

Revolutionizing Surgical Aortic Valve Repair

AVaTAR MedTech

Ignacio Lugones, MD PhD



TCT®

TRANSCATHETER
CARDIOVASCULAR
THERAPEUTICS®



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PhD in Medical Sciences

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HOSPITAL DE NIÑOS
DR. PEDRO DE ELIZALDE

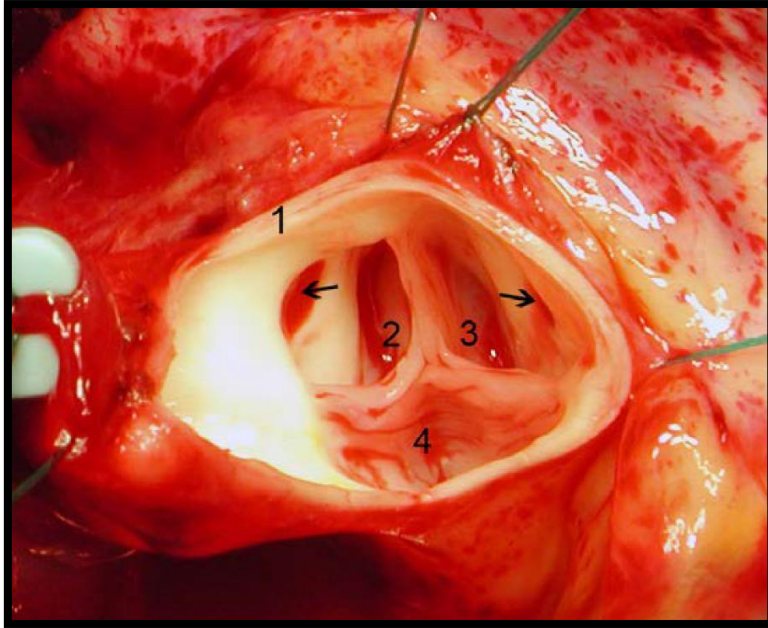


AVaTAR MedTech
Transforming Heart Valve Surgery

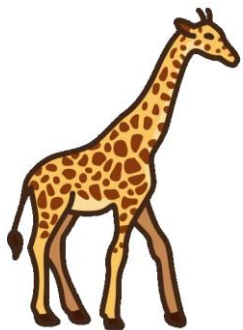


New York

The human healthy aortic valve



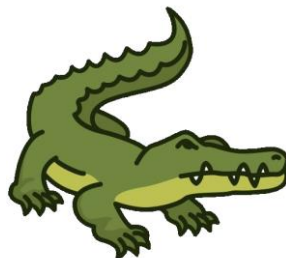
- Trileaflet
- Symmetrical
- Competent
- Non-stenotic
- Grows
- Autologous living tissue



