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Structure of Delay in Carotid Surgery – An Observational Study

Vikatmaa P., Sairanen T., Lindholm J.-M., Capraro L., Lepäntalo M., Venermo M. Eur J Vasc Endovasc Surg 2011;42:273-9.

Objectives and design: Undelayed investigation and surgical treatment of symptomatic carotid artery stenosis are recommended as per guidelines on stroke prevention. We evaluated patient referral pathways and delays from symptom to surgery in Helsinki University Central Hospital (HUCH) region.

Materials and Methods: One hundred consecutive symptomatic patients scheduled for carotid endarterectomy (CEA) between August 2007 and September 2008 were identified and the delay between ischaemic index symptom and CEA was analysed.

Results: The median time from the index symptom to surgery was 47 days (range: 3–688 days). The longest delay was surgery related with a median of 25 days (range: 2–202 days) from the consultation of the vascular surgeon to the operation. Only 11% of the patients were operated within the recommended 2 weeks' time. It was more likely that CEA was performed within 2 weeks if an emergent consultation to Meilahti Hospital neurologist on call did take place (odds ratio (OR) 12.6, 95% confidence interval (CI) 1.5–104, $p = 0.019$).

Conclusion: Delays from symptom to surgery were generally too long and the in-hospital door-to-knife time (DKT) was long mostly due to waiting for the operation theatre. The investigation of all stroke, amaurosis fugax and transient ischaemic attack patients should be performed on an emergency basis and most optimally centralised to hospitals were carotid surgery is performed.

The Association of Clinical Variables and Filter Design with Carotid Artery Stenting Thirty-day Outcome

Siewiorek G.M., Krafty R.T., Wholey M.H., Finol E.A. Eur J Vasc Endovasc Surg 2011;42:282-91.

Objective: Patient and device selection are important for the success of carotid artery stenting (CAS). We hypothesize that distal protection filter (DPF) design characteristics that minimize blood flow resistance and maximize capture efficiency are associated with the absence of transient ischemic attack (TIA), stroke and neurologic-related death after 30 days.

Methods: Records from 208 patients were reviewed retrospectively. Filter design characteristics were quantified previously in our laboratory. The association between risk factors and design characteristics with 30-day outcome was quantified using univariate analysis.

Results: The 30-day all-cause stroke and death rate was 8.7% (asymptomatic: 7.7%, symptomatic: 10.6%). Five DPFs were used in the study: Accunet (41.3%), Angioguard (33.2%), FilterWire (24%), Emboshield (1%), and Spider (.5%). Diabetes ($P = .04$) and prior carotid endarterectomy (CEA, $P = .03$) were associated with adverse outcome. Prior stroke ($P = .01$) and prior CEA ($P = .04$) were significant for peri-procedural stroke. Design characteristics such as capture efficiency were associated with favorable outcomes.

Conclusions: Patients with prior CEA or stroke are more likely to have unfavorable CAS outcomes after 30 days. Filters with high capture efficiency may yield the best clinical results. Analysis of the effect of design characteristics on CAS outcome should aid the design of future devices.

The Fate of Patients Referred to a Specialist Vascular Unit with Large Infra-renal Abdominal Aortic Aneurysms over a Two-year Period

Karthikesalingam A., Nicoli T.K., Holt P.J., Hinchliffe R.J., Pasha N., Loftus I.M., Thompson M.M. Eur J Vasc Endovasc Surg 2011;42:295-301.

Introduction: The basic premise in managing patients with abdominal aortic aneurysms (AAA) must be to reduce overall mortality from the disease. Operative mortality is widely reported, but data on patients deemed unsuitable for repair are scarce. The purpose of the present study was to report the fate of patients referred with AAA, to define the proportion deemed unsuitable for surgery and to investigate the reasons for conservative treatment.

Methods: All patients who were referred to a regional vascular centre with large (>5.5 cm) infra-renal AAA between 1st January 2008 and 31st December 2009 were included. Patients were classified into two groups; those managed non-operatively, or those offered elective repair. Survival was reported by Kaplan–Meier analysis. Multivariate analysis investigated factors leading to non-operative management.

Results: 251 patients with a mean (s.d.) age of 75(8) years were assessed. Thirty-two (13%) patients were deemed unsuitable for repair, mostly because of medical co-morbidity (16/32). 219/251 (87%) patients underwent repair (25/251 (10%) open repair 194/251 (77%) EVAR) with 1/219 (0.5%) 30-day mortality. AAA repair was associated with significantly greater survival ($p < 0.001$, log-rank test) at 2 years. In multivariate analysis Glasgow Aneurysm Score, female gender and respiratory disease were significant predictors of the decision to treat patients conservatively ($p < 0.001$).

Conclusion: Most patients were suitable for surgical intervention with low perioperative mortality. Data on "turndown" rates should be routinely reported to quantify the denominator for operative success.

Reliability of Semiautomatic Centerline Analysis versus Manual Aortic Measurement Techniques for TEVAR among Non-experts

Rengier F., Weber T.F., Partovi S., Müller-Eschner M., Böckler D., Kauczor H.-U., von Tengg-Kobligk H. Eur J Vasc Endovasc Surg 2011;42:324-31.

Objectives: The study aimed to test whether reliability and inter-observer variability of preoperative measurements for thoracic endovascular aortic repair (TEVAR) among non-experts are improved by semiautomatic centerline analysis compared with manual assessment.

