

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

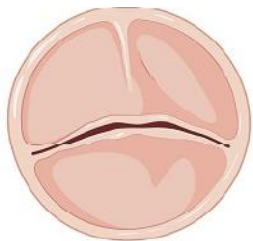
I, [Gabriela Tirado-Conte](#) DO NOT have any financial relationships to disclose.

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™



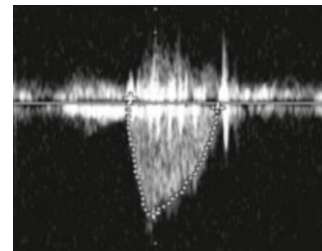
10 institutions
N = 175



Post TAVI CT



Post TAVI TTE

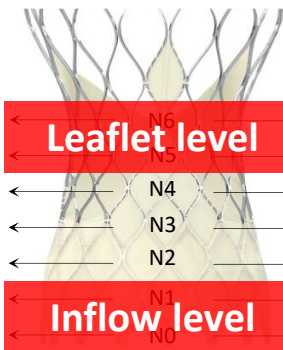


BAV anatomy

Implantation
technique



Ellipticity



Leaflet level

Inflow level

Expansion



Valve
hemodynamic

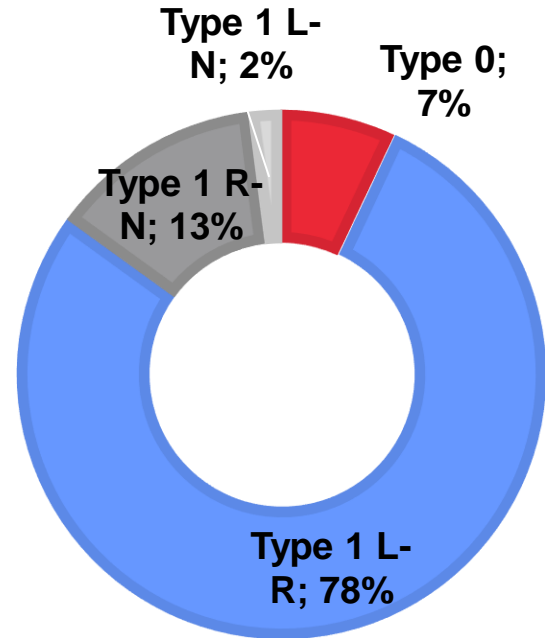
PVL

HALT

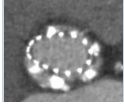
Results – baseline characteristics

- 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 (cm²) = 0.75 (0.21)

