76 years old, bicuspid aortic valve stenosis and single vessel coronary artery disease: if TAVI, how?

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V.M. 76 years old woman

Presented to ER after syncope

No previous CV history

Symptomatic with dyspnea class NYHA II and chest pain CCS II

Normal ECG

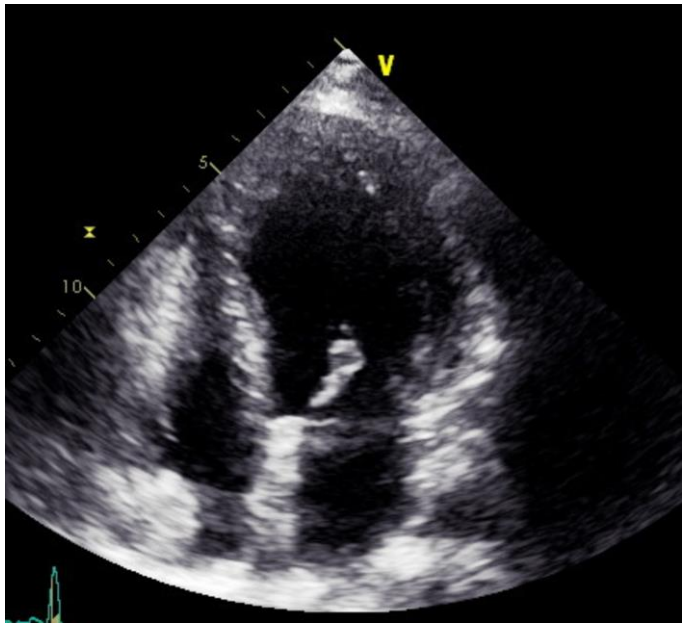
Normal blood tests except BNP 943 pg/mL

Echocardiography

Hypertrophic left ventricle with normal systolic function

AV mean gradient 70 mmHg, calcified valve

Hardly recognizable valve morphology



No other valvular disorders

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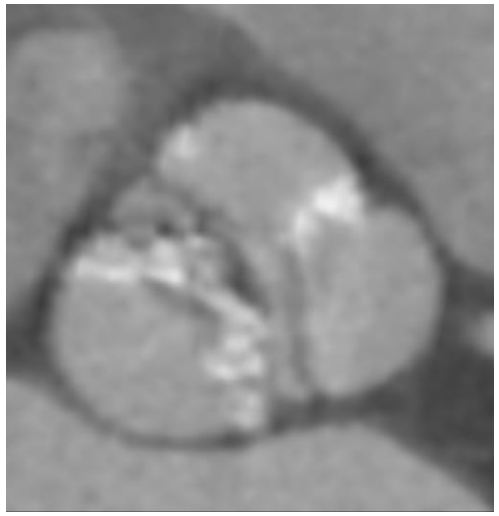
CT SCAN

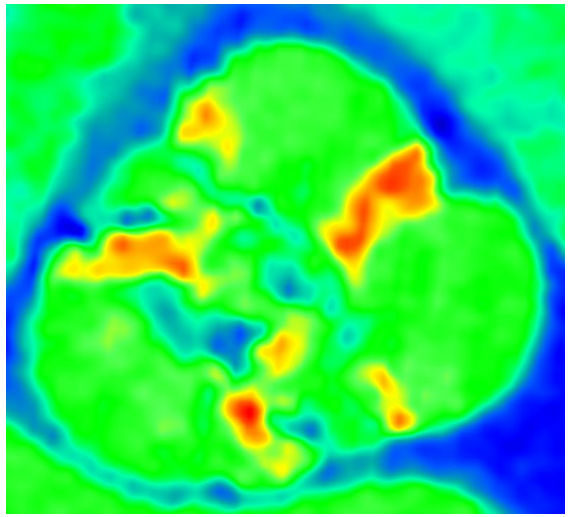
Calcified bicuspid aortic valve
(bi-commissural bicuspid aortic valve with calcific raphe; type 1 R-L)

