

VASCULAR SURGERY

VS01
LONG-TERM SURVIVAL IN OCTOGENARIANS AFTER CAROTID ENDARTERECTOMY

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Purpose Octogenarians were not included in the major trials of carotid endarterectomy. Concern has been expressed about the role of this procedure in this age group. This is based, in part, on uncertainty about the long-term survival of elderly patients following carotid endarterectomy. The aim of the present study was to assess relative survival in those patients aged 80 years and over undergoing carotid endarterectomy.

Methods A population-based record linkage study of all patients who underwent carotid endarterectomy during 1988–98 in Western Australia was undertaken. Long-term relative survival following carotid endarterectomy was assessed against age and sex matched controls.

Results During the period 1988–98, 1,796 (1,306 male, 490 female) cases were identified. There were 151 patients aged 80 years and over. The combined death and stroke rate within 30 days of admission was 2.6% for those aged 80 years and over and 2.8% for those under 80 years ($p = 0.34$). The crude cumulative survival at five years was 64.9% for those aged 80 years and over, compared to 80.1% for those under 80 years of age. Relative survival at five years was 118% (95% CI: 102–134%) for those aged 80 years and over, compared to 94.7% (95% CI: 92–97%) for those under 80 years of age.

Conclusions Long-term survival following carotid endarterectomy in patients aged 80 years and over was better than that of an age-matched population. The likelihood of living long enough to gain benefit from a carotid endarterectomy is not jeopardized by being too old.

VS02
NEED FOR SHUNT IN REGIONAL ANAESTHETIC CAROTID SURGERY INDICATES A HIGHER RISK FOR PERI-OPERATIVE NEUROLOGICAL EVENT: CAROTID SURGERY AT ST VINCENTS, MELBOURNE 1987–2003

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Purpose Combined peri-operative stroke/mortality rate is one of two clinical indicators in this country for vascular surgery. This study aims to identify a group of patients at higher risk of peri-operative neurological event with carotid endarterectomy, and report a large series of carotid endarterectomy results performed under regional anaesthesia from one institution.

Methodology All data was collected retrospectively from hospital records, and since Feb 2000 from the MVSA, a peer-reviewed prospectively collected database.

Results From October 1987 to September 2003 1612 carotid endarterectomies were performed under regional anaesthesia, with intraluminal shunting (315/1612; 20% of cases) used only in response to neurological changes detected clinically in the awake patient. Patients requiring shunting for neurological change had significantly higher risk of permanent neurological deficit than non-shunted patients (24/315 (7.6%) v 16/1297 (1.2%); $p < 0.001$). Need for shunt was more strongly predictive of peri-operative neurological deficit than any pre-operative parameter. There were 9 deaths (9/1612; 0.56%) and 35 non-fatal strokes (35/1612; 2.17%) giving a combined stroke/mortality rate of 44 (2.7%). Since Feb 2000, 226 of 287 (79%) CEAs at our institution have been performed by the vascular trainee, with a combined stroke mortality rate of 0.44% (1/226).

Conclusions Carotid endarterectomy can be safely performed under regional anaesthesia with excellent major and minor morbidity rates. Patients who develop ischaemic symptoms with trial clamping are at higher risk of post-operative neurological events despite shunting. The role of peer-reviewed audit provides a stimulus for maintaining clinical standards.

VS03
ENDOLUMINAL REPAIR OF ABDOMINAL AORTIC ANEURYSM – CONTEMPORARY AUSTRALIAN EXPERIENCE

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Purpose The audit was established in November 1999 by the Australian Government Department of Health and Ageing to determine the mid- to long-term safety and efficacy of endoluminal graft repair (ELG) of abdominal aortic aneurysm (AAA). This paper reviews contemporary practice, based on audit data supplied to the Australian Safety and Efficacy Register of New Interventional Procedures – Surgical (ASERNIP-S).

Methodology This study is a prospective audit of Australian data obtained from the private and public sector. Data were collected for ELG repairs performed between 1 November 1999 and 16 May 2001. Follow-up is continuing.

Results Seventy-nine vascular surgeons have contributed data on 950 patients (816 male, 134 female, of median age 75.5 (range 36–94)). The mean aneurysm size was 57.5 mm (± 10.2) and 44% of procedures were performed on aneurysms less than 55 mm in diameter. Fifty four percent of patients were considered suitable for open repair.