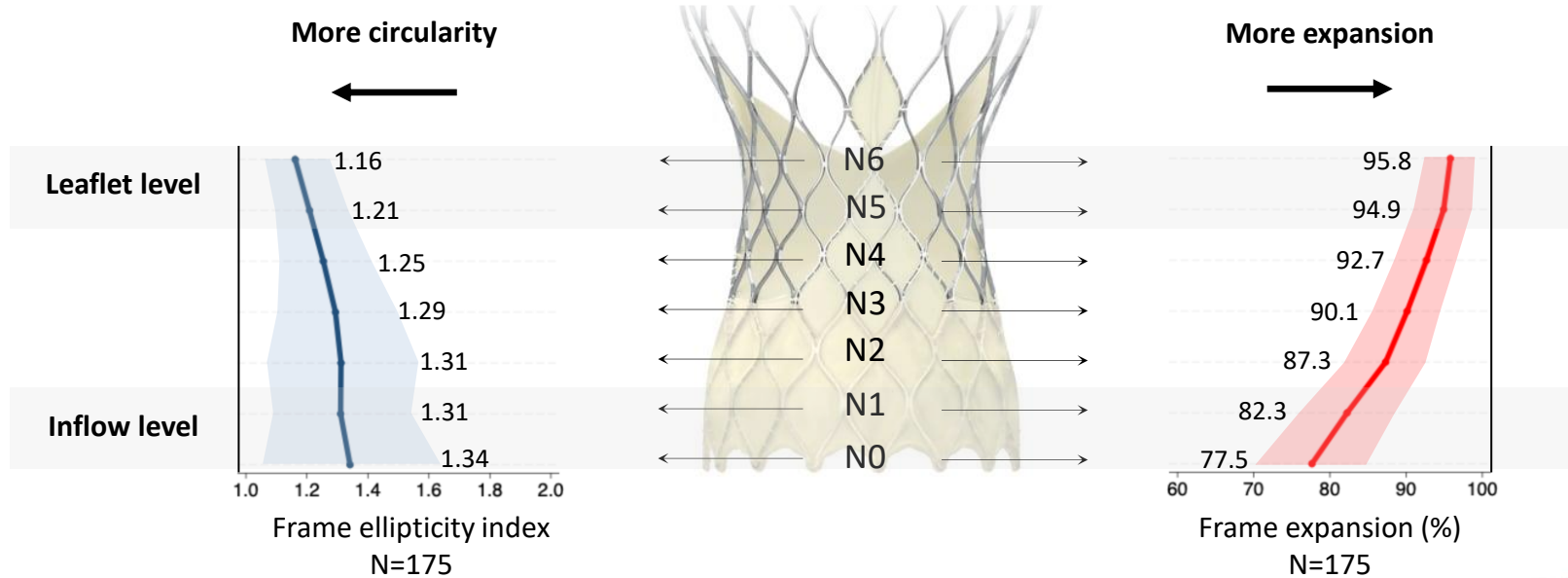
- ***BAV type***



Results



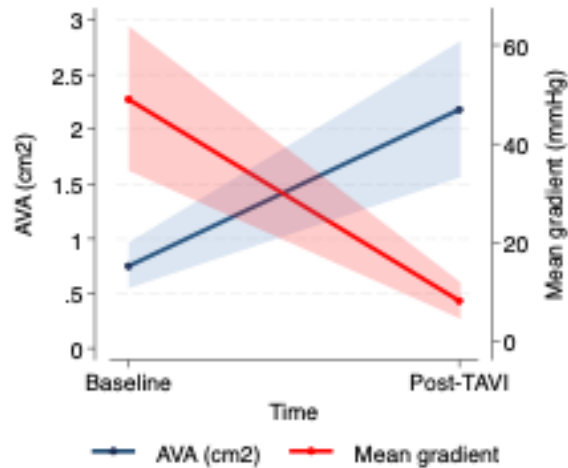
TAV stent frame expansion & ellipticity



