

Selected Abstracts from the December Issue of the European Journal of Vascular and Endovascular Surgery

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An Analysis Comparing Open Surgical and Endovascular Treatment of Atherosclerotic Renal Artery Stenosis

Abela R., Ivanova S., Lidder S., Morris R., Hamilton G. *Eur J Vasc Endovasc Surg* 2009;38:666-75.

Objective: Endovascular revascularization in atherosclerotic renal artery stenosis (ARAS) has dominated during the last 15 years with surgery relegated mostly to back-up for failed endovascular procedures. This study examines the available outcome evidence to determine what role open surgery should have in comparison to endovascular treatment in the management of ARAS.

Method: Of 183 papers listed in PubMed, the USNLM and the Cochrane library, (1975–2004) 47, dealing with outcomes of surgical and endovascular treatments (evidence levels 2b and 3) were selected. Endovascular included 1750 patients in 16 prospective non-randomised (PNRT) and 5 retrospective (RET) studies. Surgical included 2314 patients in 4 PNRTs and 17 RETs. Outcome data were subjected to meta-regression analysis weighted according to the inverse variance method.

Results: Mean maximum ages were 79.4 yrs (SD 6.9) for surgical and 83.6 yrs (SD 3.8) for endovascular studies. Primary technical success was similar. Endovascular patency declined by 0.26%/month (95% CI: 0.04–0.48, $p = 0.03$). Surgical studies showed greater improvement for hypertension control by 21% (95% CI: 9–33%, $p = 0.001$) and for renal function by 34% (95% CI: 18–54%, $p < 0.001$), as well as a higher creatinine reduction by 32 $\mu\text{mol/L}$ (95% CI: 7–57 $\mu\text{mol/L}$, $p < 0.014$). A higher excess surgical mortality, 3.1% (95% CI: 1.8–4.4%, $p < 0.001$) became insignificant, 0.18% (95% CI: 0.7–1.1, $p = 0.70$) when concomitant aortic surgery was excluded.

Conclusion: This data shows a marked and durable clinical benefit for surgery. These findings question the endovascular predominance in intervention in ARAS and highlight the need for a carefully designed prospective randomised comparison to define the roles of endovascular and surgical renal revascularization.

Developments in Genomics to Improve Understanding, Diagnosis and Management of Aneurysms and Peripheral Artery Disease

Tromp G., Kuivaniemi H. *Eur J Vasc Endovasc Surg* 2009;38:676-82.

Genome-wide approaches, including microarray-based expression profiling, DNA linkage studies and genetic association studies, offer an unbiased way to identify genetic risk factors and biological processes leading to discoveries, which might help in the development of new diagnostic and therapeutic approaches for a wide range of diseases. Currently, the number of published genome-wide analyses for aneurysms and peripheral artery diseases is still limited, and it is difficult to generalise about the disease pathogenesis or genetic risk factors contributing to these diseases. Large multicentre studies are needed to provide sufficient statistical power, and replication studies are essential before these findings are used for defining clinical policies of diagnosis and treatment. The biggest future challenge will be to translate the genomic information to the clinical settings so that it will improve our understanding of the disease processes, help us to develop better diagnostic tools and lead to the design of new ways to manage aneurysms and peripheral artery disease in the era of personalised medicine. Characterisation of diseases at the molecular level is likely to lead to more accurate diagnoses and the use of “genomic nosology” of diseases.

Prognosis of Transient New-Onset Atrial Fibrillation During Vascular Surgery

Winkel T.A., Schouten O., Hocks S.E., Verhagen H.J.M., Bax J.J., Poldermans D. *Eur J Vasc Endovasc Surg* 2009;38:683-8.

Background: Chronic atrial fibrillation (AF) in a non-surgical setting is associated with cardiovascular events. However, the prognosis of transient new-onset AF during vascular surgery is unknown.

Objective: The purpose of this study is to investigate the prognosis of new-onset AF during vascular surgery using continuous electrocardiographic monitoring (continuous-ECG).