Perioperative mortality was 1.7%, mostly from cardiac causes. Prior to discharge over 7.2% of patients experienced an endoleak and 18.6% had systemic complications. The average length of stay was 7.4 days (median 5 days). Unsuccessful exclusion of the aneurysm occurred in 6.7% of cases.

Conclusions ELG is a well accepted procedure and is performed by the majority of vascular surgeons in Australia. Australian surgeons are taking a rather aggressive approach to the management of aortic aneurysms, particularly in the moderate to higher risk patient groups. Mortality rates are low, given the elderly population in question and morbidity rates acceptable.

VS04
THE EARLY AND LATE OUTCOME OF INFRARENAL ABDOMINAL AORTIC ANEURYSM REPAIR: A 12-YEAR EXPERIENCE AT THE ROYAL ADELAIDE HOSPITAL

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Purpose To determine the operative mortality, long-term survival and late re-intervention rate for graft-related complications in patients undergoing open (OR) and endovascular repair (EVSG) of ruptured and non-ruptured infrarenal abdominal aortic aneurysm (AAA).

Methodology A prospective computerised database identified 860 consecutive patients who underwent attempted repair of ruptured and non-ruptured AAA in a single institution over the 12-year period between 1st July 1991 and 30th June 2003. Late graft-related complications were defined as those occurring beyond 30 days of AAA repair.

Results A total of 623 patients (72%) (527 men and 96 women of median age 70, range 40–88, years) underwent repair of non-ruptured AAA. The operative mortality rate for OR was 42 of 533 (7.9%) and for EVSG was 4 of 90 (4.4%). The 5-year survival rate was 74% for all patients (Kaplan-Meier method). Twelve of 491 (2.4%) survivors of OR underwent re-intervention for graft occlusion ($n = 5$), false aneurysm ($n = 4$), graft infection ($n = 2$) and ruptured AAA ($n = 1$). Two of 86 (2.3%) survivors of EVSG required re-intervention for type I endoleak. A total of 237 patients (198 men and 39 women of median age 72, range 49–95, years) underwent OR of ruptured AAA. The operative mortality rate was 109 of 237 (46%) and the 5-year survival rate was 36% for all patients. Four of 128 (3.1%) survivors underwent re-intervention for graft infection ($n = 3$) and ruptured AAA ($n = 1$).

Conclusions Conventional open AAA repair is associated with excellent long-term durability and acceptable long-term survival in patients undergoing surgery for non-ruptured AAA. Despite careful patient selection, EVSG is associated with a not insignificant mortality rate and inferior.

VS05

IS THERE A ROLE FOR FENESTRATED STENT GRAFTING IN THE MANAGEMENT OF RECURRENT ABDOMINAL AORTIC DISEASE?

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Background and Aims Recurrent abdominal aortic aneurysm disease remains one of the most difficult challenges facing the vascular surgeon. Morbidity and mortality remain high in this group of patients who often have significant co-morbidities. This study reviews early experience with the use of fenestrated endovascular stent grafts in this setting.

Methods and Results Four procedures have been undertaken for recurrent aneurysm disease. This includes two cases of proximal false aneurysm following emergency open AAA repair, and two cases of proximal (type 1) endoleaks following endovascular stent graft repair.

All fenestrated grafts have been successfully deployed with two fenestrations in most cases. Procedures have taken two to six hours each. No major complications have occurred in the perioperative period. At the completion of all four procedures no endoleak was detected. Particular difficulty is associated with repairing proximal endoleaks in short-bodied grafts.

Conclusion Fenestrated grafts appear to have a particularly attractive role in the repair of recurrent aortic aneurysm disease.

VS06

ENDOLUMINAL STENT-GRAFTING FOR COMPLICATED DISSECTION OF THE THORACIC AORTA? EARLY EXPERIENCE IN CHRISTCHURCH

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Purpose We evaluated our initial experience of endoluminal treatment of complicated acute dissection of the thoracic aorta using covered stent-grafts as an alternative to open surgery.

Methodology Our policy is to intervene in acute complicated Type-B dissections within 14 days of the dissection event. Uncomplicated dissections were managed medically. Procedures were performed under general anaesthesia in the angiography suite under angiographic and transoesophageal ultrasound control.

