

Revolutionizing Surgical Aortic Valve Repair

AVaTAR MedTech

Ignacio Lugones, MD PhD



TRANSCATHETER
CARDIOVASCULAR
THERAPEUTICS®



Ignacio Lugones

Pediatric & Congenital Cardiac Surgeon

PhD in Medical Sciences

Co-founder & CSO at AVaTAR MedTech



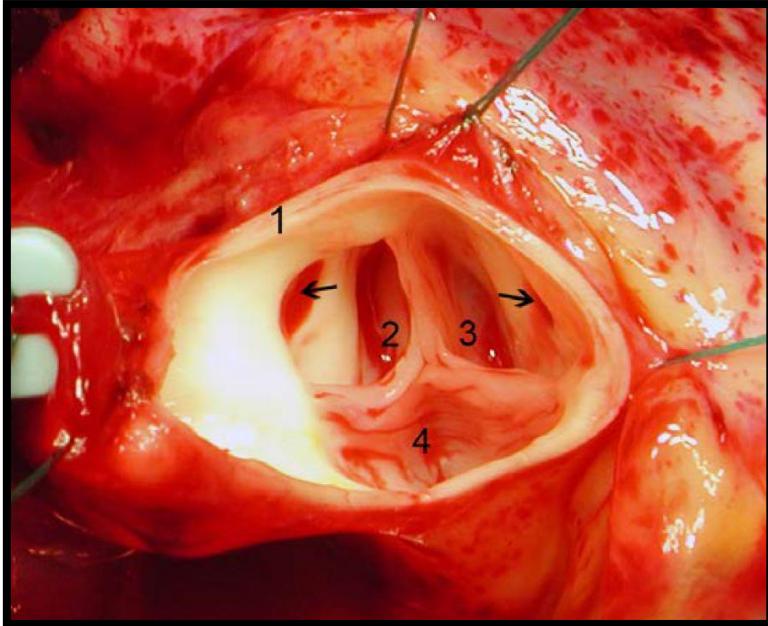
HOSPITAL DE NIÑOS
DR. PEDRO DE ELIZALDE



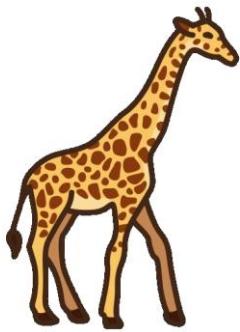
AVaTAR MedTech
Transforming Heart Valve Surgery

LIU
New York

The human healthy aortic valve



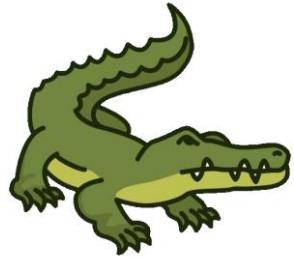
- Trileaflet
- Symmetrical
- Competent
- Non-stenotic
- Grows
- Autologous living tissue



