blood is necessary. This study investigated the use of a PA-shunt together with a low resistance lung assist device in RVF.

Methods: In 6 pigs a PA-shunt was created by a homograft. The lung assist device (Novalung; Germany) was integrated into the shunt with resulting parallel perfusion of the lungs and the lung assist. RVF was induced by pulmonary artery banding. Right ventricular performance and hemodynamics were determined by the use of pulse contour analysis (Pulsion, Germany) as well as direct pressure lines. Flows were monitored by ultrasonic flow probes; serial blood gas analyses were taken. The observation period was 90 minutes after declamping the shunt and the lung assist.

Results: A stable RVF could be generated with a significant decrease of cardiac output and right ventricular ejection fraction. After declamping the PA shunt and the lung assist cardiac output and arterial pressures increased significantly (p < 0.05; t-test) under a shuntflow of 2.3-2.6 l/min. Right ventricular ejection fraction increased significantly, whereas right ventricular filling pressures remained unchanged. \( pO_2 \) and mixed \( SvO_2 \) significantly increased. Taken together the animals recovered from cardiogenic shock over the observation period. These effects were immediately reversed when the shunt was clamped again.

Conclusions: PA shunting with a parallel lung assist device can effectively reverse the deleterious effects of RVF. This concept may be an option to treat RVF surgically.

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A “Left atrial mitral-valve prosthesis” for interventional mitral valve (re)placement

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Objective: Due to anatomical reasons, interventional placement of heart valve prosthesis in mitral position is challenging. We aimed for a totally new approach, inserting a valve-bearing prosthesis strutting on the entire left atrial wall, the mitral ring and the pulmonary veins. A design study was performed and the resulting prosthesis evaluated in the animal.

Material and Methods: Prosthesis design was derived from moulds of porcine left atria. A nitinol-skeleton was sutured onto interlaced yarns of polyvinylfluorid. Into the resulting collapsible hollow body a biological valve was sewn. Animal experiments: In 4 pigs (50 kg), under general anesthesia, a thoracotomy was performed. MR-Imaging was conducted to visualise the conduit and its state of flow. Results: There was no significant blood loss and no hemodynamic depression during the procedure. It was possible to yield the entire cardiac output through the conduit after creating a high grade aortic stenosis without any significant changes in hemodynamics. Autopsy revealed an excellent anchorage of the prosthesis. Neither relevant intracavitary injury nor thrombotic formation was seen.

Conclusions: Our investigations proved the feasibility and excellent functionality of a stentbased sutureless off-pump creation of an AAC. This approach might be used for other purposes, for instance off-pump installation of assist devices.

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