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Thin Film Nitinol Covered Stent For Brain Aneurysms

Greg Carman¹, Dan Levi², Youngjae Chun³, KP Mohanchandra¹, Colin Kealey², Fernando Vinuela²

1. Mechanical and Aerospace Engineering Department, UCLA, Los Angeles, USA, 90095

2. School of Medicine, UCLA, Los Angeles, USA, 90095

3. Mechanical Engineering, U. Pitt, Pittsburg, 15261

E-mail: carman@seas.ucla.edu

Invited Talk for pre-nominated session FS07 This presentation describes the design, fabrication, in-vitro, and in-vivo testing of a Nitinol thin film covered stent. The sputter deposited thin film Nitinol (5 microns) is fabricated to produce hyperelastic (>500%) and super-hydrophilic behavior. The thin film is attached to a commercially available neuro-stent and inserted into a 2.4 Fr (0.8 m) diameter catheter. In-vitro testing is conducted on the film, the covered stent as well as the stent/catheter delivery system. Particle velocimetry imaging shows substantial flow reductions when used to cover a typical aneurysm sac. Results from swine studies on a broad neck aneurysm indicate an occlusion of the aneurysm within five minutes of deployment. Survival studies conducted after one month indicate the parent vessel is patent and the aneurysm sac is reabsorbed.

Keywords: Nitinol;thin film;hyperelastic;Thrombosis;surface;

Preferred Presentation Type: lecture