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Flow in an Aortic Coarctation LUIS LOMA, PAUL MILLER, JEAN HERTZBERG, University of Colorado, Boulder — Coarctation of the aorta is a congenital cardiovascular defect that causes a constriction in the descending thoracic aorta. To gain a better understanding of the cause of post-surgical problems, a rigid glass and a compliant *in vitro* model of the aortic arch and descending aorta with a coarctation were constructed. Near-physiologic compliance was obtained using a silicone elastomer. Stereoscopic PIV was used to obtain 3D velocity maps. Results show a high speed turbulent jet formed at the exit of the coarctation. Flow in the rigid model was significantly different from in the compliant model. In the rigid model, the jet was symmetric, creating a toroidal recirculation area. In the compliant model, the jet was directed towards the medial wall, inducing flow reversal only at the lateral wall. Peak velocities and turbulence intensities were higher in the rigid model, however shear rate values in the compliant model were significantly above both the rigid model and normal *in vivo* values at the medial wall. In both models the reattachment region fluctuated, creating oscillatory shear.

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