

**P87. Remodeling Of The Aortic Root Using The Yacoub Technique. In-vitro Investigations Of Different Neo-sinus Shapes On Hemodynamic Parameters**

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**OBJECTIVES:** One of the basic surgical techniques in aortic valve preserving operations has been introduced by Yacoub and co-workers as the remodeling technique. Here we investigated different shapes of the neo-sinuses on hemodynamic parameters in-vitro.

**METHODS:** Three different shapes of neo-sinuses composing a Dacron graft for the remodeling technique (trapezoidal n=8, triangular n=8, spherical n=8) were implanted in fresh porcine aortic roots. Roots were mounted into a mock circulator for analysis of hemodynamic parameters (transvalvular pressure gradient, flow, closing volume) and change of dimensions at different levels of the aortic root (mid-sinus, commissures) using micro-ultrasonic probes. Cusp bending deformation index was calculated using a high speed camera.

**RESULTS:** Trapezoidal neo-sinuses showed a significant higher mean and peak transvalvular pressure gradient compared to the triangular and spherical shapes (mean pressure gradients: 4.8 vs. 2.9 vs. 3.5 mmHg, respectively; peak pressure gradient: 11.9 vs. 8.3 vs. 10.0 mmHg, respectively;  $p < 0.05$ ). Closing volume did not show differences between different shapes. Aortic root distensibility was more preserved with spherical shaped neo-sinuses which also showed the most harmonical cusp movements.

**CONCLUSIONS:** Variations in the shape of neo-sinuses in patients undergoing the remodeling technique may have some implications on aortic valve dynamics and therefore on valve durability and long-term performance.