



Guidewire Organizer for Endovascular Catheter Procedures

Team Leader: Tatum Rubald

Communicator: Addison Dupies

BWIG: Rachel Krueger

BSAC: Alex Pudzisz

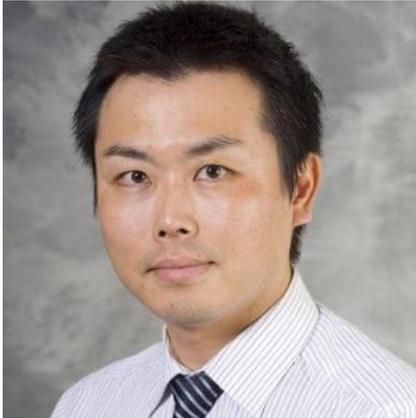
BPAG: Victoria Heiligenthal

Rachel 1

Client & Advisor

Client: Dr. Dai Yamanouchi

- Specialties: vascular and endovascular surgery



Advisor: Dr. Colleen Witzenburg

- Biomedical Engineering



Problem Statement

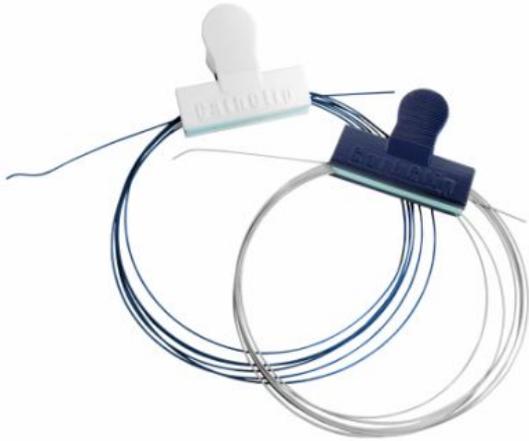
- Must use multiple guidewires during a single procedure.
- Guidewires are hard to manage (tangled and disorderly).
- Aiming to increase procedure efficiency and safety.
- Must be easy to remove the wire while in the operating room.
- Device will consist of two parts.

Product Design Specifications

- The project consists of two pieces - wheel and stand
- Determine and finalize the dimensions* of the current guidewire wheel design
- Successfully load guidewires of varying stiffnesses
- The wheel stand will stack three guidewire wheels
- Guidewires must be able to be removed from wheel while on stand
- The final market device must have biocompatible properties and be sterilizable

Background

Current Situation



Cath Clip [1]



Original Dispensing Tubing [2]



Wet Towel

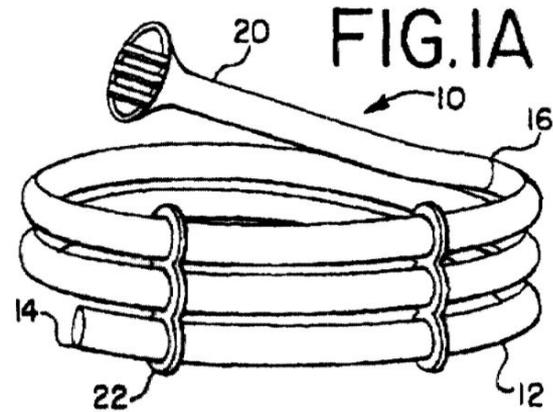
Competing designs

- Cath Clip



[1]

