Arterial Coupler Re-Design: Adjustable Stent/Cuff Anastomosis
Progress Report 8: 3/19/2026

Client: Dr. Jasmine Craig
Advisor: Prof. Darilis Suarez-Gonzalez
Team:
- Leader: Jackie Behring
- Communicator: Arshiya (Ria) Chugh
- BWIG: Sofia Decicco
- BPAG: Allison (Ally) Rausch
- BSAC: Daniel Pies

Problem Statement: Microsurgical arterial anastomosis is a cornerstone of reconstructive surgery, enabling tissue transfer and limb salvage. Current techniques are highly time consuming, technically demanding, and are highly dependent on surgeon expertise. Suturing vessels as small as 1 mm can take even the most experienced surgeons 30-60 minutes, extending operating times and jeopardizing tissue viability. Existing stent-based approaches introduce complications by contracting the vessel lumen and lack adaptability across the wide range of vessel diameters encountered in clinical practice. There is a critical need for a biocompatible, adjustable, and easy-to-use device that can reliably reduce operative time while maintaining vessel integrity and minimizing complications.

Brief Team Status Update: Progress focused on refining and executing the stent testing plan through meetings with the advisor and coordination with the client. Initial prototype testing was completed, and feedback from both the client and advisor was incorporated to improve the approach ahead of the next testing phase. Additional work included scheduling upcoming tests, researching testing methods and design factors, and completing training requirements.

Summary of Weekly Individual Design Accomplishments:
- Allison (Ally) Rausch:
    - Met with advisor advisor to discuss testing plans
    - Researched common testing procedures for stents
    - Researched coil pitch and its effects on stent properties
    - Meet with client to test prototype
- Jackie Behring:
    - Met with advisor to review testing procedures and next steps in the procurement process
    - Met with client to begin testing and receive feedback
    - Participated in giving advice to BME 301 students on their semester projects
- Sofia Decicco:
    - Discussed testing plans with team and advisor
    - Finalize scheduling with client and team for prototype testing
    - Complete second semester training requirement
- Arshiya (Ria) Chugh:
    - Met with advisor to review and refine testing plans
    - Met with client to conduct prototype testing and gather initial feedback ahead of the second testing phase in April
- Daniel Pies:
    - Discussed testing plan with advisor and incorporated feedback

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    - Integrate client feedback from initial testing phase

Weekly/Ongoing Difficulties: No notable difficulties.

Upcoming Team Goals: Upcoming work will focus on continuing research on stent pitch and its impact on testing protocols while incorporating client feedback to refine the design. The team will analyze results from initial and second-round testing to generate key insights, guide design revisions, and determine any needed changes to the testing plan. Additional efforts include coordinating as a team to plan next steps, selecting future testing methods and prototypes, and ordering materials such as nitinol springs to support continued testing.

Upcoming Individual Goals:

- Allison (Ally) Rausch:
    - Continue research on stent pitch
        - See how it impacts testing protocols
    - Review client testing feedback and iterate design
- Jackie Behring:
    - Analyze and review testing results
    - Meet with team to discuss any revisions needed for the design
- Sofia Decicco:
    - Summarize results from second round of feasibility testing
    - Order more nitinol springs for additional testing trials
    - Work with team to develop next steps pending testing results
- Arshiya (Ria) Chugh:
    - Discussed with team the need to order additional materials for upcoming testing
    - Compiled notes from the initial testing round to inform improvements for the next phase
    - Analyzed results to generate quantitative data and key observations
- Daniel Pies:
    - Analyze testing results from preliminary testing, determine if any changes are needed to testing plan
    - Meet with team to decide on prototype/methods to be used for future testing

Project Timeline

Project Goal	**Deadline**	**Team Assigned**	**State of Completion**
Initial Research	1/30	All	The team will continuously research throughout the semester.
Preliminary Presentation	2/6	All	Complete

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Preliminary Report	2/25	All	Complete
Fabrication and Testing	3/27	All	In Progress

Expenses

Item	**Description**	**Manufacturer**	**Part Number**	**Date**	**QTY**	**Cost Each**	**Total**	**Link**
Component 1								
Micro-Spring	5 mm length, 0.5 mm diameter micro-spring	Kellogg's Research Lab	N/A	02/25/26	1	12.99	12.99	micro-spring
TOTAL:								**$12.99**