

**#15 CORRELATION OF PREOPERATIVE AORTIC DIAMETER MEASUREMENTS WITH COMPUTER TOMOGRAPHIC ANGIOGRAPHY (CTA), INTRAVASCULAR ULTRASOUND (IVUS), AND ANGIOGRAPHY (ANGIO): RECOMMENDATIONS FOR AORTIC STENT-GRAFT OVER SIZING**

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**Background:** Accurate preoperative measurement of aortic diameters is critical for successful endovascular abdominal aortic aneurysm (AAA) repair. This study was designed to correlate preoperative AAA diameter measurements using CTA, IVUS, and Angio and to validate stent-graft over sizing with patient outcome.

**Methods:** During a 5 month period 31 patients underwent CTA, IVUS (12.5MHz), and Angio prior to endovascular AAA repair (Medtronic 21, Guidant 9, and Custom-made 1). Anterior/posterior and lateral diameters were measured at three aortic levels: superior mesenteric artery, just below the lowest renal artery (Ro), and 15mm below Ro. A single reviewer measured inner lumen diameter (CTA ID) and outer aortic diameter (CTA OD) from CTA images reconstructed in a longitudinal format on a workstation. Operative procedure, stent-graft size, and patient follow-up (CTA @ 1 mo. then q 3-6 mo.) were maintained on a computer registry.

**Results:** IVUS diameters tended to be equivalent with CTA ID diameters. However, IVUS underestimated diameters by 15% compared to CTA OD. Angio underestimated diameters by 3% compared to both IVUS and CTA ID.

	IVUS vs. CTA ID	IVUS vs. CTA OD	IVUS vs Angio	CTA ID vs. A
<b>Mean difference± SD(mm)</b>	<b>-0.13±1.71</b>	-3.39±1.74	0.57±2.08	0.72±1.25
<b>P Value</b>	<b>0.39</b>	0.001	0.02	0.01
<b>Correlation Coeff.</b>	<b>0.75</b>	0.77	0.75	0.9

Graft over sizing tended to be equivalent between IVUS, CTA ID, and Angio. Technical success of stent-graft deployment was 100%. There were no type I leaks (0%) and 7 type II leaks (22%) identified on follow-up CTA.

	IVUS	CTA ID	CTA OD	Angio
<b>Ave. Diameter ±SD (mm)</b>	21.74±2.84	21.73±2.21	24.95±2.74	21.07±2.42
<b>Ave. graft oversize± SD (%)</b>	26.11±15	21.79±13.81	10.10±11.65	20.84±14.83

**Conclusion:** IVUS measurements correlate best with CTA ID measurements. Preoperative stent-graft selection is best done using lumen diameters from IVUS or CTA ID and over sizing greater than 20%.