

Chorionic Villus Sampling- Transcervical Model

Client: Dr. Jesus Iruretagoyena

Advisor: Professor Kreeger

Team Members: Derek Klavas (Leader)
Mason Jellings (Communications)
Jon Mantes (BSAC)
Andy LaCroix (BWIG)

Week of February 27- March 5, 2009

Problem Statement:

Chorionic villus sampling is a prenatal diagnosis procedure that involves extracting placental tissue from the uterus of a pregnant woman in her first trimester of pregnancy. This tissue contains the same genetic information as the unborn fetus. Testing thus allows chromosomal abnormalities and genetic defects to be diagnosed early on in the gestation period. The current, and most difficult, method for chorionic villus sampling requires a catheter to be inserted through the woman's vagina and into the cervix (also known as the transcervical approach). However, doctors and residents currently do not have a model to simulate female anatomical structures and practice the transcervical method. The goal of this project is to develop a realistic and affordable model that precisely replicates the anatomy of a pregnant woman, is constructed out of ultrasound permeable materials, and can be repeatedly used to practice the transcervical approach.

Last week's goals:

- Test the materials obtained from Greg Gion under an ultrasound device at Meriter Hospital.
- Look into websites and materials from Dr. Zagzebski if the materials from Greg Gion fail. Test these materials if needed.
- Work on mid-semester PowerPoint presentation and written paper.

Accomplishments:

- Tested various materials under ultrasound device at Meriter hospital with the help of Barb Trampe and Tim Heiser.
- Testing allowed us to decide on Smooth-On EcoFlex silicone for material.
- Compiled midsemester PowerPoint for midsemester presentation.

This week's goals: (February 27- March 5, 2009)

- Get in touch with Greg Gion about ordering materials and gaining knowledge about how to synthesize the EcoFlex silicone.

- Brainstorm ideas on how to support the model under its own weight. Look into gels from Jim Zagzebski's website for support.
- Contact Dr. Iruretagoyena to approve ordering of materials.

Project Difficulties:

The main difficulty at this point is figuring out a way to have the model support itself under its own weight. Since the best performing material under ultrasound imaging (EcoFlex) is not very dense, the model may collapse on itself if not supported properly. Figuring out how to compromise for this will be essential to the success of this project.

Activities:

Member	Description of Activity	Hours this week	Cumulative Hours
Derek	Individual research on silicone products, wrote PDS	1.0	10.5
Mason	Individual research on silicone products	1.5	10.5
Jon	Individual research on silicone products, attended BSAC meeting	1.0	11.0
Andy	Individual research on silicone products, updated website	1.5	10.5
Entire team	Met with Professor Kreeger on Friday February 27 th . Met with Barb Trampe and Tim Heisel at Meriter hospital to test prospective materials. Met to put together midsemester PowerPoint and practice presentation.	4.0	14.5

Project Timeline:

Tasks	February				March				April				May	
	6	13	20	27	6	13	20	27	3	10	17	24	1	8
Meetings														
Advisor														
Client														
Product Development														
Research														
Brainstorming														
Design Prototype														
Order Materials														
Manufacture Prototype														
Testing														
Deliverables														
Progress Reports														
PDS														
Midsemester Powerpoint														
Final Poster Presentation														

Expenses:

There are currently no expenses to report.