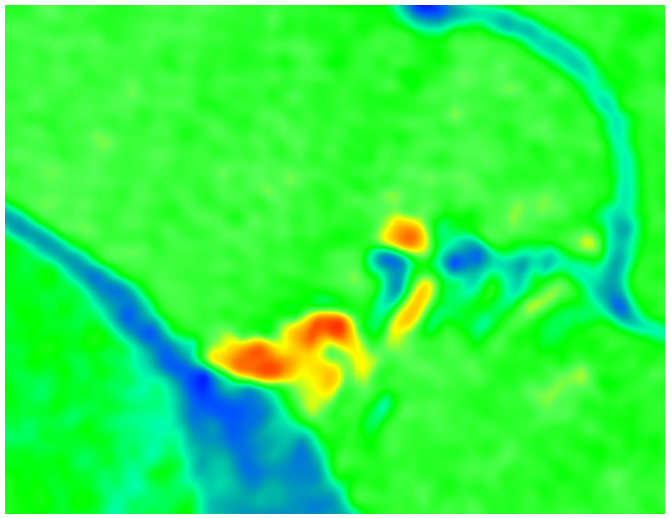
Significant stenosis of left anterior descending coronary artery

Normal dimensions of ascending aorta without mural calcifications

Good caliber of ilio-femoral arteries without significant disease







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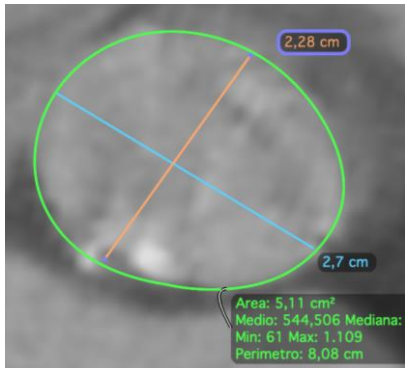
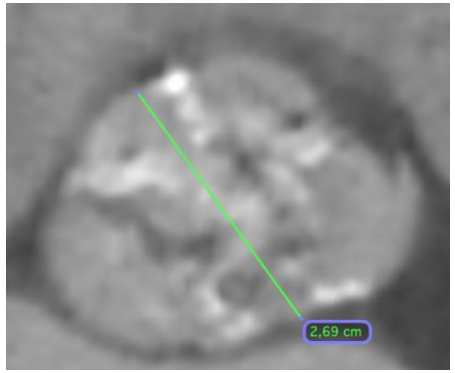
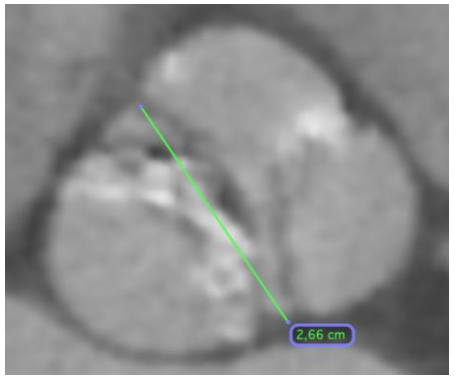
CT SCAN

Annulus: perimeter 80 mm, area 51 mm2, max diameter 27 mm, min diameter 23 mm

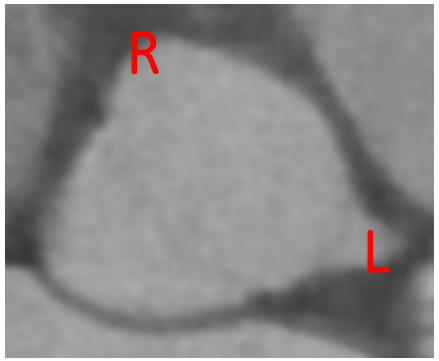


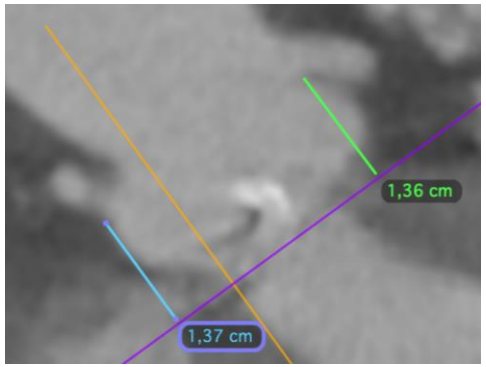




"straight tube" configuration of the valve landing zone:
the intercommissural distance measured at the annular plane and at 4 and 8 mm above the annulus was the same at all three levels

Coronary ostia high above annular plane, with "normal" origin





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HEART TEAM DISCUSSION

76 years old woman

Low surgical risk: Euroscore II 2.3%, STS-Mortality 2.1%.

