My best and worst TAVR case of the year.
The single most important lesson learned

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Disclosure Statement of Financial Interest

☑ I have the following potential conflicts of interest to report.

☐ Research Grants
☑ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Others

☒ I do not have any potential conflict of interest to report.
Demographics

76y male
HT, smoker
NYHA IV
Severely symptomatic with numerous hospitalizations for pulmonary oedema

- CABG LIMA VG to LAD OM (2006)
- Carotid Artery Stenting (2006)
- Common Iliac Stenting (2002)
- Chronic Renal Failure e-GFR 34mls/sec
- COPD
Echo findings

Calcified aortic valve with severe stenosis and insufficiency
Peak gradient 66m
AVA 0.9cm\(^2\) AVI 0.47cm\(^2\) \(\text{m}^2\)
Aortic Reg with PHT 190msec
EF 35%
Moderate to severe pulmonary hypertension 60mm
Calculated Pulmonary vascular resistance 2.5 WOODS
EUROSCORE 39.6%
STS 9.87
Echo findings

AVA (VTI) 0.90cm²

P 1/2t 194ms

Area 0.471cm²
MSCT findings - Aortic Valve

Sinotubular junction

SOV diameter

Annular diameter

LVOT diameter
MSCT findings

Max Ascending Aorta Diameter (mm) 33.6
Sinotubular junction Diameter (mm) 23.1 x 27.1

Annulus

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Perimeter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.1</td>
<td></td>
<td>27.6</td>
<td>23.9</td>
<td>75.9</td>
</tr>
</tbody>
</table>

Area 440.8 mm², 23.7 mm

Right

- CIA Min Diameter (mm) 5.6 x 5.7
- EIA Min Diameter (mm) 4.8 x 5.0
- Femoral Min Diameter (mm) 6.6 x 7.0

Left

- CIA Min Diameter (mm) 6.2 x 6.2
- EIA Min Diameter (mm) 4.5 x 5.0
- Femoral Min Diameter (mm) 4.0 x 5.2

Subclavian Min Diameter (mm) 4.8 x 6.2
Annular Angulation 43.1

Sinus of Valsalva Diameter (mm)
- LCC 32.5
- RCC 29.9
- NCC 32.7

Sinus of Valsalva Height (mm)
- LCC 22.0
- RCC 20.7
- NCC 20.7

Coronary Ostia Height (mm)
- Left 14.6
- Right 14.4

LVOT Diameter (mm)
- Min 20.4
- Max 30.1

Calcium: Mild ☐ Moderate ☐ Severe ☑

Please review images for direct aortic evaluation.
MSCT findings - Aortic Valve

**Max Ascending Aorta Diameter (mm)**
- 33.6

**Sinotubular junction Diameter (mm)**
- Min: 23.1
- Max: 27.1

**Diameter (mm)**
- Min: 20.1
- Max: 27.6
- Mean: 23.9

**Perimeter (mm)**
- Mean: 75.9

**Area (mm²)**
- Derived Diameter: 440.8
- Derived: 23.7

**Sinus of Valsalva Diameter (mm)**
- LCC: 32.5
- RCC: 32.9
- NCC: 32.7

**Sinus of Valsalva Height (mm)**
- LCC: 22.0
- RCC: 20.7
- NCC: 20.7

**Coronary Ostia Height (mm)**
- Left: 14.6
- Right: 14.4

**LVOT Diameter (mm)**
- Min: 20.4
- Max: 30.1

**Valve Size Selection**

<table>
<thead>
<tr>
<th>Size</th>
<th>CoreValve Evolut R TAV</th>
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<tbody>
<tr>
<td>23 mm</td>
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<tr>
<td>26 mm</td>
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<tr>
<td>29 mm</td>
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<tr>
<td>34 mm</td>
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**Annulus Diameter**
- 18 - 20 mm
- 20 - 23 mm
- 23 - 26 mm
- 26 - 30 mm

**Annulus Perimeter**
- 56.5 - 62.8 mm
- 62.8 - 72.3 mm
- 72.3 - 81.7 mm
- 81.7 - 94.2 mm

**Sinus of Valsalva Diameter**
- ≥ 25 mm
- ≥ 27 mm
- ≥ 29 mm
- ≥ 31 mm

**Sinus of Valsalva Height**
- ≥ 15 mm
- ≥ 15 mm
- ≥ 15 mm
- ≥ 16 mm
MSCT findings

Max Ascending Aorta Diameter (mm) 33.6
Sinotubular junction Diameter (mm) 23.1 x 27.1
Min x Max

