# EarVac: Negative Pressure Wound Therapy Device for Improved Microtia Reconstruction Surgery Recovery

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**Date:** January 30, 2026 - February 5, 2026

## Problem Statement

Newly reconstructed ears after microtia reconstruction surgery are fragile, prone to destructive fluid buildup, and difficult to dress securely. Clinicians need a conformal negative-pressure wound therapy device that holds a foam dressing over the ear, maintains consistent negative pressure over complex 3D geometry, and safely collects drainage from existing drains to reduce complications and support consistent healing. Current temporary drains often lose suction and dressings fail to seal around the ear's contours which increases a burden on clinical staff. A device specifically shaped for postoperative ear anatomy would provide a more stable seal, more reliable pressure delivery, more reliable wound drainage, and greater protection during the critical early healing period.

## Brief Status Update

The team had its first meeting since poster presentations on 1/26 to review the status of the project and our goals for this semester. There is a meeting with our client scheduled for 2/6.

## Summary of Weekly Team Member Design Accomplishments

- Team:
    - Team meeting to discuss semester goals
    - Team meeting to create preliminary presentation
    - Advisor meeting
- Bryan Heaton
    - Brainstormed seal options
    - Worked on slides for preliminary presentation
    - Outreach prep
- Meghan Kaminski
    - Work on the SolidWorks design
    - Review testing procedures
    - General research
    - Work on slides for preliminary presentation
- Serena Evers
    - Team meeting
    - Organized outreach
- Harshad Gunasekar
    - Attended team meeting
    - Review connection point between headphone, vacuum tube, adhesive, and skin
    - Worked on slides for preliminary oral presentation
- Dhruv Nadkarni
    - Worked on slides for prelim presentation
    - General research

## Weekly/Ongoing Difficulties

None for now.

## Upcoming Team and Individual Goals

- Team:
    - Get a working prototype for testing
    - Practice preliminary presentation
- Bryan Heaton
    - Get a working seal
    - Prepare outreach materials
- Meghan Kaminski
    - Work on solidworks design
    - Continue general research
    - 3D print new design
- Serena Evers
    - Work on y connector

    - Attend client meeting and complete slides for preliminary presentation
    - Finish outreach activity guide
- Harshad Gunasekar
    - Prepare outreach materials
    - Finalize connection between components
    - Start testing seal integrity
- Dhruv Nadkarni
    - Prepare outreach materials
    - Work on any prototype materials

## Project Timeline

| Project Goal | Deadline | Team Assigned | Progress | Completed |
|---|---|---|---|---|
| Preliminary Presentation | February 9, 2026 | All | 0% | |
| Preliminary Deliverables | February 25, 2026 | All | 0% | |
| Show and Tell | March 30, 2026 | All | 0% | |
| Executive Summary Application | April 3, 2026 | All | 0% | |

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| Final Presentations | April 24, 2026 | All | 0% | |
| Final Deliverable | April 29, 2026 | All | 0% | |