

Needle-stick injuries among surgeons in trainingMakary MA, Al-Attar A, Holzmüller CG, et al. *N Engl J Med* 2007;356:2693-9.

Conclusion: Needle-stick injuries among surgical residents are common, and many are not reported even if the injury involved a high-risk patient.

Summary: Between 600,000 and 800,000 needle-stick or percutaneous injuries are reported annually in United States health care workers (National Institute for Occupational Safety and Health, 1999; 2000-2108). The authors of this study postulate surgical residents, given their exposure to sharp instruments and blood-borne pathogens and relative unfamiliarity with surgical techniques, would be at high risk for needle-stick injury. Proper reporting of needle-stick injuries is obviously crucial to initiating early prophylaxis or treatment. Given that 20% to 38% of all procedures in some general surgical residencies may involve exposure to high-risk patients, it is crucial to understand the prevalence of needle-stick injuries among surgical trainees as well as reporting patterns of these injuries (*Ann Surg* 2005;251:803).

The authors surveyed surgical residents for needle-stick injuries in 17 medical centers. The survey asked about the most recent injury, whether it was reported to an employee health service, and whether the injury involved a high-risk patient, defined as a patient with known HIV, hepatitis B, or hepatitis C infection, or a history of injectable drug use. Residents were also asked about the circumstances of the injury and the perceived cause of the injury.

A total of 699 residents responded, for a 95% rate, and 83% had a needle-stick injury during training. The number of needle-stick injuries increased according to years of training. There was a mean of 1.5 injuries in postgraduate year 1 (PGY1) trainees, 3.7 injuries in PGY2 trainees, 4.1 injuries in PGY3 trainees, 5.3 injuries in PGY4 trainees, and 7.7 injuries in PGY5 trainees. By the final year of their training, 99% of residents reported a needle-stick injury. A high-risk patient was involved in 53% of the injuries, and 16% of the injuries (15 of 91) involving high-risk patients were not reported. A total of 51% injuries were not reported to an employee health service. Lack of time was the reason 42% (126 of 297) said they did not report the injury. The most frequent person knowing about an unreported injury was the attending surgeon and the least frequent was a significant other. The injuries were self-inflicted in 67%, and another member of the operating team inflicted 33%. Fifty-two percent of injuries occurred during suturing, and the perceived cause of the injury was being in a hurry in 57% of cases.

Comment: Needle-stick injury is a major occupational problem of surgeons, and many surgeons underestimate seroconversion rates after needle-stick injury (*Ann Surg* 1998;228:266-72). Clearly, systems-based approaches to reduce needle-stick injury need to be intensified. In the meantime, informing surgical trainees of the importance of reporting injuries and of the underlying causes of the injuries is something that can be implemented immediately in any surgical training program.

Quantifying improvement in symptoms, functioning, and quality of life after peripheral endovascular revascularizationSafley DM, House JA, Laster SB, et al. *Circulation* 2007;115:569-75.

Conclusion: In about 80% of a cohort of patients treated for intermittent claudication with peripheral endovascular revascularization (PER) techniques, there will be improvement in symptoms and quality of life at 1 year.

Summary: This was a longitudinal follow-up study of patients treated with PER for symptomatic peripheral arterial disease (PAD). Approximately 94% of the patients were treated for intermittent claudication. There were 477 consecutive patients who underwent PER for symptomatic PAD eligible for the study. Of these, 300 participated in a longitudinal follow-up study of their health status. Health status was quantified using the disease-specific peripheral arterial questionnaire and the generic Short Form 12 in Euro-Qual-5 dimensions (EQ5D) questionnaire. Higher scores on these questionnaires represent fewer symptoms and better health status and quality of life.

The average age of the patients was 68 ± 11 years, with 62% male and 96% white, and 39% of the cohort had diabetes. In the patients who consented to participate in the study, clinical follow-up was obtained in 99%, and 86% completed questionnaires. Peripheral revascularization procedures were technically successful in 98% of the patients. Ninety-five percent of iliac and femoropopliteal lesions revascularized were Transatlantic Intersocietal Consensus type A or B lesions. When an 8-point change in the peripheral arterial questionnaire summary was used as evidence of improved health-related quality of life, 79% of the patients treated had improvement in health-related quality of life at 1 year, but 21% did not. Overall, mean peripheral artery questionnaire summary scores improved from 31 ± 19 to 62 ± 27 at 1 year ($P < .0001$). Generic health status scores also improved significantly at 1 year ($P < .001$).

Comment: This study indicates the difficulties of treating patients with claudication. Of the patients in this study, 94% were actually treated for claudication, with 98% having technically successful procedures and 96% having favorable lesions for percutaneous revascularization. Despite this,

21% of the patients did not have sustained benefit at 1 year. Further follow-up and cost analysis and comparisons with nonoperative treatment are needed to determine in what categories of patients percutaneous revascularization for claudication is a reasonable and cost-effective therapy.

