

Stent Frame Deformation of Self-Expanding TAVR in Bicuspid Aortic Stenosis and Impact on Valve Performance

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Disclosure of Relevant Financial Relationships

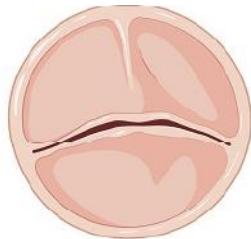
I, [Gabriela Tirado-Conte](#) DO NOT have any financial relationships to disclose.

Background

- BAV account for > 10% of TAVI procedures
- Supra-annular self-expanding THV in BAV
 - Favorable clinical outcomes on observational studies
 - Limited data on stent frame deformation and its impact on valve performance
- Aim:
 - stent frame expansion and ellipticity of EVOLUT R/PRO(+)
 - valve performance
 - pre- and post- TAVI CT

Methods

Bicuspid AS



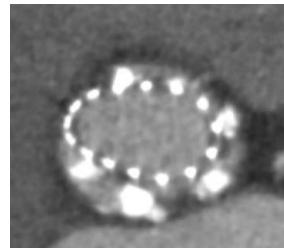
Evolut™



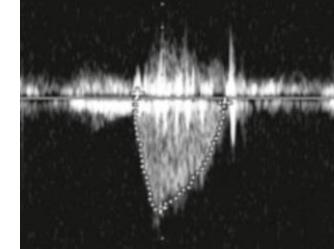
10 institutions
N = 175



Post TAVI CT



Post TAVI TTE



BAV anatomy

Implantation
technique

Ellipticity

Leaflet level

Inflow level

Expansion

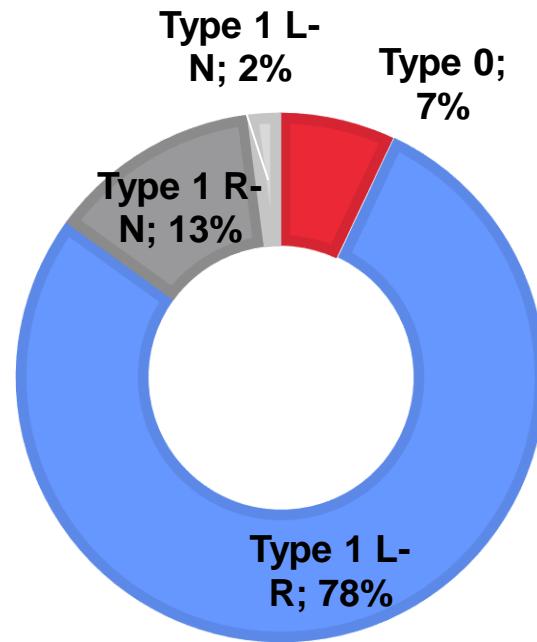
Valve
hemodynamic

PVL

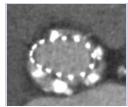
HALT

Results – baseline characteristics

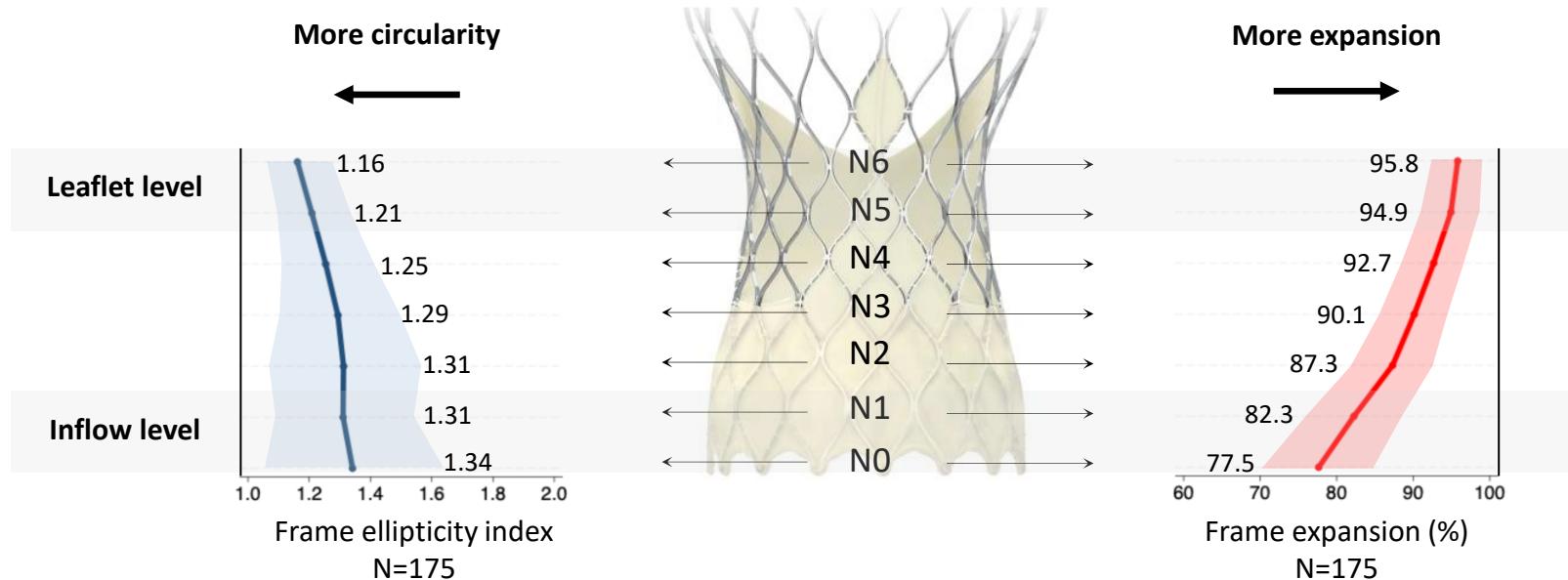
- N = 175
 - Age = 78.1 (7.2)
 - Sex (male) = 66.3%
 - CAD = 28.6%
 - AFib = 16.4%
 - Previous PM = 6.9%
 - LVEF (%) = 55.7 (11.7)
 - AVA (cm^2) = 0.75 (0.21)
- ***BAV type***



Results

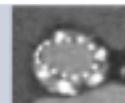
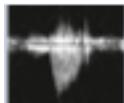


