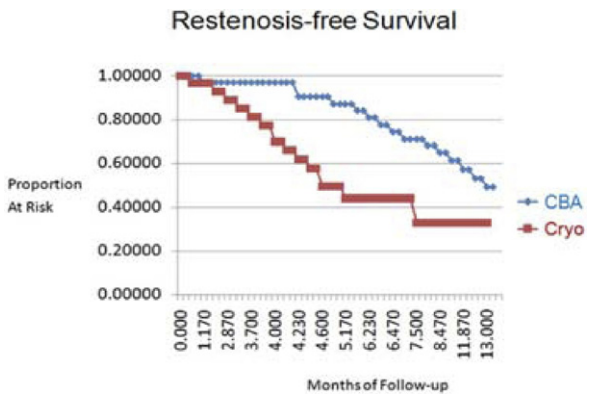

Anatomic Patterns of Failure After Infrainguinal Percutaneous Revascularization

Mounir J. Haurani, MD, Mark F. Conrad, MD, Vikram Paruchuri, and Richard P. Cambria, MD, Massachusetts General Hospital, Boston, Mass

Objective: Percutaneous revascularization (PTA) of infrainguinal occlusive disease is associated with a significant recurrence rate, with a 15% to 25% reintervention rate to maintain secondary patency. Other studies have focused on clinical predictors of such failure, but little is known of the anatomy of such failures, which is the goal of this study.

Methods: Of 1100 limbs that underwent infrainguinal PTA from 2002-2007, 40% failed based on worsening ABIs, clinical symptoms, amputation, or reintervention. A total of 150 limbs underwent femoral-popliteal PTA and had follow-up arteriograms for evaluation. Lesions were stratified into proximal, middle (adductor canal), and distal (popliteal). Angiographic findings from the initial PTA were compared with the follow-up study.

Results: Of the 150 limbs in the cohorts, 38% underwent initial PTA for critical limb ischemia, with 10% limb loss. The mean length of time to recurrence was 13.2 months, with 70% of patients recurring by that time point. The distribution of disease was not different between the initial PTA and the follow-up angiography (70% vs 64% [$P = .2$] proximal, 79% vs 78% [$P = .1$] middle, and 28% vs 30% [$P = .8$] distal femoral-popliteal). There was no change in multilevel disease from initial PTA either (64% vs 58% $P = .3$). Significantly more middle femoral-popliteal segments were initially occluded (25% proximal, 33% middle, and 12% distal; $P < .001$). An initially occluded segment did not increase the likelihood of new or worsening disease on repeat angiography. Tibial runoff deteriorated in 11% of patients but did not correlate with amputation, initial lesion location, or severity. Initially, 40% of the limbs treated underwent stenting in at least one segment; this did not predict worsening disease. In 68% of the limbs treated, the site of recurrence was the same as the initial PTA site, and in 16%, the disease was immediately adjacent to the initial PTA site.

Conclusions: Recurrent lesions after infrainguinal PTA tend to occur within the first year and most occur at or immediately adjacent to the site of initial treatment. There was no difference in the location of the recurrent disease when compared with primary PTA site. Presence of an occlusion was not predictive of worsening disease within the femoral-popliteal artery or the location of the recurrence.

Scientific Session II

Role of IVUS Versus Venograms in Assessment of Iliac-Femoral Vein Stenosis

Anil Hingorani,MD, Saadi Alhabouni, MD, Enrico Ascher, MD, Natalie Marks, MD RVT, Alexsander Shiferson, DO, Kapil Gopal, MD, Daniel Jung, DO, and Theresa Jacob, PhD, Maimononides Medical Center, Brooklyn, NY

Objective: Lower extremity venous stasis disease could be related to outflow obstruction in the iliac-femoral vein segments due to stenosis or extrinsic compression. Conventional methods to assess these vein segments include transcutaneous ultrasonography and ascending venography. The transcutaneous approach has a low sensitivity, and venography can miss significant lesions as the assessment is undertaken in a single view. We assessed the role of intravenous ultrasound (IVUS) imaging in detecting the location as well as the degree of stenosis in the iliac-femoral vein segments.

Methods: IVUS and ascending venography were used to evaluate outflow obstruction/stenosis in 104 patients with chronic lower extremity venous stasis disease. The location and degree of any stenosis were noted. A significant stenosis was defined as a 50% reduction in the diameter of the vein relative to the adjacent vein segments. Patients with significant stenosis underwent venous stenting to restore outflow. The results of venography and IVUS were compared.