Annulus

Diameter (mm) 20.1 x 27.6, 23.9 mm
Min x Max, Mean
Perimeter (mm) 75.9
Derived Diameter

Area 440.8 mm², 23.7 mm
Derived Diameter

Right
CIA Min Diameter (mm) 5.6 x 5.7
EIA Min Diameter (mm) 4.8 x 5.0
Femoral Min Diameter (mm) 6.6 x 7.0

Left
CIA Min Diameter (mm) 6.2 x 6.2
EIA Min Diameter (mm) 4.5 x 5.0
Femoral Min Diameter (mm) 4.0 x 5.2

Sinus of Valsalva Diameter (mm)
LCC 32.5, RCC 29.9, NCC 32.7

Sinus of Valsalva Height (mm)
LCC 22.0, RCC 20.7, NCC 20.7

Coronary Ostia Height (mm)
Left 14.6, Right 14.4

LVOT Diameter (mm)
Min 20.4, Max 30.1

Subclavian Min Diameter (mm)
Right 4.9, Left 5.7

Calcium: Mild, Moderate, Severe

Please review images for direct aortic evaluation.
MSCT findings-femoral access

Calcium:  Mild □  Moderate □  Severe ☐
MSCT findings-femoral access

TF access is not suitable due to iliac stent extended to abdominal aorta and vessel small diameter.
### MSCT findings

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### LEFT

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</tr>
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</tr>
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### Sinus of Valsalva

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### Coronary Ostia

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<tbody>
<tr>
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### LVOT Diameter (mm)

| Min                                              |      | 20.4  |
| Max                                              |      | 30.1  |

### Subclavian Min Diameter (mm)

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<thead>
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<tr>
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<td>4.9</td>
</tr>
<tr>
<td>LEFT</td>
<td></td>
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### Calcium

- Mild
- Moderate
- Severe

Please review images for direct aortic evaluation.
MSCT findings - subclavian access

**Right Subclavian Minimum Diameter (mm):**
4.8 x 6.2

**Annular Angulation:**
43.1

**Left Subclavian Minimum Diameter (mm):**
4.9 x 5.7

Please review images for direct aortic evaluation.
MSCT findings-subclavian access

RSCA is not suitable due to annular angulation >30°
LSCA is not suitable due to small anatomy and LIMA (recommended diameter of LSC>6.5mm)
Direct aortic access is not recommended due to porcelain aorta, CABG at 36mm height and previous sternotomy.
“Patient does NOT appear to meet the minimum anatomical requirements per the Medtronic CoreValve/Evolut R patient evaluation criteria and final decision to be made by implanting proctor/physician”
Minimal Invasive Setting

Right femoral artery
Main access
14F introducer
18F OD
2 Proglides™

Left femoral artery
6F Pigtail
5F vein
5F temporary pacemaker

Conscious sedation
(Fentanyl, propofol, dormicum)
No endotracheal intubation
No foley catheter
No TEE
TTE at the end
1. **Paddles**: same height within the pockets and equidistant from paddle attachment

2. **Outflow crowns**: aligned straight and parallel to the distal end of the paddle attachment

3. **Capsule**: straight and free of any bends or curves with node bands appearing straight and uniform
TAVI implantation Evolut R 29

Operators Arampatzis, Ziakas, Spargias
Evolut R 29 over Medtronic Confida™ wire

Decision to recapture at 2 points
1. 1/3 deployment upon annular contact
2. Just before reaching the point of no return

Operators Arampatzis, Ziakas, Spargias
Echo findings @ discharge

AVA (VTI) 2.61cm$^2$

P1/2t 351ms
The Single most Important Lesson Learned

Refinements in the implantation tools and technique may overcome anatomical impediments. Cautious preparation of the patient and step by step implantation as recommended increases the success of the valve implantation.
Recorded on 19th April 2017 with patient’s permission

**How do you feel 10 months after the TAVI procedure?**

If I can recall it was on the 26th of June 2016, nevertheless *I feel great*, I can walk 2.5-4 kilometers on daily basis, I have returned to my previous physical status and I can *effortless* do my previous activities such as gardening and digging. I am compliant with my medication and I do not feel anything troubling me.

**How did you feel before the procedure?**

**Terrible!** I could barely walk, I have been admitted to the hospital several times, 16 within 9 days!! I felt dyspnea, I *couldn’t breath* and I was always at the hospital staying 5 to 6 days, and then the same story again and again....

**Last question what is your opinion about the TAVI procedure?**

The procedure was fast, I did not feel any pain, I stayed at the intensive care unit for a night and 48 hours in the ward.
Thank you