Percutaneous cardiovascular procedures

Over the past 50 years, the number and invasiveness of percutaneous cardiovascular procedures globally have increased substantially. However, cardiovascular interventions are inherently associated with a risk of acute brain injury, both periprocedural and postprocedural, which impairs medical outcomes and increases healthcare costs. Current international clinical guidelines generally do not cover the area of acute brain injury related to cardiovascular invasive procedures. In this international Consensus Statement, Lenarczyk et al. compile the available knowledge (including data on prevalence, pathophysiology, risk factors, clinical presentation, and management) to formulate consensus recommendations on the prevention, diagnosis, and treatment of acute brain injury caused by cardiovascular interventions. They also identify knowledge gaps and possible future directions in clinical research into acute brain injury related to cardiovascular interventions [1)]

Common Percutaneous Cardiovascular Procedures Percutaneous Coronary Intervention (PCI):

Balloon Angioplasty: A balloon catheter is inserted into a narrowed coronary artery and inflated to widen the vessel. Stenting: After balloon angioplasty, a stent (a small mesh tube) may be placed to keep the artery open and prevent re-narrowing. Percutaneous Transluminal Angioplasty (PTA):

Similar to PCI, PTA involves the dilation of narrowed blood vessels (often in the peripheral arteries) using a balloon catheter. Transcatheter Aortic Valve Replacement (TAVR):

A minimally invasive procedure to replace a narrowed aortic valve. A catheter is used to deliver a new valve to the heart through the blood vessels. Percutaneous Closure of Atrial Septal Defects (ASD):

A catheter is used to place a closure device to seal a hole in the atrial septum, which separates the heart's upper chambers. Percutaneous Mitral Valve Repair:

Techniques such as the MitraClip procedure can be used to treat mitral valve regurgitation by clipping the leaflets of the valve together to improve closure. Endovenous Laser Treatment (EVLT):

A procedure used to treat varicose veins by delivering laser energy to close off affected veins. Percutaneous Cardiopulmonary Support (PCPS):

A temporary support system used in cases of severe cardiac or respiratory failure, allowing for blood circulation and oxygenation. Transcatheter Closure of Patent Foramen Ovale (PFO):

A catheter is used to deliver a device to close a PFO, which is a small hole between the heart's atria that can lead to complications like stroke. Transcatheter Embolization:

A procedure to block abnormal blood vessels (such as arteriovenous malformations or tumors) using coils, particles, or other materials. Advantages of Percutaneous Procedures Minimally Invasive: Reduced recovery time and lower risk of complications compared to open surgery. Shorter Hospital Stay: Many procedures can be performed on an outpatient basis or require only a short hospital stay. Less Pain and Scarring: Smaller incisions lead to less postoperative pain and minimal scarring. Considerations and Risks While percutaneous procedures are generally safe, they are not without risks, which may include bleeding, infection, blood vessel damage, and complications related to anesthesia. The specific risks vary depending on the procedure and the patient's overall health. Conclusion Percutaneous cardiovascular procedures have revolutionized the treatment of various

cardiovascular conditions, offering effective alternatives to traditional surgical approaches. As technology advances, these techniques continue to evolve, improving patient outcomes and enhancing the range of treatable conditions

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Lenarczyk R, Proietti M, Scheitz JF, Shah D, Siebert E, Gorog DA, Kowalczyk J, Bonaros N, Ntaios G, Doehner W, Van Mieghem NM, Nardai S, Kovac J, Fiszer R, Lorusso R, Navarese E, Castrejón S, Rubboli A, Rivera-Caravaca JM, Chieffo A, Lip GYH. Clinical and subclinical acute brain injury caused by invasive cardiovascular procedures. Nat Rev Cardiol. 2024 Oct 11. doi: 10.1038/s41569-024-01076-0. Epub ahead of print. PMID: 39394524.