TAV stent frame expansion & ellipticity

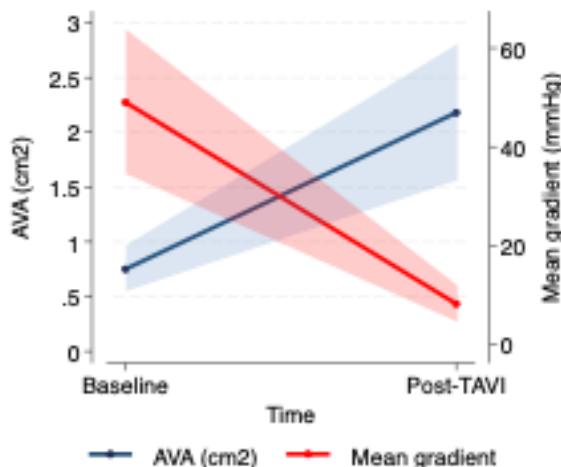


Results

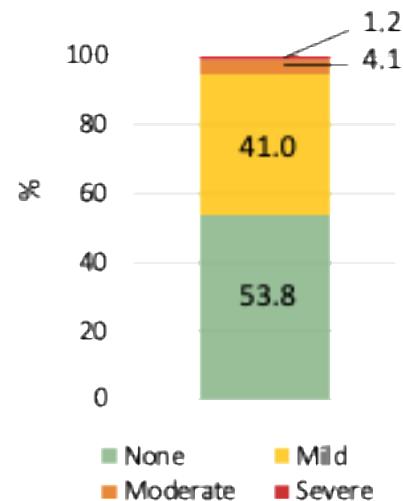
Valve performance



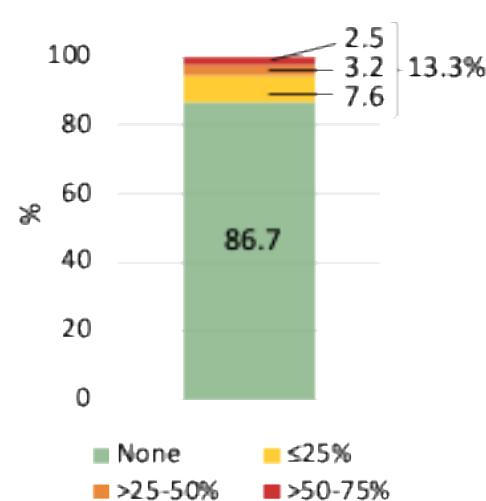
