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. pO2 and mixed Svo2 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 polyvinylfluourid. 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. Under extracorporeal circulation, the left atrium was incised. Prior to implantation, an artificial regurgitation was created by an incision in the posterior mitral leaflet. The compressed prosthesis was inserted into the left atrium and released. After re-suturing the atrium extracorporeal support was tapered. Echocardiographic and radiologic evaluations were carried out. After euthanasia, autopsy was performed.

**Results:** Echocardiography demonstrated the functionality of the prosthesis parallel to the native valve. Regurgitation was reduced. Angiographically, antegrade flow through the fully expanded prosthesis was visualized. Autopsy revealed proper positioning without major trauma. No significant thrombosis occurred.

**Discussion:** We could display feasibility and functionality of our new left atrial mitral-valve prosthesis. Left atrial exclusion and placement of an additional valve in mitral position by a valve-bearing hollow body were demonstrated. Further development is needed to optimize design and procedure for percutaneous or transapical implantation.

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Stentbased, off-pump creation of an apicoaortic conduit

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**Introduction:** An apicoaortic conduit (AAC) is an alternative therapy in patients with aortic valve stenosis and severe aortic calcification. We investigated whether it is feasible to create an apicoaortic conduit off-pump with a newly developed stent-based coring- and cannulation-device in an animal model.

**Materials & Methods:** Five adult pigs with a mean weight of 70 kg were anesthetised and a thoracotomy performed. A metal cylinder sharpened at its tip was used to punch the beating hearts apex allowing the removal of the tissue via a lock. Subsequently a 20 mm vascular prothesis with a built-in stent at its proximal end was introduced into the apex. The stent expanded by pulling back the punch creating the apical anastomosis of the conduit. The distal anastomosis to the descending aorta was performed by conventional suture. The whole procedure was guided by distinct echocardiographic imaging. Functionality was validated by banding the ascending aorta. 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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