of 3.0–5.4 cm were identified. The purpose of our study is to investigate the fate of patients diagnosed with an aorta too small for repair.

Methods: Data were extracted through a regional Veterans Affairs Service Network to identify all veteran males 65–75 years of age who smoked greater than 100 cigarettes during their lifetime. Patients meeting screening criteria were evaluated for an AAA as part of the patient’s health maintenance. An aortic diameter of 3.0 cm to 3.9 cm was considered to be a SMALL AAA, whereas INTERMEDIATE AAA was an aortic diameter 4.0–5.4 cm. For analysis rates, rate of aortic expansion, and percent for expansion were evaluated. Chi squared analysis and two-tailed t-test were used to compare groups. A P value < .05 was considered significant.

Results: A total of 9,751 patients (71.5 ± 5.6 SD years of age) were screened for an AAA over a 5 year period from January 1, 2007 to December 31, 2011. A total of 698 patients were identified with an aneurysm (7.1%). Five-hundred-nineteen patients had an aortic diameter of 3.0–5.4 cm upon initial screening; 13 aneurysms were repaired and 31 had follow-up imaging less than 6 months after initial screening. During study period, 47.8% (227/475) patients had a follow-up image study completed more than 6 months after initial screening. The average expansion rate for SMALL AAA was 0.16 cm/year versus INTERMEDIATE AAA with 0.22 cm/year (P < .01). No significant differences were found in risk factors between groups.

Conclusions: The long-term implementation of an AAA screening effort has led to the diagnosis of a significant number of patients with small and intermediate diameter aortas with lacking data-driven recommendations for long-term follow-up. Our data suggest that follow-up among patients with small to intermediate sized aneurysm are substantially low. Expansion rates are variable and risk for expansion need to be further elucidated.

Endoleaks Following EVAR: Long-Term Outcome and Clinical Significance

Eddie Blay Jr, BA,1 Vinint Varu, MD,2 Lisa Sun, MS,4 Wei Zhou, MD2,3.1,4,5

Methods: We retrospectively evaluated 213 consecutive patients who received EVARs at a referral VA medical center. Age, aneurysm size, patency of lumbar and IMA, and follow-up evaluations were recorded. Type of endoleak, date of detection and intervention were also documented. Patients who had less than 1-year follow-up were excluded. Student’s t-test and spearman correlation were used for data analysis.

Results: A total of 180 patients were included in the analysis with a mean follow-up of 51 months. Thirty-five were excluded due to death within 1 year of EVAR (n = 14), lost to follow-up (n = 5), or too early for 1 year CT (n = 14). Fifty-two (28.9%) patients had endoleaks. The mean diagnosis time for type I (n = 12) and type III (n = 4) endoleaks was 46 and 21 months post-EVAR and the majority (62.8%) were diagnosed >1 year following EVAR. All type I and III endoleaks received secondary interventions except one who presented with aneurysm rupture. Type II endoleak was detected in 37 patients on an average of 14 months following EVAR and 39.4% of which were detected >1 year post EVAR. Patients without documented endoleak had significant decrease in aneurysm size compared to the preoperative size (4.78 vs 5.65 cm; P < .001), while those with type II endoleak had increase compared to the preop (5.82 vs 5.66 cm). Importantly, 51.4% of the patients with a type II endoleak had significant AAA enlargement (0.75 cm). No significant correlation between the size of IMA or lumbar to AAA enlargement among the patients with a type II endoleak was seen. 9 patients with type II endoleak received secondary interventions.
eGFR and three patients required hemodialysis. Five patients had full recovery of renal function by discharge. In hospital, 30-day morbidity/mortality were 25%/3% respectively. At a mean follow-up of 3 years, six patients had an eGFR significantly less than the preoperative value. Late interventions related to the AAA repair were required in eight patients. Indications included: wound complication (3), anastomotic aneurysm (2), incisional hernia (1), anastomotic graft stenosis (1), and proximal aortic dilatation (1). Overall 5-year intervention free survival was 61% and overall survival 79%. Intervention free survival was decreased by perioperative pneumonia ($P < .01$) and enhanced by antplatelet ($P = .05$) use whereas overall survival was decreased by COPD ($P = .03$) and perioperative pneumonia ($P = .001$).

Conclusions: A quarter of patients requiring a suprarenal cross-clamp during open AAA repair experience renal dysfunction. Late graft related complications are few with preoperative and perioperative pulmonary function negatively impacting intervention-free and overall patient survival.