Results Between December 2001 and January 2004 10 patients (Median age 64 (20–76) years; 7 male) underwent endoluminal stent-graft procedures for complicated dissections of the thoracic aorta (7 Type-B dissections with aneurysm formation; 2 Traumatic transections with dissection and pseudoaneurysm; 1 Intramural haematoma with dissection and acute dilatation). A single stent-graft was used in each case and all have had successful exclusion and thrombosis of the false lumen in the thoracic aorta. There has been no mortality but in one case traumatic disruption of the right common iliac artery required surgical reconstruction. The left subclavian origin was occluded in 8 cases without revascularisation – 7 have had no ischaemic neurologic, or limb, symptoms but 1 developed transient claudication of the left arm. There have been no cases with motor or sensory deficits of the lower limbs. All patients remain in a surveillance programme and are included in the New Zealand National Thoracic Endoluminal Database.

Conclusions These early promising results suggest that stent-grafting may be an effective method of treating complicated dissection of the thoracic aorta. However, further monitoring and evaluation in the long-term is required.

VS07

UK AND EUROSTAR THORACIC STENTING REGISTRIES: COMBINED EXPERIENCE

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Introduction Endovascular repair is an evolving alternative to open repair of thoracic aortic disease. The EUROSTAR and UK Registries were

established to evaluate new endovascular techniques during their introduction into clinical practice.

Method We analysed the combined 30-day and 1 year data from the EUROSTAR and UK Thoracic Stenting Registries.

Results 453 patients were recorded (EUROSTAR = 339, UK = 114). The mean age was 68 years and 52% were deemed high risk for open surgery. Two thirds of patients underwent elective treatment. The indications for treatment were degenerative aneurysms (249), aortic dissections (131), trauma (50), penetrating ulcers (10) and false anastomotic aneurysms (13). Exclusion of aneurysms was successful in 87% and complete coverage of the primary entry tear was achieved in 86% of dissections. Completion angiography identified primary endoleaks in 7.5% and stent related complications occurred in 12%. Paraplegia was a complication in 4% and 0.7% of aneurysm and dissection repairs respectively. The elective 30-day mortality was 5.3% for aneurysms and 14.7% for dissection. One-year follow-up was complete in 200 patients. New endoleaks were seen in 3% and continued expansion in 8% with two cases of late aneurysm rupture.

Conclusion The operative mortality and paraplegia rate for endovascular thoracic intervention seems encouraging. However, the durability of this technique is currently unknown. Continued use of such registries will provide important data on long-term follow-up.

VS08

ENDOLUMINAL STENT GRAFT REPAIR OF THORACIC AORTIC RUPTURE IN TRAUMA PATIENTS WITH MULTIPLE INJURIES

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Purpose To report on the experience in the management of 6 major trauma cases having descending thoracic aorta rupture, and repaired with endoluminal stent graft in a regional hospital in Hong Kong.

Reports Between Sep 01 and Feb 03, six trauma patients (aged 27–58) with multiple injuries with CT thorax showing concealed rupture of the descending thoracic aorta were admitted. They all had multiple associated injuries involving the head, neck, abdomen and fractures, and were evaluated as high operative risk (ASA 4). Emergency Endovascular thoracic stent grafts were put in place 10 hours to 6 days later after other immediate life threatening conditions had been dealt with.

All 6 endovascular thoracic stent grafts were successfully placed with access gained through right common femoral artery. The operation took 110–200 (median 180) minutes with median blood loss of 170 ml. All patients survived and discharged with no spinal cord deficit. Follow up from 4 to 22 (median 17) months with CT scan showed sustained exclusion of rupture site with no graft migration or endoleak.

Conclusion In major trauma patients, endoluminal repair of traumatic rupture descending thoracic aorta is feasible and has the advantage of avoiding open thoracotomy and its associated complications. Further studies are necessary to assess the long-term outcome of this technique.

VS09

REVIEW OF OUTCOMES AND PREDICTORS FOR MORTALITY IN RUPTURED ABDOMINAL AORTIC ANEURYSM

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Aim To investigate outcomes of patients presenting to Frankston hospital with a diagnosis of ruptured abdominal aortic aneurysm and analyse whether there are any pre-operative patient factors that have a significant bearing on outcome.

Methodology A retrospective chart review was undertaken over a 4 year period of patients presenting to Frankston hospital with a diagnosis of ruptured abdominal aortic aneurysm (AAA). Data from the files of the 55 patients who had presented during that period was collected and compared with figures of other centres both in Australia and overseas.

