Abstracts

Gregory L. Moneta, MD, Abstracts Section Editor

Factors affecting symptomatic vs asymptomatic vein graft stenoses in lower extremity bypass grafts

Landry GJ, Liem TK, Mitchell EL, et al. Arch Surg 2007;142:848-54.

Conclusions: Symptomatic vein graft stenosis is associated with the presence of distal vein graft lesions, alternative conduit grafts, and larger decreases in the ankle-brachial index (ABI). Graft patency after graft revision is not affected by whether the vein graft stenosis was or was not associated with symptoms.

Summary: Stenosis of lower extremity vein grafts is often asymptomatic. This study was undertaken to characterize symptomatic vs asymptomatic vein grafts and to determine if the presence of symptoms influenced subsequent patency of vein grafts after revision. This was a retrospective analysis of a prospectively maintained database from a combined University and Department of Veterans Affairs Vascular Surgical Service. There were 219 lower extremity vein graft revisions performed in 161 patients between January 1995 and January 2007. Patients with vein graft stenoses were considered symptomatic if they had recurrence of the symptoms that had prompted the original placement of the vein graft. Both univariate and multivariate analysis were used to develop a model of independent predictors of symptomatic recurrence. Patency rates for symptomatic and asymptomatic stenotic vein grafts were compared after revision.

There were 125 asymptomatic and 94 symptomatic vein graft lesions revised. Lesions associated with symptoms had a significantly greater drop in ABI than asymptomatic lesions (0.21 ± 0.03 vs 0.18 ± 0.02, $P = .003$). Vein graft stenoses that were located in the distal graft or in the outflow artery were also more likely to be associated with symptom recurrence ($P = .048$). By multivariate analysis, a decrease in ABI (odds ratio, 6.803; 95% confidence interval [CI], 1.418-32.258; $P = .02$) and use of alternative vein conduits (odds ratio. 2.633; 95% CI, 1.243-5.578; $P = .01$) were independent predictors of symptomatic vein graft stenosis. There were also strong trends towards symptomatic recurrence being associated with other systemic manifestations of atherosclerosis such as cerebrovascular disease or coronary artery disease ($P = .06$). Patients with diabetes or renal failure and current smokers were not more likely to present with recurrent symptoms. Symptomatic stenoses were more frequent in revisions performed between 1 and 2 years postoperatively (56%) than in the first year after the operation (37%, $P = .003$). Assisted primary patency rates of grafts revised with symptomatic vs asymptomatic stenoses were not different (82% symptomatic and 88% asymptomatic at 5 years; $P = .30$).

Comment: The article defines, for the first time, factors associated with symptomatic vein graft stenoses. Unfortunately, although stenoses revised in alternative conduit grafts and stenoses revised >1 year after graft implantation are more frequently associated with symptoms, a significant number of patients in those groups also have asymptomatic graft stenosis of sufficient severity that the graft requires revision. At this time, a life-long policy of periodic surveillance of lower extremity vein grafts with duplex scanning still seems prudent.

Shifting paradigms in the treatment of lower extremity vascular disease: A report of 1000 percutaneous interventions

DeRubertis BG, Faries PL, McKinsey JF, et al. Ann Surg 2007;246:415-424.

Conclusion: The first-line therapy for patients with chronic lower extremity ischemia should be a percutaneous intervention.

Summary: The authors report retrospective analysis of 1000 percutaneous infrainguinal interventions. Claudication was the indication for intervention in 46.3%, and limb-threatening ischemia was the indication in 52.7% (rest pain, 27.7%; tissue loss, 72.3%). Patients were treated with a variety of catheter-based techniques, including angioplasty, angioplasty and stenting, laser angioplasty, and atherectomy. Femoral, popliteal, and tibial vessels were treated. Men comprised 57.3% of patients, 58% of patients had diabetes, and chronic renal insufficiency was present in 39%. The 30-day mortality rate was 0.5%. In patients with claudication, 2-year primary and secondary patency rates were 62.4% and 79.3%. At 2 years, only 0.5% of claudicant patients had undergone amputations. In patients with limb-threatening ischemia, rates for 2-year primary patency, secondary patency, and limb salvage were 37.4%, 55.4%, and 79.3%, respectively. Predictors of recurrent disease included limb threat as the indication for intervention ($P < .0001$), hypercholesterolemia ($P = .001$), diabetes ($P = .003$), coronary artery disease ($P = .047$), and TransAtlantic Inter-Society Consensus (TASC) D lesions ($P = .050$). Of the patients with recurrent disease, 60.3% underwent a successful percutaneous reintervention, 7.5% required no further intervention, 11.7% underwent bypass, and 20.5% had amputation.

