

## عنوان مقاله:

۳D numerical analysis of arterial thromboembolism through carotid bifurcation

## محل انتشار:

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## خلاصه مقاله:

Arterial embolism is one of the major causes of brain infarction. Investigating the hemodynamic factors of this phenomenon can help us to get a better understanding of this complication. The carotid artery is one of the primary tracts that emboli can go toward the brain through it. In this study, we used a ۳D model of the carotid bifurcation, and two geometries, elliptical and spherical, were considered for the clots. Hyperelastic and visco-hyperelastic models were used for the mechanical properties of clots. The governing equations of the fluid are Navier-Stokes and continuity equations and have been solved in an Arbitrary Lagrangian-Eulerian (ALE) formulation through the fluid-structure interaction method. The hemodynamic parameters of fluid and shear stress on the wall of the carotid artery were calculated. Besides, by using ADINA software, the effective stress (Von Mises stress) of the clots and the shear stress created on them were evaluated as well. Results revealed that the elliptical clot has more effects on the hemodynamic parameters of the fluid, and the mechanical property of clots has significant effects on the amount of stress created on the clots. Also, clot fracture will not occur due to the point that the maximum effective stress in this study was ۱۸۱۹ Pa. but the creation of crack in clots is more probable, and this probability is more for the elliptical clot

## کلمات کلیدی:

Arterial embolism, ischemic stroke, fluid-solid interaction, visco-hyperelastic model, wall shear stress

## لینک ثابت مقاله در پایگاه سیویلیکا:

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