

Tibial Stent Design Team Progress Report

Client: Dr. Matthew Halanski

Advisor: Dr. Paul Thompson

Team: Evan Lange *elange2@wisc.edu (Team Leader)*
Karl Kabarowski *kabarowski@wisc.edu (Communicator)*
Tyler Max *tmax@wisc.edu (BPAG)*
Sarah Dicker *sdicker@wisc.edu (BWIG)*
Lida Acuna Huete *acunahuete@wisc.edu (BSAC)*

Date: January 24th, 2014 – January 31st, 2014 (Week 1)

Problem Statement

(from last semester)

Tibia fractures are common in children, and these injuries are currently managed nonoperatively using casts; however, a surgically implanted device would provide more structural stability and aid the healing of the fracture. Adult patients with this injury typically have a rigid intramedullary device implanted into their tibia bone. Unfortunately, these implants cannot be used in pediatric patients due to the presence of growth plates at the implantation site. A previous design team produced a working device that can enter the medullary canal through a hole in the side of the bone and then expand outward to stabilize the fracture, held in place by static friction against the canal wall. This device is flexible enough to fit into the canal, yet rigid enough to maintain fracture reduction, can be secured in place with screws, and can be removed from the canal when desired; however, the device is not fully fixated against the walls of the bone canal, and the friction force of the device is not sufficient to prevent axial rotation within the canal. This rotation can lead to device failure resulting in unnecessary pain for the patient and extra surgery to correct the issue.

The goal of this semester is to improve the existing device by improving its fixation and adding more radial force thereby advancing this project toward clinical use.

Last Week's Goals (14-7 days ago)

- n/a

This Week's Goals/Individual Goals (7-0 days ago)

- Assign team roles
- Create website
- Establish time for weekly team meetings in addition to advisor meeting
- Contact client to set up meeting

This Week's Accomplishments

- Team roles assigned (see header)
- Website created
- Doodle poll completed to establish availability for meetings during the semester
- Contacted client regarding meeting

Project Difficulties

- none at this time

Next Week's Team Goals

- Hold first weekly team meeting
- Develop schedule for semester
- Revise problem statement to reflect new goals for this semester (optimization, fabrication, testing, etc.)
- Begin brainstorming optimizations to implement in current design

Summary of Design Accomplishments

- The team is meeting weekly to accelerate the design process

Expenses

- none at this time

Schedule for Fall 2013

currently under development – to be finalized by Week 2 progress report

Activities

Person(s)	Task	Time (hrs)	Weekly Total	Semester Total
Evan	<i>Team Role (Leader)</i>		2.0	2.0
	Weekly progress report	1.5		
	Developed next week's team goals	1.0		
	<i>Other</i>			
	Created Doodle Poll	0.5		
Karl	<i>Team Role (Communicator)</i>		1.0	1.0
	Contacting Dr. Halanski	0.5		
	<i>Other</i>			
	Emailed team roles to advisor	0.5		
Tyler	<i>Team Role (BPAG)</i>		0.0	0.0
	n/a			
	<i>Other</i>			
	n/a			
Sarah	<i>Team Role (BWIG)</i>		0.0	0.0
	n/a			
	<i>Other</i>			
	n/a			
Lida	<i>Team Role (BSAC)</i>		0.0	0.0
	n/a			
	<i>Other</i>			
	n/a			