Selected Abstracts from the March Issues of the Journal of Vascular Surgery and the Journal of Vascular Surgery: Venous and Lymphatic Disorders☆

Editors: Peter Gloviczki and Peter F. Lawrence

Selected Abstracts from the Journal of Vascular Surgery

Complex endovascular repair of postdissection arch and thoracoabdominal aneurysms

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Objective: We report our experience of the treatment of postdissection arch aneurysms and thoracoabdominal aortic aneurysms (TAAAs) by endovascular repair using fenestrated and branched endografts.

Methods: This study includes all patients presenting with chronic postdissection aneurysms >55 mm in diameter deemed unfit for open surgery and treated by complex endografting between October 2011 and April 2017. Where appropriate, staged management strategies including left subclavian artery revascularization, thoracic endografting, dissection flap fenestration, and tear enlargement were performed before the complex endovascular repair. Outcome data were collected prospectively, specifically including technical success, endoleaks, target vessel patency, aneurysm diameter, adverse events, reinterventions, and mortality.

Results: We treated 40 patients with a median age of 63 years (55-71 years). In total, 43 procedures were performed: 19 arch repairs using inner branch endografts (one to three branches) and 24 TAAA repairs using fenestrated or branched endografts. Three patients were treated using both arch and TAAA repair. The median time between initial presentation with acute dissection and the first complex aortic repair was 5 years (3.0-10.0 years). Staged procedures were performed in 33 of 40 patients (82.5%). The technical success rate was 93%, the median procedure length was 240 minutes (170-285 minutes), and the median dose-area product was 80 Gy · cm^2 (54.3-138.4 Gy · cm^2). The 30-day and in-hospital mortality rates were 2.3% (1/43) and 4.7% (2/43), respectively. The spinal cord ischemia rate was 7% and occurred only after TAAA repair. One stroke with partial recovery and one transient ischemic attack were observed (4.7%) after arch repair. Six early reinterventions (14%) were performed: three for access complications, two to treat acute hemorrhage, and one to treat a type II endoleak. Median follow-up was 25.5 months (11-42.25 months). The 1- and 5-year survival rates were 90% and 76.4%, respectively. Late reinterventions were required in eight patients, two in the arch group (to treat endoleaks at 3 and 33 months) and six in the TAAA group (2 iliac and 1 bifurcated endograft extensions, 2 additional renal stents, 1 inferior mesenteric artery embolization). Aneurysm diameter was stable (72%) or shrank (23%) during follow-up. Enlargement was shown in two patients with endoleaks.

Conclusions: Complex endovascular repair of postdissection aneurysms is a safe procedure in patients deemed unfit for open surgery. Our experience suggests that close follow-up is mandatory as secondary procedures are frequently required to completely exclude the false lumen.

A registry-based rationale for discrete intervention thresholds for open and endovascular elective abdominal aortic aneurysm repair in female patients

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Objective: An evidence-based consensus for a female-specific intervention threshold for abdominal aortic aneurysms (AAAs) is missing. This study aims to analyze sex-related differences in the epidemiology of ruptured AAA to establish an intervention threshold for women.

Methods: The Dutch Surgical Aneurysm Audit (DSAA) is a compulsory, nation-wide registry of AAA repairs in The Netherlands. All patients with emergency or elective AAA repair between January 1, 2013, and December 31, 2015, were included in the analysis. The main outcomes were age, sex, AAA diameter at time of rupture, and 30-day postoperative mortality.

Results: A total of 1561 ruptured AAA repairs (14.7% women) and 7063 cases of elective AAA repair (13.7% women) were included in the analysis. Women had significantly smaller mean ± standard deviation AAA diameter at time of rupture than men; 70.5 ± 14.4 mm and 78.6 ± 17.5 mm, respectively. In male patients, 8% of ruptures occurred at diameters below the 55 mm intervention threshold. The female equivalent of this eighth percentile is 52 mm. Female patients had significantly higher 30-day mortality after emergency repair, namely, 33% for women versus 24.2% for men, but were also significantly older, mean ± standard deviation age 76.7 ± 7.1 years and 73.9 ± 8.3 years for women and men, respectively. Correcting for

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1078-5884/
http://dx.doi.org/10.1016/S1078-5884(18)30096-0

age reduced the 30-day mortality risk for women after ruptured AAA repair from 1.53 (95% confidence interval, 1.14-2.04) to 1.27 (95% confidence interval, 0.92-1.73). Outcome after open elective repair was significantly worse for women compared with men, with a 30-day mortality of 7.97% 30 for women and 4.27% for men ($P < .01$).

