# Abstracts from the Thirty-Ninth Annual Meeting of the Southern Association for Vascular Surgery

### Volumetric Analysis of the Initial Index Computed Tomography (CT) Scan Can Predict the Natural History of Acute Uncomplicated Type B Dissections

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**Introduction:** Our objective was to characterize the predictive impact of computed tomography scan volumetric analysis on the natural history of acute uncomplicated type B aortic dissections (AD).

**Methods:** We conducted a retrospective review of patients with acute AD from 2009 to 2014 using TeraRecon iNtuition (TeraRecon, San Mateo, Calif). Volumes were obtained using the true lumen (TLV), false lumen (FLV), and total aortic volume (TAV) from the left subclavian artery to celiac artery. Growth rate was calculated as the change in maximal diameter between the first and last available CT scan over the time interval. Differences in proportions were determined by analysis of variance, $\chi^2$ test, or the Fisher exact test, as appropriate.

**Results:** During the study period, 164 patients had CT scan evidence of uncomplicated acute type B AD. Eleven patients were excluded for lack of adequate imaging. Thirty-six patients who underwent urgent repair (<14 days) were also excluded. To assess the natural history of the disease, we evaluated 117 patients: 85 who did not require intervention and 32 who underwent delayed TEVAR (n = 29) or open repair (n = 3; >14 days). Mean age was 66 ± 12, years 57% were male, and 34% were black. Risk factors included 95% hypertension, 29% coronary artery disease, 31% smokers, and 27% diabetic. The mean time between the initial and last imaging in follow-up or before repair was 13 months. Mean time to operation was 23 months. Mean TLV/FLV ratio on the initial CT scan was significantly higher in patients who did not eventually require an operation (1.55 vs 0.82; $P = .02$). The mean growth rate was higher in those eventually requiring operation (2.47 vs 0.42 mm/mo; $P = .003$). Patients were divided into three subgroups based on initial imaging TLV/FLV ratios (<0.8, 0.8-1.6, and >1.6). There was a significant difference in the growth rates between these groups (4.6 vs 2.4 vs 0.8 mm/mo; $P < .025$). Area under the receiver-operating curve (AUROC) analysis revealed, a TLV/FLV ratio <0.8 was highly predictive for eventually requiring an intervention (area = 0.8; sensitivity = 69%; specificity = 84%: positive predictive value [PPV] = 71%; negative predictive value [NPV] = 81%), with an odds ratio of 12.2 (confidence interval, 5-26; $P < .001$). Conversely, a TLV/FLV ratio of >1.6 was highly predictive for freedom from late intervention (sensitivity = 91%; specificity = 42%; PPV = 61%; NPV = 86%; Fig 1). After Kaplan-Meier analysis, 1-year and 2-year survival free of aortic interventions was 36% and 26% with a TLV/FLV ratio <0.8, 81% and 72% with a ratio of 0.8 to 1.6, and 88% and 80% with a ratio of >1.6 ($P = .001$; Fig 2).

**Conclusions:** CT scan volumetric analysis in patients with uncomplicated acute type B AD is a useful tool to predict the need for intervention. This may help select which patient with uncomplicated acute type B AD should undergo TEVAR preemptively.

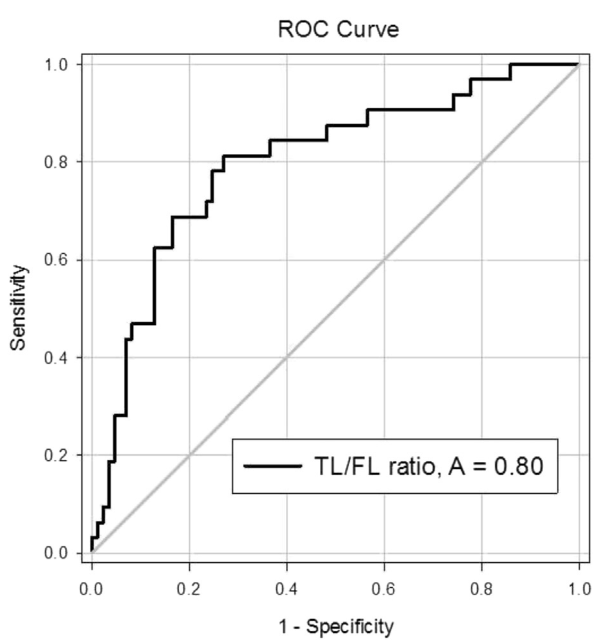


**Fig 1.** Area under the receiver-operating curve (AUROC = .80) for true lumen (*TL*) volume (TLV)/false lumen (*FL*) volume (FLV) ratio and intervention.

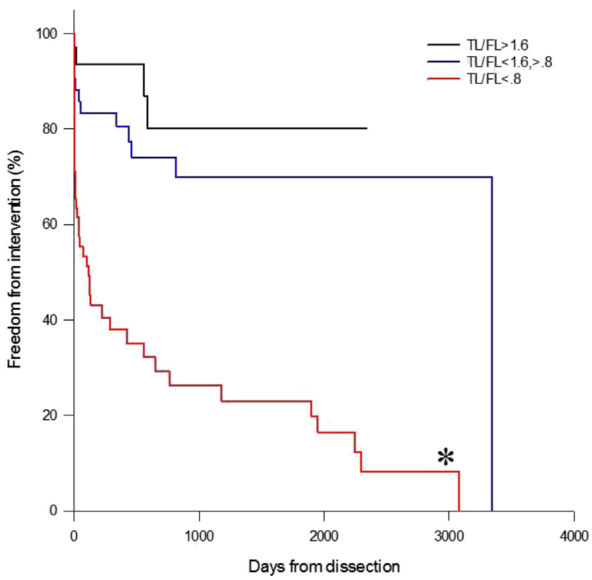


**Fig 2.** Kaplan-Meier curves of freedom from intervention (%) between study participants with true lumen (*TL*)/false lumen (*FL*) ratios less than 0.8 (*red*), greater than 0.8 but less than 1.6 (*blue*), and greater than 1.6 (*black*). *Statistically different from other groups at $P < .001$.

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### EndoAnchor Treatment of Type Ia Endoleaks After Endovascular Infrarenal Aortic Aneurysm Repair

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**Introduction:** Type Ia endoleaks continue to occur immediately after endograft deployment or remote from the initial procedure in patients undergoing endovascular aneurysm repair (EVAR). EndoAnchors have been