Endovascular Management of Acute Thoracic Aorta Emergencies in an Academic Level 1 Trauma Center


Conclusions: Adverse outcomes for thoracic endovascular aneurysm repair (TEVAR) performed for acute thoracic aortic emergencies include 24 hour packed red blood cell (pRBC) requirements ≥ 4 units, admission mental status and/or systolic blood pressure < 60 mm Hg, and 24 hour fresh frozen plasma to pRBC ratio < 1:1.5.

Summary: Endovascular techniques for treatment of a wide variety of aortic pathologies in the acute setting have become relatively commonplace. As of yet, however, there are not widespread reports from multiple institutions evaluating this experience. The authors reviewed their experience with use of TEVAR in emergency settings for acute thoracic aortic pathology. In retrospect, they evaluated emergency descending thoracic aortic endovascular interventions at their level I trauma center between January 2005 and August 2013. They included all cases of traumatic aortic rupture, ruptured descending thoracic aneurysm, penetrating atherosclerotic ulcer, acute complicated type B dissection, and aortic enteric fistula. Analysis of clinical data and demographics and outcomes stepwise logistic regression was used to identify independent risk factors for death. During the study period, 51 patients underwent TEVAR. 22 cases (43%) were performed emergently (11 patients [50.0%] traumatic aortic injury; 4 [18.2%] ruptured descending thoracic aneurysm; 4 [18.2%] complicated type B dissection; 2 [9.1%] penetrating aortic ulcer; and 1 [4.5%] aortic enteric fistula). Overall, 72.7% (n = 16) were male with a mean age of 54.8 ± 15.9 years. A total of 86.4% (n = 19) required only a single TEVAR procedure, whereas 9.1% required additional endovascular therapy and one (4.5%) open thoracotomy. Four traumatic aortic injury patients required exploratory laparotomy for concomitant intra-abdominal injuries. During a mean hospital stay of 18.9 days (range, 1-76 days), three patients (13.6%) developed major complications. In hospital mortality was 27.2% and consisted of 6 deaths from traumatic brain injury, 1 death from exsanguination in the operating room before repair could be achieved, 2 deaths secondary to bowel ischemia, 1 secondary to multisystem organ failure, and 1 resulting from withdrawal of care. A stepwise logistic regression model identified 24 hour pRBC requirements ≥ 4 units, admission mental status and/or systolic blood pressure < 60 mm Hg, and 24 hour fresh frozen plasma to pRBC ratio < 1.5 as independent risk factors for death. During a mean follow-up of 369 days (range, 35-957 days), no subsequent major complications or deaths occurred. No device-related problems were identified during intermediate follow-up.

Comment: The authors dredged up every possible reason for performing TEVAR in their institution on an emergent basis and still had a relatively small (three cases per year) experience to report. In particular, the small number of patients treated with TEVAR for traumatic thoracic injuries and aortic dissection/penetrating ulcer seems low compared to many other academic medical centers. The data emphasize that the large majority of TEVAR procedures are performed off label. They were few graft related complications in this series suggesting that even institutions with relatively small experience in TEVAR can perform the procedure with reasonable, short-term results. Adverse events in these patients primarily result from variables not specifically associated with the TEVAR procedure.

Presence of External Carotid Artery Plaque Independently Predicts Mortality in Patients Without Internal Carotid Artery Atherosclerosis


Conclusions: Presence of plaque isolated to the external carotid artery (ECA) independently predicts all-cause mortality.

Summary: Internal carotid artery (ICA) stenosis is a risk factor for increased cardiovascular morbidity and mortality (Goessens BM et al, Stroke 2007;38:1470-5). There is also a known association with the presence of plaque in the peripheral arteries increasing morbidity and mortality as compared to absent or minimal arterial atherosclerosis. The hypothesis is that external carotid artery (ECA) plaque in the absence of plaque in other cervical vessels would also be a risk factor for increased all-cause mortality. They decided to determine all-cause mortality rates in patients with ECA plaque but no ICA or common carotid artery (CCA) plaque. They queried their noninvasive vascular laboratory database for duplex ultrasounds performed between January 1, 2005 to December 31, 2005. Studies were included if plaque was absent in both the CCA and ICA. Demographic characteristics and clinical information and all-cause mortality was determined. A total of 500 patient studies met the inclusion criteria. 64 patients (12.8%) had plaque in one or both ECAs. There was no significant difference in age (mean 58.1 ± 14.8 years, race (82.5% white), or sex (64.4% male) between those with and without ECA plaque. There was, however, a significant difference in all-cause mortality between patients with and without isolated ECA plaque: after adjustments for age, sex, low—density lipoprotein cholesterol, smoking, hypertension, body mass index, and surgery within 30 days of the duplex study (adjusted hazard ratio, 2.60; 95% confidence interval, 1.46-4.66; P < .001).

Comment: The authors’ data does not truly allow one to determine ECA plaque is alone a marker for increased mortality in that the objective determination of atherosclerosis in other vascular beds was not included in this study. Nevertheless, within the context of the performance of a carotid duplex examination, isolated plaque in the ECA may provide important prognostic information and therefore should be reported. Additional studies will be needed to determine whether the presence of isolated ECA plaque occurs independently of detectable atherosclerosis in other vascular beds.