Aortic valve hemodynamic



Paravalvular leak

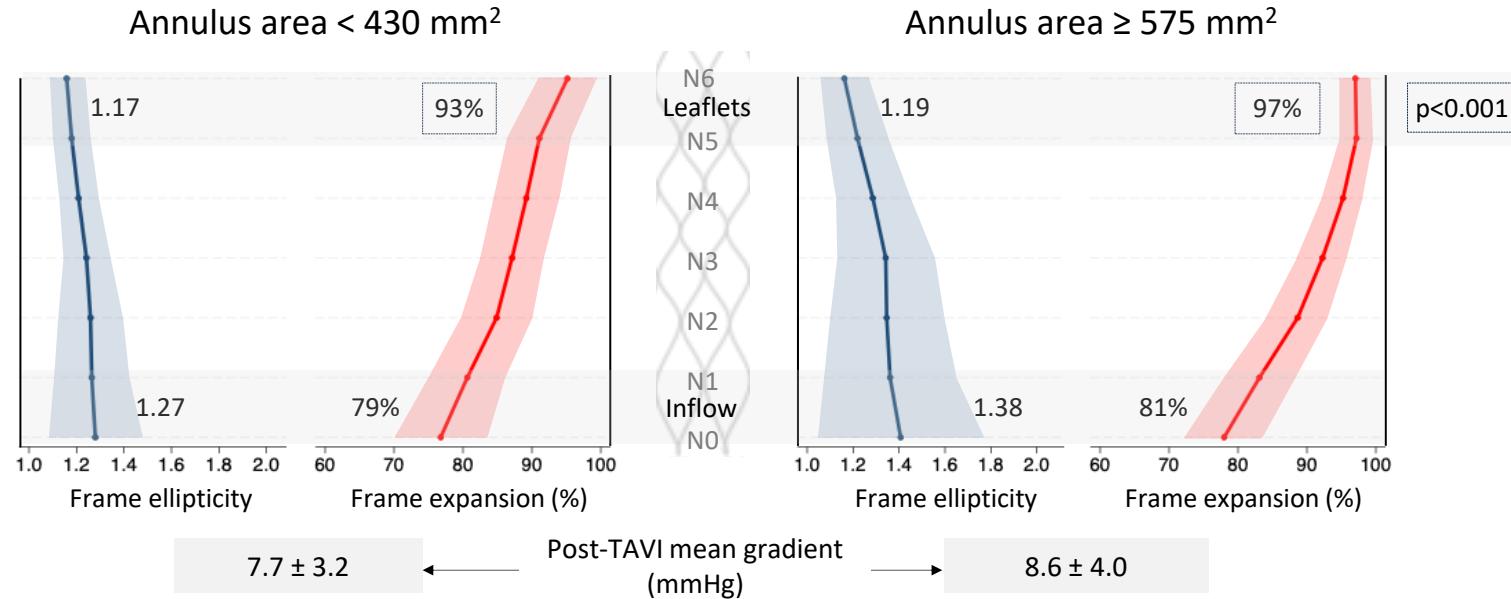


HALT



Impact of BAV anatomy

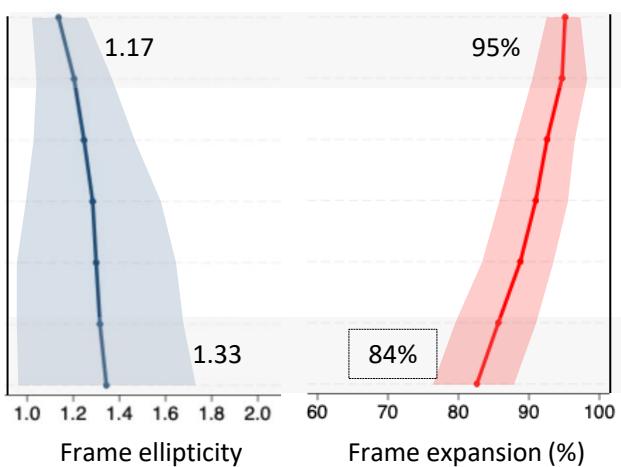
Annulus size