Comment: This is a retrospective analysis of a large number of patients treated for evolving indications with continually changing technology. The results are not surprising, and the predictors of failure not unexpected. Unfortunately, this lesion-based analysis is out dated. The authors also did not tell us about those who were medically managed, those treated with open operations, the nature of the wounds in the patients with critical limb ischemia, and who underwent primary amputation. There was no quality of life evaluation in those treated. Compared with most open series of infrainguinal revascularization, a high percentage of the patients had claudication. Overall, the article tells us what a group of surgeons with seemingly relatively liberal indications for intervention and favoring catheter-based techniques *did*. It also tells us a bit about how the intervention worked out. It doesn't really tell patients how it will work out for them, nor does it tell surgeons what they *should* do.

Effect of statin withdrawal on frequency of cardiac events after vascular surgery

Schouten O, Hoeks SE, Welten GM, et al. Am J Cardiol 2007;1000: 316-20.

Conclusion: Statin withdrawal in the perioperative period after vascular surgery is associated with increase risks of perioperative adverse cardiac events.

Summary: The incidence of adverse cardiac events increases in patients with acute coronary syndrome who have withdrawal of their statin medication (J Cardiothorac Anesthes 2003;17:90-100). There are no intravenous formulas for statins, thus interruption of statins in the postoperative period occurs frequently, especially in patients with postoperative ileus. In this study, the authors studied 298 consecutive patients who underwent major vascular surgery and who were also taking a statin medication. The goal of the study was to assess the effect of postoperative cardiac outcome after perioperative statin withdrawal.

Patients were evaluated with detailed cardiac history and determination of medication use, including the particular type of statin each patient was taking. Troponin levels were measured on postoperative days 1, 3, and 7, and 30. Troponin levels were also obtained whenever indicated clinically by electrocardiographic changes. End points of the study were myocardial infarction, postoperative troponin release, and a combination of cardiovascular death and nonfatal myocardial infarction. Cox proportional hazard analysis and multivariant analysis were used to assess the influence of statin type and the effect of discontinuation of statins on occurrence of study end points.

Perioperative discontinuation of statin medication was associated with an increased risk of troponin release (hazard ratio [HR], 4.6; 95% confidence interval [CI], 2.2-9.6). Statin discontinuation was also associated with an increased risk of the combination of cardiovascular death and myocardial infarction (HR, 7.5; 95% CI, 2.8-10.1). Fluvastatin, an extended-release statin, was associated with fewer perioperative events compared with pravastatin, simvastatin, and atorvastatin.

Comment: Evidence is accumulating that statin withdrawal in the perioperative period is harmful for vascular surgical patients. Obviously, this is not due to perioperative changes in lipid levels but likely involves some of the pleiotropic effects of statins, such as inhibition of inflammation, antithrombotic effects, and modulation of endothelial function. Pleiotropic effects are present within hours of statin administration. Such effects can be rapidly lost with acute withdrawal of a statin medication. Whenever possible, vascular surgical patients should be started on statins preoperatively and maintained on statins during their perioperative period.

TGF-Beta and CTGF-Mediated Fibroblast Recruitment Influences Early Outward Vein Graft Remodeling

Jiang Z, Yu P, Tao M, et al. Am J Physiol Heart Circulatory Physiol 2007; 293: H482-H488.

Conclusions: Elevated wall shear stress increases production of tissue growth factor-β (TGF-β) and connective tissue growth factor (CTGF) leading to increased differentiation of fibroblasts to myofibroblasts. Levels of TGF-β and CTGF correlate inversely with outward remodeling of the vein graft wall.

Summary: Placement of a venous conduit into an arterial system leads to acute alterations in shear stress in the vein graft wall. Shear influences both the morphology of the graft wall and intramural growth. Increased wall shear promotes luminal expansion, and elevated circumferential wall stress leads to wall thickening and stabilization of luminal diameter. Both TGF-β and CTGF regulate adventitial remodeling. The authors postulate increased