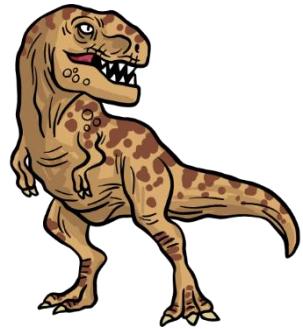
Mammals



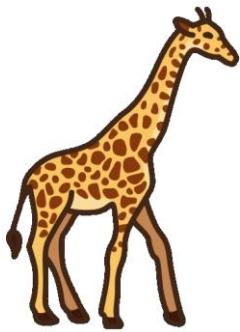
Birds



Reptiles



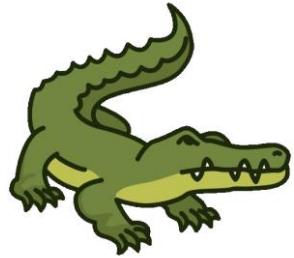
Dinosaurs



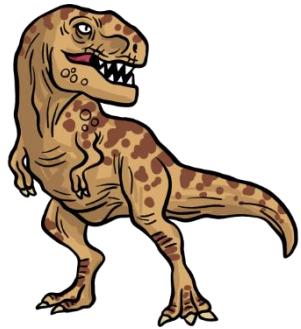
Mammals



Birds



Reptiles

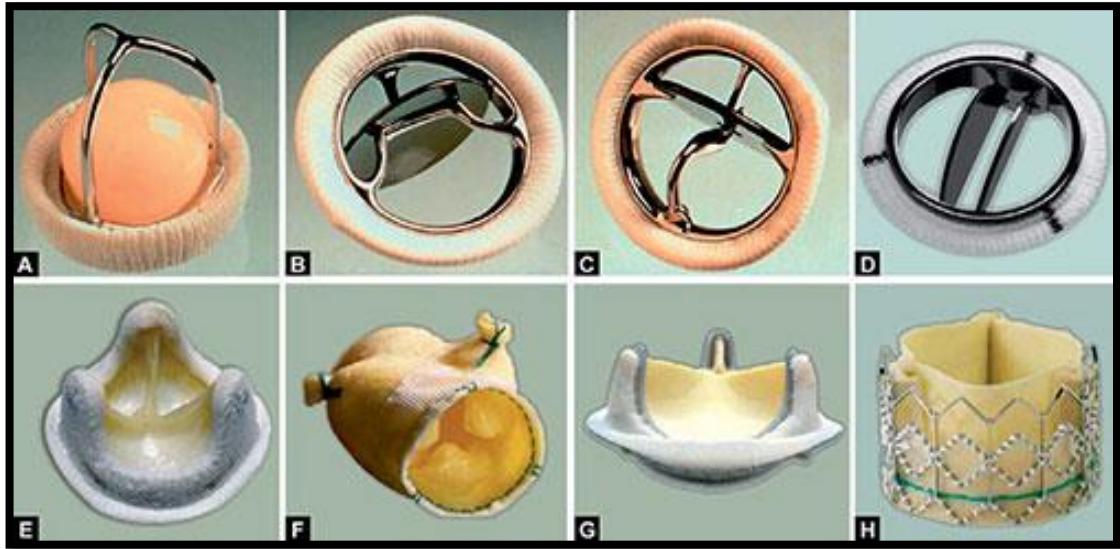


Dinosaurs

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

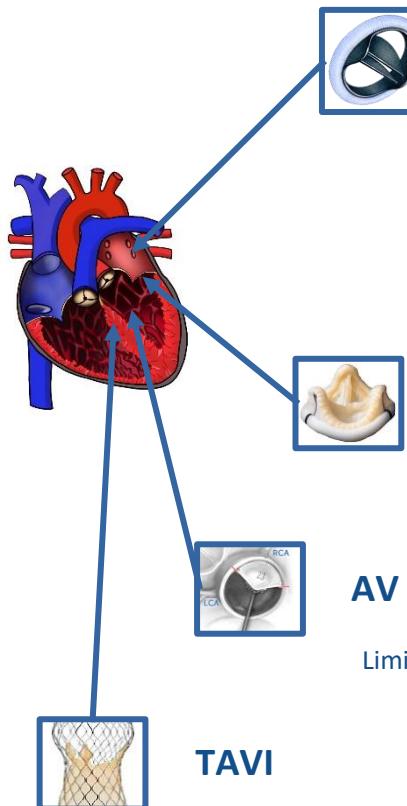


They exist because we never had a reproducible way of creating a neovalve made of autologous living tissue that worked well and was able to accommodate somatic growth.

Adult Patients



Suboptimal treatments



Mechanical Valves



Lifelong anticoagulation



Limited active life

Bioprostheses

Limited durability

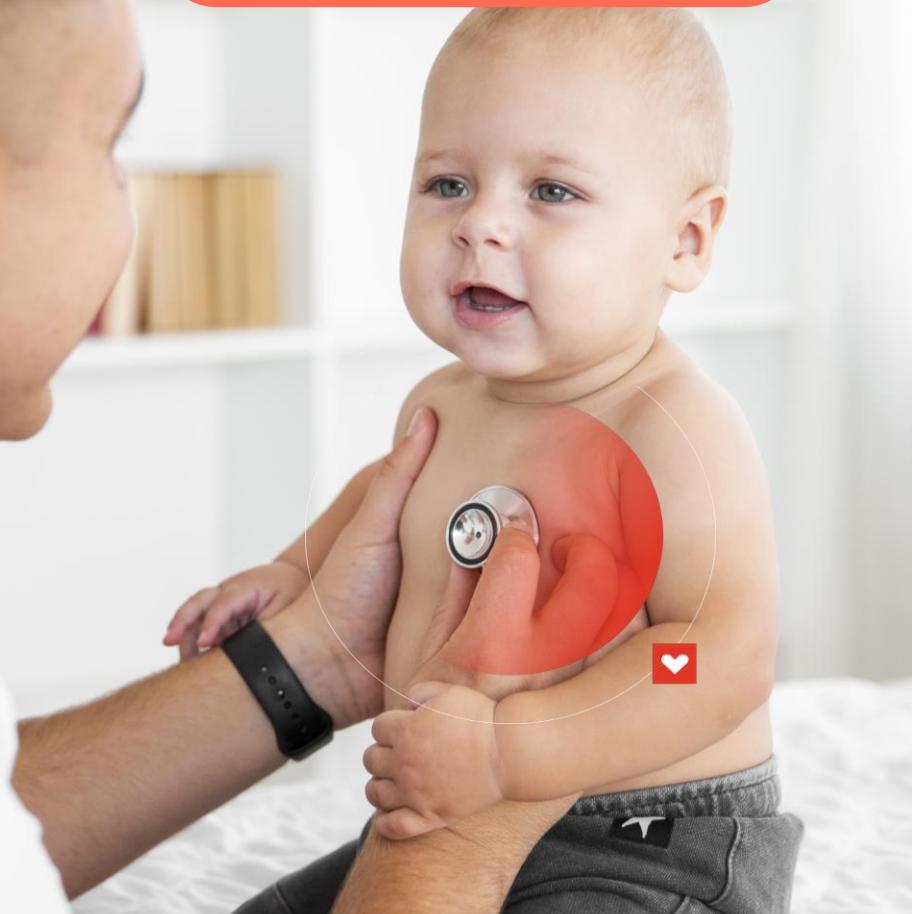
AV Neo (Ozaki)