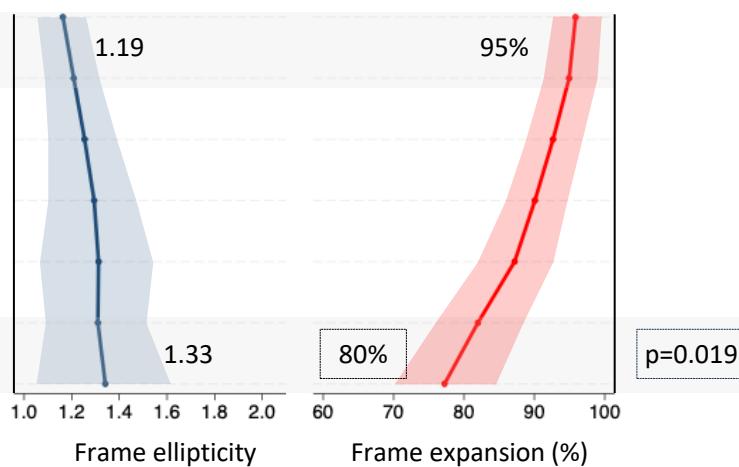
Impact of BAV anatomy

Bicuspid aortic valve Sievers type

Type 0



Type 1



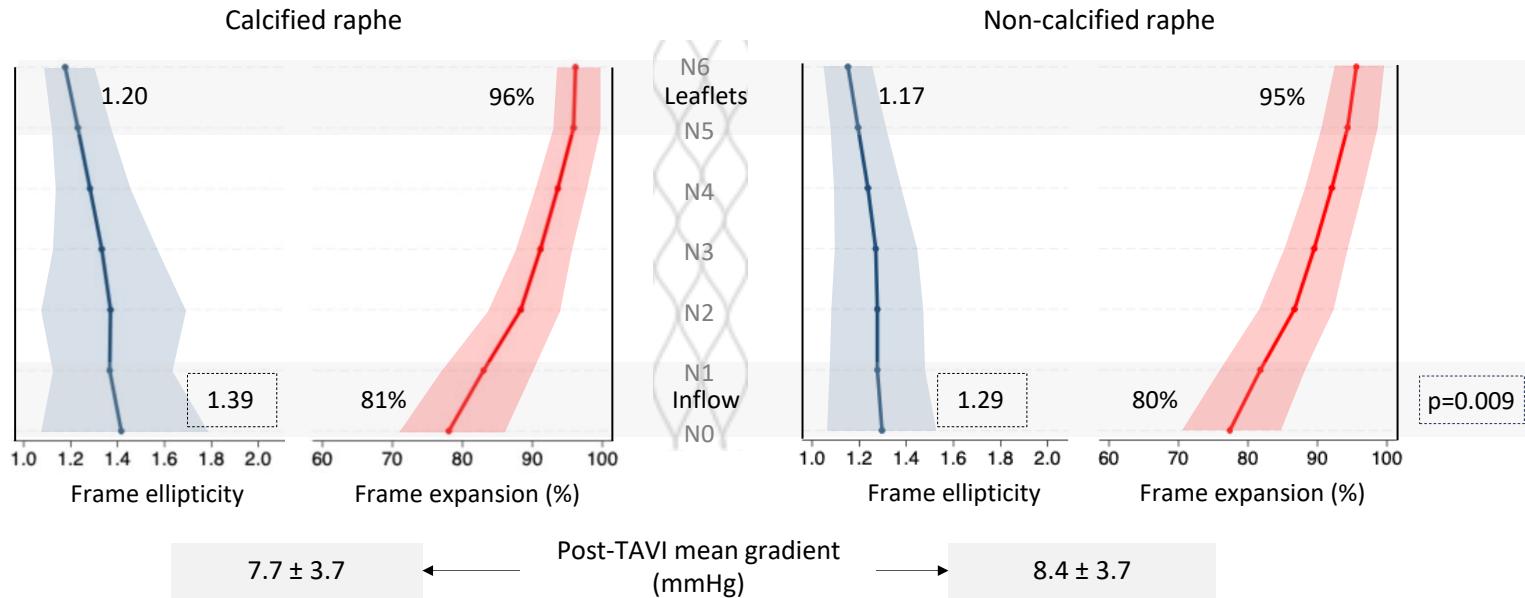
8.2 ± 3.8

Post-TAVI mean gradient
(mmHg)