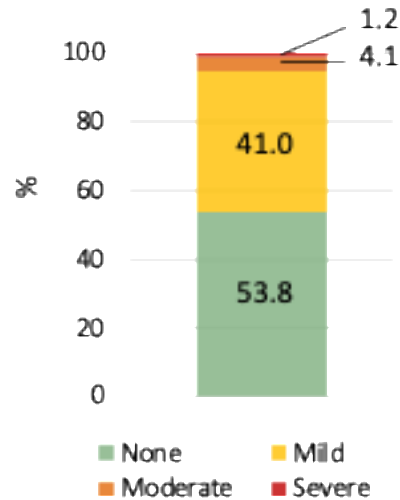
Results

Valve performance

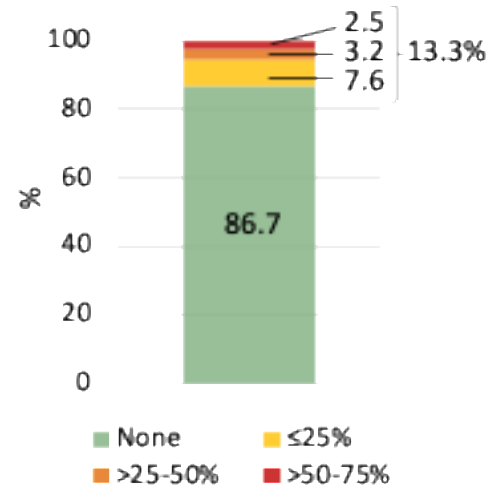
Aortic valve hemodynamic



Paravalvular leak

