

# EVAR Gets Modest Boost From Two British Trials

*One surgeon questioned the relevance of the studies because the aneurysms were large at randomization.*

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Midterm findings from two British studies of endovascular repair of abdominal aortic aneurysms may have limited relevance to U.S. practice because the aneurysms were relatively large and the wait for surgery was long.

Still, the findings offer another boost to the documented efficacy and safety of endovascular aneurysm repair (EVAR), which already is the preferred repair option in the United States, experts said. The findings also underscore the importance of reserving EVAR for patients with aortic anatomy that's amenable to placement of an endovascular-repair device.

For elderly and higher-risk patients, the results "shift the balance in favor of EVAR, and many younger, lower-risk patients will now also shift toward EVAR to avoid the short-term morbidity of open repair," said Jack L. Cronenwett, M.D., chief of vascular surgery at Dartmouth-Hitchcock Medical Center, Lebanon, N.H.

"These data will be very helpful for giving patients a perspective on how the treatment works long term," said Thomas S. Riles, M.D., chairman of the department of surgery and a vascular surgeon at New York University. "We currently do about 80% of our abdominal aortic aneurysm [AAA] repairs with EVAR, and as I look at these data, I think that maybe we should be a little more conservative. But if a group now does about 50% of their repairs with EVAR, maybe the results will push them to use EVAR more," he said in an interview.

According to Dr. Cronenwett, most American centers now use EVAR in about

60% of patients with AAAs that are large enough to warrant repair.

William D. Jordan, M.D., chief of vascular surgery at the University of Alabama, Birmingham, questioned the relevance of the two studies because the aneurysms were often large at the time of randomization (all AAAs had a diameter of at least 5.5 cm) and because many patients had long delays before surgery.

The standard of care in the United States is to offer repair once an AAA reaches 5.0 cm in diameter; with increasing use of routine surveillance, more patients are being diagnosed with even smaller AAAs. Although the efficacy and safety of AAA repair for aneurysms that are 4.0-4.9 cm in diameter is now being studied in two trials, Dr. Jordan will repair an AAA of this size if the patient asks for it and is a suitable candidate, he said in an interview.

The EVAR trials 1 and 2 were done at 34 hospitals in the United Kingdom, which assessed 4,799 patients with an AAA from September 1999 through December 2003. From this group, 1,423 patients had an AAA at least 5.5 cm in diameter and were judged eligible for either EVAR or open repair, and from this group a total of 1,082 were randomized and included in the primary end point analysis for trial 1.

Of the more than 3,000 patients ineligible for randomization, 457 were eligible for EVAR with an AAA at least 5.5 cm in diameter but unfit for open repair. Of these, 338 enrolled in trial 2 and were randomized to EVAR or medical management.

The average age of patients in trial 1 was 74 years, and their median aneurysm diameter was 6.2 cm. The median time from randomization to surgery was 43 days for EVAR and 36 days for open repair.

By 30 days after surgery, patients treated with EVAR had 1.7% mortality, compared with 4.7% in those who got an open repair (Lancet 2004;364:843-8).

By the end of 2004, all patients had been followed for 1 year, 70% for 2 years, 47% for 3 years, and 24% for 4 years. At that point, the incidence of death from all causes was 100 out of 543 in the EVAR group (18.4%), and 109 out of 539 in the open-repair group (20.2%), a difference that was not statistically significant.

But aneurysm-related deaths occurred in 19 of the EVAR patients (3.5%), compared with 34 in the open-repair group (6.3%), a statistically significant difference. When the rate of aneurysm-related deaths was adjusted for clinical and demographic differences at baseline, EVAR was associated with a 49% drop in the rate of aneurysm-related deaths, compared with open repairs (Lancet 2005;365:2179-86).

Although aneurysm-related survival was better with EVAR, the procedure also led to more complications. By 4 years, 41% of patients in the EVAR group had at least one complication, compared with 9% among those who got open repair.

In EVAR trial 2, the 166 patients randomized to EVAR had a median aneurysm diameter of 6.4 cm and waited a median of 57 days from randomization until their procedure was done. While awaiting EVAR, 9 patients experienced aneurysm rupture. Among the 172 patients randomized to medical management, 47 (27%) eventually had their aneurysm treated by EVAR or open repair.

