A Little TLC Boosts Patency of Bypass Grafts

Saphenous vein grafts for bypass surgery may hold up better with a little TLC, researchers investigating a "no-touch" harvesting technique and an "external stent" suggested.

The technique to minimize manhandling of the vein -- by stripping it out with a pedicle of surrounding tissue left attached -- yielded 3.4-fold better graft patency at 3 years compared with a conventionally harvested radial artery, Mats Dreifaldt, MD, of Sweden's Orebro University Hospital, and colleagues reported at the Society of Thoracic Surgeons meeting here.

In addition, giving the thin-walled saphenous vein grafts a metal jacket for structural support appeared feasible and safe in early data from a separate study, also presented at a late-breaking session at the meeting.

"The reality is that arteries are much better than veins. But despite all the evidence in favor of arteries, 80% of everything that goes in the heart is still a vein," David P. Taggart, MD, PhD, told *MedPage Today*. "So how can you make the vein grafts better?"

Taggart, a cardiac surgeon at John Radcliffe Hospital in Oxford England, discussed the Fluent external stent at the Tech-Con portion of the conference.

The investigational device is a cobalt-chromium alloy mesh tube that's slipped over a saphenous vein graft and stretched to fit without squeezing, presumably helping it withstand the 10-fold greater blood pressure it will face in its new environment without the usual thickening adaptations that may play a role in graft failure.

In a sheep model, the device worked like a charm, Taggart reported, with a significant reduction in vein lumen irregularities and intimal hyperplasia.

The Vein External Support Trial (VEST) presented by his co-author Anthony De Souza, MD, of Royal Brompton Hospital in London, tested the device in 30 patients without any deaths, heart attacks, strokes, or repeat revascularizations at 6 weeks for the safety endpoint.

Only four patients have reached recatheterization at 1 year for the efficacy evaluation, two with blocked grafts. Final results are expected later this year, followed by a planned 600-patient randomized controlled trial.

As another route to the same end, Dreifaldt's group studied 109 consecutive patients at a single center who got both a no-touch saphenous vein graft and a radial artery graft as secondary conduits for coronary artery bypass grafting (an internal mammary artery was used as the primary graft).

This was a good comparison because the radial artery is usually considered to fall somewhere between an internal mammary artery and a vein graft for patency outcomes, commented Frederick L. Grover, MD, of the Denver VA Medical Center and University of Colorado Denver.

After a mean 36 months of angiographic follow-up, 94% of the no-touch saphenous vein grafts were patent, compared with 82% of the radial arteries (P=0.01).

The advantage was seen in both coronary artery territories.

For the left territory, no-touch saphenous vein grafts had 97% patency, versus 84% with the radial arteries. The rate was 92% versus 84%, respectively, in the right territory.

The difference was greatest for triple sequential grafting, at 100% no-touch versus 50% radial artery graft patency, respectively, but the gently handled saphenous grafts came out ahead for double sequential and single grafts as well.

That greater advantage in longer grafting may be due to a mechanical function of the pedicle, allowing "excessively long" grafts without kinking, Dreifaldt noted.

In that sense, the no-touch technique may actually be similar to the external stent, De Souza suggested in an interview.

He argued that its advantage may have been because "the fat outside gave it extra scaffolding."

Other mechanisms may be less damage to the endothelium and differences in nitric oxide synthase and the vasa vasorum, Dreifaldt suggested.

The advantage of the no-touch technique seems intuitive, Grover said. "Whatever your conduit is, you want to be very gentle because what you don't want to do is damage the intima because that could lead to platelets clotting on that injury and causing either a narrowing or a blockage of the graft."

Whatever the mechanism, "there's no doubt that the better the success of revascularization, not just short term but longer term, the better the long-term outcomes are," he concluded.

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