

Objectives To study the epidemiology of vascular injuries, with special focus on Iatrogenic Vascular Injuries (IVIs) and time-trends.

Design and methods From the Swedish national vascular registry, Sweden, prospectively registered data on vascular injuries during 1987–2005 were analysed and cross-referenced for mortality against the population registry.

Results Of 1853 injuries, 48% were caused by iatrogenic, 29% penetrating and 23% blunt trauma. In the three groups median age was 68, 35 and 40 years, respectively. The annual incidence of procedures for vascular injuries increased from 1.2–1.6 per 100 000 inhabitants and the proportion of IVIs increased from 41 to 51%, during the period. Mortality was higher after IVI (4.9%) compared to non-IVI (2.5%). Patients with IVI also had more co-morbidities; 88% cardiac disease, 44% hypertension, and 18% renal dysfunction. Among 888 IVIs, right femoral arterial injury was the most frequent (37%). The most common vascular reconstruction was direct suture (39%) followed by by-pass or interposition graft (19%, of which prostheses were used in over half the cases). Endovascular repair increased from 4.6% to 15% between 1987 and 2005.

Conclusions Vascular injuries, in particular iatrogenic ones, appear to be increasing. Iatrogenic injuries affect vulnerable patients with co-morbidities and are associated with a high mortality.

Outcome after Endografting in Small and Large Abdominal Aortic Aneurysms: A Metaanalysis


Aim To compare the results of endovascular repair (EVAR) in large and small (diameter <5.5 cm) abdominal aortic aneurysms (AAA).

Methods A systematic review was performed to identify studies comparing the outcomes after EVAR of large and small aneurysms. Outcomes considered were: risk of death (perioperative, all cause, aneurysm-related), ruptures, and complications (conversion, reintervention). Weighted pooled estimates of outcomes in patients with small versus large aneurysms were calculated. The inverse variance method was used (random-effect model).

Subgroup analyses by a follow-up longer or shorter than 24 months were calculated. The inverse variance method was used (random-effect model).

Results Five studies, with published and unpublished data, totalling 7,735 patients, were included. Overall, the weighted pooled estimates were: OR 0.68, 95% CI 0.51–0.90 for operative mortality, OR 0.77, 95% CI 0.69 to 0.86 for all cause mortality, OR 0.58; 95% CI 0.40 to 0.87 for aneurysm-related mortality and OR 0.61; 95% CI 0.47 to 0.79 for rupture in favour of small AAA group. Pooled estimates were not influenced by follow-up length. Conversion and reintervention rates were not significantly lower for small AAA.

Conclusions EVAR in small versus large AAA might be associated with lower operative mortality, aneurysm-related mortality and aneurysm rupture. Better evidence is needed to support these suggestions.

Surgical Treatment Result of Abdominal Aortic Aneurysm in Behçet’s Disease


Objective We report our surgical treatment results of abdominal aortic aneurysm (AAA) in Behçet’s disease patient.

Materials and methods Between September 1998 and June 2006, the authors performed 21 procedures for AAA in 12 patients with Behçet’s disease. Male to female sex ratio was 3:1 and mean age was 34 years old. Behçet’s disease was diagnosed clinically using criteria of International Study Group for Behçet’s Disease (1990). Retrospective analysis was made.

Results There were six infrarenal, five suprarenal, and one double (suprarenal and infrarenal)AAA. Six graft interposition, six patch closure, and one stent-graft insertion were performed (one graft interposition and one patch closure were simultaneously performed for double AAA). Eight recurrent aneurysms were noted in six (50%) patients. Four stent-graft insertion, two patch closures, one graft interposition and one endoloopcratotomy only were performed for recurrent aneurysms. Overall recurrent rate of 21 procedures was, hence, 15%, 14.3% for graft interposition, 62.5% for patch closure, and 40% for stent-graft insertion.

Conclusion Though the resection and graft interposition is technically difficult in many occasions, it should be considered as the procedure of choice for abdominal aortic aneurysm in Behçet’s disease. Endovascular interventions may be one of the treatment modality but the result needs further long-term follow-up.

Thoracoabdominal Aortic Aneurysm Repair in Patients with Marfan Syndrome


Objective We assessed the surgical outcome of descending thoracic aortic aneurysm repair (DTAA) and thoracoabdominal aortic aneurysm (TAAA) repair in patients with Marfan syndrome.