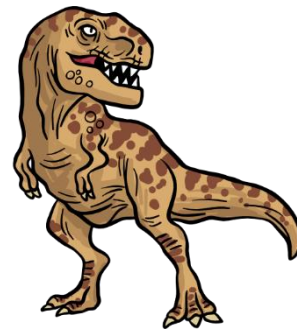
Mammals



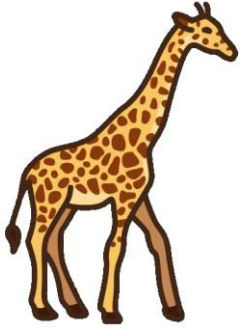
Birds



Reptiles



Dinosaurs



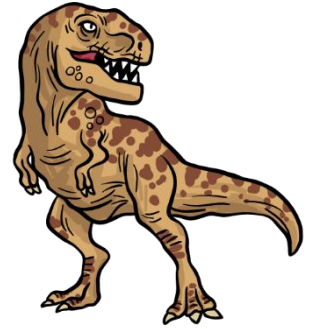
Mammals



Birds



Reptiles

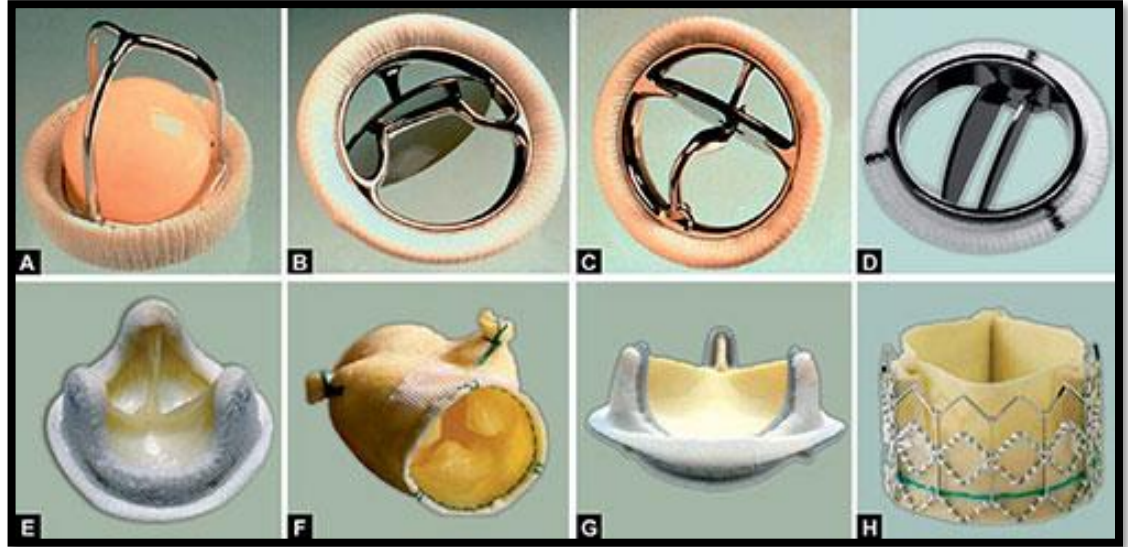


Dinosaurs

All share the same valve morphology!

How did we end up here?

- All foreign material
 - Metal
 - Animal tissue
 - Homograft
- Prone to thrombosis
- Do not accommodate growth

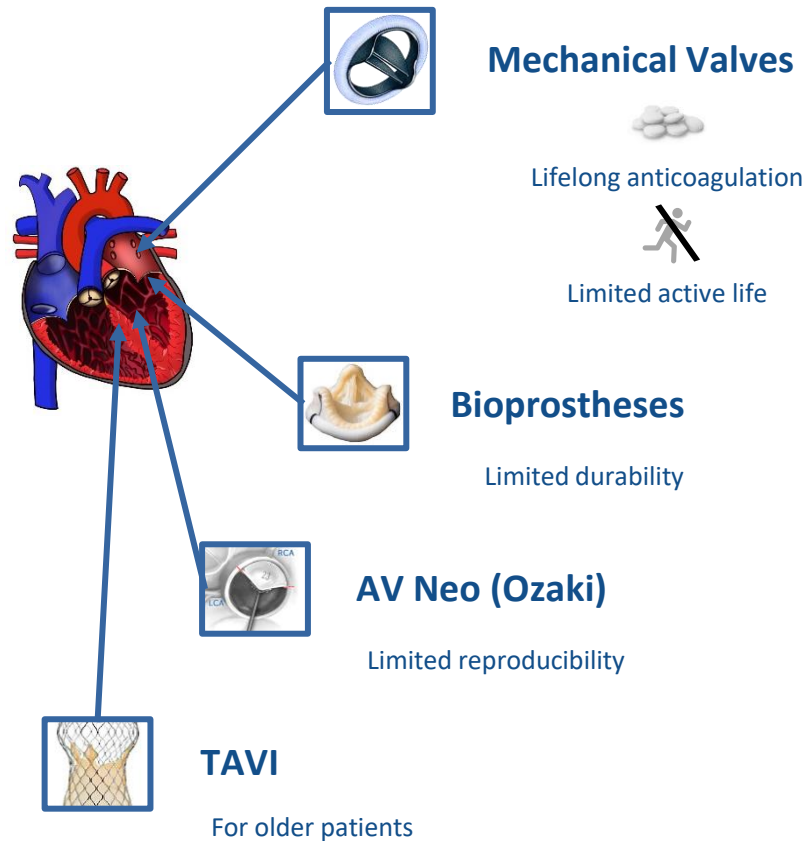


They exist because we never had a reproducible way of creating a neovalve made of autologous living tissue that worked well and was able to accommodate somatic growth.

Adult Patients



Suboptimal treatments



Pediatric Patients

Extremely challenging



Mechanical Valves

Lifelong anticoagulation

Do not grow – **not available in small sizes**



Bioprostheses

Limited durability

Do not grow – **not available in small sizes**



Valvuloplasty

Suboptimal results & difficult



AV Neo (Ozaki)

