

a graft configuration was 50% in their series (2 of 4). The authors postulate that the well-known tendency for Dacron to dilate over time may be accentuated by the presence of an endograft. They suggest oversizing the endograft 20% and a proximal landing zone with at least 4 cm of overlap when the graft is landed in Dacron.

#### Major Bleeding, Mortality, and Efficacy of Fondaparinux in Venous Thromboembolism Prevention Trials

Eikelboom JW, Quinlan DJ, O'Donnell M. *Circulation* 2009;120:2006-11.

**Conclusion:** Major bleeding in hospitalized patients participating in venous thromboembolism (VTE) prevention trials is a strong predictor of mortality.

**Summary:** Emerging evidence suggests bleeding is a strong predictor of death in patients with acute arterial thrombosis receiving antithrombotic therapy (*Eur Heart J* 2007;28:1193-204; *Neurology* 2008;71:650-5). It is, however, unknown whether a similar association exists between bleeding and death in patients with VTE. The authors used a fondaparinux VTE prevention database to explore associations between major bleeding and death, with adjustments for other patient characteristics. Analysis of the fondaparinux database was provided by GlaxoSmithKline. The database consisted of all phase 3 randomized controlled trials comparing fondaparinux (2.5 mg once daily) with low-molecular-weight heparin or placebo for prevention of VTE. The trials included 13,085 patients undergoing hip replacement surgery, major knee surgery, or elective abdominal surgery, and also high-risk medical patients. Major bleeding was defined as retroperitoneal, intracranial, or intraspinal bleeding; any bleeding that involved a critical organ or led to reoperation, or overt bleeding with a bleeding index (calculated as the number of packed red blood cells or whole blood transfusions plus pre-bleeding hemoglobin concentration minus post-bleeding hemoglobin concentration) >2. The primary outcome variable was death in  $\leq 30$  days.

Patients who developed major bleeding were older, more likely to be male, had a lower body mass index and lower creatinine clearance, and were more likely to be receiving fondaparinux. At 30 days, the risk of death was sevenfold higher among patients with a major bleeding event (8.6% vs 1.7%; adjusted hazard ratio [HR], 6.96; 95% confidence interval [CI], 4.6-10.5). However, fondaparinux was associated with a decreased mortality rate in the patients experiencing major bleeding (6.8% vs 11.4%; HR, 0.58; 95% CI, 0.27-1.23).

**Comment:** This article has three findings of particular interest. First, lower body weight, male sex, and renal dysfunction are predictors of major bleeding in patients enrolled in VTE prevention trials. Second, major bleeding in patients enrolled in these trials is associated with a sevenfold increased mortality rate at 30 days. Finally, fondaparinux, although associated with an increased risk of bleeding, appeared to be associated with a decreased risk of death with major bleeding compared with major bleeding associated with other antithrombotic agents. The data are consistent with previous studies showing an association between major bleeding and death in patients treated with antithrombotic agents for acute coronary syndromes and ischemic stroke. Only 6% of the deaths in this analysis were directly attributed to the bleeding episode. The precise reasons for increased death in patients who develop major bleeding while being treated with anticoagulation agents remain to be determined.

#### Open Abdominal Aortic Aneurysm Repair in the Endovascular Era: Effect of Clamp Site on Outcomes

Landry G, Lau I, Liem T, et al. *Arch Surg* 2009;144:811-6.

**Conclusion:** Suprarenal cross clamping during open abdominal aortic aneurysm (AAA) repair is associated with increased rates of complications but similar mortality rates and need for nursing home placement as open abdominal aortic aneurysm (AAA) repair with infrarenal clamping.

**Summary:** Currently, the most frequent anatomic restriction for use of the endovascular aneurysm repair (EVAR) is an inadequate infrarenal neck to achieve proximal fixation. Although performed "under the table" in some centers, in only a few centers in the United States is fenestrated endografting currently performed with actual investigational device exemptions (IDEs). Therefore, AAAs with an inadequate proximal fixation zone still need open AAA repair in most centers. This is a study of contemporary series of open AAA repairs in patients who were not considered suitable candidates for EVAR.

Patients were derived from those undergoing open repair during the endovascular era. Consecutive nonruptured open aneurysm repairs from March 1, 2000, through July 31, 2007, were reviewed. There were 185 patients who underwent 103 infrarenal and 82 suprarenal cross-clamp repairs. The occurrence of any complication was 37% with infrarenal and 61% for suprarenal cross-clamp repairs ( $P = .001$ ). The 30-day mortality was 2.9% for AAA repair with an infrarenal cross clamp and 6.1% for AAA repair with a suprarenal cross clamp ( $P = .18$ ). Complications that occurred most frequently in the suprarenal cross-clamp group were postoperative renal insufficiency and pulmonary complications. Suprarenal cross clamps were

also associated with greater intraoperative blood loss, operative duration, and use of adjunctive renal or visceral grafts. Intensive care units and hospital lengths of stay were also longer in the suprarenal cross-clamp group. Patients undergoing suprarenal cross clamp had a 25.6% rate of temporary nursing home placement vs 17.5% in those patients treated with an infrarenal cross clamp ( $P = .14$ ).