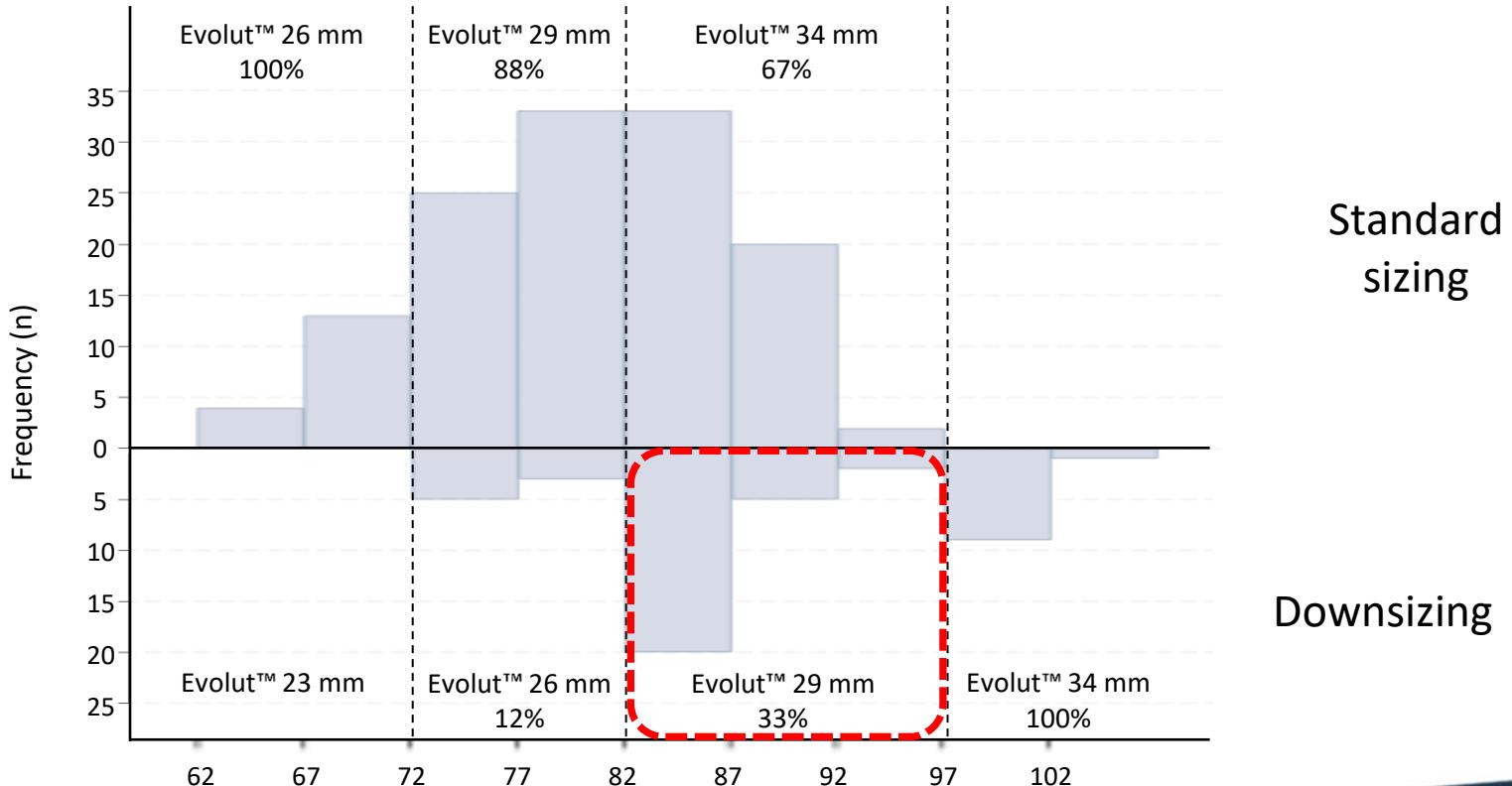
8.2 ± 2.5

Impact of BAV anatomy

Raphe calcification



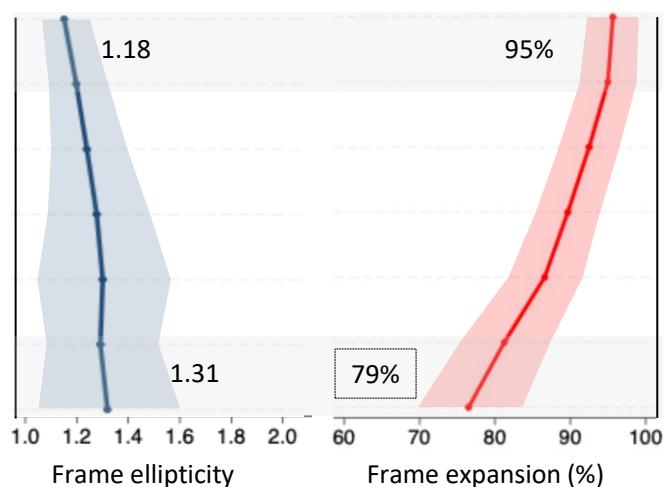
Evolut™ valve sizing



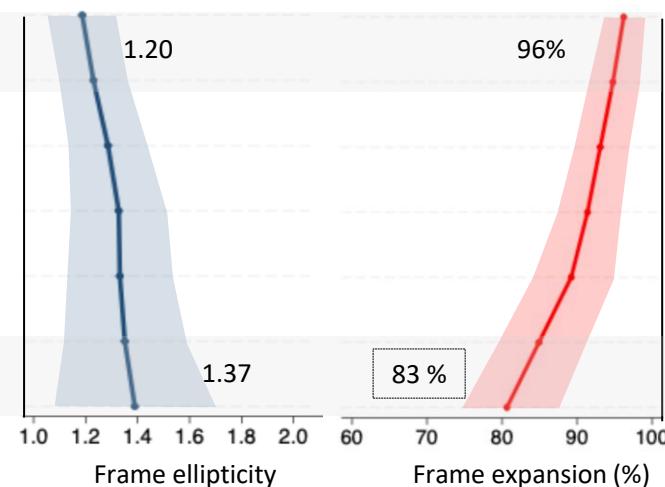
2. Impact of sizing on Evolut™ stent deformation

