Comparison of Long-term Survival After Open vs Endovascular Repair of an Intact Aneurysm Among Medicare Beneficiaries


Conclusion: In Medicare beneficiaries, repair of isolated, intact abdominal aortic aneurysms (AAA) by endovascular means is associated with a lower risk of all-cause mortality and AAA-related mortality than repair using open techniques.

Summary: Randomized clinical trials (RCTs) have failed to demonstrate a long-term survival advantage of endovascular repair vs open repair of AAA. Furthermore, a previous study of Medicare beneficiaries undergoing AAA repair between 2001 and 2004 also failed to demonstrate a survival advantage of endovascular repair over open repair beyond 3 years of follow-up (Schermerhorn ML et al, N Engl J Med 2008;358:464-74). It is possible current endovascular devices may provide improved overall results of endovascular repair than those available for analysis of endovascular vs open repair in the previous study of Medicare beneficiaries. The authors, therefore, decided to compare overall and AAA-specific mortality, readmission, and reintervention after endovascular vs open repair of ruptured AAs in Medicare beneficiary patients using a database from 2003 to 2007. This was a retrospective analysis of patients aged ≥65 years in the Medicare standard analytic file, 2003 to 2007, who underwent isolated repair of an intact AAA. The national death index was used to determine cause of death. Primary outcome was all-cause mortality. Secondary outcomes were AAA-related mortality, hospital length of stay, 1-year readmission, repeat AAA repair, incisional hernia repair, and lower extremity amputation. The Medicare standard analytic files contained data from a 5% example of Medicare inpatient discharges. The study included 4029 patients; of these, 703 underwent open repair and 3826 underwent endovascular repair (hazard ratio, 1.24; 95% confidence interval [CI], 1.05-1.47; P < .001). After adjusting for emergency admission, year of admission, sex, age, calendar year, race, and comorbidities, there was a higher risk of both all-cause mortality (hazard ratio, 1.24; 95% CI, 1.05-1.47; P = .01) and AAA-related mortality after open vs endovascular repair (hazard ratio, 4.37; 95% CI, 2.51-7.66; P < .001). Adjusted hospital length of stay averaged 6.5 days (95% CI, 6.0-7.0 days; P < .001) longer after open repair (mean, 10.4 days) compared with endovascular repair (mean, 3.6 days). Need for incisional hernia repair was higher after open AAA repair (P < .001). The 1-year readmission rates, repeat AAA repair, and incisional hernia repair were similar between groups.

Comment: The data presented here do not demonstrate inferiority of endovascular vs open AAA repair. However, there are really too many deficiencies in the data to justify a conclusion that the data demonstrate superiority of endovascular vs open repair of AAs. First, follow-up is relatively short and the number of patients analyzed quite small compared with the number potentially available for analysis. In addition, the Medicare database does not contain information about aneurysm configuration and other anatomic factors that may influence surgeon choice of endovascular or open repair. Given the general acceptance of endovascular repair, it is quite likely many—if not most—of the patients undergoing open repair were judged not suitable for endovascular repair. The report comes survival after open or endovascular repair but not necessarily in patients suitable for either open or endovascular repair. The report does not adequately address reinterventions. Most patients undergo reinterventions for failure of endovascular repair as outpatient, which was not analyzed in this study, and reinterventions for open and endovascular aneurysm graft-related failure requiring reintervention tend to occur beyond the median follow-up of this report (Kelo RL et al, J Vasc Surg 2009;49:589-95; and Brimster CJ et al, J Vasc Surg 2011;54:42-6). The most reasonable conclusion provided by the data is that endovascular repair as a form of management of AAA is a reasonable approach for management of anatomically suitable patients with AAA who are Medicare beneficiaries. The data are not suitable for cost analysis or analysis of all relevant reinterventions.

