

**C49. Transapical Implantation Of A Novel Self-expanding Sutureless Aortic Valve Prosthesis - A Three Step Protocol To Optimize Device Positioning**

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**OBJECTIVES:** Transapical aortic valve implantation has recently been performed with a balloon expandable stented valve prosthesis. Clinical implantation of a novel self-expanding sutureless stented bovine pericardial prosthesis has successfully allowed rapid aortic valve replacement via an open transaortic approach. We sought to develop a reliable protocol to facilitate the transapical implantation of this self-expanding valve in a porcine model.

**METHODS:** Off pump transapical aortic valve implantation was performed through a left mini-thoracotomy using a bovine pericardial valve mounted on a self-expandable nitinol stent of size 21 mm and 23 mm in 11 pigs (weighing 60 kg). The crimped valve was introduced via a purse-string in the left ventricular apex using a flexible and steerable delivery sheath using a 3-step technique. Biplane fluoroscopy and transesophageal echocardiography were simultaneously used for guidance. Successful adjustment of alignment along 3 axes prior to deployment of the valve was accomplished in each animal. Deployments were performed during a period of rapid pacing.

**RESULTS:** All valves were successfully deployed and functioned normally following transapical removal of the delivery system. Paravalvular leak was documented in one case (9.1%) due to prosthetic misalignment. There was no evidence of valve migration. Correct anatomic seating was confirmed during post-procedure necropsy.

**CONCLUSIONS:** Successful transapical implantation of a novel self-expandable bovine pericardial valve was accomplished in 11 animals without the assistance of cardiopulmonary bypass. A flexible, steerable delivery system with a 3-step release mechanism allowed precise positioning of the valve with a low rate of paravalvular leakage and excellent device stability.