

Device for Maxillomandibular Fixation Following Facial Fractures

Week – September 23 - September 29

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Team Members: Ashley Phillips – Co Team Leader
Nina Lewis – Co Team Leader
Joe Ferris – Communications
Sara Karle – BWIG
Emily Maslonkowski – BSAC

Problem Statement

Currently, patients with specific and common types of facial fractures are treated with "maxillomandibular fixation," known as MMF, which entails holding the upper and lower jaw together using metal arch bars wired around the teeth in conjunction with a series of rubber bands. This technique achieves its goal of holding the two parts of the jaw together until the fracture heals, but involves the time consuming process of wiring the metal bars around the teeth as well as the time-consuming process of placing multiple rubber bands to hold the upper and lower jaws together. In addition, the rubber bands can often come loose and need to be replaced. We propose a project to develop a new and innovative device that will achieve the same goals as the standard type of MMF, yet make the process less time consuming and more reliable.

Last Week's Goals

- Begin mid-semester report
- Continue to research our design possibilities
- Talk over our design ideas with our client
- Brainstorm a few more design possibilities

Accomplishments

- Joe, Emily and Sarah started our mid-semester report
- Nina researched the muscles in the jaw
- All group members met with our client on Wednesday afternoon (Sept. 28)
- All group members did further research into our design possibilities
 1. Braces design
 2. Magnet & screw design
 3. Improvements on the current method
- Emily, Joe, Sarah and Ashley attended the BME lecture on Friday (Sept. 23)

This Week's Goals

- Continue working on our report
- Finalize our three design ideas
- Figure out exact prices of magnets, screws, brackets and the materials needed for the current arch bar method
- Do further research on forces in the jaw

Difficulties

- We would like to have a visual of the current materials used for fixation so we must wait until we obtain the arch bar materials
- It is difficult to find the exact forces of the jaw and the exact amount of force that needs to be applied to keep the jaw shut
- We are having difficulty with our “magnet design” due to safety requirements of a quick release

Activities/Accomplishments

Group Member	Weekly Accomplishments	Time (hrs)	Running Total (hrs)
Ashley Phillips	Class time; progress report; group meeting w/Dr. Warner; individual research	3.5	15.5

Nina Lewis	Progress report; group meeting w/Dr. Warner; individual research on the jaw	3.5	15.5
Sara Karle	Class time; Group meeting w/Dr. Warner; mid-semester report; individual research	4.0	15.0
Emily Maslonkowski	Class time; Group meeting w/Dr. Warner; mid-semester report; individual research, BSAC meeting	5.0	15.5
Joe Ferris	Class time; Group meeting w/Dr. Warner; mid-semester report; individual research	4.0	14.5