



WEEKLY SPONSOR COMMUNICATION

TO: VICTOR NUNEZ, AESCULAP
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TEAM NAME AND NUMBER: AESCULAP 1
DATES COVERED IN THIS COMMUNICATION: OCTOBER 3, 2016 TO OCTOBER 9, 2016
WEEK NUMBER: 6 OF 15

Overview

On behalf of my team I would like to extend a sincere thank you to you, Chris Good, and Andrew Dauster for making it out to our midterm presentation this past Friday. I hope you all enjoyed our presentation, and we would love to hear any feedback each of you may have. Particularly, due to our team's lack of familiarity with the Finite Element Analysis (FEA) process, we would like to set up a time to discuss the best ways to go about conducting FEAs moving forward.

Accomplishments

1. We successfully presented our project at midterm tabletop presentations this past Friday. Our presentation setup consisted of a life-size mannequin and spinal setup on which vertebral disc removal and insertion could be performed, titanium and stainless steel material samples, 3D printed prototypes, a PowerPoint displaying the 3D model of the distractor and corresponding FEA results, a graphical summary of our first semester, and a poster displaying our financial models.
2. We conducted a Finite Element Analysis (FEA) of our distractor in Autodesk. Using the FEA results we were able to determine that the paddle design must be altered to minimize deflection and that the scissor hinge mechanism must be improved to eliminate yielding. Exhibit 1 is a screenshot from the FEA displaying the Von Mises stresses and deflection present in the distractor when each paddle is subject to a distributed load of 2000N.

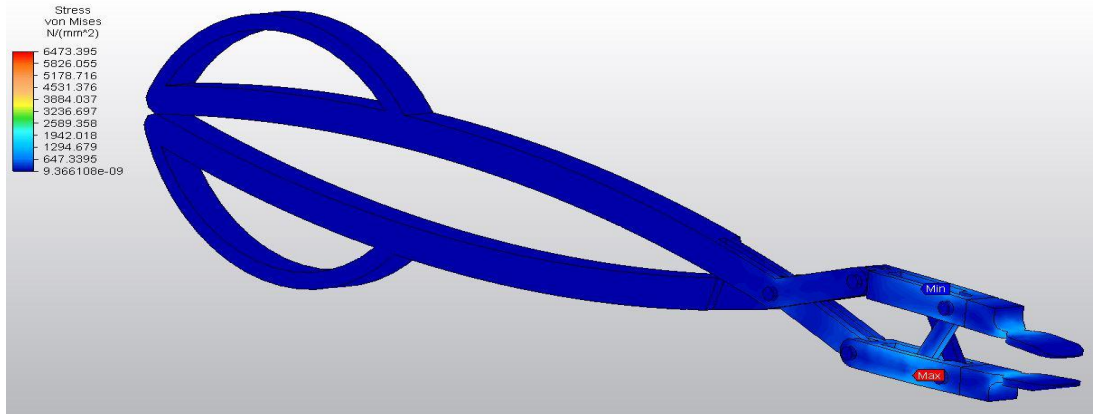


Exhibit 1: Screenshot of AutoDesk FEA for Distractor

Next Steps

1. Continue to model 3D components of the distractor in SolidWorks to add to the overall assembly (impaction handle interface/design, measurement system, and quick connect).
2. Further research the inner-workings of socket wrenches to better conceptualize the design of our ratchet system. Begin to model ratchet system in SolidWorks in an effort to create a large-scale model which can be 3D printed to best understand and explain the system.

Questions

1. When it is convenient, would you be able to arrange for a second full-sized handle to be 3D printed? That way we can have a full-sized functioning prototype at our disposal moving forward.
2. We would like to schedule a phone call with engineer(s) at Aesculap to discuss takeaways from the midterm presentation and preferred methods of conduction for FEAs. If this sounds agreeable, what times would work best for you and your colleagues?
3. During the midterm presentations we received several questions regarding the sterilization process for the distractor (both at the hospital and at Aesculap). Would you be able to send us an explanation of this process? Or put us into contact with someone at Aesculap who could?