

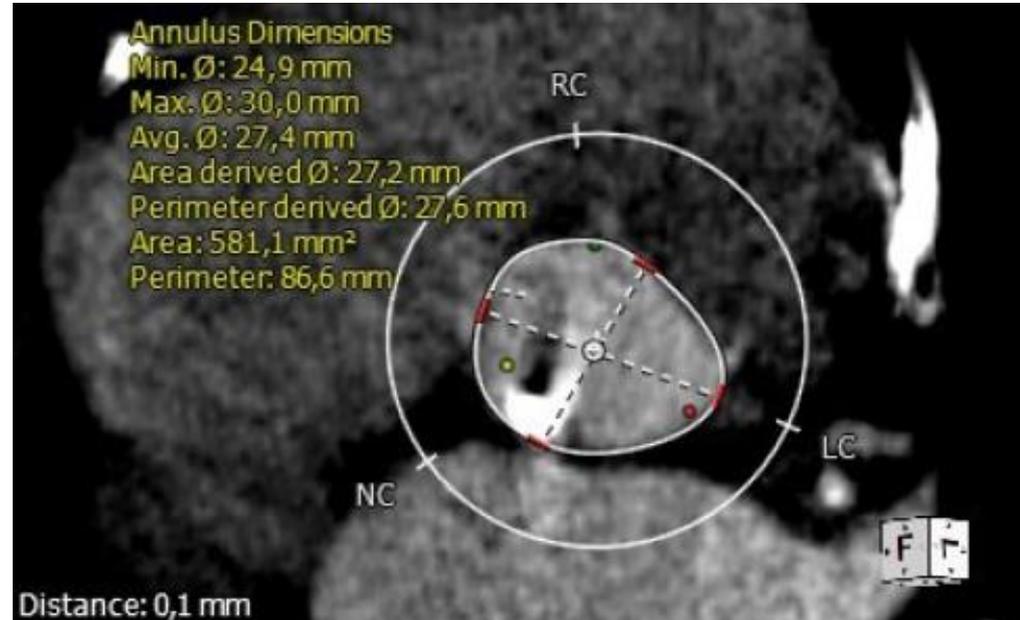
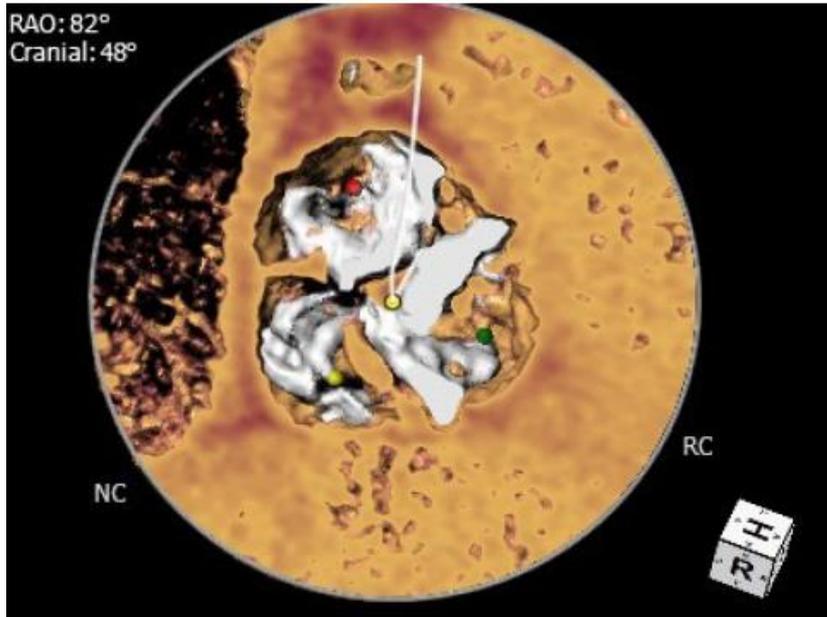
TAVI versus Calcium: Who Will Win?

