

Progress Report - Week 6

Title: Stabilizer Device for Intra-Cardiac Echocardiography (ICE) to Assist Structural Heart Interventional Procedures

Client: Dr. Amish Raval

Advisor: Dr. Darilis Suarez-Gonzalez

Team: Sara Morehouse (Leader)

Max Aziz (Communicator)

Noah Hamrin (BWIG & BPAG)

Kaden Kafar (BSAC)

Date: October 17, 2024

Problem Statement:

Intracardiac echocardiography (ICE) is a technique commonly used during catheter-based interventional procedures to treat congenital heart disease, valvular heart disease and myocardial disease. Typically, the ICE catheter is advanced into the right atrial from a femoral vein, where it is positioned for imaging purposes. A separate catheter to perform the interventional procedure such as a transeptal needle or Watchman left atrial appendage occluder delivery system is then introduced. Many times, the ICE catheter drifts out of place, the imaging perspective is lost and the ICE catheter needs to be readjusted. Therefore, there exists a need for a simple re-sterilizable device to stabilize a variety of commercially available ICE catheters during interventional procedures. The device must prevent movement of the ICE catheter so that it does not migrate out of place when in use.

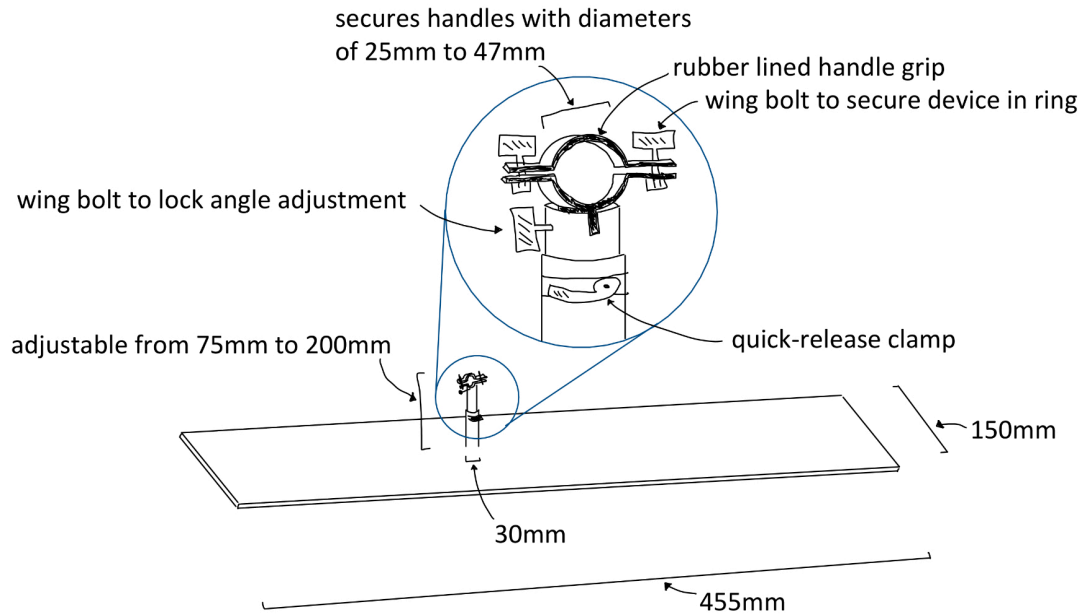
Brief Status Update:

This week, the team met with Dr. Raval to share our preliminary designs and discuss modifications that could be made. During this meeting, Dr. Raval expressed a preference for the Body Weight Holder design, with a few slight modifications requested. Additionally, we gained some clarification on design requirements. In the next week, the team will make the requested modifications and begin fabrication.

Difficulties / Advice Requests:

N/A at this time.

Current Design:



Following our meeting with Dr. Raval this week, the team plans to move forward with the Body Weight Holder design. However, some modifications will be made. These include separating the device into two components, the base and the holder. The base will consist of the rectangular plate with a pole and will be placed underneath the sterile drape with the pole between the patient's legs. The holder component will attach to the pole over the sterile drape via an attachment mechanism, which could potentially be a magnet. The holder will also be modified to utilize a hinge jaw clamp that is easy for the user to secure. This will hold the handle of the catheter parallel to the table.

Materials and Expenses:

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
-									\$0.00	
-									\$0.00	
-									\$0.00	
-									\$0.00	
-									\$0.00	
-									\$0.00	
-									\$0.00	
								TOTAL:	\$0.00	

Major team goals for the next week:

- Make modifications to design
- Create fabrication plan/protocol

Next week's individual goals:

- Sara:
 - Collaborate with team to make design decisions and implement changes.
 - Create plan for fabrication of the device.
- Max:
 - Meet with team to discuss and create new designs based on clients input
 - Help with fabrication of crude prototype
- Noah:
 - Finalize design with team and finish solidworks model
 - Brainstorm about fabrication methods
- Kaden:
 - Discuss design changes
 - Finish 3d model of design

Timeline:

Task	September			October				November					December
	13	20	27	4	11	18	25	1	8	15	22	29	6
Project R&D													
Background research	X	X	X		X								
Design development			X	X	X	X							
Prototyping													
Testings													
Deliverables													
Progress Reports	X	X	X	X	X	X							
PDS		X											
Design Matrix			X										
Prelim presentation				X									
Prelim Report					X								
Final Poster													
Meetings													
Client	X					X							
Advisor	X		X	X		X							
Website													
Update	X	X	X	X	X	X							

Previous week's goals and accomplishments:

- Meet with Dr. Raval to share designs and gain feedback.
 - The team met with Dr. Raval and received helpful feedback on our designs.
- Identify areas for improvement in the design and get ready to 3D-print a prototype.
 - The team has clear modifications to make and should be ready to 3D-print in the next week or two.

Activities:

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sara	10/14/24	Met with client and worked on design development	1	1	14
Max	10/14/24	Met with client and discussed new design ideas	1	1	13
Noah	10/14/24	Met with client and worked on refining design	1	1	12
Kaden	10/14/24	Met with client and discussed design ideas	1	1	12