Methods: In this study, 317 patients, all in sinus rhythm, scheduled for major vascular surgery were screened for cardiac risk factors. Continuous-ECG recordings for 72 h and standard ECG on days 3, 7 and 30 were used to identify new-onset AF. Cardiac troponin T (cTnT) was measured routinely after surgery. Study endpoint was a composite of cardiac death,

myocardial infarction, unstable angina and stroke (cardiovascular events) at 30 days after surgery and during late follow-up. Median follow-up was 12 (interquartile range 2–28) months.

Results: New-onset AF was noted in 15 (4.7%) patients. All but three patients returned spontaneously to sinus rhythm. The composite endpoint of cardiovascular events within 30 days and during late follow-up occurred in 34 (11%) and 62 (20%) patients, respectively. Multivariate regression analysis showed that new-onset AF was associated with perioperative (hazard ratio (HR) 6.0; 95% CI: 2.4–15) and late cardiovascular events (HR 4.2, 95% CI: 2.1–8.8).

Conclusion: New-onset AF during vascular surgery is associated with an increased incidence of 30-day and late cardiovascular events.

Management of Inadvertent Arterial Catheterisation Associated with Central Venous Access Procedures

Pikwer A., Acosta S., Kölbl T., Malina M., Sonesson B., Åkeson J. *Eur J Vasc Endovasc Surg* 2009;38:707-14.

Objective: This study aims to describe the clinical management of inadvertent arterial catheterisation after attempted central venous catheterisation.

Methods: Patients referred for surgical or endovascular management for inadvertent arterial catheterisation during a 5-year period were identified from an endovascular database, providing prospective information on techniques and outcome. The corresponding patient records and radiographic reports were analysed retrospectively.

Results: Eleven inadvertent arterial (four common carotid, six subclavian and one femoral) catheterisations had been carried out in 10 patients. Risk factors were obesity ($n = 2$), short neck ($n = 1$) and emergency procedure ($n = 4$). All central venous access procedures but one had been made using external landmark techniques. The techniques used were stent-graft placement ($n = 6$), percutaneous suture device ($n = 2$), external compression after angiography ($n = 1$), balloon occlusion and open repair ($n = 1$) and open repair after failure of percutaneous suture device ($n = 1$). There were no procedure-related complications within a median follow-up period of 16 months.

Conclusions: Inadvertent arterial catheterisation during central venous cannulation is associated with obesity, emergency puncture and lack of ultrasonic guidance and should be suspected on retrograde/pulsatile catheter flow or local haematoma. If arterial catheterisation is recognised, the catheter should be left in place and the patient be referred for percutaneous/endovascular or surgical management.

Conservative Management of Type 2 Endoleaks is not Associated with Increased Risk of Aneurysm Rupture

Rayt H.S., Sandford R.M., Salem M., Bown M.J., London N.J., Sayers R.D. *Eur J Vasc Endovasc Surg* 2009;38:718-23.

Objective: Endovascular repair (EVAR) of abdominal aortic aneurysms (AAAs) has led to a reduction in the perioperative mortality when compared with open repair. However, re-intervention for complications, such as endoleak, may be required in up to 20% of the cases. Controversy exists over the management of Type 2 endoleaks. This study examined the outcomes of patients with Type 2 endoleaks treated conservatively to inform the ongoing management debate.

Methods: All patients with a confirmed Type 2 endoleak after EVAR for an infrarenal AAA were included in the study. Data regarding device details, endoleak and time point, aneurysm sac growth, intervention and outcome were collected retrospectively from case notes and the vascular research database.

Results: Forty-one Type 2 endoleaks were seen in 369 EVARs performed for infrarenal AAA between March 1994 and June 2006. Twenty-five were isolated Type 2 endoleaks and 16 occurred in conjunction with other endoleaks. Of the 25 isolated Type 2 endoleaks, 18 (72%) patients demonstrated no increase in sac size, six (24%) patients showed an enlargement of the sac and one patient was lost to follow-up. Only one patient underwent intervention for an isolated Type 2 endoleak. After a mean follow-up period of 4 years, approximately half of the patients (48%) remain under observation (with an enlarging or stable sac), whilst the others (48%) have spontaneously sealed. Only five patients under surveillance (20%) have an enlarging sac. There were no ruptured aneurysms or aneurysm-related deaths and no patients required conversion to open repair.