Mechanical test of human cerebral aneurysm specimens obtained from surgical clipping

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Resumen

The walls of the blood vessels involved with cerebral aneurysms present different mechanical properties, when compared with those of normal artery. Consequently the models which may describe then predict an aneurysm rupture need as input their mechanical properties. This paper describes the experimental determination of the mechanical properties of the tissues of the blood vessels affected with a cerebral aneurysm. In particular, we determine and discuss the critical elongation and the rupture strength. The affected tissues were obtained from surgical clipping and extraction; six specimens were tested. The mechanical tests were performed in a tensile device. The experimental data was fitted numerically with a Mooney-Rivlin hyper elastic model. The model was compared with previous published data.

Palabras clave

Palabras clave de autor: Cerebral aneurysm; mechanical properties; soft tissue; rupture strength; rupture stretch
KeyWords Plus:FLUID-STRUCTURE INTERACTION; SHEAR-STRESS; WALL; DYNAMICS; MODEL

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