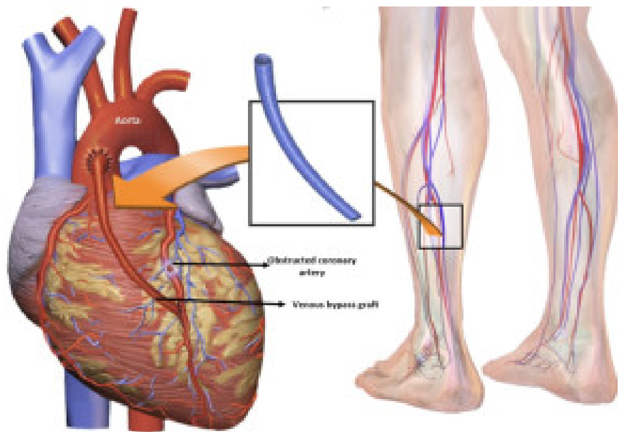
A novel treatment for saphenous venous graft thrombosis

Coronary artery disease refers to narrowing of the arteries that supply blood to the heart. Lack of blood supply to the heart can result in a myocardial infarction, commonly referred to as a heart attack. One way of treating the blockages when they affect multiple arteries is by performing bypass surgery, a procedure in which a cardiac surgeon uses various conduits to ‘bypass’ the obstructed part of the coronary artery and restore blood flow through the remaining non-diseased portion of the artery. These conduits connect the aorta to coronary circulation beyond the obstruction, as shown in the illustration. The most commonly used conduits are the internal mammary artery (from the chest wall) and the saphenous veins (from the legs). Arterial grafts remain patent for many years, whereas venous grafts frequently develop problems of re-occlusion, degeneration and thrombosis. Occlusion of venous bypass grafts by blood clots is a common underlying condition in patients who present with chest pain and myocardial infarction. Traditionally, the treatment of choice for grafts occluded by blood clots (thrombi) was to perform a procedure called percutaneous coronary intervention. In this procedure, an interventional cardiologist passes a wire through the occluded portion, aspirates the thrombus, and places a stent in the diseased area of the graft. This procedure is technically challenging and can be associated with complications such as perforation of the graft and no reflow after the stent is deployed.



Saphenous veins in the legs commonly develop blood clots, a condition known as deep venous thrombosis. This is treated with a course of oral blood thinners. Traditionally, warfarin was used as the blood thinner of choice. Over the last 5 years, newer anticoagulants have been approved for treatment of deep venous thrombosis. We postulated that these drugs can also be used to treat thrombosis of venous bypass grafts and can potentially avoid subjecting the patient to a complicated interventional procedure.

We encountered two patients who presented with myocardial infarction. On coronary angiography they were found to have thrombotic occlusions of saphenous venous bypass grafts. The rest of the venous graft was healthy with no significant disease and good blood flow distal to the occlusion. We used a two week course of an anticoagulant Dabigatran exilate in the first patient and Apixaban

in the second patient. On repeat coronary angiography two weeks later, thrombi in both patients had completely resolved with restoration of normal blood flow. By using these medications, we were able to avoid an invasive procedure with potential for complications. Thus, we report a novel way of treating thrombotic occlusions of saphenous venous grafts. Further studies testing this hypothesis may provide guidelines for appropriate patient selection and duration of therapy.

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Publication

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