The second part of the study was to look at pre-operative patient factors and perform regression analysis to verify if any of these factors were statistically significant in predicting outcome (judged by survival). The factors chosen included; Pre-operative systolic blood pressure less than 90 mmHg, ECG ischaemia, Pre-operative haemoglobin level of less than 10 g/dL, Pre-operative creatinine level greater than 0.15, Age greater than 76 years. These had been

factors previously considered in other studies of ruptured AAA outcomes in Australia.

Results Overall mortality of patients admitted to Frankston with ruptured AAA was 29% with an intention to treat mortality of 24%. These figures compare with a range of 39–47.5% for other published Australian studies.

Regression analysis did not find individual significance in any of the five pre-operative figures studied but did identify a significant mortality risk when age and low haemoglobin were present together.

Conclusion The outcomes of patients presenting to Frankston hospital were found to compare favourably with other published results.

VS10 THE USE OF ARM VEINS IN INFRAINGUINAL ARTERIAL RECONSTRUCTION: A SINGLE CENTRE'S EXPERIENCE

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Purpose To evaluate the performance of the arm veins (basilic and cephalic) as conduits for infrainguinal arterial reconstruction.

Methods Patients undergoing infrainguinal arterial reconstruction using the arm veins from March-1998 to December-2002 were identified through the departmental database. Systematic review of the operation notes, outpatient clinic follow up and radiology were done. Comparison was made to all primary infrainguinal arterial reconstruction (non-arm vein) from Jan-1999 to Dec-2000. The secondary patency rate, incidence of amputation at 12-months and mortality are the end points.

Results 78 patients with 87 arm-vein grafts were retrieved. In the non-arm vein group, 216 patients with 231 grafts were found. M : F is 3 : 2 in both groups. Mean age are 74 and 70 respectively. > 70% of patients presented with critical ischaemia. 27/87 arm-vein grafts were for primary reconstruction; 60/87 grafts for >= secondary reconstruction. 80% (vs. 63%) of the arm-vein grafts have distal anastomosis below the knee. 30-day patency are identical in both groups = 91%. 12-month patency for the arm-vein group = 68% (vs. 80%). For arm-vein grafts with distal anastomosis to the tibial vessels, 12-month patency is 63% (vs. 71%). 11/78 (14%) patients of the arm-vein group had amputations at a median of 4 months. 8/11 had graft occlusion; 3/11 had patent grafts ligated due to uncontrolled sepsis. In the arm-vein group, 30-day mortality = 2.6% per graft. 1-year mortality = 5.1% per patient. Up to date 23% died at median of 28 months.

Conclusions In our center, the patency of the arm veins is comparable to the long saphenous veins.

VS11 ARTERIAL INJURIES FOLLOWING TOTAL KNEE JOINT REPLACEMENT

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Background Vascular injuries arising as a complication of total knee joint replacement (TKJR) is a rare event which is poorly recognized and under reported. We present a small case series of patients with such injuries, their management and a review of the literature.

Methods A consecutive series of 5 patients treated for vascular injuries were retrieved and their case notes, angiographic findings and subsequent management reviewed.

Results All five patients presented with acute vascular compromise of their affected leg following TKJR. The nature of their injuries included stenosis, thrombosis and pseudo-aneurysm formation of their popliteal artery. One patient required open surgical repair (femoral to distal bypass). The other 4 were managed successfully by endovascular interventions (coiling, angioplasty and stenting).

Conclusions Vascular injury at TKJR can often be missed due to the use of a tourniquet intra-operatively. A thorough knowledge of the anatomy and an appreciation of the close proximity of the popliteal artery may prevent these from occurring. Early recognition may allow for successful endo-vascular repair techniques.

VS12 ASSESSMENT OF TREATMENT OPTIONS IN CHRONIC VENOUS DISEASE WITH VENOUS SCORING SYSTEMS

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Purpose Acceptance of treatment options for chronic venous disease depends frequently on patient and surgical factors. The role of chronic venous disease morbidities as measured by the Americal Venous Forum proposed Venous Clinical Severity Score (VCSS) and Venous Disability Score (VDS) in determining treatment is not previously reported. This study examines the relationship between treatments, VCSS and VDS.

Methods All patients on the waiting list for vein surgery of over one year were reviewed. All patients were seen by two independent staff (trained nurse and vascular surgeon). VCSS was scored for pain, varicose veins, oedema, pigmentation, inflammation, induration, active ulcers, and compression therapy. Each limb was also scored with VDS. Treatments were discussed which included reassurance with life-style modifications, customised compression stockings (CCS), sclerotherapy and surgery. Reassessment was performed 6 weeks after treatment. The relationships between VCSS, VDS and treatment options were analysed.

