Docket #: S20-476

An Adjustable Aortic Annuloplasty Ring for Symmetric Aortic Annulus Reduction

Stanford researchers in the Woo Lab have designed an implantable prosthetic for patients with aortic valve dysfunction, particularly for use in valve-sparing aortic root replacement procedures. The device, made from a flexible biocompatible material, is positioned externally to the aortic valve and includes a tightening mechanism, such as an embedded suture. This mechanism allows for the symmetric reduction of the prosthetic ring's diameter by narrowing the distances between the valve's commissures and nadirs.

Stage of Development

- Early Prototype
- Ex vivo testing

Figure

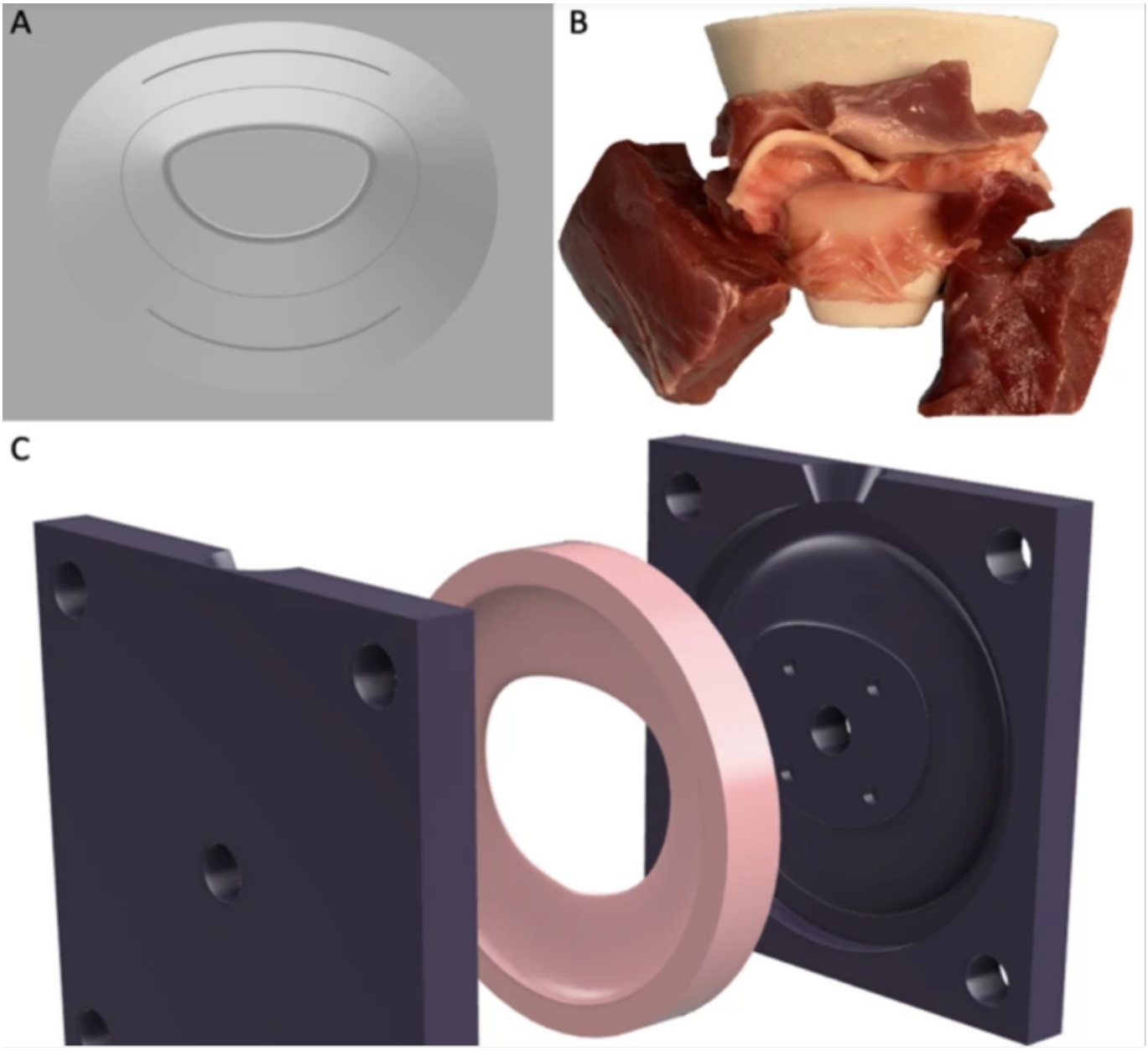


Figure description: **A)** A computer-aided design rendering of the 3D-printed mitral annular dilator. **B)** The annular dilation device placed across a juvenile porcine mitral valve to induce annular dilation. **C)** Exploded view of the elastic dilated mitral mount produced using 3D-printed molds. (*Image credit: https://doi.org/10.1186/s12872-022-02515-x)*

Applications

- Valve-Sparing Aortic Root Replacement

- Aortic Valve Dysfunction Treatment
- Aortic Root Repair

Advantages

- Preservation of Native Valve
- Customizable Fit
- Minimally Invasive
- Biocompatibility
- Potential for Improved Durability

Publications

- Zhu, Y., et al. Ex vivo biomechanical analysis of flexible versus rigid annuloplasty rings in mitral valves using a novel annular dilation system. *BMC Cardiovasc Disord 22, 73* (2022)
- Zhu, Y.,et al. A 3D-Printed Externally Adjustable Symmetrically Extensible (EASE) Aortic Annuloplasty Ring for Root Repair and Aortic Valve Regurgitation. *Cardiovasc Eng Tech* (2024)

Patents

- Published Application: WO2023235620
- Published Application: 20250099246

Innovators

- Matthew Park
- Yuanjia Zhu
- Joseph Woo

Licensing Contact

Seth Rodgers

Licensing Manager, Life Sciences

Email