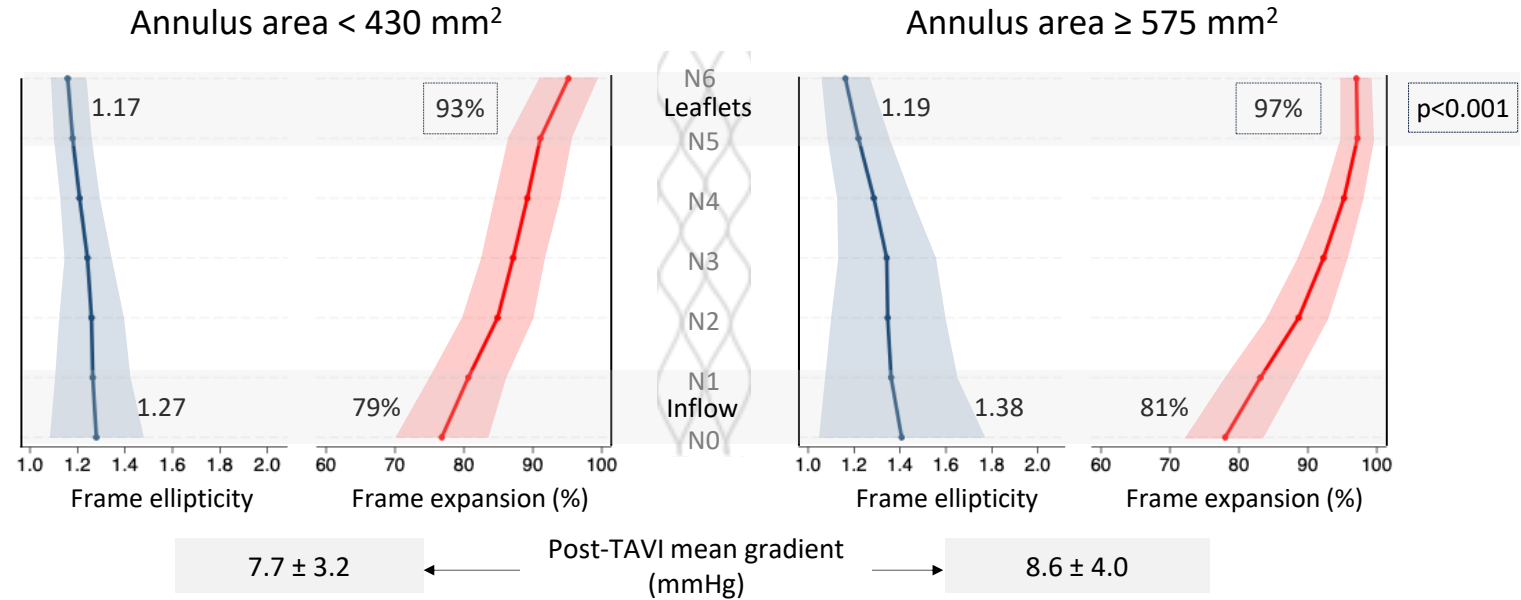


HALT



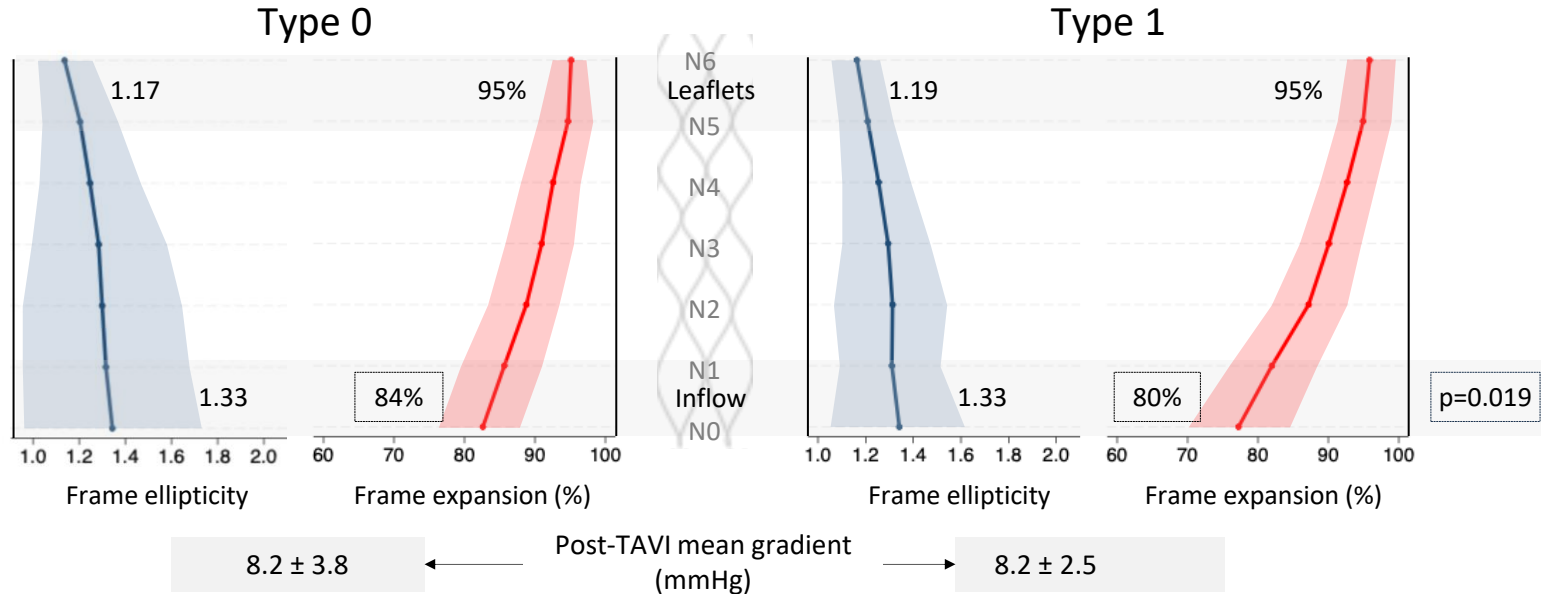
Impact of BAV anatomy

Annulus size



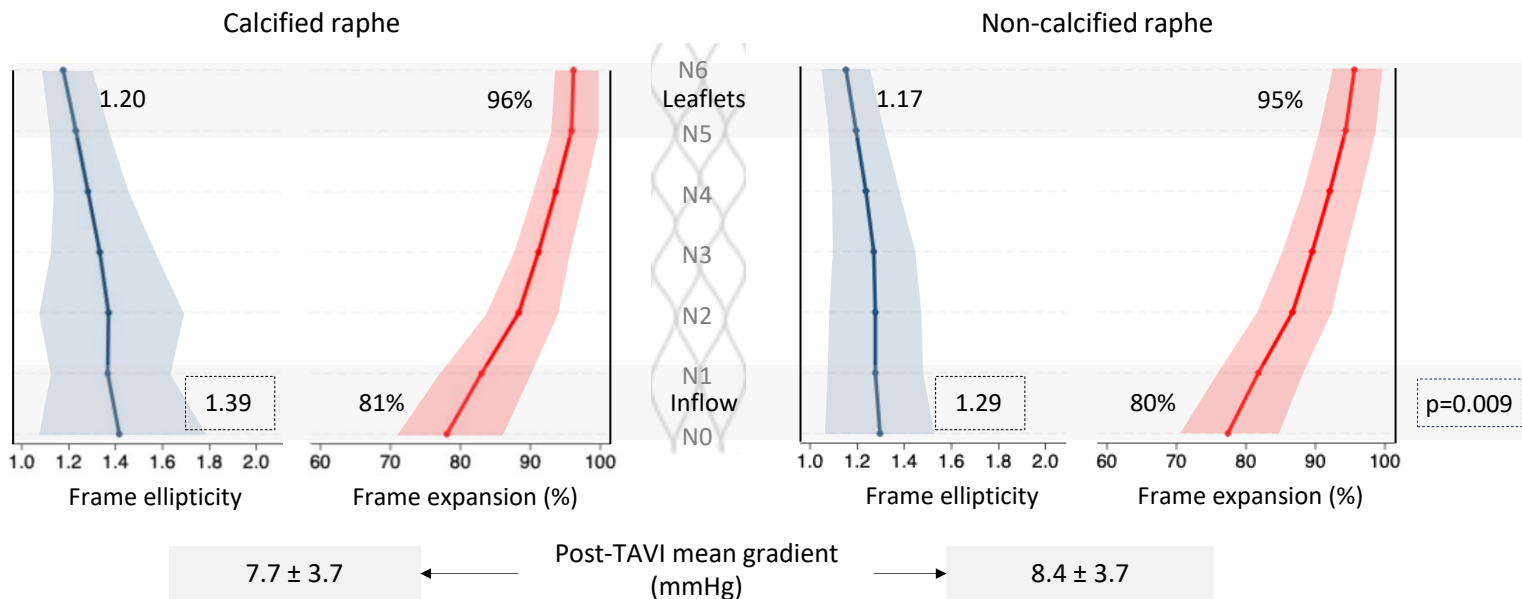