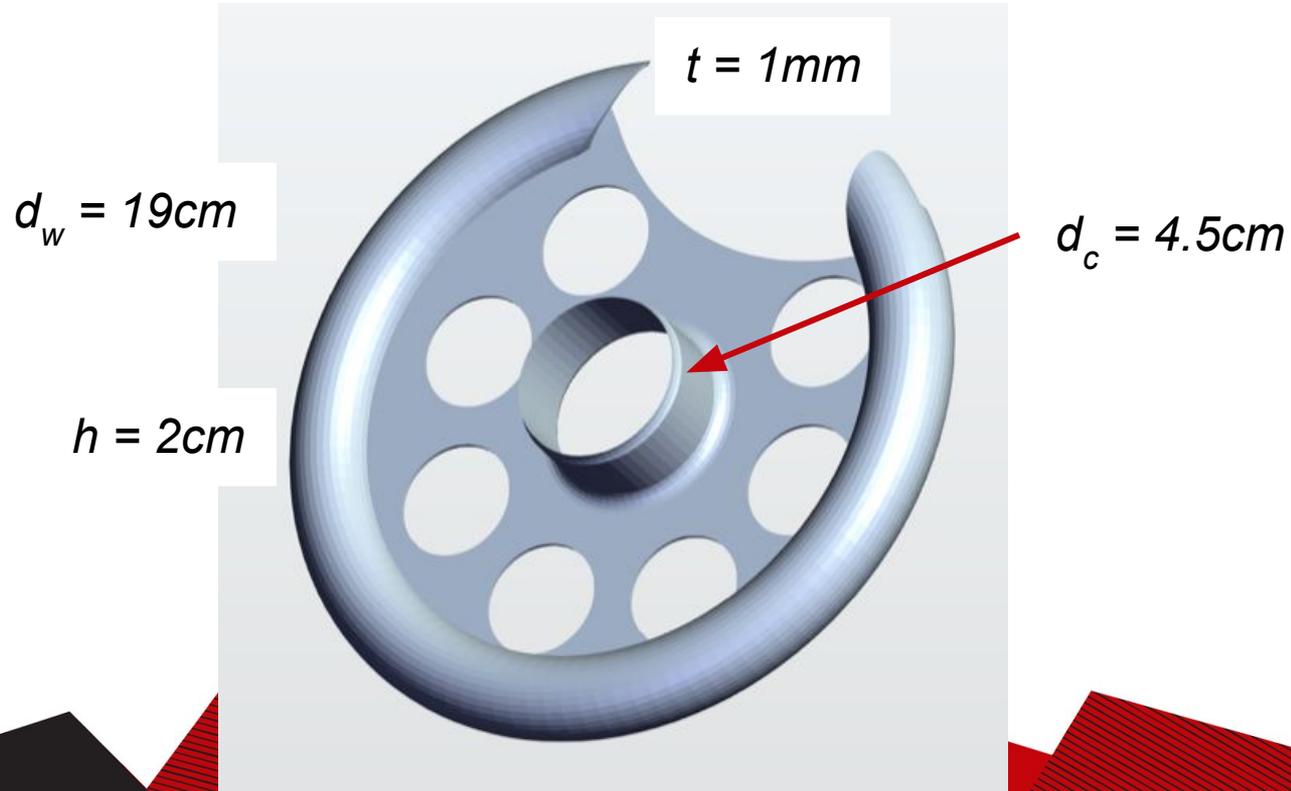
- Medical guidewire storage method and apparatus



[3]

