Arterial Coupler Re-Design: Adjustable Stent/Cuff Anastomosis
Progress Report 3: 2/12/2026

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 met with Jesse to discuss 3D modeling and the fabrication process for the stent. Jesse assisted in creating and modeling the stent with finalized dimensions and curvature. The team began looking into hiring someone from the UW Madison Design and Innovation Lab to fabricate the stent device before outsourcing manufacturing. The team met with the client to review the preliminary presentation and the semester timeline. The team is still awaiting a quote from Potomac and will review and assess after it is received.

Summary of Weekly Individual Design Accomplishments:

- Allison (Ally) Rausch:
    - Attend BPAG meeting and report findings to team
    - Review notes from Jesse meeting
    - Prepare question list for client meeting
- Jackie Behring:
    - Review Potomac quote to determine if the team should move forward with vendor
    - Sent quote request to the following vendors:
        - Laserod
        - EBTEC Hanwha Aerospace
        - Polaris
        - Precision MicroFab
        - Jonco Industries
        - Xometry
    - Met with Jesse to 3D model stent with final dimensions
    - Prepare for client meeting
- Sofia Decicco:
    - Met with Jesse to discuss fabrication methods
    - Look at online vendors that have stents available for purchase

    - Organized talking points for client meeting
- Arshiya (Ria) Chugh:
    - Communicated with the client to coordinate a meeting to review company quotes and discuss goals from the preliminary presentation
    - Researched alternative fabrication methods based on advisor feedback
    - Began initial research and planning for testing methods
- Daniel Pies:
    - Attend BSAC meeting and report findings to team

Weekly/Ongoing Difficulties: No notable difficulties.

Upcoming Team Goals: The team will finalize the complete 3D model of the arterial coupler to prepare and send to vendors for manufacturing quotes. There will be continued comparison of received quotes to assess feasibility within budget and design constraints. Also, the team will begin developing detailed testing protocols to evaluate device performance, including flow testing, structural integrity, and overall anastomosis workflow validation.

Upcoming Individual Goals:
- Allison (Ally) Rausch:
    - Assist on CAD designs
    - Research alternative stent geometries
    - Complete preliminary report
- Jackie Behring:
    - Continue to review quotes as they come in
    - Finalize 3D model to send prototype with correct dimensions
    - Start preparing testing protocols
    - Start to work on and split up preliminary report
- Sofia Decicco:
    - Starts ordering/sourcing stent
    - Plan new testing depending on the stent team has access to
    - Start preliminary deliverables
- Arshiya (Ria) Chugh:
    - Coordinate with the team regarding quotes and determine what should be ordered
    - Work on the preliminary report draft with the team
    - Create a testing plan for the coming month
- Daniel Pies:
    - Complete preliminary report sections
    - Finalize testing protocols

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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
Preliminary Report	2/24	All	In Progress

Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
Component 1								
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL:								**$0.00**