Results: Forty-six (44.2%) patients had no evidence of stenosis on venography or IVUS and hence received no stents, but 58 (55.8%) had significant stenotic lesions on IVUS. Among those, 10 (17.2%) had no detectable lesion on venogram and would have been missed. In 24 patients (41.4%), venography failed to identify all stenotic lesions or resulted in inaccurate localization of the lesion. Only 24 patients (41.4%) had stenotic lesions on venogram that conformed anatomically to the lesions detected on IVUS.

Conclusions: In assessing patients with lower extremity venous stasis disease for iliac-femoral vein stenosis/obstruction, venography alone can result in poor localization (50% specificity) and can even miss significant stenotic lesions (82.8% sensitivity). IVUS is a more sensitive and accurate method and should be included in all such evaluations.

Venous Ablation Can Be Performed Safely on High-Risk Patients

Kathleen J. Ozsvath, MD, Stephanie Saltzberg, MD, John B. Taggert, MD, Benjamin B. Chang, MD, Paul B. Kreienberg, MD, Manish Mehta, MD, MPH, Philip S. K. Paty, MD, Sean P. Roddy, MD, Yaron Sternbach, MD, and R. Clement Darling III, MD, Albany Medical College, Albany, NY

Introduction: Patients with a previous history of deep vein thrombosis (DVT) or a family history of DVT are considered at high risk for thrombotic complications (DVT) after endovenous ablation (EVA). In this study, we examine our outcomes on patients presenting for "high-risk" EVA.

Methods: We reviewed our vascular registry for all patients undergoing EVA from 2006-2008. All patients were evaluated with venous ultrasonography and initially treated with a minimum of 3 months of compression stockings. EVA candidates were treated with laser ablation or radiofrequency ablation using a standardized technique. All patients who were identified as potential high risk for DVT had hematology consultation and were prescribed periprocedural anticoagulation prophylactically. Postprocedural ultrasonography was performed at 1 week, 1 month, 3 months, and every 6 months thereafter for 2 years.

Results: A total of 685 EVA were performed (480 laser, 205 radiofrequency), most in the great saphenous veins. A subgroup of 15 patients (2.1%) was identified to be high risk for DVT. Mean age was 44 years. CEAP classifications ranged from 2 to 6, with ankle edema being the most common diagnosis. The immediate technical success rate was 99.6%. Access failure occurred in three patients (0.4%). The most common postprocedural complications included bruising in 203 (29%), phlebitis in branch varicosities in 28 (4%), and heat induced thrombus formation in 13 (1.9%). There was no significant difference between laser and radiofrequency groups. None of the presumed hypercongealable patients developed thrombotic complications. There were no deaths in this series. Mean follow-up was 6 months (range, 1-27 months). Ancillary procedures were performed in 19%, including stab phlebectomy, sclerotherapy, and perforator injection or ablations. All patients remain successfully ablated to date.

Conclusions: In our experience, EVA can be safely performed in appropriate candidates with excellent clinical outcomes and minimal morbidity and mortality. Preliminary data suggests that patients with hypercoagulable conditions or strong family history of thrombosis can be considered for EVA with periprocedural anticoagulation.

Clinical Outcomes With Covered Stent Placement for Central Venous Occlusive Disease in Hemodialysis Patients

Javier E. Anaya-Ayala, MD, Cherie Obilom, BS, Zulfiqar F. Cheema, MD, PhD, Joseph J. Naoum, MD, Jean Bismuth, MD, Mark G. Davies, MD, PhD, Alan B. Lumsden, MD, and Eric K. Peden, MD, Methodist DeBakey Heart and Vascular Center, Houston, Tex

Objectives: The use of covered stents (CSs) has been proposed as a new treatment option for central venous occlusive disease (CVOD) in hemodialysis patients. Among its advantages include the mechanical support of bare-metal stents while providing an inert and stable intravascular matrix for endothelialization. The aim of this study is to evaluate the efficacy and durability of CSs in treating central venous stenosis while preserving hemodialysis access patency.

Methods: A retrospective review was performed in all patients with symptomatic CVOD manifested with venous hypertension or access malfunction and treated by means of CS from April 2007 to March 2010. The Gore Viabahn Endoprosthesis stent graft was implanted in all cases. Patients' demographics, stenotic lesions location, stent graft, and patency were determined; complications, reintervention, and factors influencing their outcomes were examined.

Results: Twenty patients (60% men) with a mean age of 56 years (range, 28 to 86) primarily underwent CS placement for CVOD. Of the 20, 18 (90%) had history of arterial hypertension, 13 (65%) were diabetic, and 4 (20%) had peripheral arterial disease. All patients had a history of multiple central catheter placements. The indications for the CS placement were access malfunction with angioplasty-resistant lesions in 12 patients (60%)