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The Patient

- **77 year-old male with severe aortic valve stenosis (tricusp), NYHA III**
 - **Vmax 5.4m/s, mean gradient 62mmHg, AVA 0.6cm²**
 - **Left ventricular hypertrophy with hyperdynamic LV contractility (EF 60%)**
- **Coronaries without significant findings (patent stents in RCA and LAD)**
- **Comorbidity profile → intermediate surgical risk**
- **Decision for TAVR with a 34mm self-expandable bioprosthesis via the transfemoral approach**

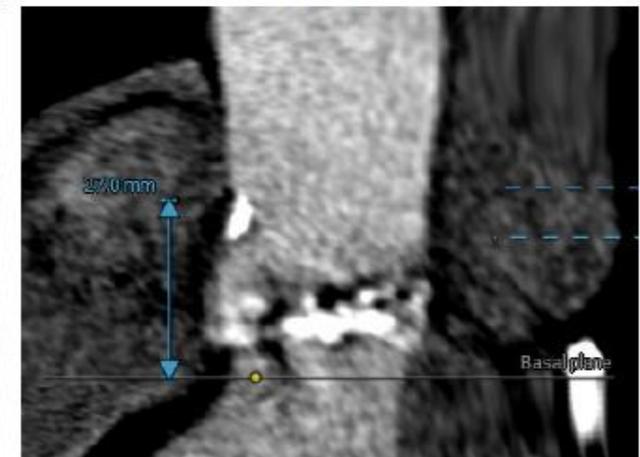
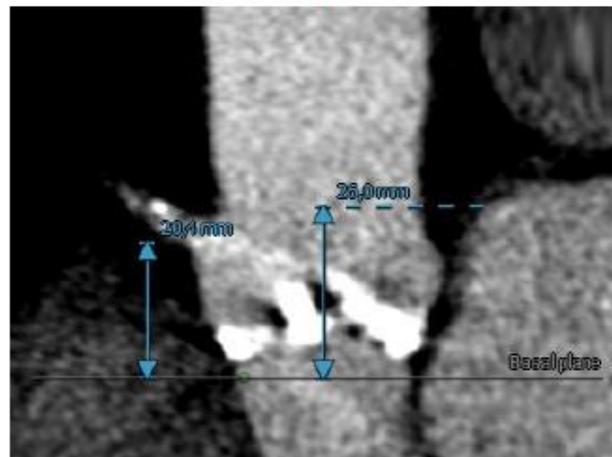
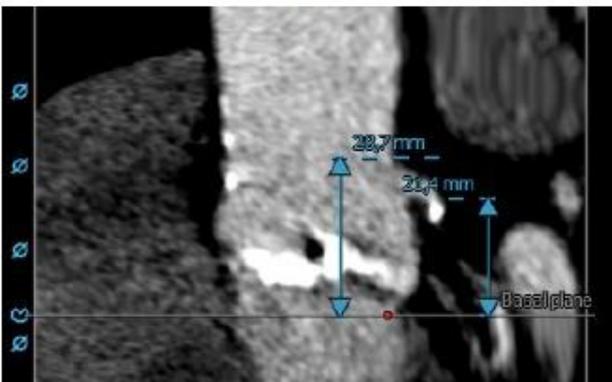
Multidetector CT: Severe calcific aortic stenosis



