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PS12.
Use of CO2 Angiography for Complex Endovascular Aneurysm Repair
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Objectives: Complex EVAR involving fenestrated and branched endografts, is associated with significant post operative complications. Increased use of iodinated contrast medium is associated with post operative contrast medium induced renal dysfunction and renal failure. We describe the use of CO2 as the primary contrast agent in patients undergoing complex EVAR.

Methods: Two cohorts of patients undergoing fenestrated and branched EVAR were compared at a regional vascular unit. 68 complex endografts were implanted between 2008 and 2010; 41 procedures were completed with iodinated contrast media (group 1) and 27 utilised CO2 as the primary contrast agent (group 2). Endpoints assessed were need for renal replacement therapy or renal impairment, defined as increase in creatinine of >25%.

Results: Baseline renal function was similar in each group (creatinine group 1 median=96; group 2 median=102, (P=0.21)). There was a significant difference in the median change in post op creatinine (28.5 in group 1 compared to 9.5 in group 2 (P=0.048)). However, there was no significant difference in postoperative renal dysfunction (13/41 in group 1 and 8/27 in group 2 (P=0.79)) or need for temporary renal support (7/41 in group 1 and 3/27 in group 2 (P=0.72). No patients required permanent dialysis. Median volume of iodinated contrast used fell from 226.25ml to 75ml (p=0.43). There was no difference between the groups in fluoroscopy time or radiation dose.

Conclusions: Renal impairment is a common post-operative complication amongst patients undergoing complex EVAR, although its aetiology is multi-factorial. CO2 angiography can be successfully used for complex EVAR and its use may reduce the volume of iodinated contrast used as well as lower post operative creatinine levels.

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Contemporary Outcomes following Endovascular versus Open Repair of Abdominal Aortic Aneurysm
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Objectives: The choice between endovascular (EVAR) and open repair (OAR) to treat abdominal aortic aneurysm (AAA) is frequently dependent on periprocedural morbidity and mortality. Previous randomized clinical trials have demonstrated better short-term outcomes with EVAR. The objective of this study was to report the contemporary 30-day morbidity and mortality of AAA repair in the United States population comparing EVAR and OAR.

Methods: Patients who underwent infrarenal AAA repair were identified from the 2007-09 National Surgical Quality Improvement Program - a multicenter (more than 180 hospitals), prospective database. Univariate and multiple logistic regression analyses were performed.

Results: Of total 10,251 patients, 72% underwent EVAR. Patients undergoing EVAR were more commonly males (83.3% vs 74.4%), octogenarians (29.3% vs 16.7%), and had a higher percentage of iliacs/femorals as attachment site (92.5% vs 43.5%). They had less intraoperative transfusion (median 0 vs 2 units), operative time (141 vs 211 minutes), hospital length of stay (median 2 vs 7 days), and return to operating room (4.2% vs 8.0%). On univariate analysis, 30-day major morbidity and mortality were lower for EVAR (8.9% vs 24.7% and 1.2% vs 3.3%, respectively; p<0.0001 for both). After controlling for 65 comorbidities and procedural characteristics on multivariate analysis, OAR was associated with higher postoperative major morbidity (OR 1.8; 95%CI - 1.5 to 2.0; p<0.0001; c-statistic: 0.73); however, a significant difference was not seen between OAR and EVAR for postoperative mortality (OR 1.4; 95%CI - 0.99 to 1.99; p=0.06; c-statistic 0.81).

Conclusions: Contemporary outcomes following AAA repair in the United States continue to be excellent. After controlling for other factors, EVAR and OAR procedures have similar perioperative mortality rates. OAR was, however, independently associated with 1.8 times higher perioperative morbidity. These data demonstrate that elective EVAR has short-term morbidity benefits compared with OAR.

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PS16.
Survival following Open versus Endovascular Thoracic Aortic Aneurysm Repair in the Medicare Population
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Objectives: To describe short and long-term survival of patients with descending thoracic aortic aneurysms (TAA) following OPEN and endovascular repair (TEVAR).

Methods: Using Medicare claims from 1998-2007, we analyzed patients who underwent repair of intact and ruptured TAA. Our main outcome measure was mortality, analyzed as peri-operative mortality (death prior to discharge or before 30 days), and five year survival, by life-table analysis. We examined outcomes by repair type (OPEN or TEVAR) in crude, adjusted (age, sex, race, procedure year), and propensity-matched cohorts.

Results: Overall, we studied 12,578 patients who underwent OPEN, and 2,733 patients who underwent TEVAR. Peri-operative mortality was significantly lower in patients undergoing TEVAR as compared to OPEN, for both intact (6% TEVAR, 7% OPEN, p<0.001) and ruptured TAA (28% TEVAR, 46% OPEN, p<0.001). However, patients with intact TAA selected for TEVAR had significantly worse survival than OPEN patients at one year (87% OPEN, 82% TEVAR, p<0.001) and five years (72% OPEN, 62% TEVAR, p<0.001) (Figure 1). In adjusted and propensity-matched cohorts, intact and ruptured patients selected for TEVAR had consistently worse 5-year survival than OPEN patients.

Conclusions: While peri-operative mortality is lower with TEVAR, Medicare patients selected for TEVAR have worse long-term survival than patients selected for OPEN. These results suggest that higher risk patients are being offered TEVAR, and some do not benefit based on long-term survival. Future work is needed to identify candidates unlikely to benefit from TEVAR.

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PS18.
Imaging of Abdominal Aortic Aneurysms: Computerized Tomography and Three-Dimensional Ultrasound Scan: A Comparison

Objectives: Ultrasound (US) assessment of abdominal aortic aneurysm (AAA) is done by determination of maximal aneurysm diameter from two-dimensional (2D) images and is prone to inaccuracies that affect precise measurements. Three-dimensional (3D) US imaging has been shown to reduce many of these errors. Computerized Tomographic (CT) scans, while being accurate, are associated with radiation exposure, contrast related injuries and cost issues not seen in use of US technology. We compare the variability in measurements of abdominal aortic aneurysms using 3D ultrasound and a conventional CT scan.

Methods: Seven patients with AAA’s underwent conventional CT scans in addition to 3D US scans. Measurements computed from 3D surface reconstructions of CT and US scans included overall maximum diameter (Dm), maximum cross-sectional area (Cm) and aneurysm volume (V). The seven matched CT and 3D US scans were compared using a combination of Pearson correlation (PC), intra-class correlation to assess agreement (IC) and Bland-Altman plots. Inter-observer variation was analyzed using correlation.

Results: Overall, we studied 12,578 patients who underwent OPEN, and 2,733 patients who underwent TEVAR. Peri-operative mortality was significantly lower in patients undergoing TEVAR as compared to OPEN, for both intact (6% TEVAR, 7% OPEN, p<0.001) and ruptured TAA (28% TEVAR, 46% OPEN, p<0.001). However, patients with intact TAA selected for TEVAR had significantly worse survival than OPEN patients at one year (87% OPEN, 82% TEVAR, p<0.001) and five years (72% OPEN, 62% TEVAR, p<0.001) (Figure 1). In adjusted and propensity-matched cohorts, intact and ruptured patients selected for TEVAR had consistently worse 5-year survival than OPEN patients.

Conclusions: While peri-operative mortality is lower with TEVAR, Medicare patients selected for TEVAR have worse long-term survival than patients selected for OPEN. These results suggest that higher risk patients are being offered TEVAR, and some do not benefit based on long-term survival. Future work is needed to identify candidates unlikely to benefit from TEVAR.

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