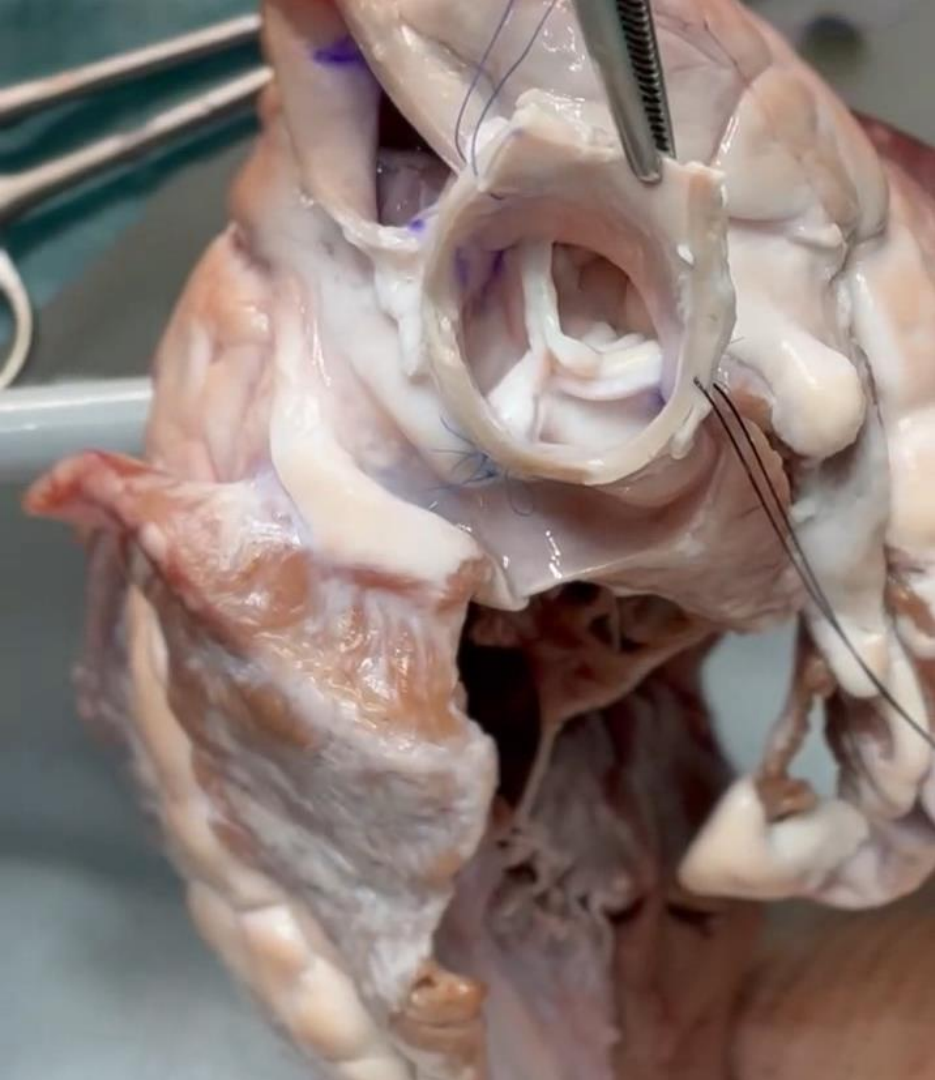
Not designed for children



Ross

Challenging and risky

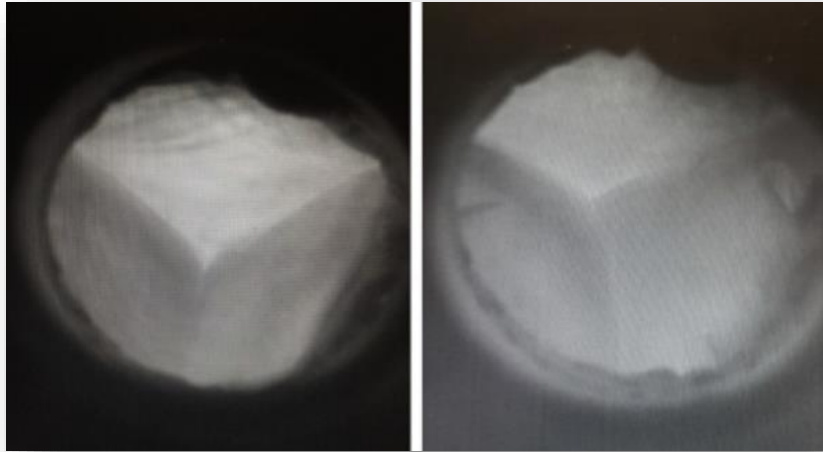
Maybe it's time to try mimicking Mother Nature...



The
AVaTAR
valve

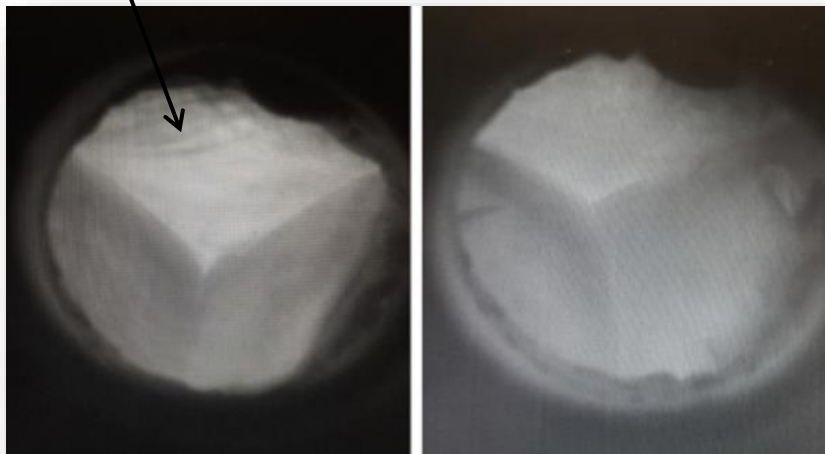
- ✓ • Trileaflet
- ✓ • Symmetrical
- ✓ • Competent
- ✓ • Non-stenotic
- ✓ • Accommodates growth
- ✓ • Autologous living tissue

