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# Antithrombotic Therapy After Percutaneous Left Atrial Appendage Occlusion Using the WATCHMAN Device

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## TO THE EDITOR

Patients with atrial fibrillation are at risk of developing a stroke, and the left atrial appendage (LAA) is the most common site for clot formation. Although anticoagulation is the mainstay treatment for stroke prevention, some patients are at high risk of bleeding and are not candidates for anticoagulation therapy. Therefore, LAA occlusion has evolved as alternative therapy for stroke prevention in such patients. The WATCHMAN implant (Boston Scientific) is the only percutaneous device approved by the US Food and Drug Administration for LAA occlusion. The device is composed of a self-expanding nitinol frame structure with fixation barbs and a permeable polyester fabric that covers the atrial-facing surface of the device.[1]

Antithrombotic therapy post LAA occlusion is recommended for a limited period to prevent device-associated thrombus. However, the optimal antithrombotic therapy following LAA occlusion is subject to debate and is highly patient-specific as many patients who undergo LAA occlusion are not eligible for long-term anticoagulation. Different antithrombotic strategies studied after WATCHMAN device implantation include warfarin, non–vitamin K oral anticoagulants, dual antiplatelet therapy, aspirin monotherapy, or no therapy at all.[2-5] The European Heart Rhythm Association/European Association of Percutaneous Cardiovascular Interventions expert consensus statement recommends treatment with clopidogrel for 1-6 months and aspirin indefinitely in patients with high bleeding risk.[6]

The post-LAA occlusion anticoagulation/antiplatelet protocol described in the PREVAIL (Prospective Randomized Evaluation of the WATCHMAN Left Atrial Appendage Closure Device in Patients with Atrial Fibrillation Versus Long-Term Warfarin Therapy) and the PROTECT AF (WATCHMAN Left Atrial Appendage System for Embolic Protection in Patients With Atrial Fibrillation) trials is one of the most widely used regimens.[2] Both trials compared the efficacy and safety of LAA occlusion using the WATCHMAN device with chronic warfarin therapy in patients with nonvalvular atrial fibrillation. Patients who had WATCHMAN device implantation were treated with warfarin for 45 days after device deployment to allow proper endothelialization. Warfarin was discontinued if transesophageal echocardiography showed complete closure or significantly decreased flow around the device. After that, patients received aspirin and clopidogrel for 6 months, followed by lifelong aspirin. The results of both trials were pooled for patient-level metaanalysis with a combined follow-up of 5 years, and the LAA occlusion and warfarin groups demonstrated similar primary efficacy endpoints of stroke (either ischemic or hemorrhagic), cardiovascular death, or systemic thromboembolism (2.8 vs 3.4 events/100 patient-years; $P = 0.27$).

In the EWOLUTION (WATCHMAN Outcomes in Real-Life Utilization) registry, anticoagulation following LAA occlusion was variable and included warfarin in 16% of patients, novel oral anticoagulants in 11%, dual antiplatelet therapy in 60%, single antiplatelet therapy in 7%, and no anticoagulation in 6% of patients.[3] A study of antithrombotic therapy in patients from the EWOLUTION registry demonstrated that treatment with novel oral anticoagulants and dual antiplatelet therapy was similar to treatment with warfarin in terms of device thrombus, stroke, and bleeding risk.[4]

The ASAP (ASA Plavix Feasibility Study With WATCHMAN Left Atrial Appendage Closure Technology) trial was a European multicenter, prospective, nonrandomized study of the WATCHMAN device in patients with nonvalvular atrial fibrillation who were not eligible for anticoagulation.[5] Patients were given dual antiplatelet therapy for 6 months followed by aspirin indefinitely. The study reported a 77% risk reduction of stroke compared to the expected stroke risk based on $CHADS_2$ (Congestive heart failure, Hypertension, Age, Diabetes, Stroke [prior]) score.

Limited antithrombotic therapy post LAA occlusion is indicated to prevent device-associated thrombus. However, the optimal regimen following device implantation is highly variable and patient-specific as these patients are ineligible for long-term anticoagulation.

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