

**A1: Average aneurysm dimensions, RSC diameters, and aorta diameters, for the 90- and 180-day cohorts treated with Flex and Vantage. All dimensions are mean  $\pm$  standard deviation (SD).**

Device	Study Duration (days)	Aneurysm Height (mm)	Aneurysm Width (mm)	Aneurysm Neck (mm)	RSC diameter (mm)
Flex	90 $\pm$ 2	6.92 $\pm$ 1.28	3.46 $\pm$ 0.56	3.96 $\pm$ 1.92	3.30 $\pm$ 0.25
Vantage	90 $\pm$ 2	7.12 $\pm$ 2.15	3.22 $\pm$ 0.59	3.29 $\pm$ 1.08	3.12 $\pm$ 0.29
Flex	180 $\pm$ 2	6.39 $\pm$ 1.72	2.82 $\pm$ 0.43	3.57 $\pm$ 1.73	3.28 $\pm$ 0.44
Vantage	180 $\pm$ 2	5.34 $\pm$ 1.13	2.66 $\pm$ 0.40	2.85 $\pm$ 1.04	3.00 $\pm$ 0.39

Device	Study Duration (days)	Aorta diameter (mm)
Flex	90 $\pm$ 2	3.08 $\pm$ 0.30
Vantage	90 $\pm$ 2	2.86 $\pm$ 0.25
Flex	180 $\pm$ 2	3.18 $\pm$ 0.28
Vantage	180 $\pm$ 2	3.27 $\pm$ 0.21

**A2: Histopathology attributes and grading scale for the tissue sections from Flex and Vantage implanted vessels for 90- and 180- day cohorts. Grading was performed by an independent pathologist blinded to device.**

#### **Luminal/Mural Thrombus**

Grade 0: No luminal thrombus

Grade 1 (Minimal): Occupies ~ <5% of the lumen area

Grade 2 (Mild): Occupies ~5-35% of the lumen area

Grade 3 (Moderate): Occupies ~ 35-70% of the lumen area

Grade 4 (Marked/Severe): Occupies ~ >70% of the lumen area

#### **Endothelial Cell Coverage**

Grade 0 (Absent): ~ <5% of the luminal surface covered

Grade 1 (Minimal): ~ 5-25% of the luminal surface covered

Grade 2 (Mild): ~ 25-50% of the luminal surface covered

Grade 3 (Moderate): ~ 50-90% of the luminal surface covered

Grade 4 (Complete): ~ >90% of the luminal surface covered

#### **Inflammation** (neointimal, medial, and adventitial)

Grade 0: No inflammatory response

Grade 1: Minimal response

Grade 2: Mild response

Grade 3: Moderate response

Grade 4: Marked/Severe response

#### **Fibrin**

Grade 0: Not present

Grade 1: Minimal

Grade 2: Mild

Grade 3: Moderate

Grade 4: Marked/Severe

#### **Medial Smooth Muscle Cell (SMC) Loss**

Grade 0: No medial SMC loss

Grade 1: Minimal ~ <5% medial SMC loss

Grade 2: Mild ~ 5-25% medial SMC loss

Grade 3: Moderate ~ 25-50% medial SMC loss

Grade 4: Marked/Severe ~>50% medial SMC loss

#### **Disruption of the Internal Elastic Lamina (IEL) and External Elastic Lamina (EEL)**

Grade 0: No disruption

Grade 1: Minimal ~ <5% disruption

Grade 2: Mild ~ 5-25% disruption

Grade 3: Moderate ~ 25-50% disruption

Grade 4: Marked/Severe ~ >50% disruption

**Adventitia**

Grade 0: No changes present

Grade 1: Minimal ~<5% affected

Grade 2: Mild ~5-25% affected

Grade 3: Moderate ~26-50% affected

Grade 4: Marked/Severe ~>50% affected

**A3: Raymond Roy Occlusion Classification (RROC) for the 90- and 180-day cohorts treated with Flex and Vantage devices.**