Long Term Outcomes in Men Screened for Abdominal Aortic Aneurysm: Prospective Cohort Study


Conclusion: Men with abdominal aortic aneurysm (AAA) and those with abdominal aortic diameters between 25 and 29 mm have increased risk of mortality and subsequent hospital admission compared with men with abdominal aortas with diameters ≥24 mm.

Summary: Screening ultrasound studies of men aged ≥65 years have been shown to be effective in reducing risk of death, with benefits extending to at least 10 years (Thompson SG et al, BMJ 2009;338:b2307). However, aneurysm screening does not reduce all-cause mortality, and this may be partly due to increased risk of mortality of other vascular disease in patients with AAA (Brady AR et al, Atherosclerosis Thromb Vasc Biol 2001;21:1203-7). Most screening studies use a threshold aortic diameter of 30 mm as the definition of an AAA. Patients with abdominal aortic diameter ≥24 mm and in those with aortic diameters ≥30 mm are reassured and not reappointed for follow-up. However, there is a possible association between aortic diameter and all-cause mortality, suggesting that patients with abdominal aorta ≥24 mm for continued aortic follow-up may still be at an increased risk for vascular-related events (Freiberg MS et al, Circulation 2008;117:1010-7). The authors therefore examined morbidity and mortality in men with an AAA (aortic diameter ≥30 mm) and those with ectatic aortas (range, 25-29 mm), and compared morbidity and mortality rates with men with abdominal aortas ≤24 mm at the time of the initial aneurysm screening study. The study was performed in a large, sparsely populated area of Scotland and included 8146 men aged 65 to 74 years. The main outcome measure was morbidity and mortality with respect to the abdominal aorta in three size categories: ≤24, 25-29, and ≥30 mm. After screening, patients with an AAA with an aortic diameter of ≥30 mm, 696 (8.2%) had aortic diameters of 25 to 29 mm, and 7063 (86.7%) had aortas ≤24 mm.

The men were followed up for a median of 7.4 years (interquartile range, 6.9-8.2 years). There were 918 deaths (2.2%) in the group with aortas ≤24 mm, and 1154 deaths (14.3%) in the group with an aorta of 25-29 mm, and 2583 deaths (36.6%) in the group with an aorta of 30 mm. Patients with an aortic diameter of 24 to 29 mm had an increased risk of hospital admission compared with men with an aortic diameter of ≤24 mm. Men with aneurysms had an increased risk of hospitalization for atherosclerotic peripheral vascular disease, cerebrovascular disease, and respiratory disease. Patients with aortas of 25 to 29 mm, risk of hospital admission was also higher than in men with an aorta of ≤24 mm (adjusted hazard ratio, 6.7; 95% confidence interval, 3.4-13.2). This increased risk became apparent 2 years after screening.

Conclusion: The data indicate that it is possible to stratify risks of cardiovascular disease by abdominal aortic diameter. Patients with AAA, with an aortic diameter ≥30 mm, have an increased risk of death compared with patients with abdominal aortas ≤24 mm. Those patients with aortic diameters of 25 to 29 mm have an increased risk of hospitalization due to hypertension, ischemic heart disease, heart failure, diabetes mellitus, and chronic obstructive pulmonary disease. The data indicate that a patient should not be just reassured and sent on their way. Targeted interventions to reduce subsequent hospital admissions for hypertension, ischemic heart disease, heart failure, etc, would seem appropriate in the group of patients with abdominal aortas of between 25 and 29 mm in diameter.

Registry of Transcatheter Aortic-Valve Implantation in High-Risk Patients


Conclusion: “Real-life” experience of transcatheter aortic valve implantation (TAVI) in elderly patients, with a high prevalence of coexisting illnesses, demonstrates acceptable complication rates.

