Abstract Submitted
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Effect of Trabeculations on the Hemodynamics of Left Ventricle: A Computational Study[1] VIJAY VEDULA, JUNG-HEE SEO, Johns Hopkins University, RICHARD GEORGE, ALBERT LARDO, Johns Hopkins Medical Institutions, RAJAT MITTAL, Johns Hopkins University — The endocardium of the human left ventricle is not smooth. There are surface trabeculations as well as papillary muscles that protrude deep into the ventricular cavity. However, most models of ventricular hemodynamics ignore the presence of these surface structures and assume a smooth endocardial surface. Several key questions arise regarding the impact of these structures on ventricular hemodynamics. These surface "roughness elements" could enhance mixing and dissipation. Moreover, the interstitial regions within the trabeculae might be prone to flow stasis, and this has implications for ventricular thrombogenesis. In the present study, we use flow simulation to study this issue for CT derived models of normal human left ventricle. We focus on the near-wall dynamics of the flow and employ a number of different diagnostics to examine the flow dynamics and "washout" in this region.

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