Why Every Vascular Open Procedure Should Be Performed In A Fluoro Equipped Operating Room: Mobile C-Arms Have Some Advantages Over Fixed Fluoro Equipment: What Are They

Daniel K. Han, MD, FACS
Assistant Professor
Icahn School of Medicine at Mount Sinai
New York, NY

No disclosures

• Most EVARs can be done on a mobile C-arm, but are limited by:
  • Technician dependent
  • Fewer controls readily accessible to the surgeon
  • Smaller image intensifier limiting field of view
  • Overheating
  • Increased radiation exposure

“A fixed imaging system within a fully functional operating room offers the ideal situation. Resolution is optimized; radiation is reduced; more control is available; and the most flexibility is offered.”
Modern Day C-Arm

Better imaging
• Larger image intensifiers
• Improved flat panel detectors
• Larger screen
• Software improvements

Modern Day C-Arm

Improved cooling system

Modern Day C-Arm

Independence

Modern Day C-Arm

Radiation
• Misconception: “Fixed units produce less radiation than C-arms.”
• The lower dosage of fixed fluoroscopy vs. c-arms was due to added functions allowing collimation, filters, low dose emitters to create the same image, position memory.
**Comparison of Radiation Exposure during Endovascular Treatment of Peripherally Arterial Disease with Flat-Panel Detectors on Mobile C-arm versus Fixed Systems.**

113 mobile C-arm vs. 206 fixed imaging

Case dose: 124 mGy vs. 173 mGy (p<0.0001)

No difference in exposure for senior surgeons
Higher Dose FOR patients, trainee residents and nurse anesthetists

---

**Benefits of Mobile C-Arm**

**Cost**

- OEC Elite & comparable C-arms: ~$270,000
- Fixed fluoroscopy:
  - Basic list ~$1,700,000
  - Zeego ~$2,000,000
  - Biplanar ~$2,400,000
- Choice for OBL and hospitals not performing complex aortic interventions

**Positioning**

- Fistulogram
- Central line and port placements
- Completion angiograms during bypasses
- Carotid subclavian embolization
- Retrograde mesenteric stenting
- Intraoperative consults
Benefits of Mobile C-Arm

**Positioning**
- Fistulogram
- Central line and port placements
- Completion angiograms during bypasses
- Carotid subclavian embolization
- Retrograde mesenteric stenting
- Intraoperative consults

**Conclusions**
- The best imaging is still available with fixed fluoroscopy.
- Significant advances have been made with C-ARM technology that most standard vascular cases do not need fixed imaging.
- There is significant cost, positioning, and portability benefits with mobile imaging.
- Software for complex cases are starting to catch up.