

Objectives: To evaluate the role of intraoperative aneurysm sac embolization during EVAR (eEVAR) with coils and glue, in the prevention of Endoleak type II (ET2).

Methods: Two groups were compared: 85 patients underwent standard EVAR during 2007-2008 (Group A) and 81 patients underwent eEVAR during 2009-2010 (Group B). CT scans were elaborated with the Osirix 4.0 software in order to obtain aneurysm sac volume. ET2 rates at the first CT scan follow-up, as mid-term free from ET2 and free from related reintervention were compared. Preoperative patent number of aortic side branches (IMA, lumbar, accessories renal), thrombus and sac volume were evaluated for their association with ET2 in the two groups, using multivariate analysis.

Results: Patients characteristics, Society for Vascular Surgery (SVS) comorbidity score (0.85 ± 0.44 vs 0.82 ± 0.48 ; $P = .68$) and operative time (185.4 ± 51.8 vs 172.9 ± 50.8 ; $P = .99$) were similar between group A and B. The first CT scan (≤ 2 months) demonstrated significantly higher number of ET2 in group A compared to group B (23.5% vs 9.8%; $P = .02$). Spontaneous ET2 resolution occurred in 65% of patients in Group A and 79% in group B ($P = 1.0$), while sac volume increased in 25% vs 10% ($P = .63$) of cases respectively. At 18 months (range: 6 to 24) overall mean difference in sac volume shrinkage (27.2 ± 12.3 cm³ vs 24.8 ± 11.6 cm³; $P = .19$) and free from ET2 (91.8% vs 96.3%; $P = 0.33$) were similar, while free from reintervention was significantly lower in Group A (94.1% vs 98.8%; $P = .05$) compared to Group B. Multivariate analysis showed preoperative aneurysm sac volume > 125 cm³ to be the only independent significant predictor of ET2 (OR, 3.64; 95% CI, 1.54 to 8.58; $P = .003$).

Conclusions: eEVAR seems to be a valid approach to prevent ET2 and its complications during short and mid-term follow-up. Patients with preoperative aneurysm sac volume higher than 125 cm³ should be considered for a more aggressive intraoperative embolization.

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PS10.

Perioperative Administration of Alvimopan, a Novel Peripherally Acting Mu-opioid Receptor Antagonist, Is Associated with Improved Resource Utilization in Patients Undergoing Open Aortic Surgery

Matthew B. Burruss, Bryan A. Ehlert, Timothy W. Capps, William M. Bogey, Frank M. Parker, Charles S. Powell, Michael C. Stoner. East Carolina University Heart Institute, Brody SOM, Greenville, NC

Objectives: Alvimopan is a peripherally acting mu-opioid antagonist used to shorten the time to return of gastrointestinal function after surgery. Randomized clinical trials have demonstrated a shorter time period to return of bowel function and

discharge in open abdominal colonic surgeries, but no data exists on its use in the aortic vascular surgery population.

Methods: Alvimopan was administered to patients having open abdominal aortic aneurysm repair or aortofemoral bypass. The administration protocol was one 12 mg dose preoperatively and doses of 12 mg twice a day postoperatively until the first bowel movement or a total of seven days. There were seven patients in the study group and 6 patients in the control group. The primary end points were time to regain bowel function and length of hospital stay.

Results: The average age (Study = 69.3 ± 3.8 years vs. Control = 68.5 ± 3.4 years; $P = .88$), abdominal aortic aneurysm size (Study = 5.9 ± 0.3 cm vs. Control = 5.3 ± 0.5 cm; $P = .28$), procedure time (Study = 2.1 ± 0.1 hours vs. Control = 2.6 ± 0.3 hours; $P = .12$), gender and comorbidities were not different between the two cohorts. There is a quicker time to regain bowel function (Study = 2.9 ± 0.4 days vs. Control = 4.5 ± 0.6 days; $P = .04$) and shorter hospitalization (Study = 5.6 ± 0.3 days vs. Control = 6.8 ± 0.4 days; $P = .03$) in the study group compared to the control group.

Conclusions: These preliminary data show that perioperative Alvimopan benefits patients, resulting in quicker time to regain bowel function and shorter hospitalization, consistent with previous studies involving open abdominal bowel resection. This improved resource utilization supports further investigation via a large scale randomized pharmacoeconomic endpoint trial.

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PS12.

Open Repair of Aortic Coarctation in Adults

Kristofer M. Charlton-Ouw, Maria E. Codreanu, Samuel S. Leake, Harleen K. Sandhu, Daniel Calderon, Ali Azizadeh, Anthony L. Estrera, Hazim J. Safi. Dept. of Cardiothoracic and Vascular Surgery, University of Texas at Houston Medical School, Houston, TX

Objectives: Aortic coarctation is one of the most common congenital aortic lesions and is usually repaired in early childhood. Without correction, death often occurs before the fourth decade and surviving adults suffer from hypertension and other complications from poor distal flow. We report on our experience with open repair of aortic coarctation in adults.

Methods: We retrospectively reviewed all patients age > 16 years requiring open repair (de novo and redo) of aortic coarctation. Our protocol for spinal cord protection includes distal aortic perfusion via aortofemoral bypass, moderate passive hypothermia, and cerebrospinal fluid drainage. Indications for repair, operative details, and outcomes were analyzed.