Impact of BAV anatomy

Bicuspid aortic valve Sievers type

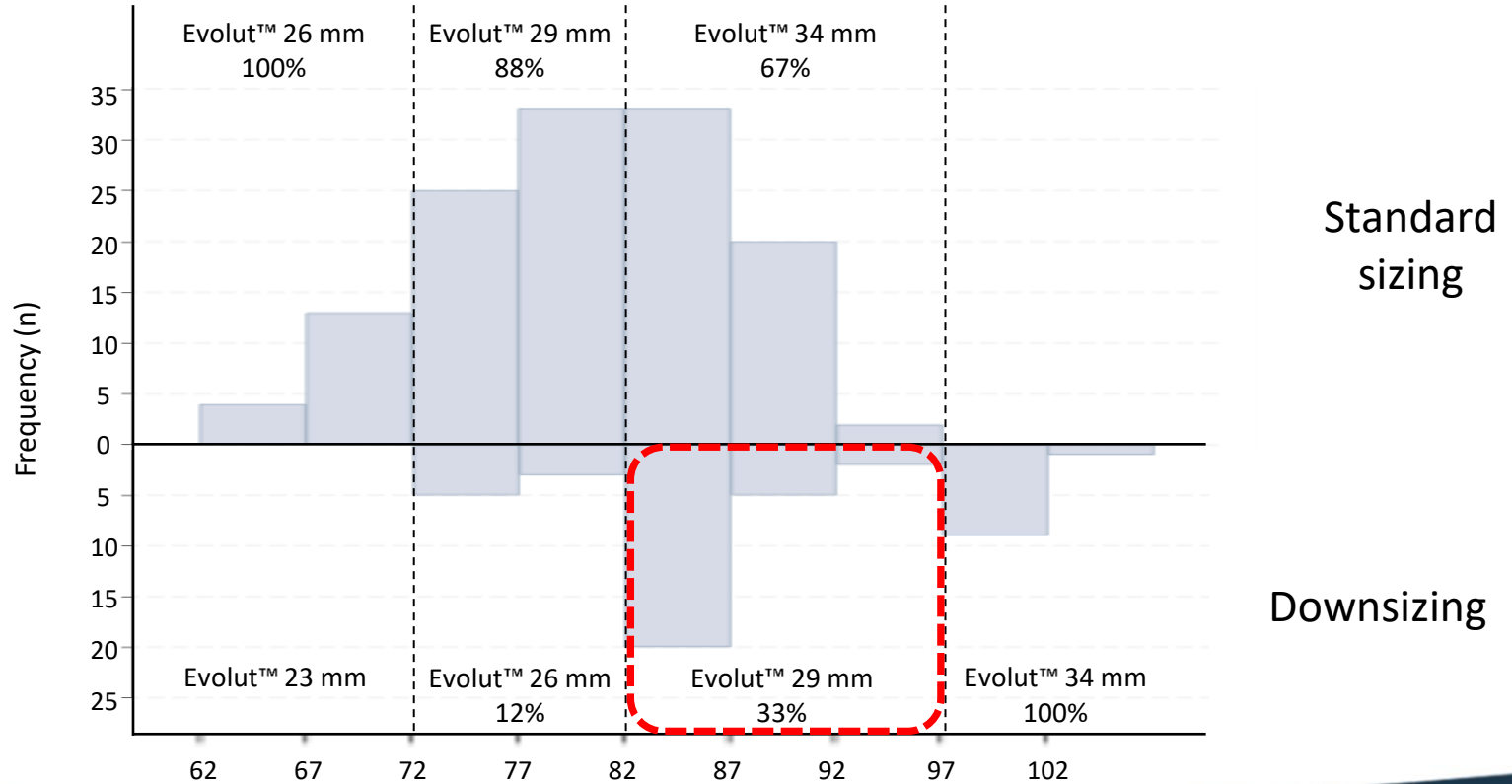


Impact of BAV anatomy

Raphe calcification

