Device for Maxillomandibular Fixation Following Facial Fractures

Week – October 7 – October 13

Client: Jeremy Warner, MD
Plastic Surgery, UW Medical School
Phone: (608) 262-2122 or (608) 829-2161
E-mail: jp.warner@hosp.wisc.edu or warner@gwu.edu

Advisor: William Murphy
Assistant Professor, Department of Biomedical Engineering
Phone: (608) 262-2224
E-mail: wlmurphy@wisc.edu

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
• Work on our power point
• Work on our mid-semester report
• Figure out the exact costs of each design
• Acquire the supplies for the current MMF design
Accomplishments

- Emily attended a BSAC meeting
- Nina contacted local orthodontist again to discuss the design in more detail (exact costs)
- Sara updated our website
- Joe revised our power point slides
- All group members met Monday night (Oct. 10) to discuss the final changes that needed to be made on our slides and to evaluate the “Canine Head Positioning System for MR Imaging” group’s power point/paper
- Emily received magnets from a company, and we tested their durability
- All group members met Wednesday night (Oct. 12) to practice our oral presentation

This Week’s Goals

- Finish our written report
- Contact other orthodontist offices in the area to try to get a hold of brackets and elastics
- Order the model skull
- Do further research on forces in the jaw

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

Activities/Accomplishments

<table>
<thead>
<tr>
<th>Group Member</th>
<th>Weekly Accomplishments</th>
<th>Time (hrs)</th>
<th>Running Total (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley Phillips</td>
<td>Class time; group meeting (Oct. 10); group meeting (Oct. 12);</td>
<td>5.5</td>
<td>26</td>
</tr>
<tr>
<td>Name</td>
<td>Activities</td>
<td>Score</td>
<td>Attendance</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Nina Lewis</td>
<td>Class time; group meeting (Oct. 10); calling orthodontists; progress report; group meeting (Oct. 12); practiced presentation</td>
<td>5.5</td>
<td>26</td>
</tr>
<tr>
<td>Sara Karle</td>
<td>Class time; group meeting (Oct. 10); group meeting (Oct. 12); practiced presentation</td>
<td>4.5</td>
<td>24</td>
</tr>
<tr>
<td>Emily Maslonkowski</td>
<td>Class time; group meeting (Oct. 10); group meeting (Oct. 12); BSAC; practiced presentation</td>
<td>5.0</td>
<td>25</td>
</tr>
<tr>
<td>Joe Ferris</td>
<td>Class time; revised power point; practiced presentation; group meeting (Oct. 10); group meeting (Oct. 12)</td>
<td>5.0</td>
<td>24</td>
</tr>
</tbody>
</table>