Limited reproducibility

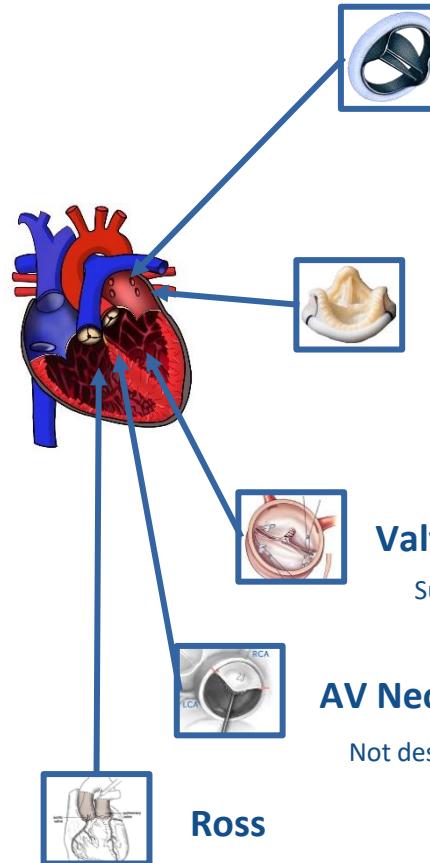
TAVI

For older patients

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

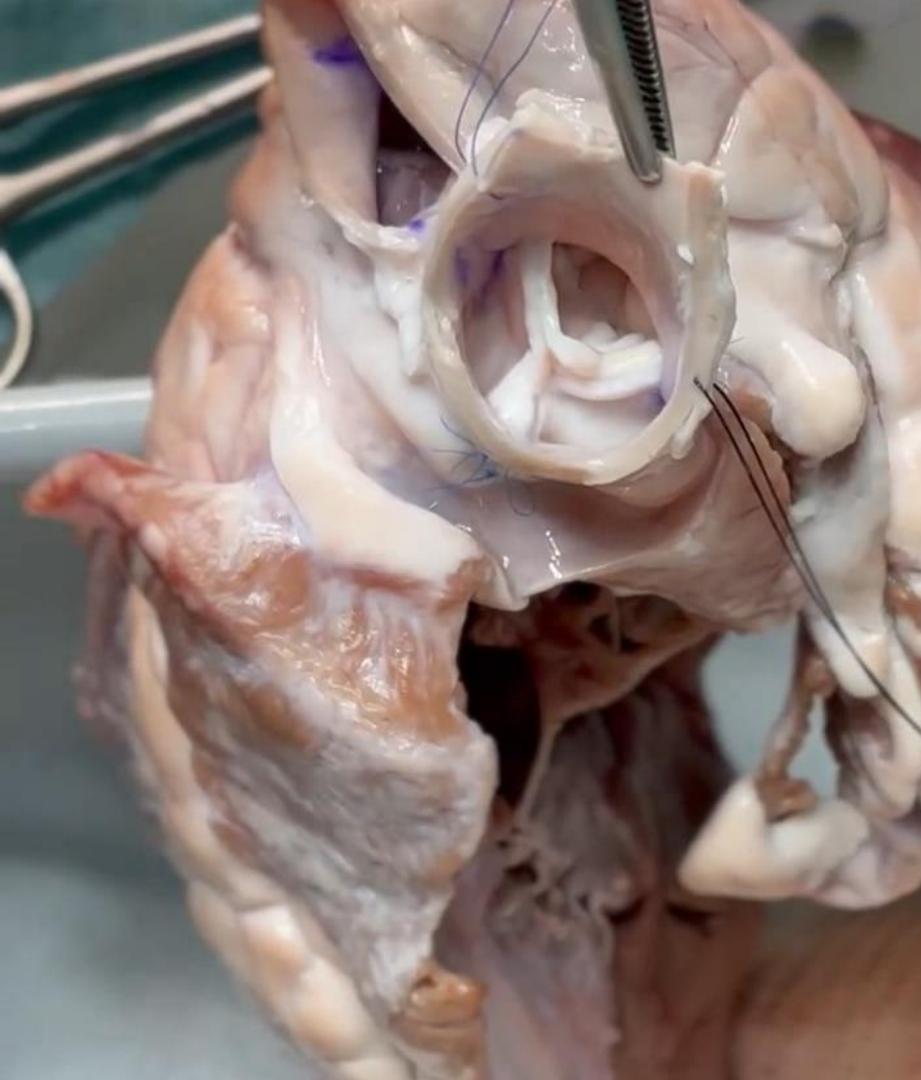
AV Neo (Ozaki)

