Approximating Surface Matrix Band for Dentist to Use for Patients

Project Page

Date: October 12th, 2025 - October 16th, 2025

Client: Dr. Donald Tipple
Advisor: Prof. Beth Meyerand
Team:

Roshan Patel - rgpatel3@wisc.edu (Team Leader)

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Problem statement

Surface matrix bands are devices used by dentists to separate adjacent teeth during restorations of interproximal cavities (cavities found in-between two teeth). The matrix band serves to support the restoration material, to provide shape and contour to the tooth being restored, and to protect the adjacent tooth. Ideally, the width of the space between the two adjacent teeth is just large enough to fit one matrix band in order to ensure close proximal contact area, which prevents food impaction and decay. In the case of two cavities on two adjacent teeth, this process is tedious, as the dentist must complete the process from start to finish for each adjacent tooth individually. The goal of this project is to create a dental matrix band that effectively partitions adjacent teeth for more efficient tooth restoration procedures on interproximal cavities by making it possible to complete two adjacent restorations simultaneously.

Brief status update

The team has started discussing manufacturing processes and ordering materials.

Summary of weekly team member design accomplishments

- Roshan Patel
    - Material considerations
- Keleous Lange
    - Material consideration
    - Looked into where to fabricate using water jet
- Tanya Predko
    - Looked into material selection for the prototype.
    - Looked into fabrication methods for the prototype.
- Joseph Koch
    - Material
    - Worked on fabrication files

Difficulties / advice requests

There are no difficulties at this time.

Current design

N/A

Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
									$0.00	
									$0.00	
Category 2										
									$0.00	
									$0.00	
								TOTAL:	**$0.00**	

Major team goals for the next week

1. Order Materials
2. Meet with design advisor
3. Work on the manufacturing plan

Next week's individual goals

- Roshan Patel
    - Do more background research on design manufacturing.
    - Order materials.
- Keleous Lange
    - Order materials for prototyping
    - Research methods for prototyping
- Tanya Predko
    - Order the materials for prototype fabrication.
    - Create a LabArchives entry describing the fabrication process.
    - Begin planning testing.
- Joseph Koch
    - Finish fabrication files
    - Order materials

Timeline

Task	September				October				November					December	
	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13
Project R&D															
Empathize	X														
Background…															
Prototyping															
Testings															
Deliverables															
Progress Reports	X	X	X	X	X	X	X								
Prelim presentation						X									
Final Poster															
Meetings															
Client															
Advisor	X	X	X	X	X	X	X								

Website															
Update	X	X	X	X	X	X	X								

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- Researched materials

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Roshan Patel	10/16/2025	- Material considerations research	2	2	15
Keleous Lange	10/16/2025	- Researched where to find materials	2	2	15
Tanya Predko	10/16/2025	- Researches fabrication methods and materials	1	1	20.5
Joseph Koch	10/16/2025	- Researched materials	2	2	15