

Novel Negative Pressure Wound Therapy Device for Rhytidectomy Recovery

Clients: Ms. Nada Botros

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Advisor: Dr. Russ Johnson

Team: Bryan Heaton (Leader)

Meghan Kaminski (Communicator)

Dhruv Nadkarni (BWIG)

Serena Evers (BSAC)

Harshad Gunasekar (BPAG)

Date: September 12, 2025 - September 19, 2025

Problem Statement

Hematoma remains the most common and severe complication after rhytidectomy due to the facial flap's limited blood supply, and current prevention methods are inconsistently effective. There is a need for a specialized, anatomically compatible negative pressure wound therapy solution to reduce fluid buildup and improve surgical outcomes in facelift procedures.

Brief Status Update

The team held their second client meeting with Ms. Botros and Dr. Cho on Thursday morning and asked all remaining preliminary questions. They also completed an initial draft of the PDS. Next steps for the team are to continue with research and creating preliminary designs.

Summary of Weekly Team Member Design Accomplishments

- Team:
 - Attended second advisor meeting.
 - Continued research.
 - Worked on the PDS.
- Bryan Heaton
 - Worked on the operating environment, shelf life, and standards sections of the PDS
 - Led team meeting associated with completion of the PDS
- Meghan Kaminski
 - Worked on material, aesthetics, and the customer section of the PDS
 - Researched information focusing on NPWT devices and functions
 - Researched material restrictions
 - Researched common dressings used in rhytidectomies
- Serena Evers
 - Worked on Size, weight, and patient related concerns sections of the PDS
 - Further research on NPWT
- Harshad Gunasekar
 - Worked on Performance Requirements, Safety, Quantity, and Competition sections of the PDS
 - Researched previous existing designs and solutions with NPWT
 - Researched ISO and FDA standards that the device must comply with to be fully compliant with all regulatory requirements
 - Attended a client meeting and asked clarifying questions about the NPWT and its criteria for success
- Dhruv Nadkarni
 - Worked on the accuracy, life in service, ergonomics, and cost sections of the PDS.
 - Researched current NPWT units in the market.
 - Researched FDA guidelines and standard consensus values for NPWT pressure and fluid flow.
 - Attended client meeting.

Weekly/Ongoing Difficulties

N/A

Upcoming Team and Individual Goals

- Team:
 - Work on preliminary designs
 - Vote for designs
 - See NPWT device in person
- Bryan Heaton
 - Research specific NPWT application process

- Research materials/elasticity of headband
- Meghan Kaminski
 - Brainstorm design ideas for the design matrix
 - Research materials/methods for the headband
 - Schedule continuous client meetings
- Serena Evers
 - Brainstorm preliminary designs for the headband design
- Harshad Gunasekar
 - Start brainstorming possible designs before the next group meeting
 - Meet with the client next meeting in person to see the NWPT in person and discuss further details
 - Research NPWT procedures and more solutions for the client's suggestions after the meeting
- Dhruv Nadkarni
 - Work on preliminary designs for the design matrix
 - Research suction seals

Project Timeline

Project Goal	Deadline	Team Assigned	Progress	Completed
Product Design Specification (PDS)	September 19, 2025	All	90%	
Design Matrix	September 26, 2025	All	0%	
Preliminary Presentations	October 3, 2025	All	0%	
Preliminary Deliverables	October 8, 2025	All	0%	
Show and Tell	October 31, 2025	All	0%	
Poster Presentations	December 5, 2025	All	0%	
Final Deliverables	December 10, 2025	All	0%	

Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link	
Component 1									
Component 2									
Component 3									
TOTAL:								\$0.00	