**Comment:** At some point it is almost inevitable that open AAA surgery will, for the most part, be relegated to the dust bin. When this actually happens will depend on a slew of regulatory, engineering, technical, and cost considerations. In the interim, some AAAs will still need to be repaired with open techniques. The data indicate what is well known: Open repair is associated with significant morbidity, but mortality rates are low. Open repairs of AAA are, at the same time, becoming more infrequent and more complex. With the limited training available in these complex repairs in many vascular surgical residencies, it may not be appropriate for most finishing vascular surgical trainees to perform open AAA repair right out of residency without senior colleague supervision. On the other hand, it is also very likely not to be appropriate for older vascular surgeons to perform fenestrated endografts without junior colleague supervision!

#### Quality of Life in Patients with Idiopathic Subclavian Vein Thrombosis

Berzaczy D, Popovic M, Reiter M, et al. *Thromb Res* 2010;125:25-8.

**Conclusion:** Patients with idiopathic subclavian vein thrombosis treated without surgical or catheter based intervention have good overall quality of life and deal well with their physical limitations.

**Summary:** Late clinical manifestations of axillosubclavian vein thrombosis can be persistent swelling and the presence of prominent veins on the chest wall in 7% to 46% of patients (*Thromb Res* 2005;117:609-14). The authors sought to determine how quality of life was affected after idiopathic subclavian vein thrombosis using the Short Form (SF)-36 survey and the Disabilities of the Arm, Shoulder and Hand (DASH) outcome questionnaire. The DASH, which was introduced in 1994 by the American Academy of Orthopedic Surgeons, is a self-administered questionnaire of 30 questions designed to measure upper extremity disability and symptoms. It appears to be an accurate measure of disability irrespective of underlying cause (*J Hand Therapy* 2001;14:128-46). The intent was to assess thrombosis-related disability of the upper extremity and general quality of life in patients who had had axillosubclavian vein thrombosis. The DASH and SF-36 both use 100-point scales. In DASH, 0 represents uncompromised function and 100 is maximum limitation; whereas in the SF36, 0 is the lowest rating quality of life and 100 indicates the best imaginable quality of life.

The patients had been treated with anticoagulation alone or systemic thrombolysis, followed by anticoagulation. They did not appear to be treated with catheter-directed thrombolysis or surgical decompression of the thoracic outlet. Mean follow up was  $120 \pm 80$  months. Right-sided subclavian vein thrombosis occurred in 22 patients (60%) and left-sided subclavian vein thrombosis occurred in 14 (40%). Anticoagulant therapy was used for <12 months after initial presentation in 92% and for >12 months in 8%. At follow-up, arm swelling was present in 43% of patients, venous ectasia in 54%, pain at rest in 16%, and pain with exercise in 22%. Despite these findings, mean DASH and SF-36 scores were good, with a mean DASH score of  $10.7 \pm 12$  and mean scores for the SF-36 physical component summary and mental component system of  $52 \pm 9.3$  and  $46 \pm 9.5$ , respectively.

**Comment:** These data provide long-term information on symptoms and signs after conservatively managed idiopathic axillosubclavian vein thrombosis and the effects of these signs and symptoms on patient-perceived function and quality of life. Advocates of invasive management of subclavian vein thrombosis will point to the high prevalence of late symptoms and signs related to the subclavian vein thrombosis. Those favoring more conservative management will note, despite the presence of arm swelling and symptoms, the patients actually had little functional impairment and a very reasonable quality of life. In either case, the data suggest it may be difficult to demonstrate significant patient-perceived improvement with surgical therapy over medical management alone in patients with axillosubclavian vein thrombosis.

#### The General Prognosis of Patients with Peripheral Arterial Disease Differs According to the Disease Localization

Aboyans V, Desormais I, Lacroix P, et al. *J Am Coll Cardiol* 2010;55:898-903.

**Conclusion:** Independent of risk factors and other comorbidities, in patients with peripheral arterial disease (PAD), there is a poorer overall general prognosis in patients with proximal (aortoiliac) disease compared with those with more distal PAD.

