Arterial Coupler Re-Design: Adjustable Stent/Cuff Anastomosis
Progress Report 11: 04/16/2026

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: This week the team focused on finalizing key deliverables and completing validation efforts. We reviewed and incorporated feedback on the executive summary, refined the preliminary report, and began developing the final poster and presentation content. Testing remained a major priority, with multiple rounds conducted alongside the client to validate performance and generate data for analysis. Results were documented and evaluated for inclusion in the final report. The team also coordinated with another BME group to test a nitinol stent and better understand its mechanical properties, while simultaneously fabricating a backup design to ensure readiness for final demonstrations.

Summary of Weekly Individual Design Accomplishments:

- Allison (Ally) Rausch:
    - Reviewed executive summary feedback and iterated to improve the final version
    - Brainstormed with team members what to present at final presentation
- Jackie Behring:
    - Finalized and reviewed executive summary feedback
    - Continued to run testing procedures with team and client
    - Reached out to another BME team to borrow and test a nitinol stent in order to determine the mechanical properties
- Sofia Decicco:
    - Review executive summary feedback
    - Started revision of preliminary report for final deliverables
    - Complete final testing with team
- Arshiya (Ria) Chugh:
    - Conducted a final round of testing with the team and client
    - Documented and analyzed results for inclusion in the final report and presentation
    - Initiated development of the final poster presentation
- Daniel Pies:

- Review and contribute to edits on executive summary
- Conduct final testing with clients
- Fabrication of backup design

Weekly/Ongoing Difficulties: No notable difficulties.

Upcoming Team Goals: In the coming week, the team will focus on completing and refining all final deliverables while preparing for the final presentation. This includes developing and practicing presentation slides, coordinating roles, and deciding on any props to support the presentation. The team will compile, organize, and analyze all testing data to clearly summarize key findings and design limitations for inclusion in the final report and poster. Efforts will also be directed toward finalizing the poster presentation, reviewing all deliverables for completeness, and ensuring the team is fully prepared for a polished and cohesive final presentation.

Upcoming Individual Goals:

- Allison (Ally) Rausch:
  - Work on final presentation slides
  - Continue thinking about what props to bring to final presentation
  - Review and summarize testing results
- Jackie Behring:
  - Compile testing results in order to summarize key findings and limitations of design
  - Review the final deliverables and prepare for the final presentation
- Sofia Decicco:
  - Complete final deliverables
  - Sort and practice presentation details with team members
- Arshiya (Ria) Chugh:
  - Collaborate with the team to develop the final poster presentation
  - Compile all testing data and analysis
  - Prepare final project deliverables
- Daniel Pies:
  - Finalize/organize testing data
  - Collaborate on final poster presentation and begin final report

Project Timeline

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

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Preliminary Presentation	2/6	All	Complete
Preliminary Report	2/25	All	Complete
Fabrication and Testing	3/27	All	Complete
Final Deliverables	4/29	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
Microsprings	Varying Mandrel sizes (mm): 0.5, 0.9, 1.15, 1.6	Kellogg's Research Lab	N/A	03/23/26	4	8.00	36.99	VaryingMandrelSprings
Metal Shim Kit	Metal shim kit with sheets of stainless steel of varying thicknesses	Home Depot	Internet # 335115252 Model # 2-HDPH005OT053	03/24/26	1	50.30	50.30	Metal Shim Kit
TOTAL:								**$100.28**