In Vitro Test



In Vitro Test

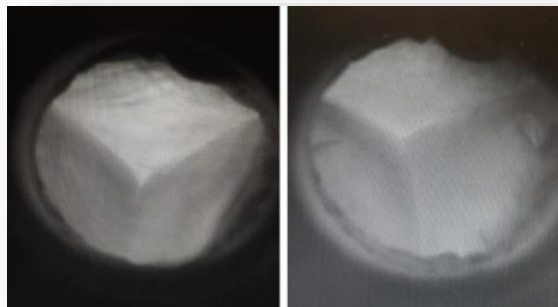
Fiber bundles



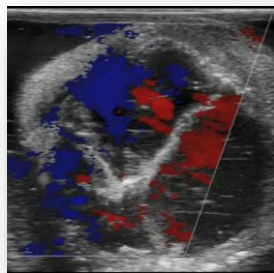
Native

Δ VaT Δ R

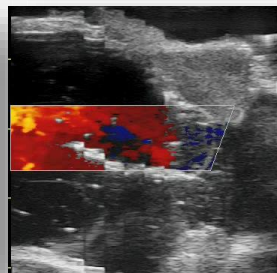
In Vitro Test



$\Delta V_a \Delta R$



No stenosis

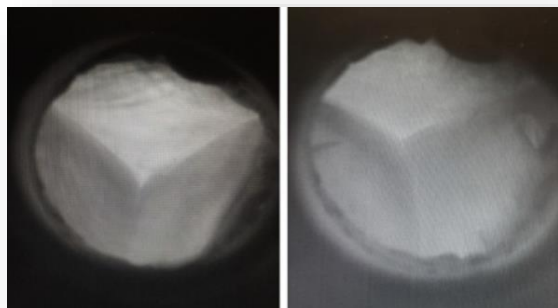


No regurgitation

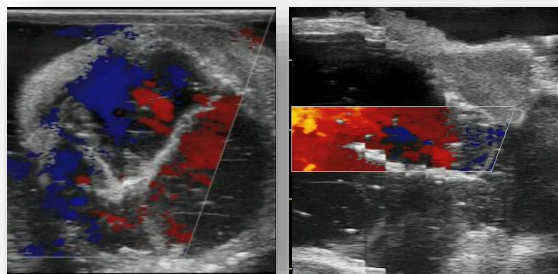
In Vitro Test



