

Abstract Submitted
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Patient specific flow dynamic simulations of flow in diseased coronary artery CARLOS MORENO, KIRAN BHAGANAGAR, University of Texas, San Antonio — Patient specific simulations of patients belonging to type I: protruding, type II: ascending, type III: descending, and type IV: diffuse have been performed to understand the effect of inlet forcing frequency and amplitude on the wall shear stress (WSS). Numerical simulations are performed with unsteady flow conditions in a laminar regime. The results have revealed that at low amplitudes, the sensitivity of WSS to forcing frequency is strongly dependent on the patient type for same degree of stenosis. For all the types, the maximum WSS is observed in post-stenotic or the distal region of the stenosis, and WSS has lowest magnitude at the peak location of the stenosis. For higher pulsatile amplitude ($a > 1.0$), WSS exhibits a strong sensitivity with forcing frequencies for all types. However, at higher forcing frequency the WSS exhibits nonlinear response to the inlet forcing frequency, which is strongly type dependent. The study clearly demonstrated differences between the intra-type flows are small compared to the inter-type flows.

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