LCC

RCC

NCC



TAVR: Direct implantation

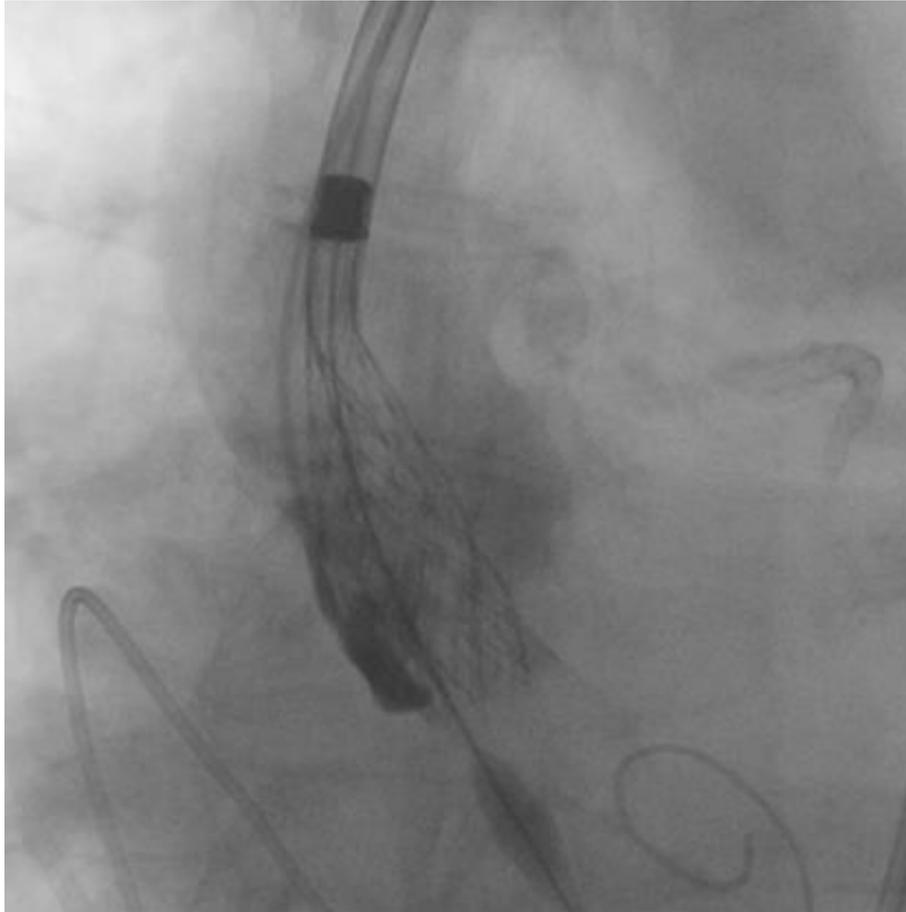


Image shows direct implantation of a 34mm self-expandable aortic bioprosthesis. Even before final release of the valve it is evident that the inflow of the stent frame is severely constrained by the native valve leaflets

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Series 11
Run 11 - Frame 1 / 56
3/20/2018

LAD 6.4°
Caudal 16.6°

L 128
W 266

TAVR: Direct implantation VIDEO

What should be done now??

- A. Change to a different TAVI valve (Sapien)
- B. Perform balloon dilation before deploying
- C. Perform balloon dilation after deploying
- D. Perform only a balloon valvuloplasty, not TAVI
- E. Perform open surgery

TAVR: Balloon Postdilatation (25+28)



- 2 sequential postdilatation attempts with a 25 initially and a 28mm balloon during bursts of rapid ventricular pacing. Both attempts are ineffective in relieving the constraint on the inflow of the valve and in obtaining adequate engagement of the prosthesis on the aortic annulus

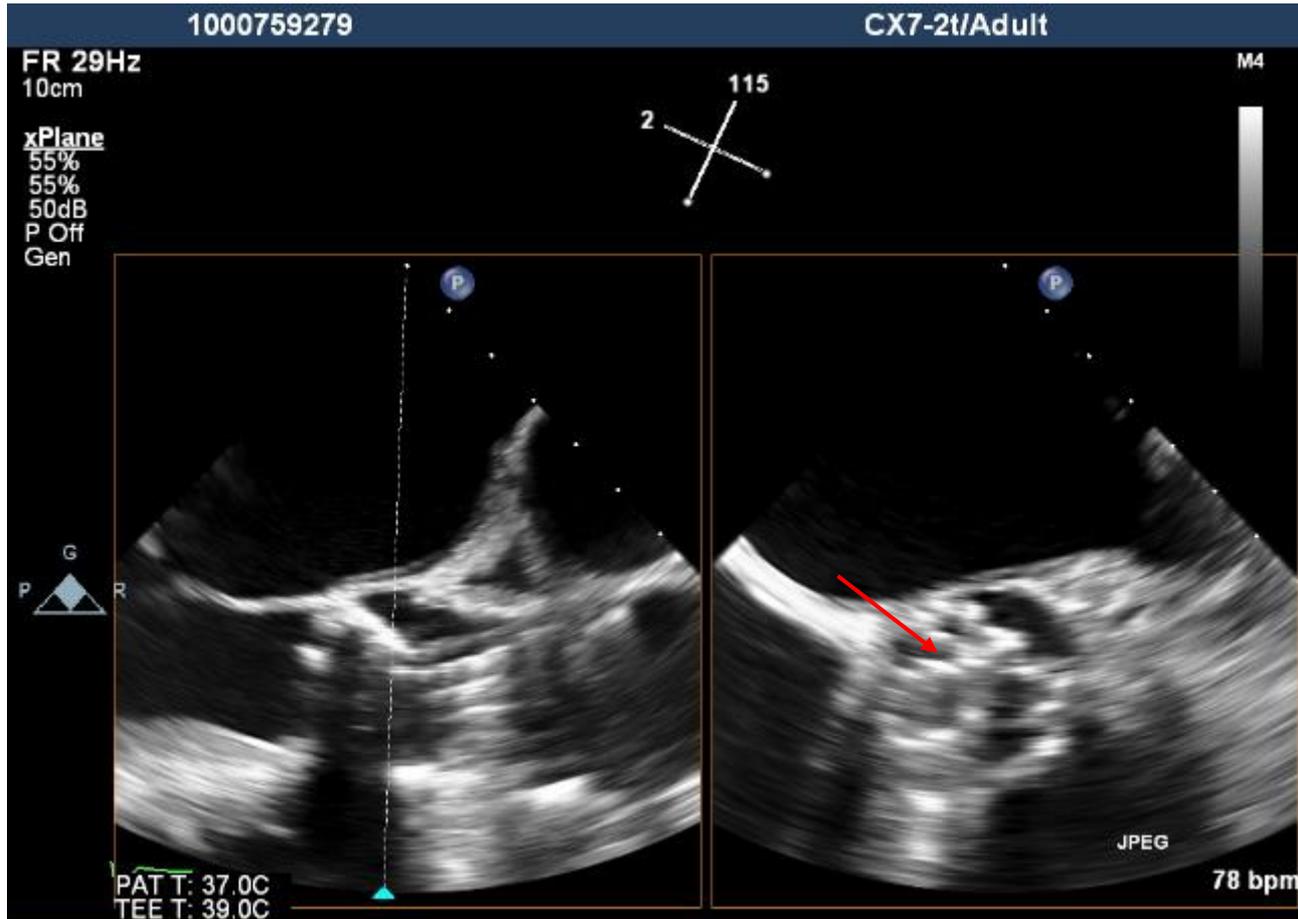
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LAO 4.6°
Caudal 6.8°