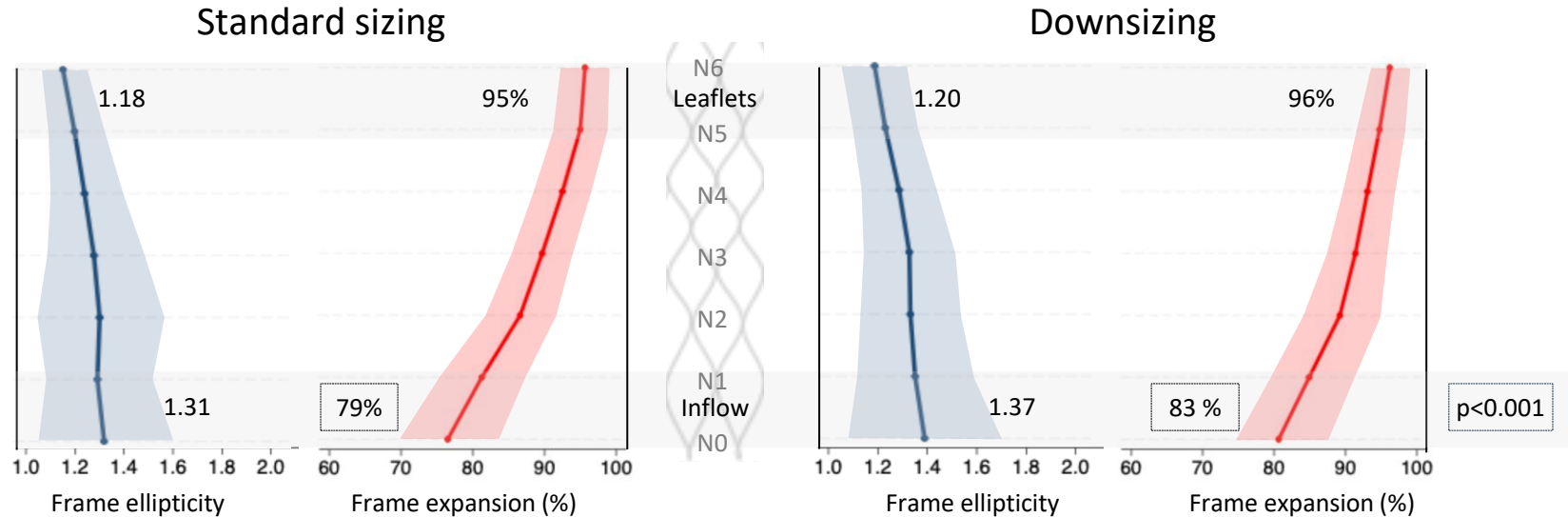


Evolut™ valve sizing



2. Impact of sizing on Evolut™ stent deformation

Evolut™ valve sizing



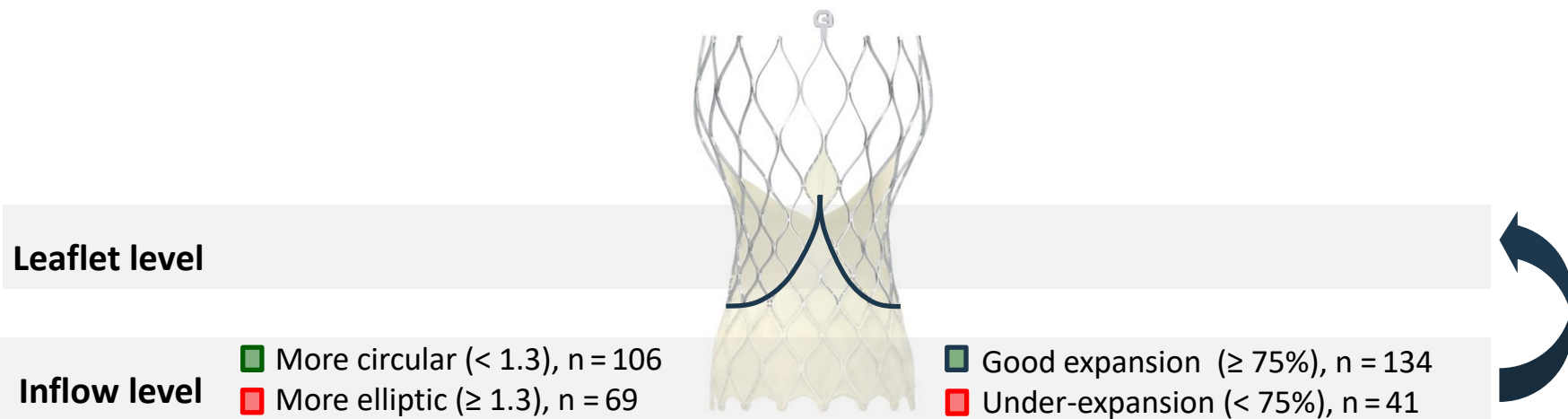
7.7 ± 3.4

Post-TAVI mean
gradient (mmHg)

9.3 ± 4.3

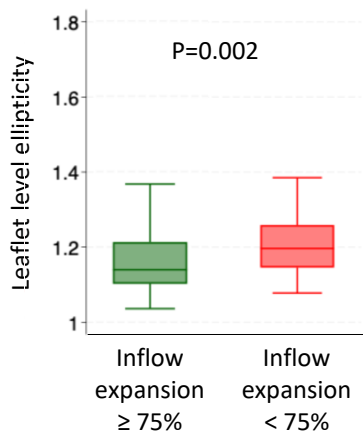
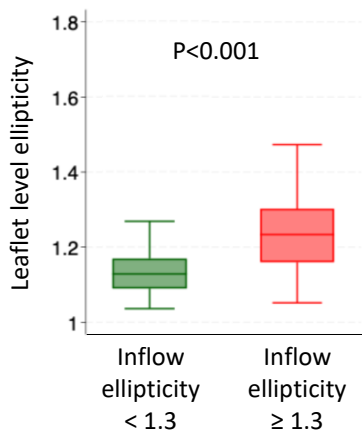
$p = 0.011$

