**MP2-8**

## The optimal transcatheter method to achieve long term patency of atrial septal defects

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Introduction: Long term patency of transcatheter atrial septal defects (TASDs) is required for both paliative L-R shunts (i.e. Fontan Operation, Isolated Left Heart Failure) or paliative R-L shunts (i.e. Right Heart Failure, Eisenmenger syndrome). Atrial balloon seprostomy and static pressure balloon septostomy(SPBS) have only temporary results and standard stents have been found problematic.

Methods: We developed and tested in piglets, 2 new methods for longer patency of TASDs. Alcohol septal defect angioplasty and special flat stent placement after static pressure balloon angioplasty. A 9 mm TASD was created in 10 one month old piglets by SPBS. In 5 of them alcohol septal angioplasty was performed using an alcohol infiltrated polyurethane foam sleeve on an angioplasty balloon. In the rest of them, a specially made flat nitinol stent was used. The Stent had a 15mm proximal and distal ring and a 9mm septostomy central ring. All rings were polyurethane covered for endothelialization/thrombogenicity purposes. The animals were followed for 4 months and then had autopsies.

Results: All alcohol septostomies had good acute results and no acute complications; however none of the defects were patent at 4 months. All flat stents had successful creation of TASDs. At 4 months, there was excellent endothelialization, no thrombogenicity and full patency of the ASDs.

Conclusions: The application of the flat septal stent as made, was the optimal method for long term patency of experimental TASDs. Clinical trials are justified.