Graduated Bowman Probes

Date: January 30 to February 5, 2026

Client: Dr. James Law
Advisor: Professor Monica Ohnsorg
Team:
Neel Srinivasan nsrinivasan8@wisc.edu (Team Leader/BPAG)
Caden Robinson carobinson5@wisc.edu (BSAC)
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Problem Statement

Bowman probes are the standard instrument used in interrogation of the nasolacrimal (tear duct) system in Ophthalmology. They are available in various sizes and provide tactile feedback to the surgeon when probing the canalicular/nasolacrimal system, allowing them to assess for strictures, discontinuities, obstruction, or other abnormality within its lumen. Probing is typically performed prior to the passage of implants such as nasolacrimal stents (eg. Crawford, Lacriflow, Nunchucku, Monoka), to confirm patency of the nasolacrimal system. Available probes on the market do not have any markings on them which may allow the surgeon to make measurements to points within the canalicular/nasolacrimal lumen (eg. a stricture at 30 mm distal to the punctum), which can be helpful in correlating with imaging findings, or for accurate clinical documentation and therefore inform management of nasolacrimal pathologies. We propose the development of such a stent with inscribed bands corresponding to millimeter markings which may be referenced during canalicular or nasolacrimal probing.

Brief Status Update

This week the team had its first meeting with Dr. Law to gather preliminary information on his design requirements, potential ideas, and goals for application for the design in the clinic. The team prepared questions for Dr. Law, while keeping track of his answers in LabArchives. The team has also split up sections of the Performance Design Specification document, and plans to have it finished by Thursday, February 5th. Finally, the team plans to meet with Dr. Ohnsorg to discuss our continued research and the content of the first client meeting.

Summary of Weekly Team Member Design Accomplishments

- Team:
    - Collectively finished PDS
    - Continued background research on bowman's probes, nasolacrimal duct obstruction, laser etching etc.
    - Met with client to pose initial design questions and understand his requirements

- Neel Srinivasan:
    - Began researching laser engraving along with material side effects due to etching
    - Finished individual sections of PDS
    - Met with client and posed questions

- Caden Robinson:
    - Continued to research about nasolacrimal blockages
    - Met with client to discuss design specifications
    - Finished drafting the PDS

- Caleb White:
    - Continued research, specifically looking into laser engraving techniques as well as the appropriate surface restoration processes.
    - Met the client and brought up all relevant concerns and questions for the project, gaining a solid basis of expectation for the project going forward.
    - Completed the miscellaneous section of the preliminary design specifications deliverable.

- Cole Miller:
    - Continued research on background information
    - Organized client meeting and brainstormed questions for client
    - Finished individual sections of PDS

Weekly/Ongoing Difficulties

N/A

Upcoming Team and Individual Goals

- Team:
    - Brainstorm ideas and build design matrix
    - Continue background research
    - Potentially acquire a set of probes from Dr. Law

- Neel Srinivasan:
    - Continue researching biomaterial changes due to laser modifications on stainless steel
    - Look into if laser engraving is accepted in standards of medical devices
    - Meet with team and evaluate design matrix options

- Caden Robinson:
    - Research different options for creating markers on the bowman probes
    - Watch the bowman probes used in real time to see how they work in the OR
    - Research testing procedures and look into IRB guidelines

- Caleb White:
    - Continue to research relevant biological and manufacturing techniques for the Bowman probe modification.
    - Hopefully receive Bowman probes ordered on amazon by the client to get hands on with the devices.
    - Begin to consider the preliminary design presentation and what is required to be prepared for the presentation.

- Cole Miller:
    - Continue research on how other clinical tools are graduated
    - Brainstorm potential design options
    - Research biomaterial requirements specific to the tear ducts

Project Timeline

Project Goal	Deadline	Team Assigned	Progress	Completed
Meet with client	2/2	All	✓	✓
Product Design Specification	2/5	All	✓	✓
Preliminary Presentations	2/20	All	X	X
Preliminary Deliverables	2/25	All	X	X
Show and Tell	3/20	All	X	X
Poster Presentations	4/24	All	X	X
Final Deliverables	4/29	All	X	X

Expenses

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