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TAVI: Alternative approaches and techniques

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Transcatheter aortic valve replacement TAVI has become a frequently used additional option for elderly and high/intermediate risk patients. The transfemoral approach is mostly preferred. Alternatively, in case of small femoral vessels, severe arterial occlusive disease or other vascular abnormalities, the transapical approach or an access via the subclavian arteries is considered. The decision is such determined by the vascular pathology. However, there are also patients with accompanying cardiac or vascular pathologies not amenable for current TAVI techniques and we were looking for alternative techniques which are determined by these patients need. One frequently seen adjunctive disease is the occlusion or severe stenosis of the carotid arteries and many of these patients have already suffered from a stroke or a TIA. So, we developed a combination of typical carotid endarterectomy, also under local anesthesia, and, during the same procedure, a transcarotid aortic valve replacement. To avoid an impairment of blood flow through the newly reconstructed neck vessel, a vascular prosthesis is connected side to side to the common carotid artery, facilitating the introduction of the sheaths and avoiding its positioning inside the native vessel. Another problem is created by concomitant heart pathologies additional to the aortic valve disease. As ischemic time matters, especially in this cohort of elderly risk patients, we still operate these patients under extracorporeal circulation and cardioplegic arrest, initially addressing the concomitant pathologies like severe coronary artery or mitral/tricuspid valve disease but finally insert transcatheter valve prosthesis directly via the ascending aorta. By this hybrid approach, a complete surgical treatment can be achieved and at the same time a significant reduction of the cross-clamp time, even compared to new suture less valves. This is also reflected by lowered mortality among these patients. We consider these examples a step towards a minimally invasive and at the same time individualized surgical therapy not primarily determined by access site or incision size but by the patient's pathologies.

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