Abstract Submitted
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The influences of curvature and torsions on flows in a helical bifurcated stent-graft[1] JEONG HYUN SHIM, School of Mechanical & Aerospace Engineering, Seoul National University, Seoul 151-744, Korea, KYUNG EUN LEE, BK21 School for Creative Engineering Design of Next Generation Mechanical & Aerospace Systems, Seoul National University, Seoul 151-744, Korea, JUNG YUL YOO, School of Mechanical & Aerospace Engineering, Seoul National University, Seoul 151-744, Korea — A bifurcated stent-graft signifies an improvement in surgical technique for treatment of a lesion in the branched blood vessel. However, there still remains a high failure rate regarding bifurcated stent-graft due to the occurrence of thrombosis or re-stenosis. The objectives of this study are to understand the effect of torsion in helical bifurcated geometries, to explain how the mixing of flows there may be advantageous to the prevention of the occurrence of thrombosis, and to keep the patency of stent-graft in the aspect of hemodynamics. For clinical applications, flows in a helical bifurcated stent-graft are simulated three-dimensionally using an incompressible Navier-Stokes solver. In this study, the hemodynamics is investigated in terms of mechanical factors, i.e., velocity profiles, vortex patterns and wall shear stress distributions.

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