Hybrid Operating Room or Hybrid Procedure? Staff Safety

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Radiation Protection Pavilion
Basic Facts

- There is an increased emphasis on radiation safety
  - It created the need for better Radiation dose management
- Image Guided Interventionists use powerful sources of Ionizing Radiation for diagnosis and treatment of various pathologies
- Multidisciplinary teams (MDT) working together requires innovative solutions in Radiation Protection
Hybrid Endovascular Room Definition

- Integration of cutting-edge endovasular and surgical equipment and technologies in order to facilitate array of procedures in one location.
- Hybrid suites enable Endovascular Interventionalists and surgeons to join forces thus providing an optimal treatment options for patients.
“No Boundaries?”

- Since IRs have more sophisticated tools we become more “like” surgeons
- The same as Vascular Surgeons (VS) use less invasive tools they become more like IRs
- Hybrid rooms are aimed to grant a high-tech setting that allows IRs and VS to work together performing complex, minimally invasive therapies
  - Is this an alternative to separating surgical procedures from interventions performed in traditional ORs or Cath labs?
Hybrid Dilemma

- Some experts (Vascular Surgeons) as well as vendors declare that Hybrid Suites represent the “wave of the future” in endovascular care.

- But what about?:
  - Interventional Oncology,
  - Nonvascular interventions,
  - Vascular access
Most of the image guided interventions are NOT hybrid and do not require any surgery at all but:

- Require the best angiography equipment,
- Much more sophisticated and dedicated to specific tasks in the evolving fields of:
  - Interventional Oncology,
  - Trauma and other bleeding patients,
  - Venous interventions,
  - Lymphatic ducts interventions,
  - Bariatric Interventions and more...

In fact the diameter of devices is getting smaller - almost eliminating the need in any surgery.
Cardiovascular Hybrid Suite

- Extremely complex working environments where large teams of:
  - Surgeons,
  - Interventionalists,
  - Nurses,
  - Anesthesiologists
- and technicians need to work together seamlessly
Different in Practice (from TCT’11)
Cardiovascular Hybrid Suite

- There may be as many as 15 to 20 people working at the same time.
- In addition to interventional cardiologists and cardiovascular surgeons, the professionals who work in a cardiovascular hybrid suite may include:
  - Interventional radiologists,
  - Cardiac anesthesiologists, perfusionists, cardiac OR nurses and X-ray technicians.
- Please notice that in this communication we IRs may be included and are with “others.”
How does a fixed X-ray system fit in the Hybrid OR?
Hybrid Room Design
What makes it Hybrid?
Hybrid OR
Operator-controlled Imaging Significantly Reduces Radiation Exposure during EVAR

- Aim: to assess whether changing from radiographer-controlled imaging to a system of operator-controlled imaging (OCI) would influence radiation exposure, screening time or contrast dose

Operator-controlled imaging allows surgeons and IRs to perform EVAR with greater independence while significantly reducing the delivered radiation dose.
Decisive leadership and coordination of the procedure will result in:
- shorter procedure time
  - as a result shorter fluoroscopy time
- We have to keep to a minimum the number of optimized DSA runs

Dose management and staff protection at such open space rooms are a challenge and have no comprehensive solution today
Dose Management in Hybrid Rooms

Leadership Issues

- The vendors provide powerful state of the art equipment, but only part of the staff involved can use protective shields.

- A team approach, involving specialists working together rather than in competition, is most likely to lead to better outcomes for patients.

- There is a need in a leader who will orchestrate the team and the procedure.
Staff Radiation Risk in Hybrid Rooms

- Staff protection is challenging
- Lack of training in Radiation Protection
- Personal occupational dose monitoring
- Radiation protection tools not always available
- Need to nominate a responsible person for RP
Staff Radiation Risk in Hybrid Rooms

- Difficulties to bring all the needs during the design of the labs
- Ceiling suspended screens not available for all the personnel
- Difficult to maintain RP procedures when multidisciplinary staff is using the room
Take Home Points

- Hybrid OR’s are required in OR’s with busy Cardiovascular practice, not in IR
  - Cost effectiveness should be considered
- IR practice does not require Hybrid procedures in the vast majority of cases
- Dose management and leadership issues should be identified and involve all stakeholders
Thank You!