are Essential For Complex EVAR Procedures (F/BEVAR)

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EVAR procedures in the Hybrid Room

Outcomes for EVAR procedures at CHU Lille

Disclosures

Research support, Consulting
- Cook Med, GE Healthcare

Operator dose at CHU Lille

How do we achieve this low radiation dose?

Operator exposure over the lead apron per procedure type

The limit for occupational exposure suggested by the ICRP is maximal 50 mSv/year.

Hybrid room with angiography systems

Detector High Detective Quantum Efficiency (DQE)

Auto Exposure Management

Any image frame is automatically analyzed by AutoEx AI algorithm to select the best exposure parameters to optimize CNR, based on the estimated patient thickness.

Detector High Detective Quantum Efficiency (DQE)

Before the procedure

EVAR ASSIST 2 planning to define ostia contours & best working angulations

3D Volumes preparation for Image Fusion

Before the procedure

3D overlay

Optimized C-arm angulations

Planning automatically exported to the Discovery C-arm

Planning on CT Angio

3D overlay

Planned Landing zones

Ostia contours

Optimized C-arm angulations

CT Angio fused with fluoroscopy

Optimize system geometry

InnovaSense patient contouring automatically positions the detector as close as possible to the patient

Fluoroscopy dose rate

Air Kerma dose reduction by up to 25%

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% IQ+ IQ+ IQ+ Normal Normal Normal Normal Low Low Low

Use lowest acceptable protocol and frame rate

Routinely use image fusion: reposition anatomy without fluoro
Automatic reposition of table and gantry without fluoroscopy using preset working views

Routinely use image fusion: use digital zoom, not magnification

Limit DSA runs, use Fluoroscopy

In term of dose, 1 DSA image ~ 500 fluoro images

Prefer fluoroscopy instead of DSA, except for completion angio or difficult situations

Intra-op CBCT assessment

Median radiation exposure of CBCT is 7 Gy.cm²

Intra-op CBCT assessment
FEVAR in Chronic Dissections
Conclusion

Nearly 1000 cases performed using Discovery IGS with EVAR ASSIST

- Low dose technologies enabled by modern hybrid ORs, associated with good practices, has a huge impact on low dose results
- Integrated workflow of EVAR ASSIST from sizing to CBCT including fusion imaging reduces total dose throughout patients' hospital stay
- Routine use of fusion imaging with full control at table side enables to achieve low dose results and high technical success