Results 162 limbs were scored to date. Of these, the preferred treatments were reassurance in 8, CCS with good results in 14, CCS with uncertain results in 15, sclerotherapy in 2 and surgery in 123. The average VCSS for these groups were 3.63 (reassurance), 8.5 (CCS-good), 5.4 (CCS-uncertain) and 6.08 (surgery). The average VDS were similarly distributed as 0.25, 2, 1.07 and 1.2 respectively.

Conclusions Patients with less morbidity were satisfied with reassurance and those more severe disease obtained good results for CCS. Patients with intermediate scores preferred more invasive interventions. Venous scoring may hence provides valuable guide to treatment in chronic venous disease.

VS13 INFRA-INGUINAL VASCULAR TRAUMA: THE WESTMEAD EXPERIENCE

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Purpose To create an audit of infra-inguinal vascular trauma that presented to Westmead Hospital over a period spanning 25 years in order to identify patterns of mechanism of injury and factors influencing outcome.

Methodology Retrospective analysis of all non-iatrogenic lower limb vascular trauma. The Trauma Service Database of the Westmead Hospital was used to identify cases that presented during the period 1 January 1978 to 31 December 2002.

Results Ninety-four patients sustained infra-inguinal vascular trauma. Their mean age was 30 years. The male-to-female ratio was 7 : 1. Motor vehicle accidents (28%), motorbike accidents (23%) and pedestrian accidents (16%) were the predominant causes of injury, reflecting the high incidence of blunt vs. penetrating injury (4 : 1). The median time from injury to presentation was 1 hour, 42 minutes. The median time from presentation to surgery was 2 hours 39 minutes. Thirty-eight percent of patients had pre-operative angiograms. Endovascular management was utilised in two patients. The popliteal artery (32%), superficial femoral artery (25%) and posterior tibial artery (21%) were most often involved. Twelve percent of patients had limbs amputated. All of these sustained blunt trauma. The median length of stay was 28.5 days. Morbidity of 59.5%, as well as mortality of 11% was reflected in correlating high Injury Severity Scores.

Conclusions The majority of infra-inguinal vascular trauma managed at this hospital resulted from blunt trauma due to road traffic accidents (68%). Amputation rates were higher in patients with blunt trauma.

VS14 PERIOPERATIVE CARDIAC RISK REDUCTION WITH BETA BLOCKERS: FACT OR FICTION?

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The use of beta-blockers in the perioperative period has become an increasingly popular strategy to reduce perioperative cardiac risk.

I will present a body of evidence, which provides guidance on the appropriate clinical settings in which beta-blockers may improve outcome.

I will review the basic pharmacology of beta-blockers and the theoretical reasons why their use may be supported.

The applications of beta-blockers in the treatment of ischaemic heart disease are well documented and will be reviewed. This encompasses the applications in angina and acute myocardial infarction.

In 1996 Mangano et al¹ published a study which pushed beta blockade to the forefront of perioperative medicine. Since this time more evidence has emerged which support this strategy in particular groups of patients, in particular vascular surgical patients. A more recent systematic review of the evidence has recently published by Stevens et al² which provides context for the available evidence.

As a result a variety of evidence exists to support the use of these agents' perioperatively. Some in the literature have questioned the quality and validity of this evidence. Emerging from this criticism is the current POISE (Perioperative ISchaemic Evaluation Study) Trial.

In reviewing this literature I will attempt to indicate particular clinical uses for these agents perioperatively and also where current research is heading in an attempt to provide more definitive answers.

References

1. Mangano DT. *et al.* Effect of Atenolol on Mortality and Cardiovascular Morbidity after Noncardiac Surgery. *NEJM* 1996; 335: 1713–1720.
2. Stevens RD, Burri H, Tramer MR. Pharmacological Myocardial Protection in Patients Undergoing Noncardiac Surgery:

VS15

C-REACTIVE PROTEIN LEVELS AND THE EXPANSION OF SCREEN-DETECTED ABDOMINAL AORTIC ANEURYSMS

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Purpose C-reactive protein (CRP) levels have been shown to predict a number of cardiovascular outcomes. CRP levels have also been found to be elevated in patients with abdominal aortic aneurysms. The aim of this study was to assess the relationship between levels of CRP and rates of expansion in small abdominal aortic aneurysms.