In Vivo Test

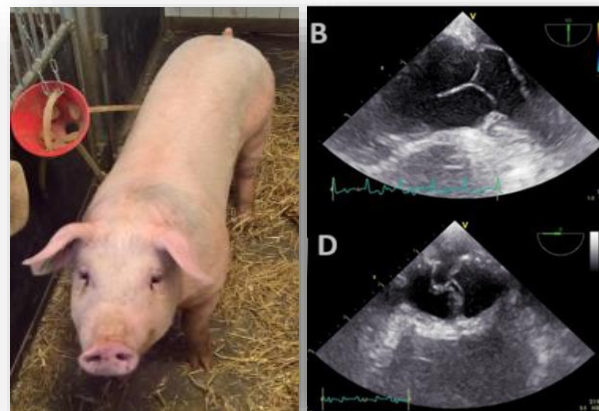


$\Delta V_a T \Delta R$



No stenosis

No regurgitation



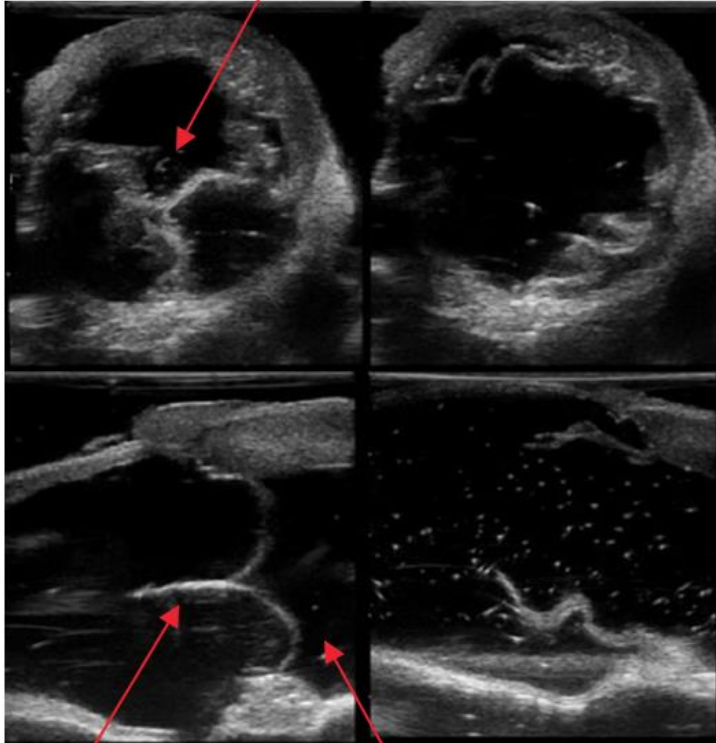
No stenosis

No regurgitation

Oversized new valve

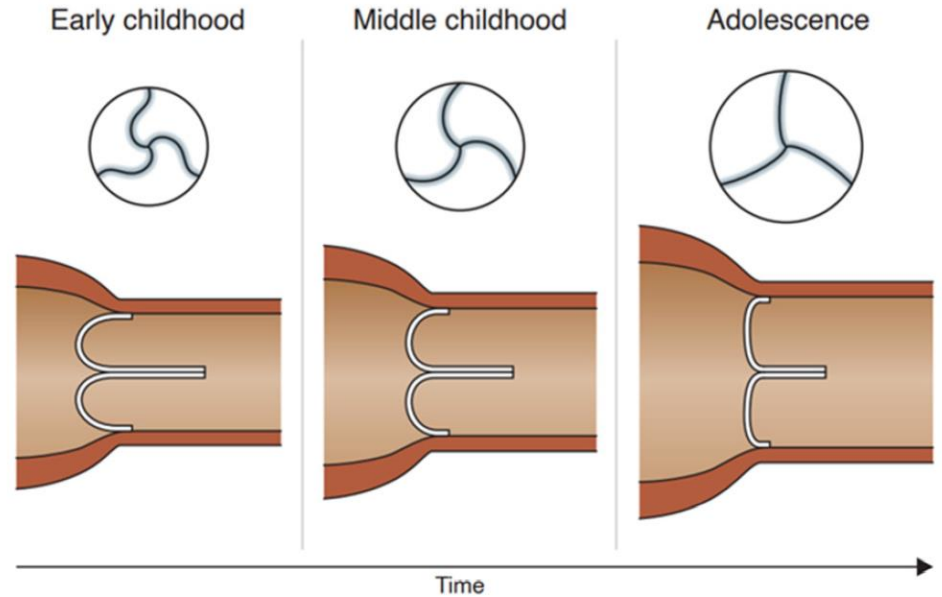


Windmill shape



Increased
coaptation

Negative
billow



ΔVαTΔR

accommodates
growth in children

