

Abstract Submitted
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FFR analysis of blood flow through a stenosed Left Anterior Descending Artery. JAWAHAR PASUPATHI, ARUL PRAKASH K, Indian Inst of Tech-Madras — The numerical analysis of blood flow through a stenosed tapering Left Anterior Descending (LAD) artery was done using Streamwise Upwind Petrov Galerkin (SUPG) method to obtain the clinical parameters such as Fractional Flow reserve (FFR) and Wall Shear Stress (WSS). The geometry was considered to be a straight tapering cylindrical duct with the severity of stenosis modeled using a curve equation based on the reduction in diameter at the stenosed region. Poiseuille velocity profile was given at the inlet such that at each time step the product of mean velocity and the inlet area gives the realistic flow rate through the LAD. The simulation was done for 30,50 and 70 percent reduction in cross-section of LAD. The average pressure values across the stenosis was used to quantify FFR. The FFR increased with higher pressure ratio across the stenosis, which is a result of increased severity of stenosis. The velocity gradients that are responsible for the shear stress at the walls were found to be dependent on the shape of the stenosis, i.e., the diameter and its length.

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