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Validation of a Fluid-Structure Interaction Model of an Aortic Dissection versus a Bench Top Model

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Abstract : The aim of this investigation was to validate the fluid-structure interaction (FSI) model of type B aortic dissection with our experimental results from a bench-top-model. Another objective was to study the relationship between the size of a septectomy that increases the outflow of the false lumen and its effect on the values of the differential of pressure between true lumen and false lumen. FSI analysis based on Galerkin’s formulation was used in this investigation to study flow pattern and hemodynamics within a flexible type B aortic dissection model using boundary conditions from our experimental data. The numerical results of our model were verified against the experimental data for various tear size and location. Thus, CFD tools have a potential role in evaluating different scenarios and aortic dissection configurations.

Keywords : aortic dissection, fluid-structure interaction, in vitro model, numerical
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