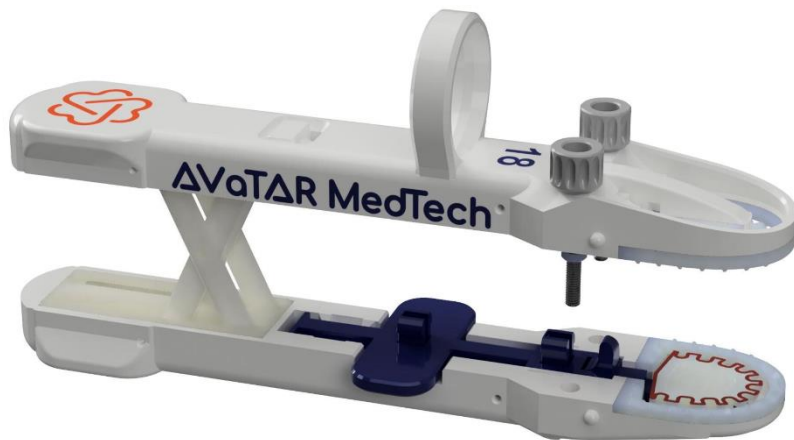


12 mm

**How can this be achieved by any surgeon
in a very easy and reproducible manner?**



Disposable set of surgical tools



WIPO | PCT
The International
Patent System

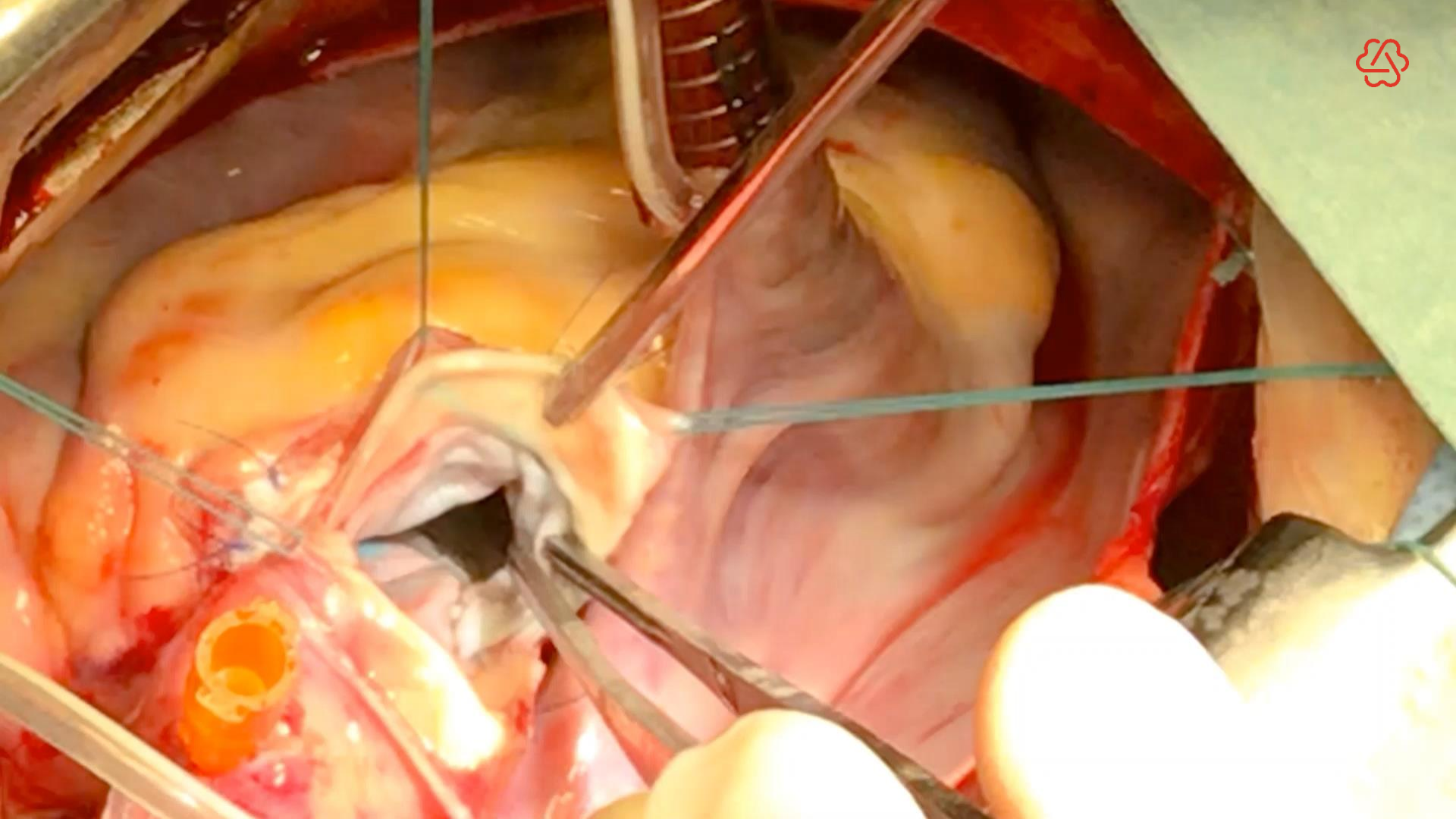
Patent Submitted

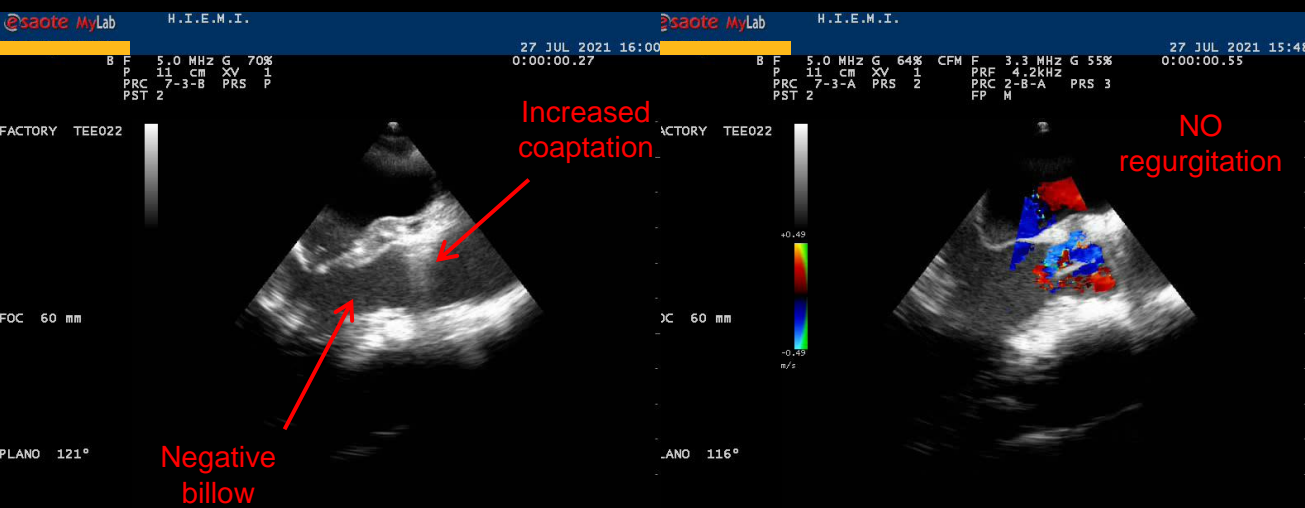
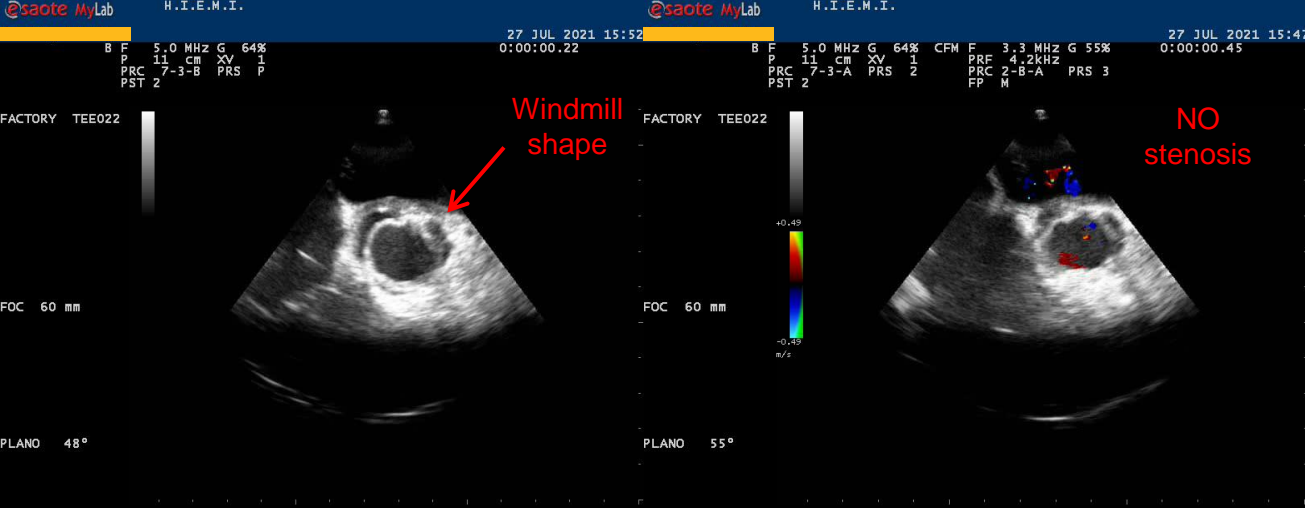


