Alternative Access for TAVR: From TransApical to TransCaval

Bryan A. Whitson, MD, PhD
Associate Professor of Surgery
Director, End-Stage Cardiopulmonary Failure Program
Co-Director, COPPER Laboratory

5th Annual Structural Heart Disease Conference: Aortic Valve and Beyond

Disclosures

- No conflicts of interest
- No financial relationships
Transcatheter AVR

Edwards Sapien

Medtronic CoreValve
Ideal Ileo-Femoral Access
- Large, No Calcium, Straight

Tortuous but Large diameter
Stiff Guidewire

It is not only the Ileofemoral Vessels

Whole Aorta and Iliacs Tortuosity
What's inside

What's Inside?
TAVR Patient Selection

- Transileofemoral
- Transapical
- Left subclavian
- Direct aortic

- “Alternative alternative”
  - Carotid
  - Cavo-aortic
  - Thoracoscopic
Pre-operative planning

- Computed tomography
  - Anatomy
    - Length of ascending aorta
    - Aortic annulus to brachiocephalic trunk
    - Sternommanubrium to right rib cage
    - Calcified plaques
    - Lung lesions, pleura, pericardium, mediastinum, supra-aortic valves
  - Size of aortic annulus

Direct Aortic

- 2nd Most Common access
- Very controllable delivery
- Coaxial
- Well tolerated
- Planning essential:
  - Mini-sternotomy vs. Right thoracotomy
  - Point of entry into the aorta
  - Tunneling of the sheath
  - Which side to stand

Minimally Invasive Direct Access TAVR
Procedure - Tunneling

Slide courtesy of Juan Crestanello, MD

Procedure - Tunneling

Slide courtesy of Juan Crestanello, MD
**Surgical Technique – Right thoracotomy**


**Transapical Approach**
Subclavian Access

TRANSCATHETER AORTIC VALVE REPLACEMENT (TAVR): ACCESS PLANNING AND STRATEGIES
Basel Ramlawi, M.D.; Javier E. Anaya-Aya, M.D.; Michael J. Reardon, M.D.
Methodist Dallas Heart & Vascular Center, The Methodist Hospital, Houston, Texas

The Ohio State University Wexner Medical Center

Subclavian Access

The Ohio State University Wexner Medical Center
Subclavian Access

Surgical exposure and access to common carotid artery. (A) Carotid stump pressure distal to clamp was checked to ensure mean arterial pressure >32 mm Hg. (B) A micropuncture needle was used to enter carotid artery, followed by insertion of 6F sheath. (C) After aortic valve crossing, valve delivery sheath was placed. (D) Transcatheter aortic valve replacement (TAVR) valve was passed through delivery sheath into position.

Carotid

Surgical exposure and access to common carotid artery. (A) Carotid stump pressure distal to clamp was checked to ensure mean arterial pressure >32 mm Hg. (B) A micropuncture needle was used to enter carotid artery, followed by insertion of 6F sheath. (C) After aortic valve crossing, valve delivery sheath was placed. (D) Transcatheter aortic valve replacement (TAVR) valve was passed through delivery sheath into position.

Surgical repair and recovery from transcarotid transcatheter aortic valve replacement (TC-TAVR). (A–C) Transverse repair of carotid artery, with distal and proximal clamps in place. (D) Small incision site and minimal scarring 7 days postoperatively.
Transcaval Access Technique for TAVR

Central Illustration: Transcaval Access Technique for TAVR


The Ohio State University Wexner Medical Center
Thoracoscopic


Take Homes…
- Transileofemoral
- Transapical
- Left subclavian
- Direct aortic
- “Alternative alternative”
  - Carotid
  - Cavo-aortic
  - Thoracoscopic

- Concepts of alternative access are expanding
- Creativity is paramount
- Multidisciplinary approaches yield improved delivery of patient care
Acknowedgements

- Slide contribution of Dr. Juan A. Crestanello and Dr. Ahmet Kilic
- OSUWMC Structural Heart Team