EVAR Continues to Cost More than Open AAA Repair

Misty D. Humphreys, MD, Bjoern D. Suckow, MD, Joshua T. Binks, Carrie McAdam-Marx, Pharm D, Larry W. Kraos, MD, Vascular Surgery, University of California-Davis, Sacramento, Calif; University of Utah, Salt Lake City, Utah; University of Pittsburgh, Pittsburgh, Pa

Objectives: Endovascular aortic aneurysm repair (EVAR) is now established as first line treatment for infra-renal aortic aneurysms in the United States. Recent data from randomized trials suggest elective EVAR is cost effective compared to open AAA repair (oAAA). Cost analysis for urgent aneurysm repair has not been reported. We evaluated the cost of EVAR and oAAA in both elective and urgent settings in our center.

Methods: All infrarenal AAA repairs performed from 2004-2010 were retrospectively reviewed ($n = 172$). Clinical characteristics of patients receiving EVAR and oAAA repair were compared. Direct costs, payments, and direct cost margin for the index inpatient episode were obtained from the hospital for all patients. Subsequent financial information including clinical, radiologic, and procedural cost was also available for 52 patients who had received all follow-up care in our institution for one year (EVAR = 34; oAAA = 18).

Results: Overall, elective EVAR patients were older than oAAA patients but EVAR patients had significantly shorter lengths of stay, regardless of urgency (Table). Urgent AAA repair occurred more often by oAAA than EVAR ($P < .001, \chi^2$). There were no other significant clinical differences between EVAR and oAAA patients. For elective patients, EVAR costs were greater than for oAAA. There was a trend toward lower costs in EVAR vs oAAA patients being treated urgently. The hospital experienced a negative cost margin more often after elective EVAR vs oAAA. Negative cost margins were less frequent following EVAR vs oAAA. Cost margins remained negative in all EVAR patients followed for one year in our institution.

Conclusions: At a tertiary academic institution, costs for elective EVAR are significantly higher than oAAA. EVAR may be relatively more cost effective in urgent situations. Negative cost margins were more common in EVAR patients and one year follow-up with imaging in the same institution did not result in a positive margin.

Percutaneous Aortic Dissection Flap Fenestration for the Treatment of Functional Severe Claudication

Miguel F. Montero-Baker, Magdiel Trinidad-Hernandez. University Medical Center, Tucson, Ariz

Fig 1. Fenestration technique. A, Initial predilation of the flap perforation. B, Size optimization with large diameter balloon.

A 49-year-old man with past medical history of spontaneous type A Aortic dissection 3 months prior, was referred to Vascular Surgery outpatient clinic for severe lifestyle-limiting claudication on the left. His past medical history includes ascending aortic valve sparing repair and essential hypertension. His father died at a young age from a presumed aortic syndrome.

Physical examination revealed a well-healed median sternotomy and normal cardiopulmonary auscultation. There were no bruits in the abdomen. His left femoral pulse was diminished in contrast to the right. A discrete bruit was discovered above the left groin. Noninvasive vascular testing revealed a baseline ankle-brachial index of 0.92, which dropped to 0.40 within 3 minutes of exercise testing.

Table.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Elective</th>
<th>Urgent</th>
<th>$P$ value</th>
<th>Elective</th>
<th>Urgent</th>
<th>$P$ value</th>
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<tbody>
<tr>
<td>No.</td>
<td>EVAR 66</td>
<td>oAAA 37</td>
<td>–</td>
<td>EVAR 21</td>
<td>oAAA 48</td>
<td>–</td>
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<tr>
<td>Mean age, years</td>
<td>75 (67)</td>
<td>67 (&lt;.001)</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>.94</td>
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<td>Median LOS, days (IQR)</td>
<td>4 (1-4)</td>
<td>9 (7-17)</td>
<td>&lt;.001</td>
<td>6 (2-8)</td>
<td>16 (9-30)</td>
<td>&lt;.001</td>
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<tr>
<td>Median direct cost-index survival, S (IQR)</td>
<td>21054 (19758, 24749)</td>
<td>15939 (12205, 29910)</td>
<td>.01</td>
<td>27178 (22675, 38954)</td>
<td>48236 (17476, 73242)</td>
<td>.22</td>
</tr>
<tr>
<td>Patients with negative cost margin (%)</td>
<td>17 (26)</td>
<td>2 (5)</td>
<td>&lt;.01</td>
<td>3 (14)</td>
<td>3 (6)</td>
<td>.36</td>
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