Methods A cohort of 632 men with small aneurysms was identified in a trial of screening using ultrasound scanning. After initial screening men were re-scanned at 6–12 monthly intervals. CRP levels were measured at the first follow-up visit. Risk factors for expansion were assessed using a multivariate model.

Results The mean annual rate of expansion was 1.6 mm. The only clinical risk factor found to be an independent predictor the rate of expansion was initial aortic diameter. The median CRP level was 2.8 mg/L in men with the smallest AAAs (30–39 mm) compared with 3.5 mg/L in men with larger AAAs (40+ mm) ($p = 0.005$). There was a statistically borderline relationship between the highest quintile of CRP level and rate of expansion (OR = 2.2; 95% CI, 1–5.2).

Conclusions Most small aneurysms expand slowly. Although higher levels of CRP appear to be associated with greater rates of expansion, the most useful predictor of expansion is aortic diameter.

VS16

A ROLE FOR OSTEOPROTEGERIN IN ABDOMINAL AORTIC ANEURYSM EXPANSION

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Purpose The aim of this study was to establish if levels osteoprotegerin (OPG) were related to abdominal aortic aneurysm (AAA) expansion and to assess if this cytokine contributed to the pathology of AAA.

Methodology The concentration of OPG was compared in aortic biopsies from patients with atherosclerotic (AO) and aneurysmal aortas. In 146 patients with small (30–50 mm) AAA under ultrasound surveillance the serum concentration of OPG was correlated to aneurysm growth rate. The effect of recombinant human (rh)OPG on VSMC and human monocyte (THP-1) function was investigated in vitro.

Results By Western analysis OPG concentration was 6-fold greater in biopsies from AAA compared to AO (1.16 ± 0.07 vs. 0.20 ± 0.02 ng/mg, $p < 0.0001$). Serum concentration of OPG was higher in patients with faster growing aneurysms

and on multiple regression analysis was an independent predictor of aneurysm expansion (OR = 2 (1–8), $p = 0.02$). Addition of rhOPG to proliferating VSMC in vitro induced a sensitive dose-dependent decrease in DNA synthesis (3H-thymidine up-take) (up to 5-fold, $p < 0.0001$) and a 63% increase in apoptosis ($p < 0.001$). THP-1 cells cultured on collagen lattice incubated with rhOPG had a dose-dependent increase in release of IL-6 (up to 2-fold, $p = 0.02$) and total metalloproteinase activity (up to 1.5-fold, $p = 0.002$). The treatment of AAA explants in culture with the angiotensin II blocker Irbesartan (1 mg/ml) reduced the secretion of OPG 1.3-fold over 48 hours from 0.349 to 0.276 ng/mg ($p < 0.001$).

Conclusions These findings support a role for OPG in the expansion of human AAA and suggest a benefit of angiotensin II blockade in slowing aneurysm progression.

VS17

C1q EXPRESSION BY DENDRITIC CELLS IN THE ARTERIAL WALL: POTENTIAL SIGNIFICANCE IN ATHEROSCLEROSIS

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Purpose C1q, an element of the first component of complement, is expressed by interdigitating dendritic cells and follicular dendritic cells in the spleen where C1q is involved in capturing immune complexes. Immune complexes are detected in atherosclerotic lesions. Purpose of this study was to investigate whether C1q is expressed by DCs in the arterial wall and by monocyte-derived DCs in vitro.

Methodology Specimens of the aorta, carotid, mammary, popliteal and tibial arteries were obtained during operation. Expression of C1q in the arterial wall was studied by immunohistochemistry. The nature of cells expressing C1q was studied in sections double stained with antibodies to C1q and cell type specific markers. In vitro, DCs were differentiated from human peripheral blood monocytes using GM-CSF and IL-4. Peripheral blood monocytes were differentiated to macrophages using M-CSF. The expression of C1q in monocytes and in vitro monocyte-derived DCs and macrophages was determined by RT-PCR, Western blotting, immunofluorescence microscopy and flow cytometry.

Results In all the arterial specimens studied, DCs expressing C1q were detected. C1q was also found in macrophages, macrophage foam cells and in neovascular endothelial cells in atherosclerotic lesions. In vitro analysis demonstrated that monocyte-derived DCs and macrophages express C1q but no C1q was detected in monocytes.