L 128
W 256

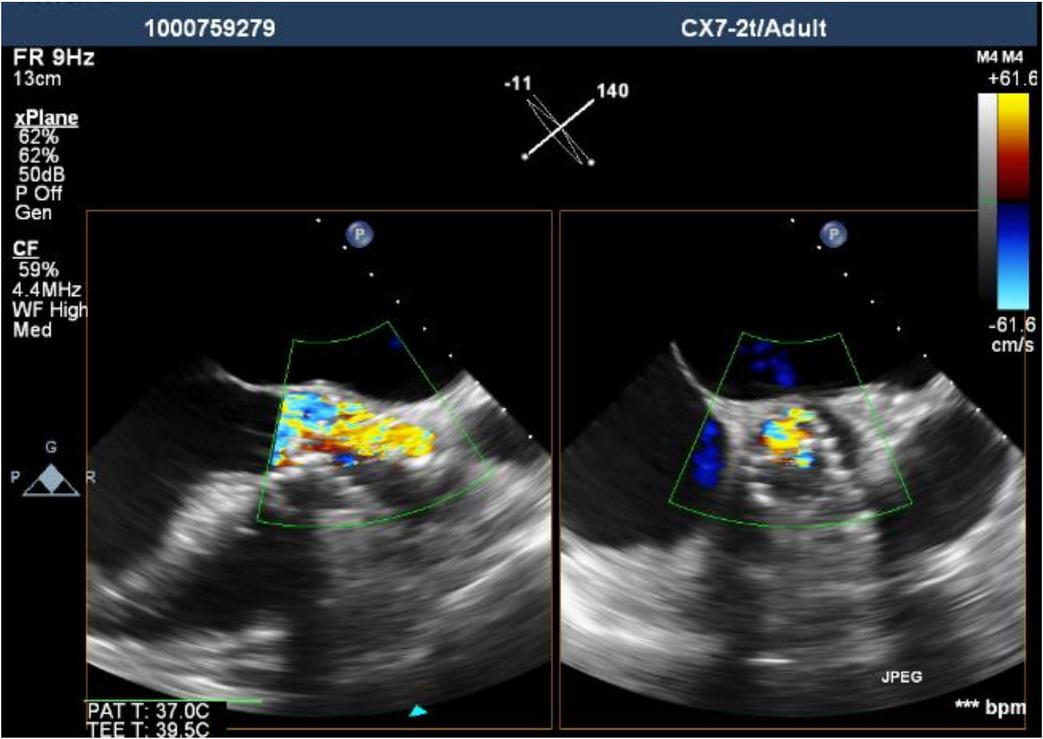
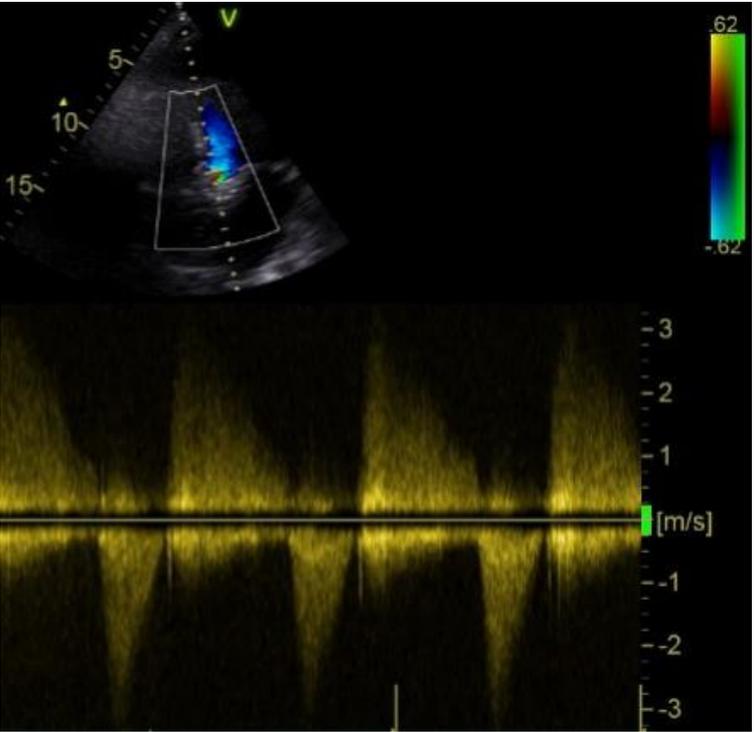
TAVR: Postdilatation VIDEO