Evolut™ valve sizing

Standard sizing



Downsizing



p<0.001

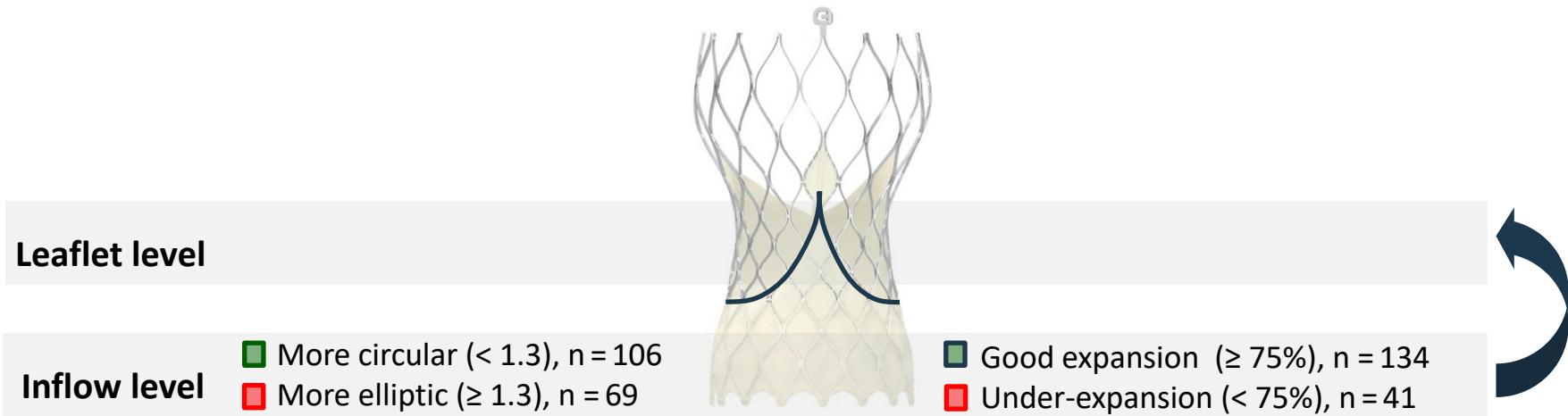
Post-TAVI mean
gradient (mmHg)

7.7 ± 3.4

9.3 ± 4.3

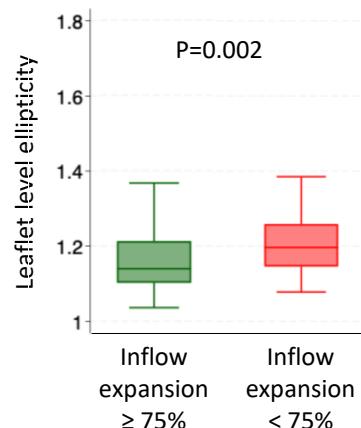
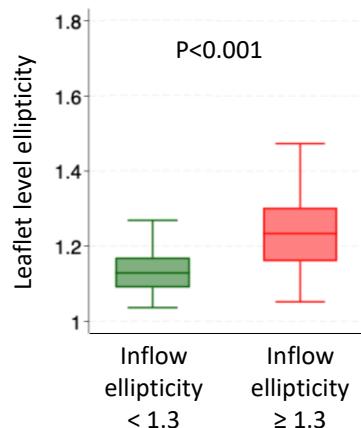
p = 0.011

