

## Expandable Polyurethane Stent Valve, implanted by catheter, in pediatric and adult patients: Results from physical, hydrodynamic, animal and ultrastructural Studies



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### Abstract

**Background:** Patients with pediatric prostheses suffer from mismatch and early calcification, which causes a high number of reoperations

**Methods:** Expandable Polyurethane Stent Valve – EPSV, is composed by a flexible polyurethane (PU) leaflets is grown on the top of an expandable cobalt-chrome alloy stent, including the formation of three leaflets. Physical, hydrodynamic, animal studies, were performed following: ISO 5840-3, 2015.

**Results:** Physical tests. Result of study of surface scanning of pre and post crimp stent, showed no structural modification of the PU. Hydrodynamic test showed a pressure gradient oscillation between 5 to 20mm, in basal or stress condition respectively. Experimental studies. Sheep were subjected to 3D echo-Doppler study, in 6th follow-up months, which showed satisfactory hemodynamic performance, with low transvalvular gradient ( $M = 6.60$  mm Hg).

**Ultrastructural Study:** Six stents were explanted after 20 days to 21 months of follow-up to Ultrastructural analysis. All of which revealed no presence of calcium growth and prostheses structure was intact.

**Conclusions:** Expandable Stent valve and PU no Calcification are good expectations for pediatric use.

### Biography

Miguel Angel Maluf is an Associate Professor of Cardiovascular Surgery and is the Chief of Pediatric Heart Surgery at Sao Paulo Federal University.

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