HOW TO TRAIN HYBRID SUITE STAFF OPTIMALLY FOR COMPLEX AORTIC PROCEDURES: IT’S ESSENTIAL THEY KNOW ABOUT ALL EQUIPMENT

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Disclosures
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 I have the following potential conflicts of interest to report:
• Clinical & Research Support:
  WL Gore, Endologix, Medtronic, Vokano
• Consultant & Speakers Bureau:
  Intact Vascular
 Off-Label Use of devices discussed only in context of FDA approved IDE studies

ROOM Size

Transapical Room Setup
Procedure room with fixed imaging system is required.

Hybrid OR with fixed imaging:
- Sterile environment
- Greatest flexibility to handle all complications
- Anesthesia and echo support
- OR table with positioning options
- Availability of full array of catheters, wires, stents, stents, stents
- CPB capability

Alternatively, bring OR to Cath Lab:
- Bypass equipment (and cell saver) with perfusionist in attendance
- Surgical instruments
- Echocardiography
- High efficiency particulate air (HEPA) filters, laminar air flow, air curtain.

Room Setup: Equipment

Interventional Equipment:
- Venous pacing catheter with sterile pacemaker cable (or epicardial)
- Femoral access guidewires and sheaths
- Digital catheter
- Diagnostic catheter for traversing arch (i.e. JR4 or Glidcath)
- .035” with J-Tipwire
- .018” Exchange length 0.035” Amplatz Extra Stiff J-tip wire (or super stiff)
- 14F CheckFlo® Introducer Set (optional for BAV)
- Aortogram contrast (50%-100%)
- Syringes

Coordination of Imaging Modalities

- Adjuncts to appropriate therapy
  - Imaging
    - CT/MRA
    - ANGIO
    - IVUS
    - TEE
  - Transcranial Doppler

Implications for TAVI

- All complex aortic cases with crossing of aortic valve, incorporate all components of TAVR procedure:
  - Vascular surgery, CT Surg, Cardiology, Neuro radiology
  - Support staff – TEE (Anesthesia/ Cardiology), Pump technicians, OR & Cardiology staff (Hybrid OR Tech) – Transcranial doppler, if possible
- All cases carefully planned carefully with imaging modalities including 3-D centerline CT angios

Coordination of Imaging Modalities

- Challenging combination of multimodality imaging and ancillary equipment
- Coordination by a dedicated “Hybrid OR Technician”
- poses challenge for administrators & hospital staff to understand importance of imaging in this setting
Ascending TEVAR Device Deployment

- CT OR & nursing support, pump capability, transvenous pacers
- CT registration, IVUS & TEE
Coplanar Deployment View Selection

- Determine coplanar deployment view where basal aspect of all 3 cusps are on same plane.
- View may be pre-determined during patient screening and should be confirmed during the procedure.
- Select view so that the image intensifier does not interfere with surgeon’s access to the operating field.

Coplanar Deployment Views

Advanced CT Imaging Software and Hardware can improve the planning of the procedure (Annulus measurements, Assessment of Vascular Access) and the implantation of the valve (coplanar view and valve positioning guidance).

Methods to determine position of the LV apex:

- Fluoroscopy of the heart with forceps on the skin surface.
- 5-7 cm submammary, left anterior thoracotomy incision at 5th or 6th intercostal space centered on location of LV apex.
- TTE may also be acceptable method to locate apex.

Transapical Approach

Surgical Exposure
**Surgical Exposure**
- Soft tissue retractor
- Use rib spreader
  - Shoulder of spreader towards left side of patient (out of fluoroscopic field of view)
- Place pericardial stay suture except for Re-op – no pericardial dissection
- Avoid LAD and major diagonal coronary arteries

**Locate Apical Access Site**
- Identify myocardial “bare spot” for access - minimum bare spot 2 cm by 2 cm
  - Palpate ventricular wall under TEE (2- or 4-chamber view)
  - Superior and lateral of the true LV apex
  - Lateral to LAD
  - Consider enlarging incision for optimal apex exposure
- Extensive fat can obscure “bare spot” and have high risk of ventricular rupture – should consider different puncture site

**Left Ventricular Access**
- Assess proper tracking of the stiff wire in LV
- TEE is critical for evaluation

**Sheath Insertion**
- Allow the introducer to dilate entry site while gently inserting sheath
- TEE guidance is essential
- Stabilization of the Ascenda Sheath is critical

**Personal Protection**
- Age 57
- O gravity