Transcatheter valve frame folds inward



The transcatheter valve frame folds inward and loses radial force, thus not able to expand to nominal shape and size

Native Valve Leaflet Prevents Expansion: Severe AI



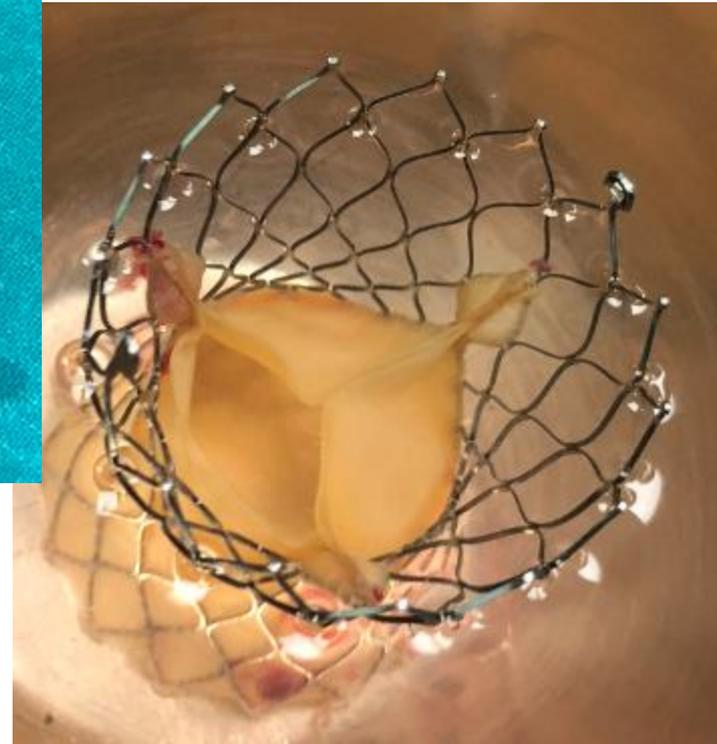
What should be done now??

- A. Repeat echocardiogram in 24 hours
- B. Remove TAVI valve with balloon or snare
- C. Convert to open surgery
- D. Send the patient home

Clinical course

- Discharge from index admission
 - Procedure report states the final peak-to-peak gradient was 10mmHg with mild aortic regurgitation immediately postoperative
- Progressive deterioration over 2-3 weeks with severe heart failure, NYHA IV
- Echocardiography: Severe aortic regurgitation (PHT <200ms), dilatation of the left ventricle with decline in EF to 45%, moderate functional mitral regurgitation and severe pulmonary hypertension
- Referred 4 weeks later for removal of bioprosthesis and surgical AVR (Stented bioprosthesis 23mm)

Surgical Findings



Surgical Findings



Discussion

- Unusual mechanism of structural failure: Crushing of the valve frame by calcified native valve leaflet with inward bend of the frame and loss of radial force
- No improvement with post-dilatation suggests this complication is not remediable
 - Also valve in valve unlikely to have made a difference
- Conversion to surgery only option
- Definite role for predilatation in severely calcified valves to ensure adequate expansion of self-expandable bioprostheses

Σας Ευχαριστώ



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