Methods During a six year period, 206 patients underwent DTAA and TAAA repair. In 22 patients, Marfan syndrome was confirmed. The median age was 40 years with a range between 18 and 57 years. The extend of the aneurysms included 6 DTAA (1 with total arch, 2 with distal hemi-arch), 11 type II TAAA (2 with total arch, 3 with distal hemi-arch), 4 type III and one type IV TAAA. All patients suffered from previous type A (n = 6) or type B (n = 16) aortic dissection and 15 already underwent aortic procedures like Bentall (n = 7) and ascending aortic replacement (n = 8). All patients were operated on according to the standard protocol with cerebrospinal fluid drainage, distal aortic and selective organ perfusion and monitoring motor evoked potentials. In patients undergoing simultaneous arch replacement (via left thoracotomy), transcranial Doppler and EEG assessed cerebral physiology during antegrade brain perfusion. In four patients circulatory arrest under moderate hypothermia was required.

Results In-hospital mortality did not occur. Major postoperative complications like paraplegia, renal failure, stroke and myocardial infarction were not encountered. Mean pre-operative creatinine level was 125 mmol/L, which peaked to a mean maximal level of 180 and returned to 92 mmol/L at discharge. Median intubation time was 1.5 days (range 0.33–30 days). Other complications included bleeding requiring surgical intervention (n = 1), arrhythmia (n = 2), pneumonia (n = 2) and respiratory distress syndrome (n = 1). At a median follow-up of 38 months all patients were alive. Using CT surveillance, new or false aneurysms were not detected, except in one patient who developed a visceral patch aneurysm six years after open type II repair.

Conclusion Surgical repair of descending and thoracoabdominal aortic aneurysms provides excellent short- and mid-term results in patients with Marfan syndrome. In this series, a surgical protocol with cerebrospinal fluid drainage, distal aortic and selective organ perfusion and monitoring motor evoked potentials resulted in low morbidity and absent mortality. These outcomes of open surgery should be considered when discussing endovascular aneurysm repair in Marfan patients.

Retrojugal versus Ventroujugal Approach to Carotid Bifurcation for Eversion Endarterectomy: A Prospective Randomized Trial


Objectives The aim of this prospective randomized study was to demonstrate the comparability of retrojugular access for carotid eversion endarterectomy compared to the conventional ventroujugal procedure.

Patients and methods Due to the expected minor and major complication rate of 8% in patients undergoing carotid surgery, a patient cohort of 600 study patients was planned. All patients underwent standard preoperative and postoperative assessments including clinical investigation and fiberoptic laryngoscopy. The 6 month follow-up examination included an evaluation of patient contentment, a duplex scan, clinical investigation and a fiberoptic laryngoscopy.

Results After the first interim evaluation of 101 patients, the study was stopped because of a significant increase in temporary ipsilateral vocal cord motility dysfunction in the retrojugular access group (21% vs. 6%, p = 0.0014). This early postoperative impairment was, however, statistically significant at the follow-up examination at 6 months (2.4% vs.
0%). No other significant differences concerning major complications (death or stroke), other cranial nerve injuries, wound healing, or patient satisfaction was observed neither in the early postoperative phase nor at follow up.

**Conclusion** Due to the high incidence of temporary ipsilateral vocal cord dysfunction in patients undergoing retroperitoneal exposure of the carotid artery, we recommend the conventional ventromedial approach, which can be performed by incision along the anterior border of the sternomastoid muscle or by transversal skin incision.

**The Creation of the Optimal Dedicated Endovascular Suite**

**Background** During the last decade endovascular therapy has been established as an alternative treatment for a variety of vascular diseases. Neither the classic operating room (OR), nor the conventional angiography suite is optimal for both open surgery and endovascular procedures. Important issues include: quality of the imaging equipment, radiation burden, ease of use of the equipment, need for specially trained personnel, ergonomics, ability to perform both open and percutaneous procedures, sterile environments, as well as quality and efficiency of patient care.

**Methods** A literature search identified articles pertinent to the key issues during the decision-making process of creating the optimal endovascular suite. Manual cross-referencing also was performed.

