Device for Maxillomandibular Fixation Following Facial Fractures

Week – November 4 – November 10

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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, the most common technique of fixating the jaw after a facial fracture is called maxillomandibular fixation (MMF), which requires wiring the mouth shut with the use of arch bars and wires. It has been proposed to us to design a device which will mimic the function of MMF, but be easier and faster to apply while maintaining an adequate cost of application. Our design needs to securely hold the lower jaw tight to the upper jaw, but also needs to have an emergency quick release system. The device should also be safe for the patient during application and for the 4-6 weeks of healing.

Last Week’s Goals
- Research adhesive options
- Create a method to measure jaw forces
- Figure out the forces of the elastics on the teeth
- Figure out if we can use the arch bar, cut into brackets
- Look into the use of the power chain vs. wire to hold the brackets together
- Determine ways to bring the cost down; mostly with the brackets and
adhesive

Accomplishments
- Everyone looked into the adhesives
- Joe found a website about the adhesive that mimics mussels
- Emily found an adhesive that can be applied to wet surfaces; we still need to look further into obtaining this
- Sara and Ashley also researched adhesives
- Nina attempted to set up static equations to determine the forces in the elastics when they were in different configurations and looked into adhesives

This Week’s Goals
- Obtain an adhesive in order to test it on wet surfaces and on our bracket design
- Create a method to measure jaw forces experimentally
- Meet with a professor to figure out how exactly to analyze the forces in the elastics

Difficulties
- We would like to find a more cost effective way to use the braces design, since this is the only con to this design
- Calculating the forces of the jaw
- If the arch bars were to be used we need to figure out a method in which to connect them laterally as well as add texture to the back in order to create a stronger bond for the adhesive

Activities/Accomplishments

<table>
<thead>
<tr>
<th>Group Member</th>
<th>Weekly Accomplishments</th>
<th>Time (hrs)</th>
<th>Running Total (hrs)</th>
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</thead>
<tbody>
<tr>
<td>Ashley Phillips</td>
<td>Class time; individual research on adhesives; progress report</td>
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<td>Nina Lewis</td>
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<td>Emily Maslonkowski</td>
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<td>Joe Ferris</td>
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