Results: Between 2005 and 2013, nine patients (3%) with malignant lower extremity STS underwent surgical resection with vascular reconstruction. Of these, 6 (67%) underwent resection of femoral and popliteal vessels with subsequent femoropopliteal bypass, 1 (11%) underwent resection of femoral and SFA bypass, 1 (11%) underwent resection of the femoral and popliteal vessels with reanastomosis, and 1 (11%) underwent resection of the superficial femoral vessels with superficial femoral arteriovenous fistula. All bypasses were performed using saphenous vein from the contralateral leg. Four patients (44%) returned to the operating room for wound complications requiring incision and drainage. Three (33%) required plastic surgery each for one of the following: VRAM flap, split-thickness skin graft, and pedicle gracilis flap. Functional activity was assessed using the criterion 1 of the Musculoskeletal Tumor Society (MSTS) functional assessment forms preoperatively and at follow-up at 6 months and 1 year. A score of 5 indicates no functional restrictions, whereas a score of 0 indicates total disability. The mean MSTS scores preoperatively and at 6 months and 1 year were 4.1, 3.6, and 3.8, respectively, for the limb-sparing surgery without vascular reconstruction group.

Conclusions: The need for vascular reconstruction during limb-sparing surgery for lower extremity malignant STS is rare in a high-volume sarcoma center. Wound morbidity is high, and these patients frequently require plastic surgery to achieve wound healing. Postoperative functional status as assessed by the MSTS is acceptable but may be lower than in patients not requiring vascular reconstruction.


Determining the Toe-Brachial Index in Young Healthy Adults
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Objectives: The purpose of this study was to determine the toe-brachial index (TBI) in healthy young adults and compare it with the accepted reference range.

Methods: Medical students from the undergraduate class were prospectively recruited. Physical measurements (height, weight), health behaviors (physical activity quantity and type, smoking status, alcohol consumption), and medical history (medication history; relevant diagnoses, family history) were collected. Bilateral brachial, toe, and ankle blood pressures (using both dorsalis pedis and posterior tibial arteries) were measured. TBI was calculated as the mean toe blood pressure divided by the highest systolic blood pressure.

Results: Forty medical students with a mean age of 24.7 ± 2.1 years, without any comorbid conditions, were studied. There were no current or past smokers. Participants maintained relatively healthy lifestyles (hours of activity per week: 5.1 ± 3.3; body mass index: 21.7 ± 2.4 kg/m²). Caffeine and alcohol consumption was modest (10.6 ± 8.5 and 1.8 ± 2.7 drinks per week, respectively). The mean systolic brachial blood pressure was 121 ± 9 mm Hg (right) and 116 ± 9 mm Hg (left). The TBI was 0.95 ± 0.11 (right) and 0.97 ± 0.13 (left) for men, and 0.86 ± 0.13 (right) and 0.86 ± 0.20 (left) for women.

Conclusions: The distribution of TBI in this healthy population differs significantly from the referenced normal range of 0.6 to 1.0. Our findings suggest that the accepted value of 0.6 for the low-normal limit is too low. This level may promote underdiagnosis of peripheral vascular disease and represent foregone opportunities for early intervention. We recommend that the TBI reference range be modified to increase the clinical utility of this measurement.


Fistula Outcomes in Octogenarians: Is a Fistula First Approach Appropriate?
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Objectives: The fastest growing segment of the dialysis population in Canada is in patients aged >75 years, with an overall increase from 5% in 1980 to 28.2% in 2010. These patients present multiple significant challenges to caregivers, including differences in life expectancy, comorbid health status, goals of care, and supportive care requirements. The current National Kidney Foundation Kidney Disease Outcomes Quality Initiative guidelines do not take age into account in recommendations for hemodialysis access. The goal of our study was to compare failure to mature, overall survival, and complication rates for arteriovenous fistulae in octogenarian patients with nonoctogenarians to determine if our standard approach to renal access should be modified to account for advanced age.

Methods: A review was conducted of all patients requiring arteriovenous fistulae for hemodialysis access at two teaching hospitals between 2007 and 2012. The study was designed as a retrospective cohort study with patients stratified by age into octogenarians and nonoctogenarians. Data were collected from a large, prospectively maintained database of all dialysis access procedures.

Results: Of 1019 patients who had their access created during the study period and were eligible for inclusion, 156 (15.3%) were aged ≥80 years at the time of fistula creation. With respect to the primary end point, there was no difference between octogenarians and nonoctogenarians with respect to failure to mature (0.92 vs 0.86, P = NS; OR = 0.95, 95% CI, 0.80-1.12). Octogenarians had decreased overall survival and were significantly more likely to die during the study period (45.8% vs 23.2%; P < .001). There were no significant differences between the two cohorts with respect to postoperative incidence of steal syndrome (7.3% vs 6.3%; P = NS) or wound complications (5.3% vs 5.7%; P = NS).

