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HEMODYNAMIC FEATURES OF THE OCCURRENCE
OF VASCULAR ANEURYSMS

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In this study the main aim is to evaluate the hemodynamics of basilar artery fenestration using computational fluid dynamics

Basilar artery fenestration has been proposed as a contribution to ischemic stroke, as unique flow patterns induced by the fenestration are related to thrombus formation or insufficiency.

Central aneurysm and abdominal aortic aneurysm are degenerative vascular pathologies that manifest as abnormal dilations of the arterial wall. They arise with different pathologies but common pathways in their hemodynamic pathologies.

A systematic review of the following literature was performed. Clinical hemodynamics by Micheal Ragosta. Cardiovascular hemodynamics for the clinician edited by George. A. Stoufter. The brain aneurysm by Vini G. Khurana.

Current concepts on pathologies and hemodynamics were collected and compared.

Cerebral aneurysm arises as saccular dilations on the cerebral arteries of the circle of willis under high blood flow, high wall shear stress and high wall shear stress gradient conditions.

Abdominal aortic aneurysm arises as fusiform dilations on the infrarenal aorta under low blood flow, low oscillating wall shear stress and high wall shear stress gradient conditions. This alone may not be enough to initiate aneurysm formation, but may ignite a cascade of downstream events that lead to aneurysm development.

In the course of my study, I noticed similar pathways in different pathologies. Also I highlighted the need for cross disciplinary studies that aid in finding similarities between pathologies.