Not designed for children

Ross

Challenging and risky

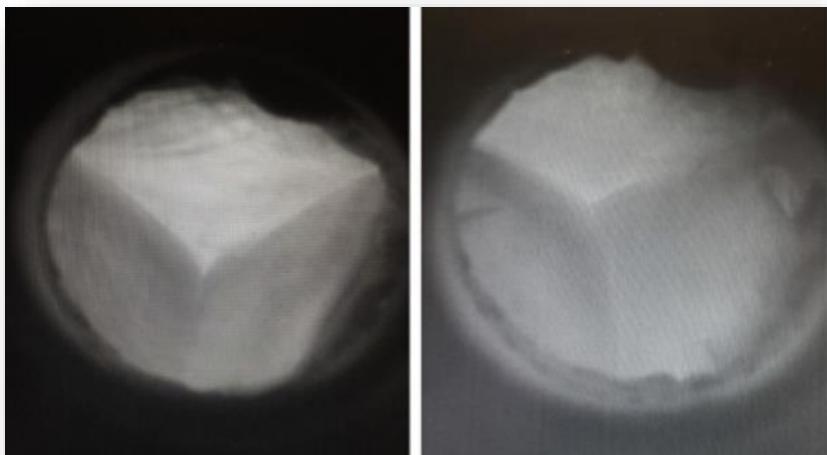
Maybe it's time to try mimicking Mother Nature...



The
ΔVaTΔR
valve

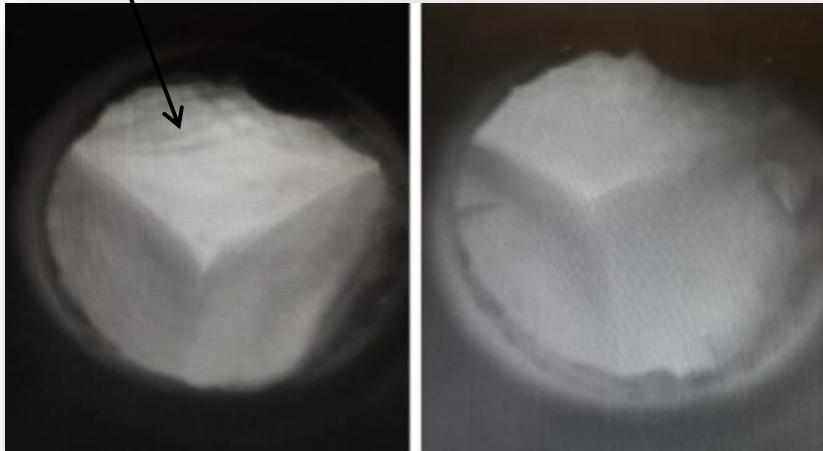
- Trileaflet
- Symmetrical
- Competent
- Non-stenotic
- Accommodates growth
- Autologous living tissue

In Vitro Test



In Vitro Test

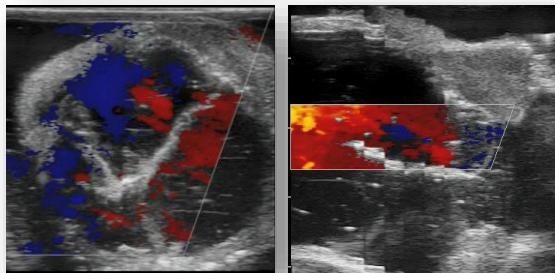
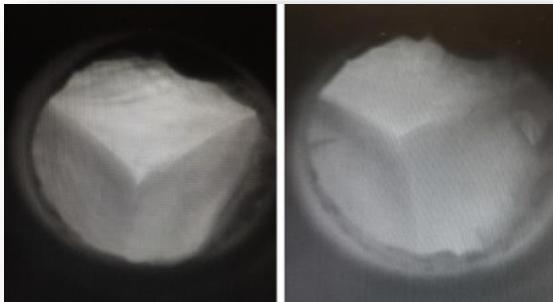
Fiber bundles



Native

ΔVaTΔR

In Vitro Test



ΔVaTΔR

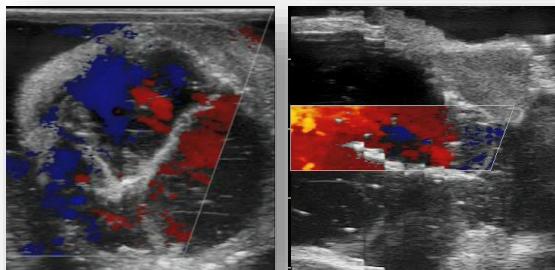
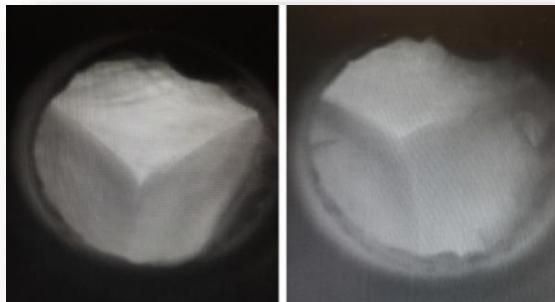
No stenosis