Conclusions: The results of this study demonstrate no overall differences in maturation rates within the octogenarian group and that age alone should not preclude placement of an autogenous arteriovenous fistula in this cohort. These findings demonstrate that an approach that incorporates limited life expectancy should be used when planning hemoaccess in this growing demographic.


Suggestion of Better Outcomes With Two-Stage Brachiobasilic Vein Transposition: A Meta-Analysis
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Objectives: Brachiobasilic vein transposition is recommended in patients who are not candidates for a radial or brachial artery-to-cephalic vein fistula for dialysis access. One-stage and two-stage procedures both have advantages and disadvantages. Which procedure results in improved outcomes remains unclear.

Methods: A systematic review was conducted of the MEDLINE and EMBASE databases for studies that compared one-stage and two-stage brachiobasilic vein transpositions. Abstracts and full texts of studies were screened independently by two reviewers, with data abstraction done in duplicate. Random-effects meta-analysis was used to identify differences in primary failure rates and 1-year primary and secondary patency rates. Study quality was assessed using a previously described tool designed for observational studies reporting on dialysis access outcomes.

Results: Of 1662 abstracts that were screened, 131 were selected for full-text review. Of these, seven studies (one randomized trial, six observational studies) involving 737 patients met the inclusion criteria. The pooled odds ratio (OR) estimate for primary failure was 1.36 (95% confidence interval [CI], 0.92-2.00), suggesting reduced failure rate in patients having undergone two-stage transpositions, although this was not statistically significant (Fig 1). Simi- larly the estimated ORs of 1.71 (95% CI, 0.89-3.28) for the 1-year primary patency rate and 1.44 (95% CI, 0.49-4.24) for the 1-year secondary patency rate were in favor of the two-stage procedure, but again, the results were nonsignificant (Fig 2). Study quality was limited by unclear outcome definitions, minimal control for confounding, and variable selection criteria. The decision to pursue one-stage vs two-stage was often based on the size of the basilic vein, with a two-stage procedure reserved for patients with smaller veins.

Conclusions: Meta-analysis of the existing literature comparing one-stage and two-stage brachiobasilic vein transposition suggests improved 1-year patency and reduced primary failure rates in the two-stage group, despite the two-stage procedure being used in patients with smaller basilic veins. These findings are limited by the small size, observational design, and inconsistent quality of included studies.

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Sepsis-Free Survival: A Long-Term Comparison of Catheter Access Versus Synthetic Graft Septic Complications in Hemodialysis Patients

**Objectives:** Our aims were to analyze and compare septic complications in graft-based and catheter-based hemodialysis patients and to study long-term functional permeability and risk factor for nonuse of synthetic grafts in our patient population.

**Methods:** The data were prospectively collected and retrospectively analyzed. Our study population was made up of 64 consecutive patients with arteriovenous grafts created between January 2000 and January 2013 and 121 patients with tunnelled central venous catheter-based hemodialysis installed between June 2005 and January 2013. A Kaplan-Meier life-table analysis was done for the sepsis-free survival and for the functional permeability of the grafts. Univariate and multivariate Cox survival regression analysis were constructed to evaluate independent predictors for septic complications.

**Results:** Patients’ demographics for arteriovenous graft and catheter-based hemodialysis were similar, except for age (P = .02) and hypertension (P = .04). Catheter-based dialysis patients experienced more septic events (33.9% vs 17.2%; P = .02). The number of hospitalizations required for the septic event were more important in the synthetic graft group (90.9% vs 36.6%; P = .001), but the 30-day mortality rates were similar. Long-term sepsis-free survival was similar in both groups (log-rank P = .9). A functional graft was the only independent predictor of a synthetic graft septic event (P = .03). Older patients and male gender were independent risk factors for catheter-related sepsis. Warfarin was an independent protective factor for graft functional survival.

**Conclusions:** Long-term functional permeability of arteriovenous grafts is low, and the sepsis-free survival is comparable to catheter-based hemodialysis patients. In centers where synthetic grafts are used as last-resort options, catheter-based hemodialysis may yield similar long-term clinical outcomes.


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Trends in Renal Function Post Aortic Aneurysm Intervention

**Objectives:** Abdominal aortic Aneurysm (AAA) constitutes a significant health problem. Endovascular aneurysm repair (EVAR) is a less invasive intervention for AAAs compared with conventional open repair (OR). However, patients undergoing AAA repair by any means are at risk of developing acute kidney injury (AKI). This is significant, because AKI is associated with high rates of morbidity and mortality in the period after cardiac surgery, vascular surgery, angiography, and other interventions. Previous studies demonstrate a decline in renal function after EVAR, especially in patients with pre-existing renal insufficiency. However, studies of the effects on renal function of EVAR compared with OR have yielded conflicting results. The aim of this study was to retrospectively compare the effect of EVAR vs OR on renal function.