Summary: Aortic stenosis is the most frequently diagnosed valvular cardiac condition. In elderly patients at good risk, operative mortality after aortic valve placement is low but increases dramatically with severity of coexisting illnesses (Melby SJ et al, Ann Thorac Surg 2007;83:1651-7). Cribier et al implanted the first transcatheter aortic valve 10 years ago (Circulation 2002;106:3006-8). Since then, >50,000 patients have been treated by TAVI around the world. One randomized trial compared TAVI with medical therapy in patients where surgery was contraindicated (Leon MB et al, N Engl J Med 2010;363:1597-607). Most TAVI data is therefore smoking and registry data. In France, the France 2 registry is a prospective multicenter study of the French experience with TAVI. In this report, all TAVI procedures performed in France, as listed in the France 2 registry, were prospectively analyzed with a primary end point of death from any cause. Between January 2010 and October 2011, at 34 centers, 3,195 patients (49% women) were treated with TAVI. Between January 2010 and October 2011, at 34 centers, 3,195 patients (49% women) were treated with TAVI. Median age was 81 years; 50.0% had coexisting illnesses (EuroSCORE) and New York Heart Association functional class III or IV, and mortality were significant, with the mortality risk in men with an aneurysm and in those with an aorta measuring 25 to 29 mm being significantly higher than in men with aortas ≤24 mm. Mortality risk in the 25 to 29 mm group was not different after taking into account known heart disease. However, after adjustment, risk of hospital admission for cardiovascular disease and chronic obstructive pulmonary disease was higher in men in France and in men with aortas measuring 25 to 29 mm compared with men with an aortic diameter of ≤24 mm. Men with aneurysms had an increased risk of hospitalization for atherosclerotic peripheral vascular disease, cerebrovascular disease, and respiratory disease. Furthermore, patients with an aortic diameter of 25 to 29 mm still have an increased subsequent risk of hospital admission due to hypertension, ischemic heart disease, heart failure, diabetes mellitus, and chronic obstructive pulmonary disease. The data indicate that a patient should not be just reassured and sent on their way. Targeted interventions to reduce subsequent hospital admissions for hypertension, ischemic heart disease, heart failure, etc, would seem appropriate in the group of patients with abdominal aortas of between 25 and 29 mm in diameter.
Comment: At this point, vascular surgeons are not likely to be involved with the selection of patients for TAVI. However, TAVI will more widely performed in the U.S. during the next few years as approved devices are gradually disseminated to selected hospitals. Because the devices can require large introducer sheaths (up to 24F) and the transfemoral approach appears to be associated with higher mortality, vascular surgeons may be involved with selection of access for placement of these devices and treatment of the complications of transfemoral or trans-subclavian access. At this point, previous vascular complications in patients undergoing TAVI via the transfemoral approach appear to occur in about 5.8% of the cases. It also appears that in Europe, patients are increasingly opting for TAVI rather than open aortic valve replacement, and there are suggestions of a high rate of off-label use of the device (Zahn R et al, Eur Heart J 2011;32:198-204). Vascular surgeons should be aware of the complexity of these patients, access options, and the complications and outcomes of TAVI.

Stroke Recurrence Within the Time Window Recommended for Carotid Endarterectomy


Conclusion: Patients with asymptomatic carotid stenosis (CS) can have recurrent strokes within the recommended treatment period of 14 days.