No regurgitation

In Vitro Test



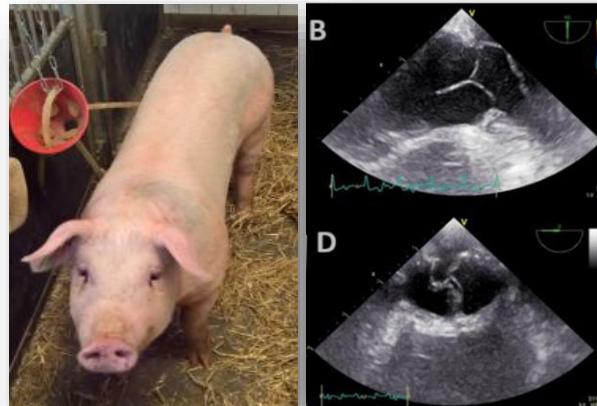
In Vivo Test



ΔVaTΔR

No stenosis

No regurgitation



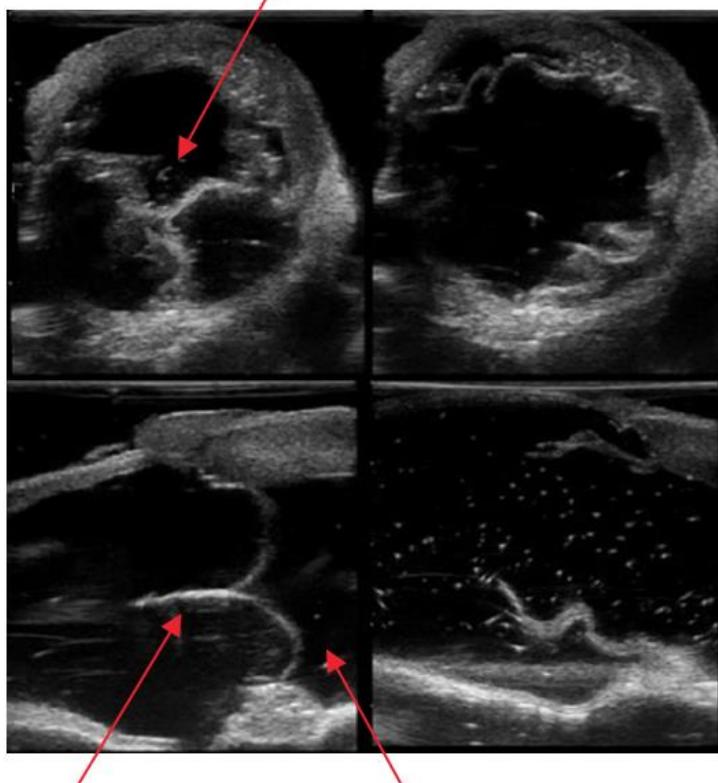
No stenosis

No regurgitation

Oversized new valve

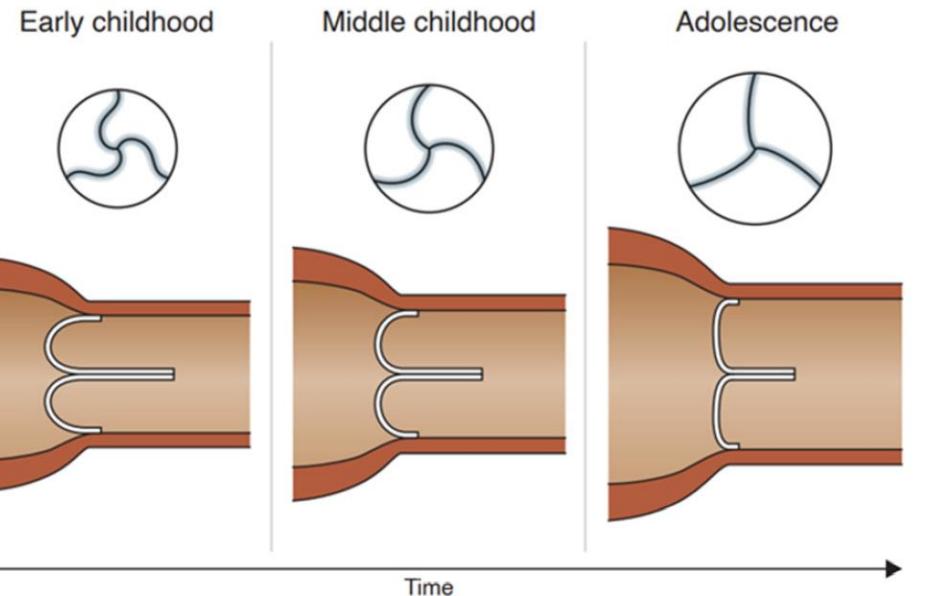


Windmill shape



Increased
coaptation

Negative
billow



AVATAR

accommodates
growth in children



12 mm

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

AVATAR

Disposable set of
surgical tools



WIPO | PCT
The International
Patent System

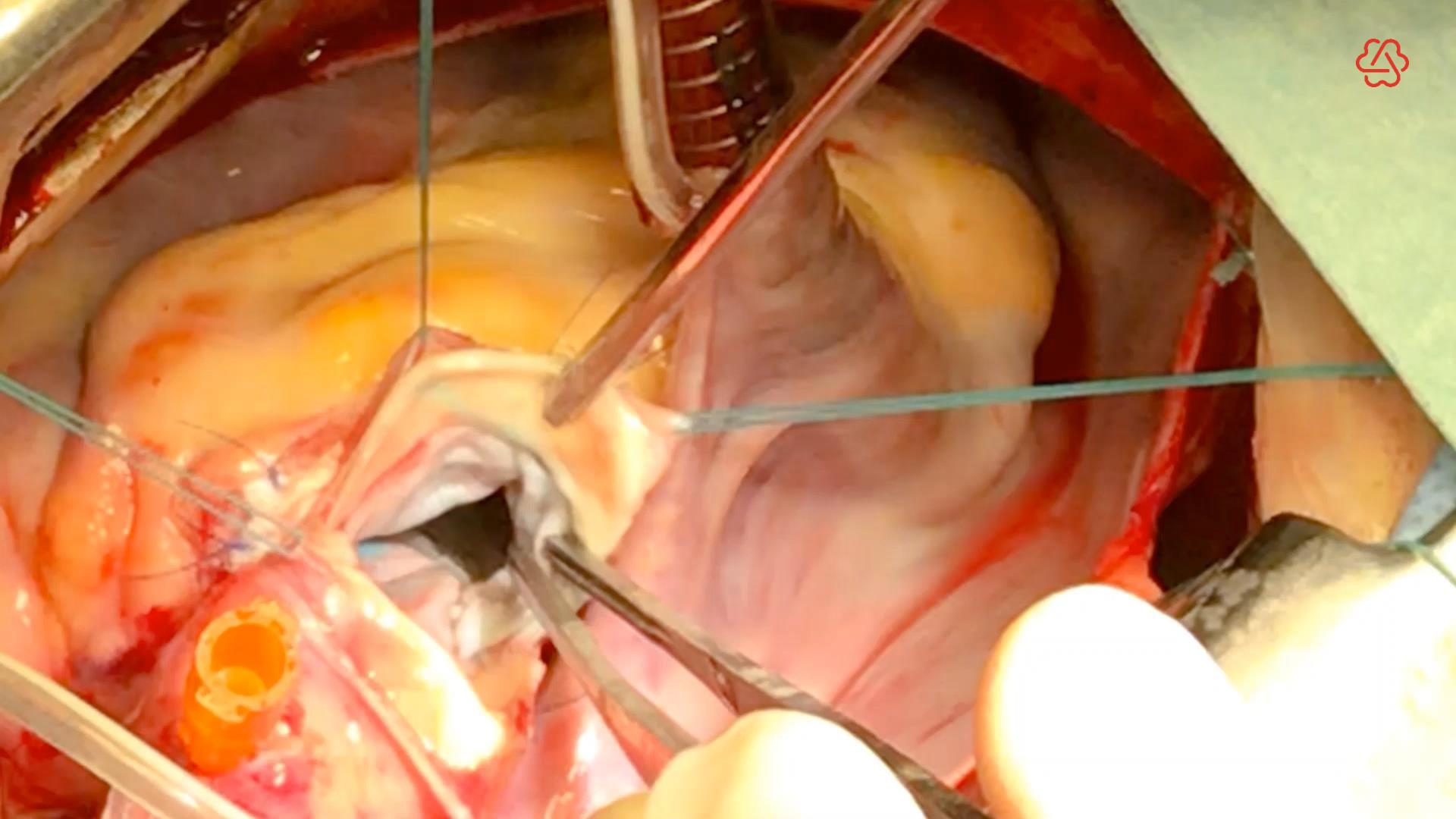
Patent Submitted



Expected CLASS I
510(k) exempt

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Reimbursed under
existing codes



B F 5.0 MHZ G 64%
 P 11 cm XV 1
 PRC 7-3-B PRS P
 PST 2

27 JUL 2021 15:52
 0:00:00.22

B F 5.0 MHZ G 64% CFM F 3.3 MHZ G 55%
 P 11 cm XV 1 PRF 4.2KHZ
 PRC 7-3-A PRS 2 PRC 2-B-A PRS 3
 PST 2 FP M

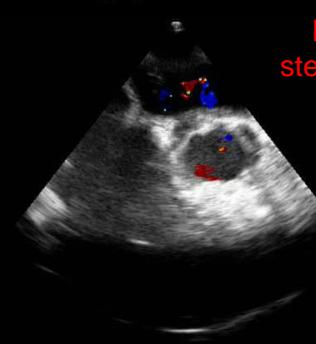
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FACTORY TEE022



Windmill
shape

FACTORY TEE022



NO
stenosis

FOC 60 mm

PLANO 48°

@saote MyLab

H.I.E.M.I.