Results: Between 1999 and 2011, we treated 30 patients with adult aortic coarctation. The median age was 40 years (range 17-69) and there were 16 males. Eight patients had previous repair with recurrence; 22 patients had native coarctation. Aortic

aneurysm was present in 20 patients (67%), ranging in size from 2.6-9.6 cm. The most common repair was resection of aortic coarctation with interposition graft replacement (n = 26). Other repairs included bypass from proximal descending thoracic aorta to the infrarenal aorta (n = 2); and ascending, arch, and proximal descending aortic replacement via median sternotomy (n = 2). Complications occurred in 7 patients (23%), including chylothous effusion (n = 2), recurrent laryngeal nerve injury (n = 1), acute renal failure (n = 1), respiratory failure (n = 1), atrial fibrillation (n = 1), and urinary tract infection (n = 1). In-hospital mortality was 0%. There were no cases of immediate or delayed neurologic deficit. Death occurred in 3 patients during follow-up (mean 19 months, range 1-231); none were related to coarctation repair. One patient (3%) required reoperation 6 years later due to aneurysm formation distal to the initial repair.

Conclusions: Open repair of adult aortic coarctation has acceptable morbidity, low mortality, and excellent durability.

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PS14.

EVAR in the Elderly: Trends and Outcomes from the Nationwide Inpatient Sample

Brian D. Park¹, Nchang M. Azefor¹, Chun-Chih Huang¹, Cameron Akbari¹, Frederick P. Beavers¹, David Deaton², Robyn S. Macsata³, Sean O'Donnell¹, Susanna Shin¹, John J. Ricotta¹. ¹The Washington Hospital Center, Washington, DC; ²Georgetown University Hospital, Washington, DC; ³Veterans Affairs Medical Center, Washington, DC

Objectives: To identify trends in EVAR utilization and outcomes over a 5 year period in a nationwide data set.

Methods: The Nationwide Inpatient Sample database was queried for the years 2005 to 2009. Number of EVAR cases, ratio of EVAR/Open repair (OR), major clinical outcomes, hospital costs and discharge status were analyzed by decade. Interval data were compared with ANOVA and proportions via chi squared tests.

Results: There were 174,714 AAA repairs (124,869 EVAR) identified. The ratio of EVAR/OR increased with increasing age. Between the years of 2005 and 2009, the number of AAA repairs in the elderly increased by 21% (7179 vs. 8554) and EVAR in patients ≥ 80 increased by 50% (5057 vs. 7650 $P < .05$). In 2009 85% of AAA repairs in patients over 80 were EVAR. 25% of all EVAR cases were performed in age > 80 patients.

In hospital mortality rate, remained acceptable in all age groups. EVAR associated mortality, length of stay, hospital costs, and discharge to skilled nursing facilities associated increased with each successive decade of life ($P < .05$). Post operative MI and acute renal failure also increased with increasing age ($P < .05$). Results of EVAR by decade are presented below.

Conclusions: One quarter of all EVAR cases are being performed in patients ≥ 80 with overall low mortality rates. There is an age dependent increase in death, complications, hospital costs and discharge to extended care facilities. Such factors, and long term aneurysm related death, should be considered when evaluating the appropriateness of elective aneurysm repair in the elderly.

Table.

Age group	60-69 years	70-79 years	80-89 years	90+ years
Number of patients	33,629	56,783	32,493	1,964
In-hospital mortality	.46%	.70%	1.56%	2.49%
Average length of stay	2.7	3.1	3.6	4.6
Myocardial infarction	3.69%	4.19%	4.81%	8.41%
Acute renal failure	1.21%	1.92%	2.87%	4.0%
Average hospital cost	\$26,399	\$27,350	\$28,490	\$30,741
Discharge to SNF	2.19%	5.21%	11.12%	22.29%

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PS16.

Intra-Thoracic Subclavian Artery Aneurysm Repair in the Thoracic Endovascular Era

Michael E. Barfield, Nicholas D. Andersen, Asad A. Shah, Cynthia K. Shortell, Richard L. McCann, G. Chad Hughes. Duke University Medical Center, Durham, NC

Objectives: Intra-thoracic subclavian artery aneurysms (SAAs) are rare aneurysms that often occur in association with concomitant aortic pathology. Modern thoracic endovascular aortic repair (TEVAR) methods may complement or replace conventional open SAA repair.

Methods: A retrospective review was performed of all intra-thoracic SAAs repaired at a single institution since the FDA approval of TEVAR in 2005.

Results: Nineteen patients underwent 20 operations to repair 22 (13 native, 9 aberrant) SAAs with an intra-thoracic component (Table). Mean SAA diameter was 3.1 cm (range 1.6-6.0 cm). Median patient age was 62 years (range 24-80 years). Four patients (21%) had a connective tissue disorder (two Loeys-Dietz, two Marfan). Overall, 8 (36%) SAAs were repaired by open techniques and 14 (64%) via a TEVAR-based approach. All TEVAR cases required proximal landing zone in the aortic arch and revascularization of at least one arch vessel in 11 patients (79%). Concomitant repair of associated aortic pathology was performed in 10 patients with 12 (55%) subclavian aneurysms. Thirty day/in-hospital rates of death, stroke, and permanent paraplegia/paresis were 5% (n = 1), 5% (n = 1), and 0%, respectively. Three (16%) patients required delayed re-intervention, two for occluded bypass grafts and one for type II endoleak at a mean follow-up of 28 23 months.