Importance, Prevention and Treatment of Vascular Complications Of TAVR

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Peripheral complications
- access artery complications
- Inadvertent branch vessel coverage
- retrograde dissection

VARC End-points: Pooled Analysis

<table>
<thead>
<tr>
<th>VARC End-point</th>
<th>Pooled estimate</th>
<th>95% Confidence Interval</th>
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<tbody>
<tr>
<td>Device success</td>
<td>92.1%</td>
<td>88.7-95.5%</td>
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<tr>
<td>30-day mortality</td>
<td>7.8%</td>
<td>5.5-11.1%</td>
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<tr>
<td>Myocardial Infarction</td>
<td>1.1%</td>
<td>0.2-2.0%</td>
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<tr>
<td>Acute kidney injury stage III</td>
<td>3.3%</td>
<td>1.1-11.4%</td>
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<tr>
<td>Life threatening bleeding</td>
<td>13.6%</td>
<td>11.5-20.5%</td>
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<tr>
<td>Major vascular complications</td>
<td>11.9%</td>
<td>8.6-16.6%</td>
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<tr>
<td>Major stroke</td>
<td>3.2%</td>
<td>2.1-4.8%</td>
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<tr>
<td>Permanent pacemaker</td>
<td>13.9%</td>
<td>10.6-18.9%</td>
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Genereux P. et al. JACC 2012

16 Studies
3519 Patients

Vascular Access evaluations

- Narrow Vessels
- Excessive Calcification
- Tortuosity

You can overcome 1 or 2 of the above, but hard to tackle all 3

Overcoming tortuosity!

Benson Wire
Amplatz Superstiff Wire
Lunderquist Wire
Guidewire Management

- Transition Point
- Wire Exchanges
- Wire Management

Access complications
- Common femoral artery landmarks
  - Fluoroscopic landmarks
    - Femoral head
  - Palpable landmarks
    - Inguinal ligament
    - Maximal femoral pulse
  - Visual landmarks
    - Inguinal fold / crease

Landmarks, angiogram and Ultrasound!

Ultrasound access is standard of care!
Illofemoral artery angiogram using a micro-puncture catheter

Large bore access

- Pre-dilating Vessel
- Unfavorable tracking

Iliac Direct access

- Direct common iliac artery approach
  - Avoid if calcified
  - Place sheath if possible
- Primary repair or patch

Iliac Exo-conduit

Either suture is closed...
..bring it to the common femoral artery and suture it there just like a bypass graft.
Iliac Endo-conduit – also bailout for “the iliac on the stick”

Aorto-iliac dissection

Percutaneous EVAR, TEVAR, TAVR

And local anesthesia

Caveats:
Calcified vessels,
femoral artery stenosis

Dissection, Fistula, PA, and Other Goodies!

Percutaneous small bore access closure

Percutaneous large bore access closure

Intraluminal plugs

Perclose

Angioseal
Open surgical repair
Lymphocelle, venous obstruction, arterial stenosis, neuropathy, infection

Inadvertent branched vessel coverage
- brachiocephalic or celiac vessel
- open: bypass vs. transposition
- hybrid: bypass followed by coiling
- endovascular: Parallel grafts

RAD - Management
- high index of suspicion
- completion angio/IVUS
- regulated f/u with designated personnel
- 1/3 will develop rTAAD after 3 month
- prompt surgical repair: 50% survival (3/6)

Retrograde aortic dissection
operation 1) hemiarch ascending replacement
Distal anastomosis incorporating TEVAR

Retrograde aortic dissection
2) total arch replacement
- extra-anatomic bypass
- ascending replacement
- TEVAR extension

Thank you!