3. Impact of INFLOW on LEAFLETS & PERFORMANCE

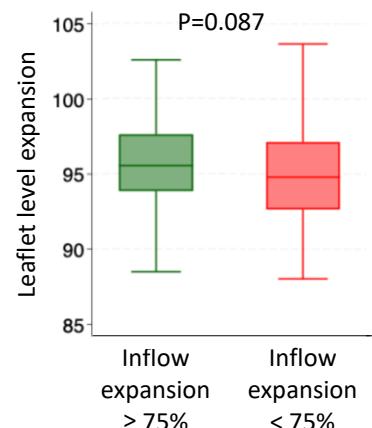
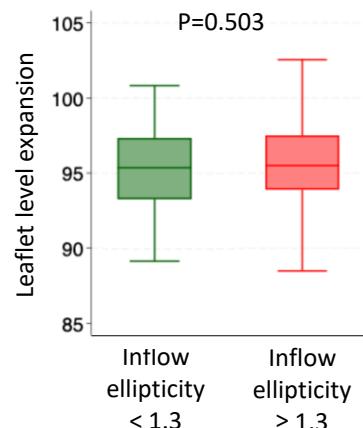


3. Impact of INFLOW on LEAFLETS & PERFORMANCE

Leaflet level ellipticity

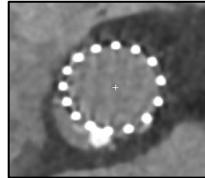


Leaflet level expansion



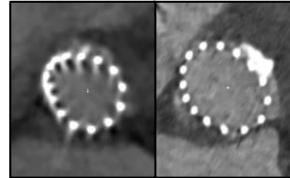
3. Impact of INFLOW on LEAFLETS & PERFORMANCE

Stent frame at inflow level



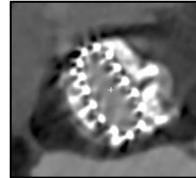
Group 1

No underexpansion or eccentricity. N=88 (50.3%)



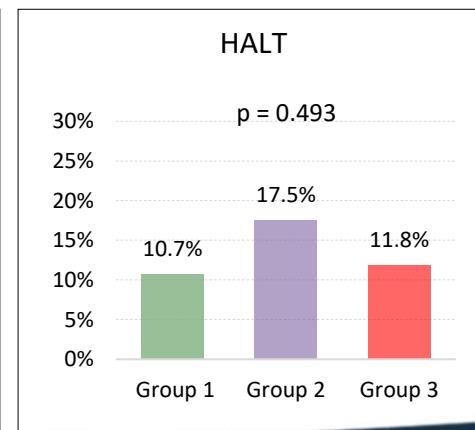
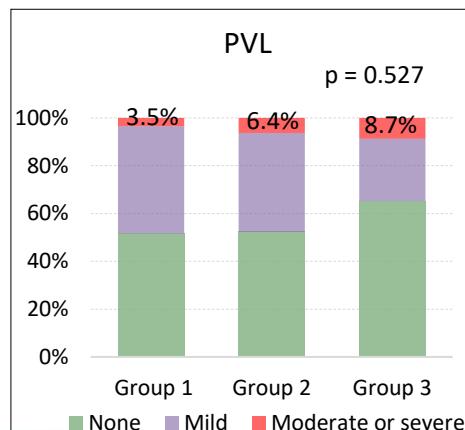
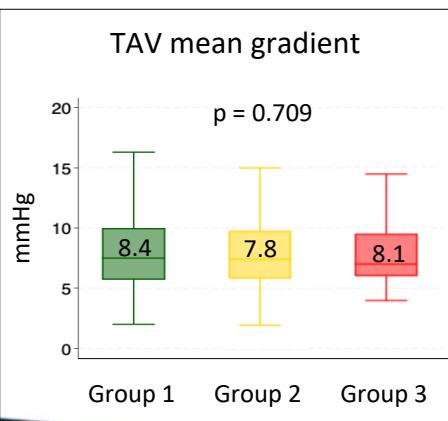
Group 2

Underexpansion or eccentricity. N=64 (36.6%)



Group 3

Underexpansion and eccentricity. N=23 (13.1%)



Summary

- Inflow under-expansion and ellipticity was observed in BAV treated with the Evolut™ platform
- BAV anatomy and procedural aspects mainly affected inflow stent frame deformation
- Leaflet level stent deformation and valve performance was optimal despite the anatomy or inflow under-expansion or ellipticity
- Only a mild increased in PVL was observed in those with inflow under-expansion and ellipticity