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Titel des Beitrags: Outcome-based anatomic criteria for defining the hostile aortic neck.

Abstract:
There is abundant evidence linking hostile proximal aortic neck anatomy to poor outcome after endovascular aortic aneurysm repair (EVAR), yet the definition of hostile anatomy varies from study to study. This current analysis was undertaken to identify anatomic criteria that are most predictive of success or failure at the aortic neck after EVAR. The study
group comprised 221 patients in the Aneurysm Treatment using the Heli-FX Aortic Securement System Global Registry (ANCHOR) clinical trial, a population enriched with patients with challenging aortic neck anatomy and failure of sealing. Imaging protocols were not protocol specified but were performed according to the institution's standard of care. Core laboratory analysis assessed the three-dimensional centerline-reformatted computed tomography scans. Failure at the aortic neck was defined by type Ia endoleak occurring at the time of the initial endograft implantation or during follow-up. Receiver operating characteristic curve analysis was used to assess the value of each anatomic measure in the classification of aortic neck success and failure and to identify optimal thresholds of discrimination. Binary logistic regression was performed after excluding highly intercorrelated variables, creating a final model with significant predictors of outcome after EVAR. Among the 221 patients, 121 (54.8%) remained free of type Ia endoleak and 100 (45.2%) did not. Type Ia endoleaks presented immediately after endograft deployment in 58 (58.0%) or during follow-up in 42 (42.0%). Receiver operating characteristic curve analysis identified 12 variables where the classification of patients with type Ia endoleak was significantly more accurate than chance alone. Increased aortic neck diameter at the lowest renal artery (P = .013) and at 5 mm (P = .008), 10 mm (P = .008), and 15 mm (P = .010) distally; aneurysm sac diameter (P = .001), common iliac artery diameters (right, P = .012; left, P = .032), and a conical (P = .049) neck configuration were predictive of endoleak. By contrast, increased aortic neck length (P = .050), a funnel-shaped aortic neck (P = .036), and neck mural thrombus content, as measured by average thickness (P = .044) or degrees of circumferential coverage (P = .029), were protective against endoleak. Binary logistic regression identified three variables independently predictive of type Ia endoleak. Neck diameter at the lowest renal artery (P = .002, cutpoint 26 mm) and neck length (P = .017, cutpoint 17 mm) were associated with endoleak, whereas some mural neck thrombus content was protective (P = .001, cutpoint 11° of circumferential coverage). A limited number of independent anatomic variables are predictive of type Ia endoleak after EVAR, including aortic neck diameter and aortic neck length, whereas mural thrombus in the neck is protective. This study suggests that anatomic measures with identifiable threshold cutpoints should be considered when defining the hostile aortic neck and assessing the risk of complications after EVAR.