Conclusions C1q is expressed by DCs residing in the arterial wall as well as by monocyte-derived DCs in vitro. Expression of C1q occurs during differentiation of monocytes to DCs and macrophages and might be important in binding and trapping immune complexes in atherosclerotic lesions.

VS18P

LONGTERM RESULTS OF TRAUMATIC RENAL ARTERY INTIMAL DISSECTION TREATED BY ENDOVASCULAR STENTING

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Purpose Management of traumatic renal artery intimal injury remains controversial. Surgical repair is often risky due to the severity of coexisting injuries. Long-term results of medical treatment with anti-platelet agents are unknown and may result in unrecognised thrombosis. Endovascular stenting holds promise as a safe and minimally invasive treatment option, however, the long-term results have not been documented. We present a case of blunt traumatic renal artery dissection treated with endovascular stenting and the results of follow-up at 3 years. The current evidence is also reviewed.

Methodology A 20-year-old man who fell 15 m complained of abdominal pain on admission to hospital. CT showed a fractured right kidney with impaired perfusion and no contrast excretion. Arteriogram showed localised intimal dissection in the distal right main renal artery. A 7 mm by 20 mm AVE Bridge flexible stent was placed across the dissection uneventfully. Warm ischemic time was 9 hours. Follow-up Doppler ultrasound was performed at 3 months and clinical examination, Doppler ultrasound and radio-nuclide scanning were performed at 3 years.

Results The patient remained normotensive with a normal serum creatinine 3 years following percutaneous stenting of the right renal artery. Doppler ultrasound at follow up showed normal flows through the stented artery. A radionuclide scan (TC99m-DTPA) was also performed at follow-up, which demonstrated preserved function of the right kidney.

Conclusions We have shown long-term stent patency and preserved renal function 3 years following endovascular stent placement. Our findings support endovascular stenting as a safe and effective treatment for traumatic renal artery dissection.

VS19P CHRONIC VENOUS ULCER IN CHINESE PATIENTS

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Purpose There were very few studies described the use of compression treatment for chronic venous ulcer (CVU) in Asian countries with hot and humid weather. The aim of this study was to determine the effectiveness of compression treatment in a group of Chinese patients with CVU in a regional hospital in Hong Kong.

Methods Between Sep 01 and April 03, 46 legs in 43 patients with complicated CVU were managed in an outpatient venous ulcer clinic with 4-layer compression bandage treatment. Patients' demographic data, Duplex US findings, outcomes of treatment were collected prospectively and analyzed.

Results The median size of ulcer was 3 cm with median duration of 15 months. 43.5% of patients had past history of superficial venous surgery. Duplex US showed 83.8% of legs had deep venous reflux (43.2% mixed superficial and deep reflux, 40.6% pure deep venous reflux), only 5.2% with pure superficial reflux, and 8.1% with DVT.

With compression treatment applied, 75% of ulcers healed in 12 weeks time. Ultimately, 89.1% of ulcers healed. The median treatment time was 8

weeks. Recurrence occurred in 26.8% of ulcers with a median follow up of 16 months.

Conclusions Despite the hot and humid weather of Hong Kong, most of the CVU can heal with compression bandage treatment. However, recurrence is not uncommon. Further studies would be necessary to determine if adjuvant surgery can further improve the outcome & cost effectiveness.

VS20P THE CHANGING FACE OF VASCULAR SURGERY

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Purpose To make a quantitative comparison of the change in vascular surgical workload at a district general hospital over the past ten years.

Methodology We collated the data involving vascular surgical interventions at the Launceston General Hospital for the years 1993, 1998 and 2003. The changes in the vascular surgical workload, particularly in relation to the recent introduction of minimal access vascular surgery, were examined.

Results There has been a dramatic reduction in open abdominal aortic aneurysm repair from 1993 (47) to 2003 (6) and a drastic increase in angioplasties (zero in 1993 to 85 in 2003). The number of infrainguinal bypass grafts fell by 50% (38 in 1993 to 19 in 2003) and there was a 75% reduction in the number of embolectomies over the ten year period. There were fewer extra-anatomical cross-over grafts performed in 2003 (1) compared with 1993 (9). There has been a steady modest increase of carotid stenting from 1993 (0) to 1998 (3) and 2003 (16). The number of arterio-venous fistulae created has been consistent over the 10 years.

Conclusions There has been a significant shift from traditional open surgery to minimally invasive procedures at our institution over the past decade. We believe this trend is likely to continue, and this will reflect on both the training of vascular surgeons and the resources required for the specialty.