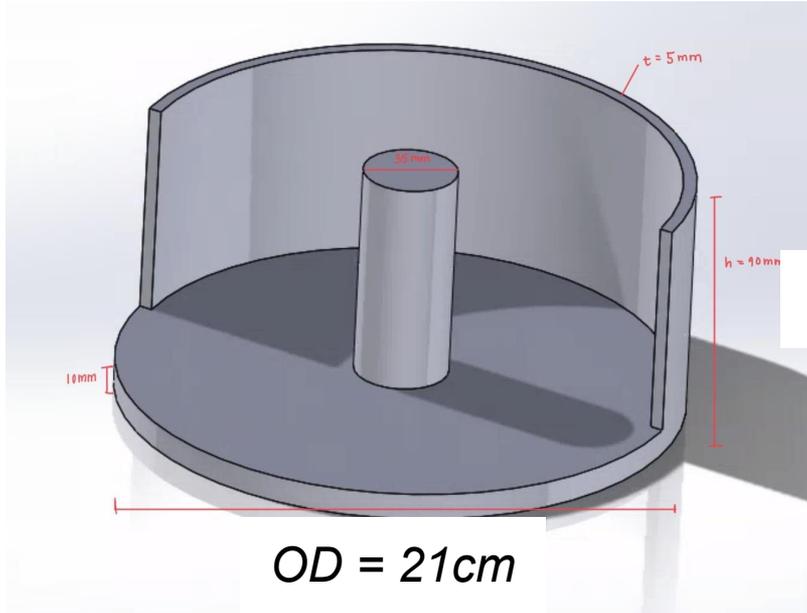
Addie 6

Current Wheel Design

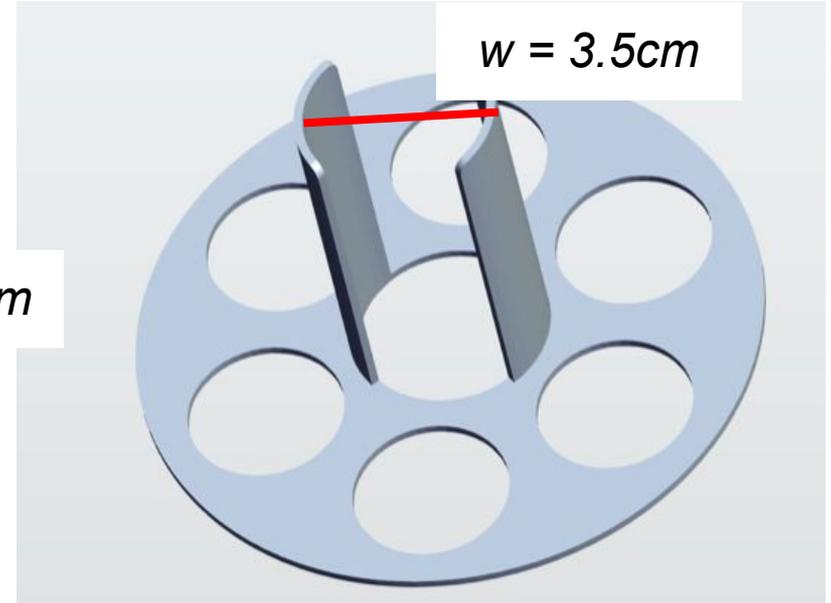


Design Ideas

UHold

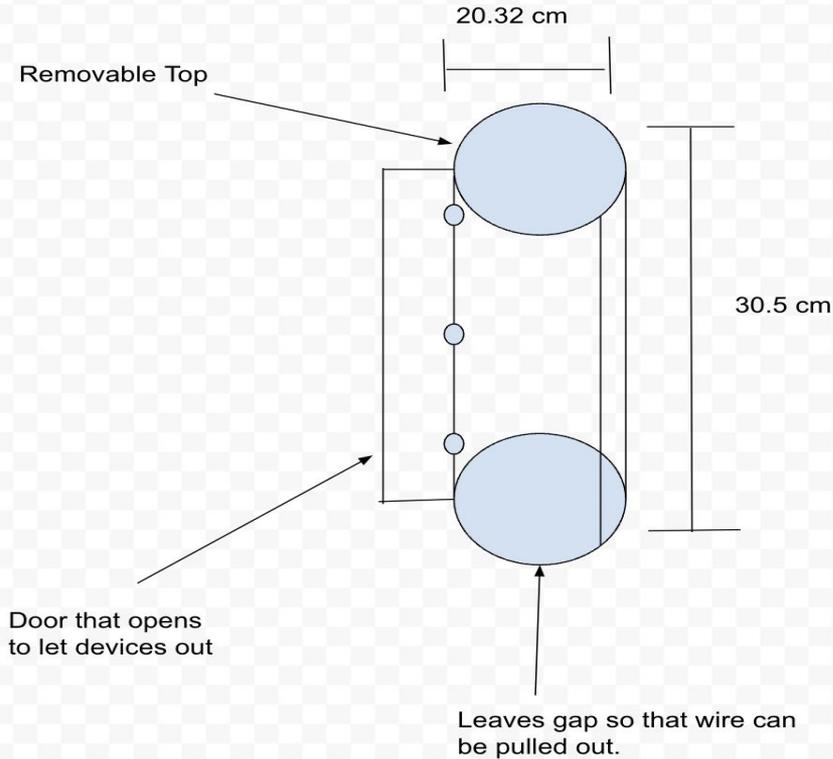


DYStand

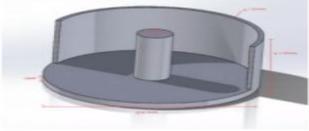
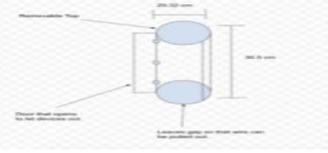


Design Ideas (cont.)

Door



Design matrix

Design	 UHold		 DYStand		 Door	
Efficiency (30%)	5/5	30	5/5	30	2/5	12
Learning Curve (25%)	4/5	20	5/5	25	3/5	15
Compatibility (20%)	4/5	16	5/5	20	3/5	12
Durability (15%)	5/5	15	3/5	9	3/5	9
Safety (10%)	5/5	10	3/5	6	3/5	6
Total for each design:	91		90		54	

Future Work

- Fluid stand design because it cannot be too bulky
- The wheel diameter will be finalized
- Complete quantitative testing and analysis of the wheel
- Ensure the stand device is suitable for wheel device

Acknowledgements

We would like to thank our client, Dr. Dai Yamanouchi, and our advisor, Dr. Colleen Witzenburg, for their support and guidance throughout this project.

References

- [1] “Dropped and damaged devices? Cathclip can help.,” CathClip. [Online]. Available: <https://www.cathclip.com/>. [Accessed: 22-Feb-2022].
- [2] “Guidewire & Catheter Accessories,” Qosina. [Online]. Available: <https://www.qosina.com/vascular-access-guidewire-catheter-accessories#gref>. [Accessed: 22-Feb-2022].
- [3] “EP1145730A1 - Medical Guidewire Storage Method and apparatus,” Google Patents. [Online]. Available: <https://patents.google.com/patent/EP1145730A1/en>. [Accessed: 22-Feb-2022].