Conclusions: The equivalent of the 55-mm intervention threshold for elective endovascular AAA repair in men is 52 mm in women. The almost doubled mortality risk for elective open repair in women implies that the optimal point for open repair is at higher diameters, very possibly at least 55 mm.

Indications, risk factors, and outcomes of 30-day readmission after infrarenal abdominal aneurysm repair

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Objective: Reducing readmissions is an important target for improving patient care and enhancing health care quality and cost-effectiveness. The aim of this study was to assess rates, risk factors, and indications of 30-day readmission after open aortic repair (OAR) and endovascular aneurysm repair (EVAR) of infrarenal abdominal aortic aneurysms (AAAs).

Methods: A retrospective analysis of the Premier Healthcare Database from 2009 to 2015 was performed. Indications for readmission after the index procedure, risk factors, and outcomes of the index admission and rehospitalization were evaluated. Multivariate logistic models were used to assess the association between 30-day readmission and different patient and hospital factors.

Results: A total of 33,332 AAA repair procedures were identified: 27,483 (82.5%) EVAR and 5849 (17.5%) OAR. The overall rate of 30-day readmission was 8.1%, and it was greater after OAR (12.9% vs 7.1% in EVAR; $P < .001$). In general, the most common specific readmission diagnoses were infectious complications (16.1%), followed by respiratory and cardiac complications (11.8% and 11.3%, respectively). After multivariate adjustment, OAR was associated with higher 30-day readmission compared with EVAR (adjusted odds ratio, 1.11; 95% confidence interval, 1.0-1.2; $P = .04$). Other risk factors of 30-day readmission included female gender, emergency and urgent procedures, certain patient comorbidities (dyslipidemia, congestive heart failure, history of transient ischemic attack, previous cardiac surgery, chronic obstructive pulmonary disease, asthma, chronic kidney disease, peripheral vascular disease, and history of malignant disease), and hemorrhage/shock/bleeding occurring during the index admission as well as nonhome discharge. Readmitted patients had an overall in-hospital mortality of 3.6% and paid a median rehospitalization cost of $7757.

Conclusions: Our study shows that around 8.1% of patients undergoing infrarenal AAA repair were readmitted within 30 days. Because many readmissions are unrelated to the index procedure or caused by factors that are nonmodifiable or nonidentifiable at discharge, efforts should focus on discharge planning and improving the decision process regarding discharge destination as well as post-discharge coordination of care for high-risk patients.

Multifactorial risk index for prediction of intraoperative blood transfusion in endovascular aneurysm repair

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Background: In some institutions, the current blood ordering practice does not discriminate minimally invasive endovascular aneurysm repair (EVAR) from open procedures, with consequent increasing costs and likelihood of blood product wastage for EVARs. This limitation in practice can possibly be addressed with the development of a reliable prediction model for transfusion risk in EVAR patients. We used the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database to create a model for prediction of intraoperative blood transfusion occurrence in patients undergoing EVAR. Afterward, we tested our predictive model on the Vascular Study Group of New England (VSGNE) database.

Methods: We used the ACS NSQIP database for patients who underwent EVAR from 2011 to 2013 ($N = 4709$) as our derivation set for identifying a risk index for predicting intraoperative blood transfusion. We then developed a clinical risk score and validated this model using patients who underwent EVAR from 2003 to 2014 in the VSGNE database ($N = 4478$).

Results: The transfusion rates were 8.4% and 6.1% for the ACS NSQIP (derivation set) and VSGNE (validation) databases, respectively. Hemoglobin concentration, American Society of Anesthesiologists class, age, and aneurysm diameter predicted blood transfusion in the derivation set. When it was applied on the validation set, our risk index demonstrated good discrimination in both the derivation and validation set (C statistic = 0.73 and 0.70, respectively) and calibration using the Hosmer-Lemeshow test ($P = .27$ and 0.31) for both data sets.

Conclusions: We developed and validated a risk index for predicting the likelihood of intraoperative blood transfusion in EVAR patients. Implementation of this index may facilitate the blood management strategies specific for EVAR.

An update on the incidence of perioperative outcomes after carotid endarterectomy, stratified by type of preprocedural neurologic symptom

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