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Opinion Article

Management of Patent Foramen Ovale in Patients with Atrial Fibrillation

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DESCRIPTION

Patent Foramen Ovale (PFO) is a congenital cardiac anomaly characterized by an open flap-like connection between the right and left atria of the heart, allowing for shunting of blood between the two chambers. While PFO itself may not typically cause any symptoms or complications, it has garnered significant attention in recent years due to its association with various clinical conditions, including Atrial Fibrillation (AF). Atrial fibrillation, characterized by irregular and often rapid heart rhythms, is a common cardiac arrhythmia. It poses a substantial risk for stroke and systemic embolism due to the potential formation of blood clots in the atria. PFO, on the other hand, provides a direct pathway for clots to move from the right atrium to the left atrium, bypassing the filtering function of the lungs. This can potentially increase the risk of embolic events, especially in the presence of AF. The exact interlink between PFO and AF remains complex and multifaceted. Some studies have suggested that the presence of PFO may increase the risk of Atrial Fibrillation (AF) development, while others emphasize the role of PFO as a facilitator for embolic events in individuals already suffering from AF. Diagnosing PFO in patients with AF typically involves a combination of imaging modalities and clinical evaluation. Transesophageal Echocardiography (TEE) is often considered the good standard for detecting PFO. It allows for a direct visualization of the interatrial septum and any potential defects. Contrast echocardiography, wherein a contrast agent is injected to visualize shunting, is frequently used during TEE. While TEE is reliable, it is an invasive procedure that may not always be well-tolerated by patients. Transcranial Doppler (TCD) ultrasound is another non-invasive method used to detect PFO by assessing the presence of microbubbles in the cerebral circulation after the intravenous injection of a contrast agent. TCD is particularly useful in evaluating the risk of paradoxical embolism in stroke patients, which may be a concern in individuals with both PFO and AF. Transthoracic Echocardiography (TTE) and contrast TTE can also be utilized to detect PFO, though they are generally considered less sensitive than TEE and TCD. Recent advancements in imaging technology have introduced three-dimensional echocardiography, which offers improved visualization of PFO and its anatomy. Additionally, cardiac Magnetic Resonance Imaging (MRI) and Cardiac Computed Tomography (CT) scans have shown capabiliy in PFO detection, providing non-invasive alternatives to TEE. In patients with PFO and AF, medical management of AF is the first-line approach. Anticoagulant medications, such as warfarin or Direct Oral Anticoagulants (DOACs), are commonly prescribed to reduce the risk of clot formation and stroke. These medications do not address the PFO directly but help manage the risk of embolism by preventing clot formation. In some cases, particularly when there is a significant concern about paradoxical embolism or recurrent strokes, PFO closure may be considered.

PFO closure can be achieved through surgical or percutaneous procedures. Surgical closure is rarely performed today, as minimally invasive percutaneous approaches have become the preferred method. Percutaneous PFO closure involves the insertion of a closure device *via* a catheter to seal the PFO. This procedure is usually performed in a cardiac catheterization laboratory under fluoroscopic guidance. The choice of device (e.g., Amplatzer PFO occluder) depends on the anatomy of the PFO and the operator's experience. After the procedure, patients typically need to take antiplatelet medications, such as aspirin and clopidogrel, for a period to prevent device-related thrombosis. Follow-up imaging is often conducted to ensure that the device remains in the proper position. The decision to close a PFO in patients with AF should be individualized. Shared decision-making is essential, considering the patient's clinical history, symptoms, the risk of recurrent embolism, and their preferences.

CONCLUSION

The potential benefits of PFO closure must be weighed against the risks, including procedural complications. For some patients, particularly those at higher risk of bleeding complications with anticoagulants or those who are not suitable candidates for PFO closure, long-term anticoagulation may be the most appropriate approach. Regular monitoring of coagulation parameters is necessary in these cases. The management of patent foramen ovale in patients with atrial fibrillation is a complex and evolving field that requires a thorough evaluation of each patient's clinical history and risk factors. Advances in imaging technology and ongoing research are likely to provide further insights into the optimal management strategies for this unique patient population.

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