Development of Novel Cerebral Aneurysm Embolization Method via Injection of Pluronic F-127 Multiblock Copolymer Hydrogel

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**Background/Problem**

- Brain aneurysms can rupture and cause hemorrhagic strokes.
- Current treatments consist of endovascular coiling and surgical clipping.
- Reoccurrence in 20% of coiling treatments, surgical clipping is very invasive.
- A biocompatible hydrogel with thermoreversible properties could be a minimally invasive way to occlude the aneurysm completely and decrease the reoccurrence rate.

**Design and Methodology**

- I created a number of hydrogel solutions
- Created a simulator to model a brain aneurysm connected to blood vessels
- Injected hydrogels with red dye through a catheter into the aneurysm
- X-ray imaging.

**Results**

- I conducted both temperature dependent and amplitude sweep tests to determine the elastic and viscous moduli.

**Rheological Analysis**

- Due to their biocompatibility and absorbent properties, coupled with high elastic moduli and shear thinning properties, hydrogel injection for aneurysm embolization has great potential for intracranial aneurysm treatment.
- Polymers that could potentially promote endothelialization would be helpful to ensure a permanent solution.

**Conclusions/Future Work**


**Acknowledgements/References**