Methods: Preoperative computed tomography (CT) angiographies of 30 patients with thoracic aortic disease (mean age 66.8 ± 11.6 years, 23 men) were retrospectively analysed in randomised order by one blinded vascular expert (reference standard) and three blinded non-expert readers. Aortic diameters were measured at four positions relevant to TEVAR using three measurement techniques (manual axial slices, manual multiplanar reformations (MPRs) and semiautomatic centerline analysis). Length measurements were performed using centerline analysis. Reliability was calculated as absolute measurement deviation (AMD) from reference standard and inter-observer variability as coefficient of variance (CV) among non-expert readers.

Results: For axial, MPR and centerline techniques, mean AMD was 7.3 ± 7.7%, 6.7 ± 4.5% and 4.7 ± 4.8% and mean CV was 5.2 ± 4.2%, 5.8 ± 4.8% and 3.9 ± 5.4%. Both AMD and CV were significantly lower for centerline analysis compared with axial technique ($p = 0.001/0.042$) and MPR ($p = 0.009/0.003$). AMD and CV for length measurements by centerline analysis were 3.2 ± 2.8% and 2.6 ± 2.4%, respectively. Centerline analysis was significantly faster than MPR ($p < 0.001$).

Conclusions: Semiautomatic centerline analysis provides the most reliable and least variable diameter and length measurements among non-experts in candidates for TEVAR.

In Treatment of Popliteal Artery Cystic Adventitial Disease, Primary Bypass Graft not Always First Choice: Two Case Reports and a Review of the Literature

van Rutte P.W.J., Rouwet E.V., Belgers E.H.J., Lim R.F., Teijink J.A.W. Eur J Vasc Endovasc Surg 2011;42:347-54.

Cystic adventitial disease (CAD) is a rare cause of unilateral intermittent claudication of unknown aetiology, which is characterized by the formation of multiple mucin-filled cysts in the adventitial layer of the arterial wall resulting in obstruction to blood flow. The disease predominantly presents in young otherwise healthy males and most commonly affects the popliteal artery. CAD can be diagnosed by magnetic resonance imaging, computed tomographic angiography, or duplex ultrasound. Surgery is the primary mode of treatment, including exarterectomy, or replacement of the affected vascular segment by venous or synthetic interposition graft. Alternatively, the cysts can be drained by percutaneous ultrasound-guided needle aspiration. We provide a literature update on the aetiology and treatment of this uncommon condition and present two cases supporting patient tailored treatment without primary bypass grafting.

Prevalence and Predictors of Persistent Health Status Impairment in Patients Referred to a Vascular Clinic with Intermittent Claudication

Safley D.M., Kennedy K.F., Stansby G., Flather M., Cohen D.J., Spertus J.A. Eur J Vasc Endovasc Surg 2011;42:355-62.

Background: The goal of treatment for lower extremity peripheral artery disease is often to improve health status. Factors associated with failure to improve are unknown.

Methods: Health status was assessed with the Peripheral Artery Questionnaire (PAQ) at baseline and 2 years in 344 patients referred to vascular

clinics. Improvement was defined as an increase of ≥5 points on the PAQ Summary Score. Multivariable logistic regression identified patient and treatment characteristics associated with impaired baseline health status, and predictors of no improvement (<5 points).

Results: Older age, bilateral symptoms, female sex and prior revascularization were associated with impaired baseline health status. At 2 years 36% reported unimproved health status. Factors associated with no improvement were older age (Odds Ratio 1.67/decade, CI 1.28, 2.19), better baseline health status (OR 1.40/10-points, CI 1.24, 1.59), beta blocker use (OR 2.53, CI 1.37, 4.68), prior stroke (OR 4.12, CI 1.33, 12.77) and bilateral claudication (OR 1.79, CI 1.07, 2.99).

Summary: Older patients, women, and those with bilateral symptoms or prior revascularization have worse health status at vascular referral. Over 1/3 of patients' health status did not improve over 2 years; older patients and those with bilateral or milder symptoms, prior stroke or using beta blockers were less likely to improve.

Limb Salvage Using Bypass to the Perigeniculate Arteries

De Luccia N., Sassaki P., Durazzo A., Sandri G., Kikuchi M., Hirata C., Romiti M., Sacilotto R., Brochado-Neto F.C. Eur J Vasc Endovasc Surg 2011;42:374-8.

Objective: To describe bypass to perigeniculate vessels for limb salvage.

Design: Retrospective cohort study.

Material and Methods: Between 1995 and 2009, 47 bypass procedures to perigeniculate collateral arteries were performed in 46 patients (15 women, 31 men; median age, 68 years). All patients presented with critical ischaemia (tissue loss in 87.5%, rest pain in 12.5%). Mean ankle brachial index was 0.27 ± 0.17. The site of distal anastomosis was the descending genicular artery (DGA) in 23 bypasses (1 bilateral) and the medial sural artery (MSA) in 24. Proximal anastomosis was to the external iliac artery in 2 cases, common femoral artery in 23 cases, superficial femoral artery in 8 cases, deep femoral artery in 8 cases, above-knee poplitaeal artery in 2 cases, and previous graft in 4 cases.

Results: There were four deaths during the immediate postoperative period. Mean follow-up duration was 27 months. Ten patients required major amputation. Mean ankle brachial index post-operatively was 0.60 ± 0.21. At 3 years, primary patency was 74.7 ± 7%, secondary patency was 83.4 ± 8%, and the limb salvage and survival rates were 73.5 ± 7% and 77.4 ± 7%, respectively.

Conclusion: Bypass to perigeniculate arteries is a viable treatment option for critical limb ischaemia in selected patients.