

Tibial Stent Design Team Progress Report

Client: Dr. Matthew Halanski

Advisor: Dr. Wan-Ju Li

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

Date: September 27th, 2013 – October 4th, 2013

Problem Statement

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

- Begin work on problem statement and PDS
- Meet with client
- Conduct more specific literature searches and research based on client needs established at meeting

This Week's Goals/Individual Goals

- Get feedback from all team members regarding design ideas and revise design matrix
- Complete PDS v.1
- Complete Midsemester Presentation
- Begin work on Midsemester Report

This Week's Accomplishments

- Completed Midsemester Presentation
- Revised design matrix
- Completed PDS v.1
- Divided writing assignments for Midsemester Report

Project Difficulties

- Issues getting all team members together for working on Midsemester Presentation

Next Week's Team Goals

- Finish detailed specifications of final design
- Complete Midsemester Report

Activities

Person(s)	Task	Time (hrs)	Weekly Total	Semester Total
Evan	<i>Team Role (Leader)</i>		14.0	30.5
	Weekly progress report	1.5		
	Developed next week's team goals	0.5		
	Created Design Matrix Documents	2.0		
	<i>Other</i>			
	Team Meeting	1.0		
Karl	Midsemester Presentation Preparation	9.0	11.5	27.5
	<i>Team Role (Communicator)</i>			
	Invite Client to Midsemester Presentation	0.5		
	<i>Other</i>			
	Work on PDS	1.0		
	Team Meeting	1.0		
Tyler	Midsemester Presentation Preparation	9.0	9.0	17.0
	<i>Team Role (BSAC)</i>			
	n/a			
	<i>Other</i>			
	Team Meeting	1.0		
	Research	0.5		
	Problem Statement Review	0.5		
Sarah	Midsemester Presentation Preparation	7.0	10.0	21.5
	<i>Team Role (BWIG)</i>			
	Update Website	0.5		
	<i>Other</i>			
	Research	2.0		
	PDS/Problem Statement work	0.5		
Lida	Midsemester Presentation Preparation	7.0	5.0	7.5
	<i>Team Role (BPAG)</i>			
	n/a			
	<i>Other</i>			
	Midsemester Presentation Preparation	5.0		