Thoracic aortic aneurysm and dissection: Increasing prevalence and improved outcomes reported in a nationwide population-based study of more than 14,000 cases from 1987 to 2002Olsson C, Thelin S, Ståhle E, et al. *Circulation* 2006;114:2611-8.

Conclusion: The prevalence and incidence of thoracic aortic disease is increasing, as are the number of operations for thoracic aortic disease.

Summary: This study was designed to reappraise the epidemiology and long-term outcomes in subjects with thoracic aortic disease. Previous studies were based on treatments and diagnostic procedures. The current study identified 14,229 subjects with thoracic aortic dissection or thoracic aortic aneurysm in the Swedish National Healthcare registries from 1987 to 2002. Of these patients, 11,039 (78%) were diagnosed before death. The incidence of thoracic aortic disease rose by 52% in men to 16.3 per 100,000 per year and rose by 28% in women to 9.1 per 100,000 per year.

There was a sevenfold increase in operations in men and 15-fold increase in operations in women over time. During the study, 2455 patients underwent operation and 389 (16%) died ≤ 30 days after operation. Aortic rupture and older age were risk factors for operative mortality. Cox proportional hazards analysis showed the only variable associated with long-term mortality was increasing age. Long-term and short-term mortality both improved during the course of the study. The patients who underwent operation had an actuarial survival (95% confidence interval) at 1, 5, and 10 years of 92% (91% to 93%), 77% (75% to 80%), and 57% (53% to 61%). There was a 7.8% cumulative incidence of thoracic reoperations at 10 years.

Comment: The study represents a sample of an entire population of approximately 8.7 million people during a 16-year period. The measured increased incidence of thoracic aortic disease was likely partly due to better diagnostic imaging and more awareness of the problem during the course of the study. The study also noted overall survival was better with surgical treatment. Because age was the only variable associated with increased mortality, the study allows one to suggest—but of course not prove—that early surgical intervention of thoracic aortic disease may be a prudent treatment strategy.

Endovascular stent grafting versus open surgical repair of descending thoracic-aortic aneurysms in low-risk patients; a multicenter comparative trialBavaria JE, Appoo JJ, Makaroun MS, and the Gore TAG Investigators. *J Thorac Cardiovasc Surg* 2007;133:369-77.

Conclusion: Compared with a well-matched surgical cohort, descending aortic endovascular stent grafts have excellent early outcomes for treatment of descending thoracic aortic aneurysms. At 2 years' follow-up, however, the rate of endoleak and reintervention in the endograft patients exceeds those of open surgical repair.

Summary: This study represents the results from the first multicenter trial that was completed with the goal of gaining approval from the United States Food and Drug Administration of endovascular thoracic aortic grafting. Between September 1999 and May 2001, 140 patients at 17 sites were evaluated for a Gore TAG endograft (W.L. Gore & Associates, Flagstaff, Ariz). A surgical cohort of 94 patients served as controls. Control patients were identified historically and concurrently. Assessment was before treatment, at treatment, and at hospital discharge. Follow-up visits occurred at 1 month, 6 months, and annually thereafter.

Of the 140 patients identified for placement of a Gore TAG prosthesis, 137 had successful implantation of the endograft. Perioperative mortality was lower in the endograft cohort than in the surgical controls (2.1% vs 11.7%, $P < .001$). At 30 days, the endograft cohort had a lower incidence of spinal cord ischemia (3% vs 14%), respiratory failure (4% vs 20%), and renal insufficiency (1% vs 13%) than did the open surgical controls. The endograft group had a higher incidence of peripheral vascular complications (14% vs 4%). Mean intensive care unit stay and hospital stay were also significantly shorter in the endovascular cohort. At 1 year, the incidence of endoleak in the endovascular group was 6%, and at 2 years, 9%. With 2 years of follow-up, there were three reinterventions in the endograft group and none in the open surgical group. Kaplan-Meier analysis showed no difference in mortality at 2 years.

Comment: This study extends the initial results for the Gore TAG thoracic aortic prosthesis initially reported in 2005 (*J Vasc Surg* 2005;41:1-9). The surgical control group in this study was not ideal. More than half the patients were acquired through retrospective analysis, and little detailed information on aortic pathology was available in many of the open patients. The question arises of whether complex procedures such as thoracic aneurysm repair are best performed at centers of excellence where both endograft and open repair can be offered with best possible perioperative morbidity and mortality, or should thoracic aneurysm repair become a widespread community hospital procedure because of the availability of the endograft?