Expected CLASS I
510(k) exempt



Reimbursed under
existing codes





6 yo patient
Severe AR
(post-valvuloplasty)

1 week after the AVaTAR procedure
using autologous fresh pericardium

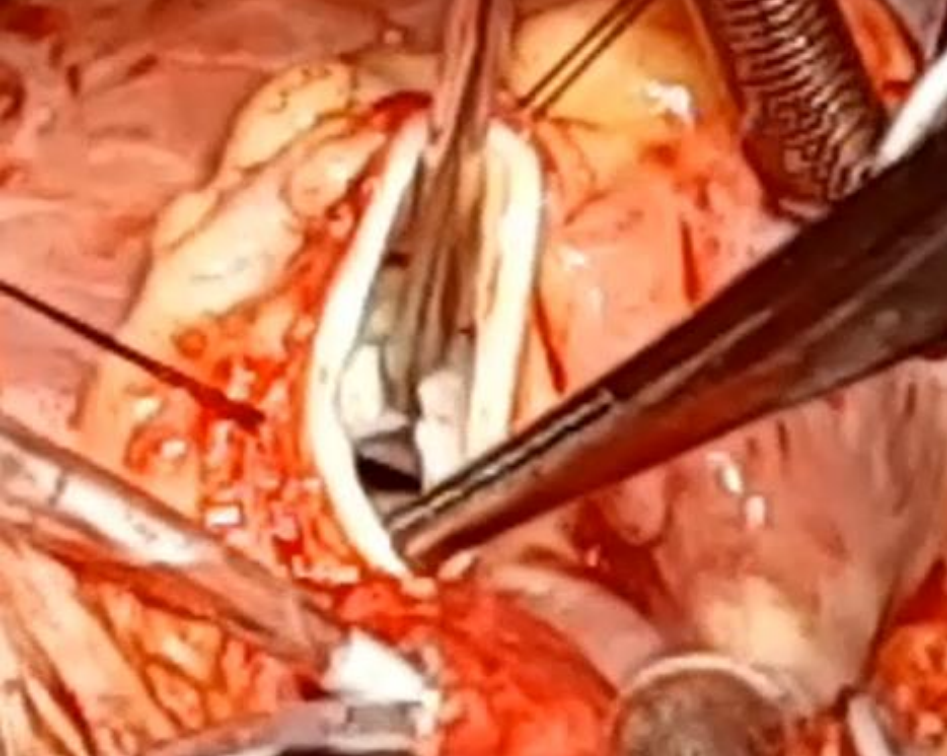
Last patient

Gala

3 years-old with severe
aortic stenosis & regurgitation

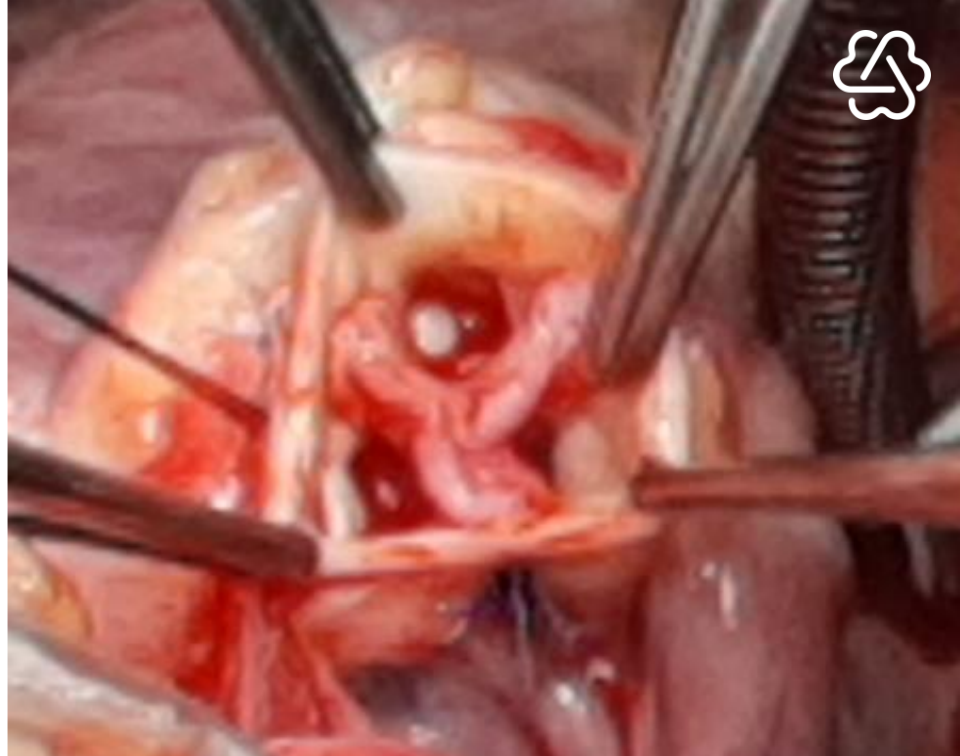
Just before surgery





