Device for Maxillomandibular Fixation Following Facial Fractures

Week – October 28 – November 3

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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
• Obtain materials for the braces design
• Create a method to measure jaw forces
• Look into a possible “rip-cord” as a quick release
• Determine ways to bring down cost of braces design, i.e. new brackets, reuse brackets
Accomplishments
- Met with our advisor Fri., Oct. 28 to go over progress
- Group meeting Mon., Oct. 31 to discuss future work
- Joe continued research on producing our own brackets for the braces design
- Sara obtained materials from orthodontist
- Group brainstormed the idea to use segments of the current arch bars as brackets
- Nina began setting up equations to solve for jaw forces
- Emily did further research into adhesives
- Ashley did further research into jaw forces and texturing possibilities for arch bars
- Ruled out the use of a rip cord device

This Week’s Goals
- Set up equations for forces in the jaw
- Create a method to measure jaw forces experimentally
- Determine a method for including arch bar segments into design for use as brackets

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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<tbody>
<tr>
<td>Ashley Phillips</td>
<td>group meeting (Oct. 31); individual research; progress report; contacted her orthodontist</td>
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<td>Joe Ferris</td>
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