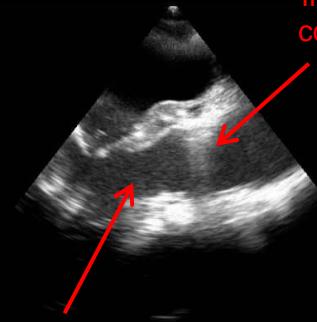
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 P 11 cm XV 1
 PRC 7-3-B PRS P
 PST 2

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B F 5.0 MHZ G 64% CFM F 3.3 MHZ G 55%
 P 11 cm XV 1 PRF 4.2KHZ
 PRC 7-3-A PRS 2 PRC 2-B-A PRS 3
 PST 2 FP M

27 JUL 2021 15:48
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FACTORY TEE022



Increased
coaptation

FACTORY TEE022



NO
regurgitation

FOC 60 mm

PLANO 121°

Negative
billow



6 yo patient
Severe AR
(post-valvuloplasty)

1 week after the AVaTAR procedure
using autologous fresh pericardium



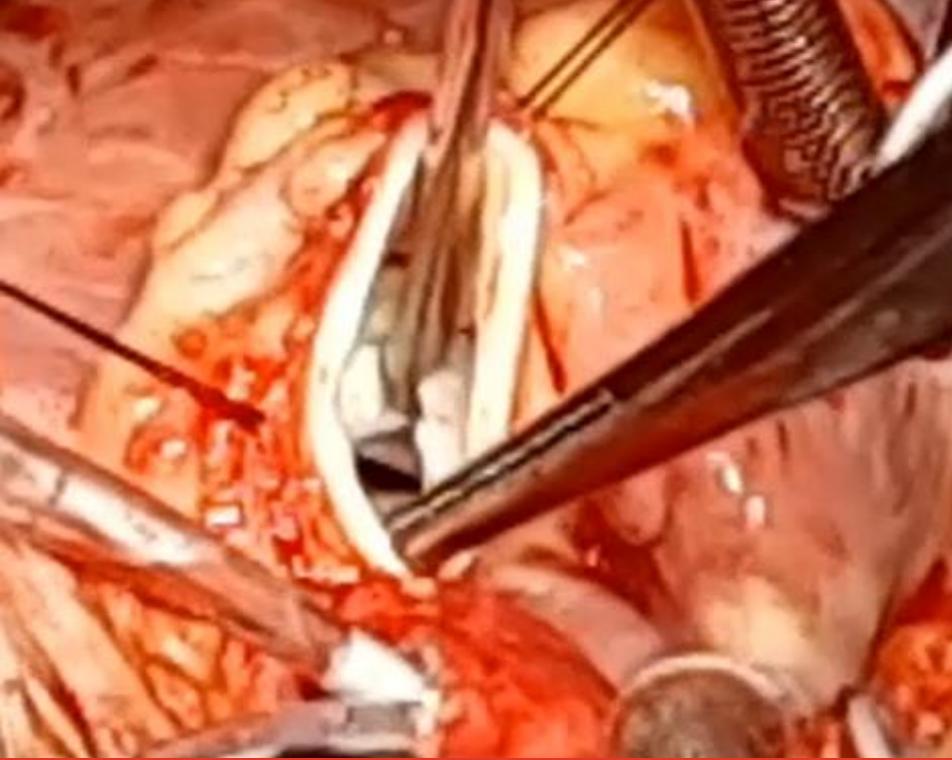
Last patient

Gala

3 years-old with severe
aortic stenosis & regurgitation

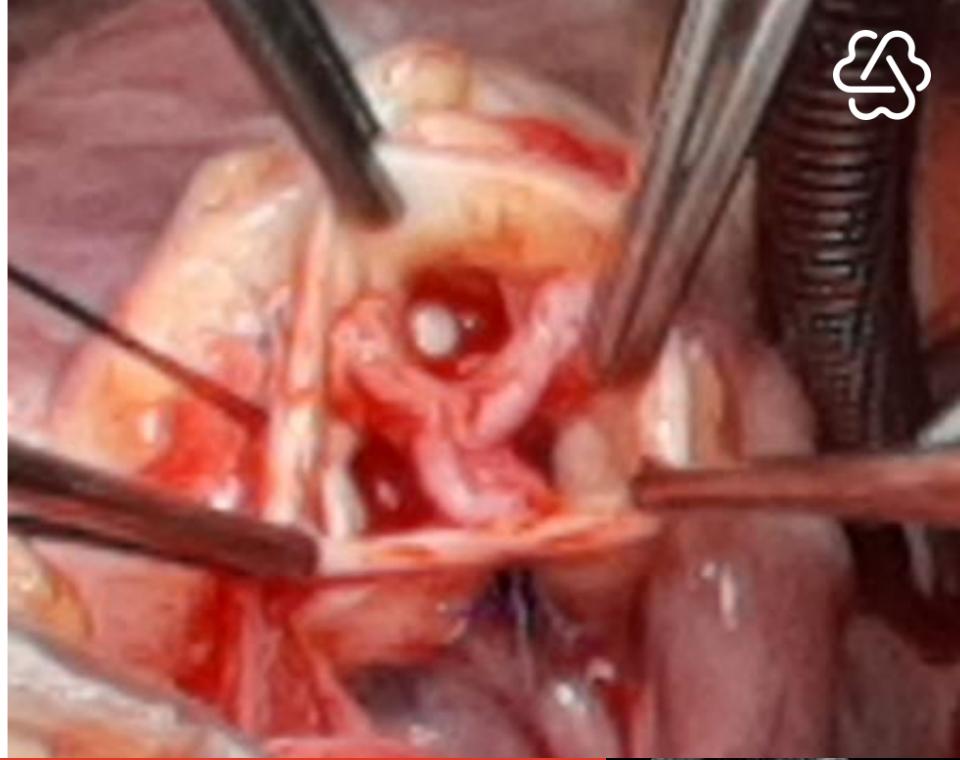
Just before surgery





*Native
valve*

Δ VaT Δ R



*New
valve*





Gala

**Having breakfast 2 days
after the operation**

Gala

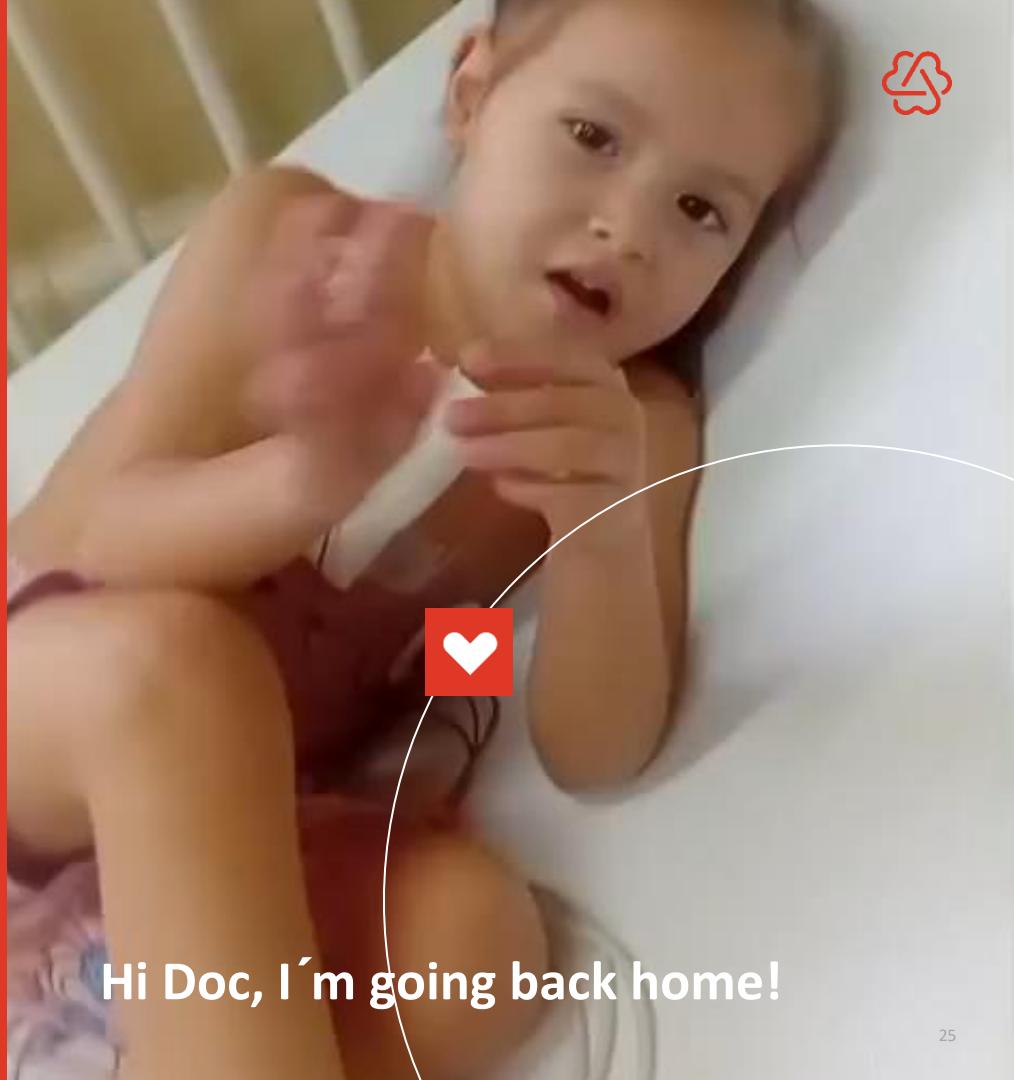
Walking around the hospital
on the 3rd postop day





5 days after
the operation

Gala going
back home!





Thank you for your attention

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