3. Impact of INFLOW on LEAFLETS & PERFORMANCE

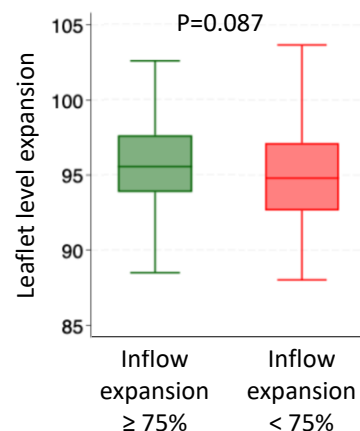
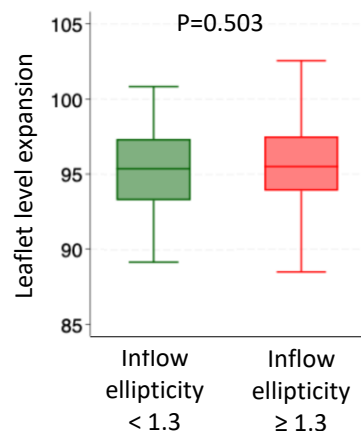


3. Impact of INFLOW on LEAFLETS & PERFORMANCE

Leaflet level ellipticity



Leaflet level expansion

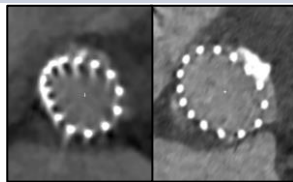


3. Impact of INFLOW on LEAFLETS & PERFORMANCE

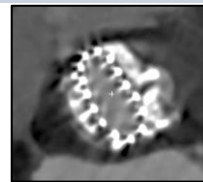
Stent frame at inflow level



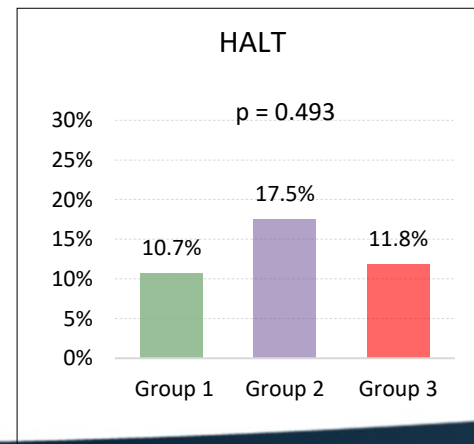
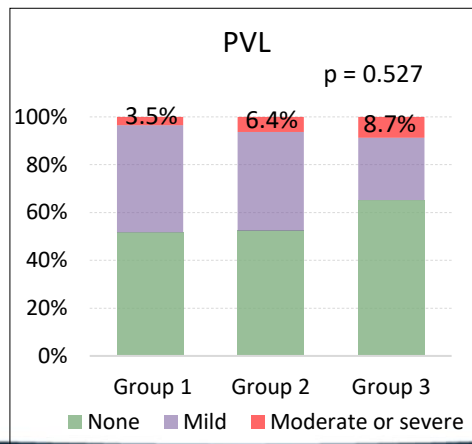
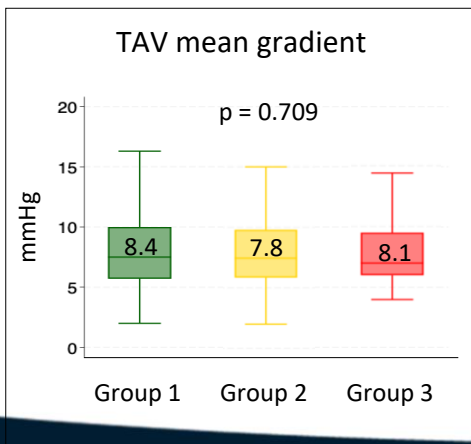
Group 1
No underexpansion or
eccentricity. N=88 (50.3%)



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