Device for Maxillomandibular Fixation Following Facial Fractures

Week – September 9 - September 15

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
- Meet with our client to obtain a better understanding of our project
- Brainstorm ideas for possible designs
- Research the design ideas that we came up with
Accomplishments
- Joe contacted our client and set-up the date & time of our meeting, he also sent out an e-mail with everyone’s contact information
- All group members met our client on Friday afternoon (Sept. 9) to discuss our project in further detail
- All group members met on Monday night (Sept. 12) to discuss possible design ideas
- We allocated the design ideas to members of the group so further research on each design could be done throughout the week
- Joe and Ashley did further research on the “magnet design”
- Nina did further research on the “bracket design”
- Sara did further research on the “screw design”
- Emily did further research on improving the current method of MMF

This Week’s Goals
- Begin PDS—have a rough draft done by next week
- Continue to research our design possibilities
- Talk over our design ideas with our client
- Brainstorm a few more design possibilities

Difficulties
- Some of our design possibilities might not actually work because they take the same amount of time, if not more, than the pre-existing method. This means that we will have to come up with more design possibilities.

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>Meeting w/our client, Dr. Warner; individual research; progress report; group meeting; class time</td>
<td>5.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Nina Lewis</td>
<td>Meeting w/our client, Dr. Warner; individual research; progress report; group meeting; class time</td>
<td>5.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Name</td>
<td>Activities</td>
<td>Hours</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Sara Karle</td>
<td>Meeting w/ our client, Dr. Warner; individual research; group meeting; class time</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>Emily Maslonkowski</td>
<td>Meeting w/ our client, Dr. Warner; individual research; group meeting; class time</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>Joe Ferris</td>
<td>Meeting w/ our client, Dr. Warner; individual research; group meeting; e-mails to client &amp; group</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.0</td>
<td></td>
</tr>
</tbody>
</table>