**Summary:** Cardiovascular risk factors, socioeconomic, and demographic differences are associated with different patterns of peripheral arterial disease (PAD) and progression rates of PAD differ between large and small vessels. Distal PAD is associated with more adverse outcomes with respect to the limb itself. The general belief, with little direct evidence, is also that more

distal PAD is associated with more adverse overall outcomes. The authors therefore sought to determine, through retrospective analysis of arteriograms, whether the general prognosis of PAD patients differs according to location of disease.

Patients who underwent a first digital subtraction arteriogram of the lower limbs at the authors' institution between January 2000 and December 2005 were reviewed. Arterial stenoses >50% in diameter reduction were scored by two senior physicians. Up until April 2007, death, nonfatal myocardial infarction, stroke, and coronary and carotid revascularization were recorded. The primary outcome variable included all these events.

There were 400 PAD patients (75% male), with a mean age of  $68.3 \pm 12.3$  years, who met qualifications for the study. Iliac disease was noted in 211 (52.8%) and infrainguinal disease in 344 (86.0%). Proximal PAD was associated with greater prevalence of male sex and smoking, whereas more distal PAD was associated with older-age diabetes, hypertension, and renal failure ( $P < .05$ ). Follow up averaged  $34 \pm 23$  months. After adjustments for age, sex, cardiovascular disease history and cardiovascular disease risk factors, critical leg ischemia status and treatments, event and survival curves differed according to PAD location ( $P < .03$ ). Proximal PAD was associated with the worst prognosis, with a primary outcome hazard ratio of 3.28 and a death hazard ratio of 3.18 ( $P < .002$  vs distal PAD).

**Comment:** This is the first study to report a poorer overall prognosis in patients with aortoiliac disease compared with those with more distal PAD. An obvious limitation of this study is that only patients undergoing angiography were included. The information was therefore primarily derived from patients with severe vascular disease where some form of intervention was contemplated. The results of this study need to be confirmed in a more general population of patients with PAD. However, if these findings are confirmed, it could result in potential additional risk stratification of PAD patients according to which lower extremity arteries are affected.

#### Two-Stage Basilic Vein Transposition—A New Approach for Pediatric Dialysis Access

Kim AC, McLean S, Swearingen AM, et al. *J Ped Surg* 2010;45:177-84.

**Conclusion:** Rates of arteriovenous fistula (AVF) maturation and patency in pediatric patients are higher for two-stage basilic vein transposition (BVT) than for BVT performed in one stage.

**Summary:** BVT can be performed as a one-stage or a two-stage procedure. Advantages of a two-stage procedure are potential maturation of smaller veins before the actual transposition, thereby potentially improving ultimate success of the transposition. The two-stage procedure is technically easier than a one-stage transposition but does involve two separate procedures. The authors sought to determine whether using two-stage BVTs in children improves fistula maturation rates, fistula use, and overall patency compared with one-stage BVTs, other types of AVFs, and AV grafts. The study took place at two tertiary care children's hospitals. Between 1997 and 2008, 31 patients underwent AV access creation. Forty-two access procedures were performed: 15 two-stage BVTs (36%), 13 one-stage BVTs (31%), 6 radiocephalic fistulas (14%), 3 brachiocephalic fistulas (7%), 1 brachio-bra-chial fistula (2%), and 4 AV grafts (10%). Average follow-up was  $20.4 \pm 3.2$  months for two-stage BVT and  $47.9 \pm 4.1$  months for other AVFs. All two-stage BVTs matured, but only 14 of 27 (52%) other AVFs matured ( $P = .001$ ). More two-stage BVTs (87%) were used for dialysis than other AVFs (48%;  $P = .024$ ). The fistula failure rate in the two-stage BVT was 7% compared with 59% for other AVFs ( $P = .001$ ). The patency at 1-year was 91% for two-stage BVT vs 47% for other AVFs ( $P = .003$ ). The size of the basilic vein increased from  $0.3 \pm 0.027$  cm before the performance of the first stage of the BVT to  $0.79 \pm 0.08$  cm after the first stage of the two-stage BVT. Of the 16 failures in the other AVF group, 11 were primary failures occurring before attempted access. One case of steal syndrome occurred in the two-stage BVT group.

**Comment:** Establishing durable hemodialysis access is difficult in all patients and is particularly difficult in the pediatric population because of the overall small caliber of the vessels. Most of the patients in this study, however, were not small children but adolescents with reasonable size vessels to work with. It is therefore a bit unclear whether the apparent advantage of the two-stage BVT in these patients was due to converting a more difficult procedure to a less difficult procedure for performance by surgeons who do not perform large volumes of dialysis access surgery. Two-stage BVT requires two operations, but the first is a relatively small procedure. Given the big picture, there appears to be no great disadvantage to the two-stage procedure and there may be a significant advantage in pediatric patients. The authors' contention that two-stage BVT should be preferred hemodialysis access in the pediatric population deserves consideration.