During up to 4 years of follow-up in tri-

al 2, there was no statistically significant difference between the two study groups in total mortality or in aneurysm-related mortality (Lancet 2005;365:2187-92).

The performance of EVAR in trial 2 was handicapped by two factors, Dr. Cronenwett said in an editorial. First was the lag between randomization and EVAR—a delay that probably led to the ruptures in nine patients. Second was the high rate of aneurysm repairs in the patients randomized to medical management. These two factors "bias the study against EVAR," he wrote (Lancet 2005;365:2156-8).

Nonetheless, trial 2 shows that in patients with a relatively short life expectancy, EVAR should be targeted to carefully selected patients, he said.

Trial 1 also shows that patients with low operative risk are the best candidates for open repair and should be considered for EVAR only if they have excellent anatomic suitability. According to

Dr. Riles, that would mean a long, proximal, aortic neck, 1.5 cm or longer, and a width that's ideally no more than 28 mm.

A relatively small fraction of patients with marginal anatomic suitability and a short life expectancy are best managed medically with no aneurysm repair. But a sizable fraction of patients fall into a gray area, where there is no clear advantage of EVAR or open repair. In these cases, patient preference is an important factor, Dr. Cronenwett wrote.

Dr. Riles noted that the data from the British trials will be useful for tempering the enthusiasm of some patients for EVAR by showing them that after EVAR, they face an ongoing risk that a follow-up procedure will be needed. ■

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## Metabolic Syndrome Components Found to Raise PAD Risk

BY MIRIAM E. TUCKER  
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WASHINGTON — The metabolic syndrome increases the risk for peripheral arterial disease as well as coronary artery disease, Andy Menke and his associates reported in a poster presented at a conference on cardiovascular disease epidemiology and prevention sponsored by the American Heart Association.

The relationship between the metabolic syndrome and coronary artery disease is well established.

Now, data from 2,175 participants in the 1999-2002 National Health and Nutrition Examination Survey (NHANES) suggest that the association also extends to the peripheral arteries, and in a dose-response fashion—that is, the more metabolic syndrome

components a person has, the greater the risk for peripheral arterial disease (PAD), said Mr. Menke, a doctoral student in the department of epidemiology at Tulane University, New Orleans.

A total of 827 participants had metabolic syndrome, defined as the presence of three or more of the following:

- ▶ Systolic blood pressure readings greater than or equal to 130 mm Hg, and/or diastolic blood pressure greater than or equal to 85 mm Hg, and/or the use of antihypertensive medication.
- ▶ Serum HDL cholesterol less than 40 mg/dL for men and less than 50 mg/dL

for women.

- ▶ Serum triglyceride level greater than or equal to 150 mg/dL.
- ▶ Plasma glucose greater than or equal to 110 mg/dL and/or use of insulin or glucose-lowering medication.

- ▶ Abdominal obesity (waist circumference greater than 102 cm for men and greater than 88 cm for women).

Those with metabolic syndrome were significantly older, had a higher body mass index, and were more likely to have a low glomerular filtration rate.

The age-adjusted prevalence of PAD, defined as the average of the left and right ankle-brachial index being less than 0.9, was present in 5.3% of those with metabolic syndrome and in 3.2% of those without, a significant difference.

After adjustment for BMI, age, race/ethnicity, sex, high school education, physical inactivity, alcohol consumption, glomerular filtration rate, and current/former smoking, subjects with the metabolic syndrome were nearly three times more likely to have PAD than were those who did not.

Those with three metabolic syndrome components had an odds ratio of 1.68 for PAD, compared with subjects who had just one or two components, while the odds ratio for those with four or five components was 1.54.

Among the individual metabolic syndrome components, the subjects with elevated blood pressure had an odds ratio of 1.83 for PAD, compared with those who were normotensive, according to the investigators.

The conference was also sponsored by the National Heart, Lung, and Blood Institute. ■

### Science Behind The Aging Heart

The National Institute on Aging has released "Aging Hearts and Arteries: A Scientific Quest," which provides an overview of cardiac research findings. The free booklet looks at the links between aging and cardiovascular diseases. To download or order a copy, visit [www.niapublications.org/pubs/hearts/aginghearts.asp](http://www.niapublications.org/pubs/hearts/aginghearts.asp).