Summary: There is time-dependent benefit of surgery for patients with symptomatic CS, with maximum benefit when treatment is within 2 weeks and minimal benefit for those treated after 12 weeks (Rothwell PM et al, Lancet 2004;363:915-24). Multiple guidelines from surgical and medical societies now recommend endarterectomy within 14 days of symptoms referable to a cervical CS. There are however, only a few population-based studies regarding the risk of stroke recurrence within the 14-day period recommended for endarterectomy (Fairhead JF et al, Neurology 2005;65:371-5). No population-based studies have evaluated recurrence risk within 72 hours of symptoms. In this study, the authors hypothesized ischemic stroke associated with CS would have a high early recurrence rate. They attempted to qualify this recurrence rate by using a population-based prospective cohort study design with patients from the North Dublin population stroke study. Ischemic strokes were identified over a 1-year period and categorized into those with and without CS, with CS defined as an ipsilateral CS with ≥50% luminal narrowing. Stroke recurrence not associated with any procedure was determined at 72 hours and at 7 and 14 days. A total of 365 patients had an ischemic stroke and carotid imaging. There were 51 exclusions because the stroke involved the posterior circulation, was nonlateralizing, or was associated with ipsilateral carotid occlusion or an intracranial CS. Of the 314 patients included for analysis, there were 36 CS-positive and 278 CS-negative strokes. Recurrent stroke occurred in 5.6% (2 of 36) of CS-positive patients and in 0.4% (1 of 278) of CS-negative patients within 72 hours of symptom onset (P = .003). At 7 days, recurrent stroke occurred in 5.6% (2 of 36) of CS-positive patients and in 0.7% (2 of 278) of CS-negative patients (P = .001). At 14 days, recurrent stroke occurred in 8.3% (3 of 36) of CS-positive patients and in 1.8% (5/278) of CS-negative patients. With multivariate Cox regression analysis, the CS was the only independent predictor of recurrence at 72 hours (adjusted hazard ratio [HR], 36.1; 95% confidence interval [CI], 1.6-837.5; P = .03) and was also the only independent predictor of recurrence at 7 days (HR, 9.1; 95% CI, 1.1-79.2; P = .05). There was also a trend at 14 days for CS being an independent predictor of recurrence (HR, 4.6; 95% CI, 0.9-22.8; P = .06).

Comment: The data indicate that in some stable patients who are suitable candidates for endarterectomy, urgent surgery within a few days of symptoms may prevent early stroke recurrence. A recent systematic review also concluded there is no difference in risk of stroke or death in neurologically stable patients who undergo endarterectomy within 1 week compared with a later time (Rerkasem K, Rothwell PN, Stroke 2009;40:e564-72). The authors succinctly point out the implications of their study, “if the incidence rate of venous thrombosis in women using combined oral contraceptives containing levonorgestrel and estrogen (30-40 μg). A diagnosis of VTE was considered confirmed if there was at least 4 weeks of anticoagulation therapy after the initial VTE diagnosis. There were 5,287 first ever VTE events recorded within 9,429,128 women-years of observation. Of these VTE events, 3,434 were confirmed. The rate of confirmed VTE events was 2.1/10,000 years in nonusers of hormonal contraception. After adjustment for age, calendar year, and education, the relative risks and 95% confidence interval (95% CI) of confirmed VTE in users of transdermal combined contraceptive patches and vaginal ring compared with nonusers of hormonal contraception were 7.9 (3.5-17.7) and 6.5 (7.4-8.9), respectively. Corresponding incidence events per 10,000 exposure-years were 9.7 and 7.8 events. The relative risk (95% CI) was increased in women who used subcutaneous implants (1.4 [0.6-3.4]) but not in those who use the levonorgestrel intrauterine system (0.6 [0.4-0.8]). Compared with users of combined oral contraceptives containing levonorgestrel, the adjusted relative risk (95% CI) of VTE was 2.3 (1.0-5.2) in users of transdermal patches and 1.9 (1.3-2.7) in users of the vaginal ring. Comment: In the last paragraph of the discussion portion of this article the authors succinctly point out the implications of their study, “if the incidence rate of venous thrombosis in women using combined oral contraceptives containing levonorgestrel is 6 per 10,000 exposure years, that of the vaginal ring is 11 per 10,000 exposure years, and that of the transdermal patch is 14 per 10,000 exposure years, then 2000 women using the vaginal ring, and 1250 using the transdermal patch should shift to combined oral contraceptives with levonorgestrel to prevent 1 event of VTE in one year. A risk of 10 per 10,000 years implies a risk of VTE more than 1% over a 10 year user period. Therefore, women are generally advised to use combined oral contraceptives with levonorgestrel or norgestimate, rather than to use transdermal patches or vaginal rings.”