*Native
valve*

AVaTAR



*New
valve*





Gala

**Having breakfast 2 days
after the operation**



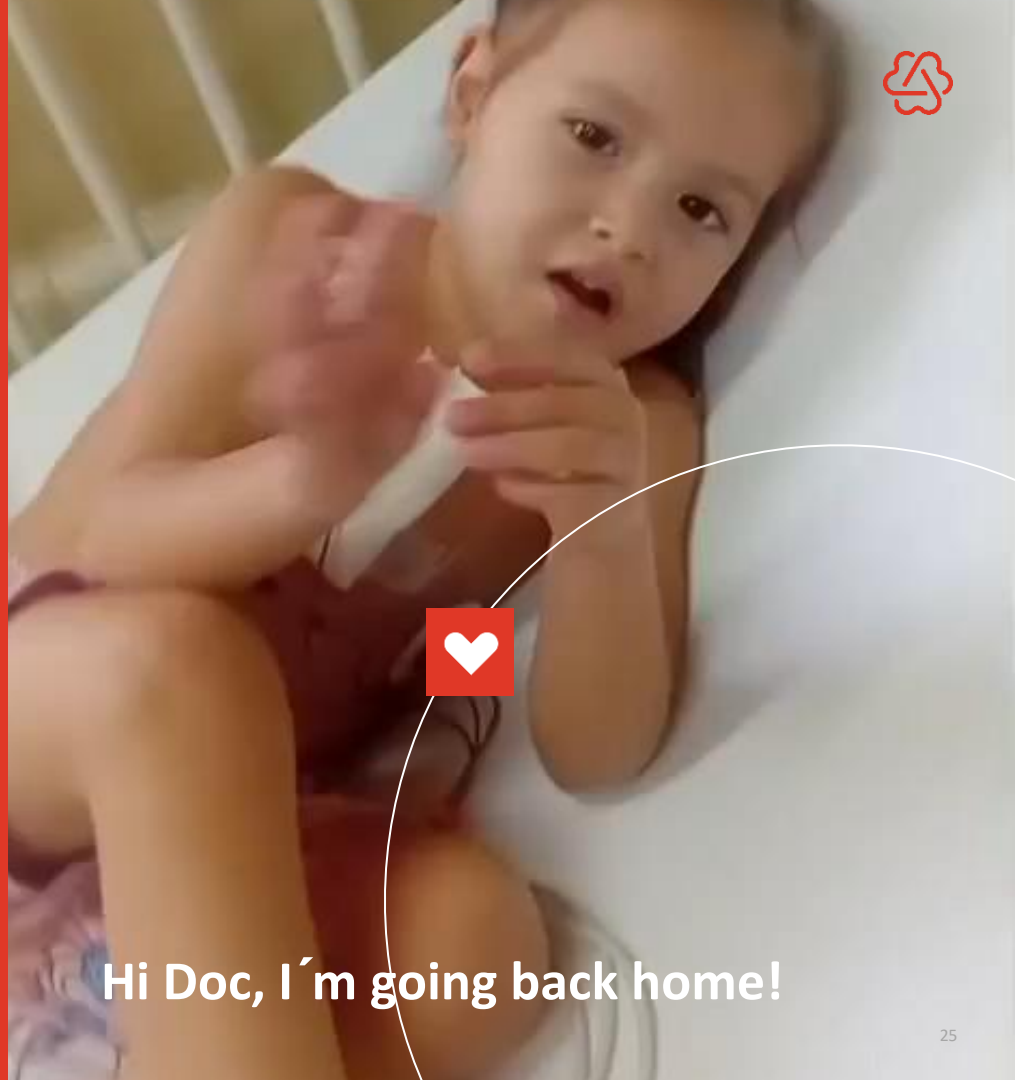
Gala

Walking around the hospital
on the 3rd postop day



5 days after
the operation

Gala going
back home!



Hi Doc, I'm going back home!

Thank you for your attention

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