**Results and conclusion** The most important feature of working in a dedicated endovascular suite should be the ability to attain best treatment of vascular patients. Whether the interventional radiologist or the vascular surgeon uses the facilities is of less importance. A fixed fluoroscopy unit is preferred, above a portable C-arm. Establishment of an endovascular operating room suite has the benefit of a sterile environment, the possibility of performing hybrid procedures and conversions when necessary. Moreover, angiography immediately before treatment gives contemporary anatomical information, and after treatment provides quality control. As a consequence, better quality and service can be provided to the individual patient.

**Conventional Stripping versus Cryostripping: A Prospective Randomised Trial to Compare Improvement in Quality of Life and Complications**

**Objectives** To assess the improvement in quality of life and complication rates in patients undergoing great saphenous vein (GSV) stripping using two different techniques.

**Patients and methods** 160 patients with primary varicose veins and GSV incompetence were randomised to either conventional stripping or cryostripping combined with phlebectomy of varices. Quality of life was assessed as the primary outcome measure prior to surgery and 6 months later, using the SF-36 questionnaire. Operative data, pain score and procedure related complications were evaluated as secondary outcome measures.

We assessed the area of bruising and symptoms attributable to saphenous nerve injury.

**Results** The number of completely analysed patients was 77 in the conventional stripping group and 69 in the cryostripping group. When comparing the preoperative SF-36 scores to the results after 6 months, there was an improvement in all eight domains, which reached statistical significance in six domains in both groups. The mean area of bruising measured in the thigh was significantly greater in the conventional stripping group (161 S.D. 63 cm^2 versus 123 S.D. 52 cm^2, p = 0.010, Student’s t test). The number of patients with paraesthesia due to saphenous nerve injury was numerically lower in the cryostripping group at one week [15 (22%), versus 28 (34%), N.S.] but no difference was observed at 6 months. Postoperative pain score evaluation in the evening and 24 hours after the operation revealed no significant difference.

**Conclusions** The study confirmed significant improvement in quality of life measured by SF-36 questionnaire after both conventional and cryostripping with no difference between the two stripping techniques. Cryostripping results in less bruising than conventional stripping.

**Association of Primary Varicose Veins with Dysregulated Vein Wall Apoptosis**

**Background** Disordered programmed cell death may play a role in the development of superficial venous incompetence. We have determined the number of cells in apoptosis, and the mediators regulating the intrinsic and extrinsic pathways in specimens of varicose vein.

**Methods** Venous segments were obtained from 46 patients undergoing surgical treatment for primary varicose veins. Controls samples were obtained from 20 patients undergoing distal arterial bypass grafting surgery. Segments of the distal and proximal saphenous trunk as well as tributaries were studied. Cell apopptoses and mediators of the mitochondrial and transmembrane pathway were evaluated with peroxidase in situ apoptosis detection, Bax and Fas detection, caspase-9 and 8 detection in the medial layer.

**Results** Organised histological architecture was observed in varicose veins. Primary varicose veins also contained fewer peroxidase in situ-positive cells than control veins (2.6% S.D. 0.2% versus 12% S.D. 0.9%, P = 0.001, Mann-Whitney test), fewer Bax positive cells (2.1% S.D. 0.3% versus 13% S.D. 0.9%, P = .0001) and fewer Caspase 9 positive cells (3.2% S.D. 1% versus 12% S.D. 1.8%, P = .0001). Similar findings were observed in saphenous trunk, main tributaries and accessory veins. In patients with recurrent varicose veins in whom the saphenous trunk had been preserved showed similar findings to primary varicose veins. Residual varicose veins contained fewer peroxidase in situ-positive cells than healthy veins (3.2% S.D. 0.6% versus 11% S.D. 2%, P = 0.0001), fewer Bax positive cells (2.2% S.D. 0.3% versus 12% S.D. 0.7%, P = .0001) and fewer Caspase 9 positive cells (2.6% S.D. 0.6% versus 12% S.D. 1%, P = .0001). Immunohistochemical detection for Fas and caspase 8 remained equal was the same in the varicose vein and control groups.

**Conclusion** Apoptosis is down regulated in the medial layer of varicose veins. This dysregulation is attributable to a disorder of the intrinsic pathway and involves the great saphenous vein trunk, major tributaries and accessory veins. This process may be among the causes of primary varicose veins.