Anatomy compatible with both good percutaneous and surgical treatment

Patient perspective: refused surgery

TAVR

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PROCEDURAL PLANNING

Cerebral Protection

TAVR first:

Aortic valve predilatation

BSCI acurateNEO 2 “L” implantation with coronary alignment

Aortic valve post-dilatation, if needed

LAD angioplasty if disease confirmed

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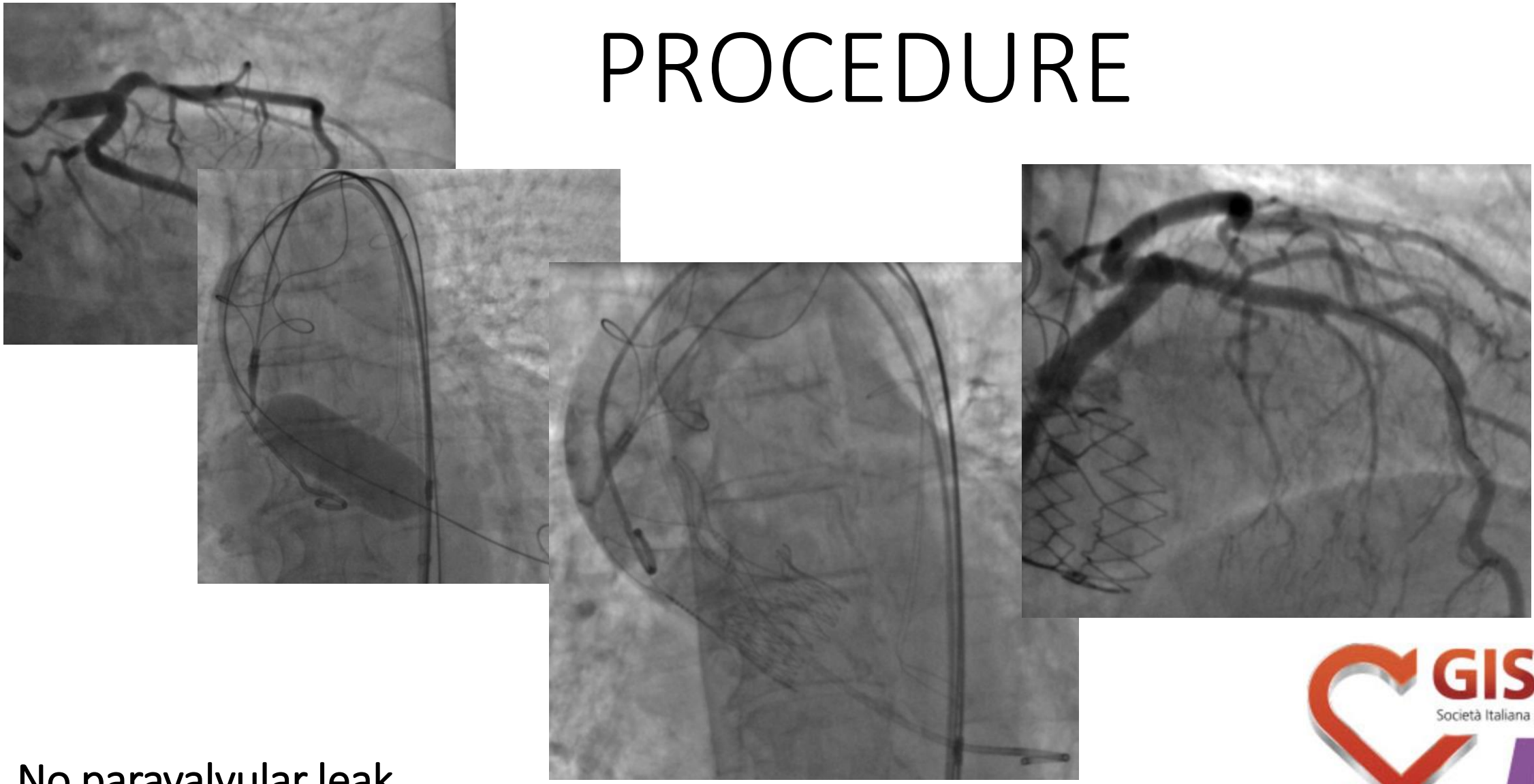
PROCEDURE



No paravalvular leak.
No significant invasive gradient (peak-to-peak < 10 mmHg).
No postdilatation.
Patient was discharged 4 days later, AV mean gradient = 12 mmHg

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CONCLUSIONS

- To safely perform TAVI with bicuspid AV, aortic root and valve landing zone anatomy must be carefully studied with special attention to landing zone conformation, raphe and leaflet calcifications, coronary ostia location and ascending aorta morphology;
- Native aortic valve pre-dilatation and TAVI post-dilatation must be considered in order to achieve the best result possible in terms of paravalvular leaks, transvalvular gradient and valve durability;
- Because bicuspid aortic valve TAVI have a higher risk of stroke, cerebral protection must be considered in all cases

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