Transcatheter Aortic Valve Implantation
with the Balloon expandable Edwards Valve
Past, present and future

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From PVT to Edwards Valves

2000: PVT Valve
- Percutaneous Heart Valve
- Bovine pericardium
- Stainless steel frame
- 23mm
- 24F
- TF sheath sizes

2003-2004
- Cribier Edwards
- Equine pericardium
- Stainless steel frame
- 23mm
- 22F

2005-2009
- Edwards Sapien
- Treated bovine pericardium
- Stainless steel frame
- 23 and 26mm
- 22F, 24F

2009
- Edwards Sapien XT
- Next to come
- 20mm / 29mm
- Next generation
- 18F, 19F
The past:
First In Man, Rouen, April 16, 2002
Trans-Septal Approach; PVT Valve

Man, 57 y-old, severe AS
Cardiogenic shock, LVEF: 12%
Multiple comorbidities,
No arterial access
The past: Trans-Septal Approach
(Rouen, 2002-2004: 40 patients, 80% success)

- Guidewire from femoral vein to contra-lateral femoral artery
- Dilatation of atrial septum with a 8mm balloon

- THV advanced from femoral vein to native aortic valve
The past: Trans-Septal Approach
(2002-2004: 40 patients, 80% success)

- THV delivered under rapid pacing
- Sones catheter from femoral artery to hold the THV in place during inflation
- Good angiographic result
Cribier Edwards Valve
Edwards Sapien Valve
Transapical
Transfemoral
Retrograde
Ø Bovine pericardium
Ø Stainless steel stent
Treated anti Ca (Tfx)
Ø 2 sizes: 23 or 26mm
Ø Sheath: 22F or 24F

2004: PVT Retroflex Ascendra Delivery systems

LCA
Septum

Edwards Lifesciences
The present: Retrograde approach
Edwards Sapien Valve

The Retroflex III
Third generation of delivery system
Rouen: Clinical example: 89 y/o female

- NYHA functional class 3
- Severe AS:
  - EOA: 0.46 cm²/m², Mean gradient: 46 mm Hg
  - LVEF: 75%, normal coronary arteries
- Breast cancer, pulmonary insufficiency
- Bilateral hip prosthesis, arthritis (chronic corticotherapy)

EuroSCORE: 22.37%
Annulus diameter: 20.2mm

Indication to THV 23 mm, transfemoral approach
Pre-shaping the exchange extra-stiff wire

260cm long COOK 0.035”
« Extra-Stiff Guidewire »

RAO View
20mm Edwards balloon: 20mm (23mm THV)

Two inflations, one with aortogram

Rapid Ventricular Pacing (200 to 220 bpm)
Helps stabilizing the balloon during inflation
Aortography during balloon inflation used to confirm the optimal valve size required and assesses the risk of Left Main occlusion by bulky calcified leaflet
Edwards Polyethylene dilators

16 to 25F dilators to dilate the arterial access
The 22F Sheath

(a 24F sheath is requires for the 26mm valve)

Catheterization of the LFA with the 22F sheath
Introduction of retroflex and loader in 24F sheath
THV advanced in aorta

AP view

RetroFlex slightly deflected

LAO view 40°
Crossing the native valve and positioning

Reference view (LAO 10° / Cranial 10°) (aortic annulus seen perpendicular to screen)
THV delivery under RVP

Full inflation maintained 3 sec
Retroflex straightened and retrieved
Final angiographic control
TA Procedure: Edwards Sapien
Chest opening, purse string and LV puncture
TA Procedure: Edwards Sapien
THV deployment and controls

- Balloon inflated under RVP and kept inflated 5 sec
- Results assessed on aortography and TTE or TEE
The future: is already there!

EDWARD SAPIEN XT

- New Frame Design
- Cobalt-chromium Material
- New Valve and Leaflet
- 23 and 26 mm valves
- 29 & 20mm to come

Sheath size
- 18F: 23mm valve
- 19F: 26mm valve

Percutaneous approach
- Local anesthesia
- Preclose technique (PROSTAR)
The future: is already there!

EDWARD SAPIEN XT

THV delivery

Aortogram post-THV
Conclusions

• Major technological advancements have been made over the last years, making TAVI procedure simpler, faster, safer, and more efficient

• In the next future, with the decreased sheath sizes, TAVI will be performed in 70 to 80% of the cases using the trans-femoral approach, as a stent like procedure.

• Optimal training and proctoring for patients selection and procedure, and excellent partnership within the teams are crucial for the success of TAVI