1. **Purpose**
   1.1. The purpose of this document is to outline the procedure for the fabrication of mandible mounting setup. This setup will be used to test a cooperative robotic workflow for a Bilateral Sagittal Split Osteotomy.
2. **Equipment/Software**
   2.1. Drill
   2.2. Drill bits
   2.3. FDM 3D printer
   2.4. Metric Allen wrench set
   2.5. Pliers
   2.6. Wire cutters
   2.7. Anspach EG1 Dill
   2.8. Fluted Router Bit 1.4mm x 12.8mm or similar
3. **Materials**
   3.1. ABS Filament
   3.2. Disposable Reflective Marker Spheres – Screw Type
   3.3. M2 nuts X4
   3.4. M2 x 12 socket head screw X4
   3.5. M3 x 12 socket head screw X4
   3.6. M3 x 20 socket head screw X2
   3.7. M3 x 30 socket head screw X1
   3.8. PLA Filament
4. **Procedure**
   4.1. Printing Components
   4.1.1. FDM print the Mandible Mount in PLA.
   4.1.2. FDM print the Anspach Adaptor in ABS.
   4.1.3. Open Fusion 360 and import the Mandible Mount Offset file into the mandible phantom file.
   4.1.4. Use the Move tool to position the mandible how it would be when mounted. See Figure 1 for reference.

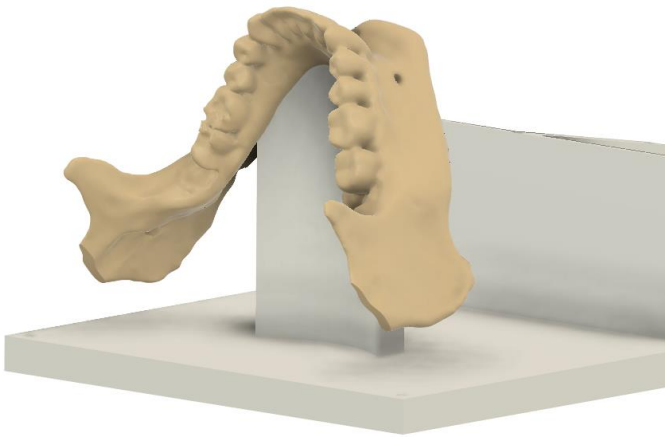

Figure 1. Mandible position on mount.

4.1.5. Use the Combine tool to subtract the Mandible Mount Offset from the mandible.

4.1.6. Follow the Mandible Phantom Creation procedure for the remainder of the phantom fabrication.

4.2. Post Processing

4.2.1. Use wire cutters to trim off all excess support material from the mandible phantom. Especially be sure to clear off all excess material on the mating surface with the mounting plate.

4.2.2. Using a drill and a set of drill bits, ream out the holes in the mandible phantom until the M3 x 30 socket screw can freely pass through the 3 holes.

4.2.2.1. Make sure to slowly work up in drill bit size as to not fracture the mandible.

4.2.3. Do the same operation on the holes in the Anspach Adaptor until the M2 screws can freely pass though the 4 holes.

4.3. Assemble Components

4.3.1. Insert the 4 M2x12 screws through the holes in the Anspach Adaptor.

4.3.2. Place the M2 nuts on the ends of the screws.

4.3.3. Slide the adaptor over the Anspach as shown in the figure below.

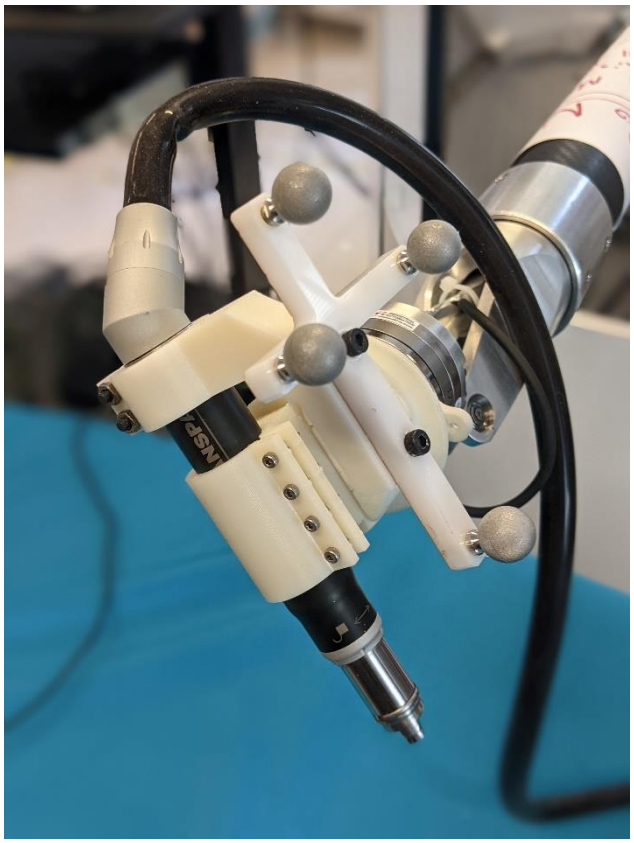

Figure 2. Anspach Adaptor for Galen.

4.3.4. Use an Allen wrench and pliers to tighten the screws until the Anspach cannot move in the adaptor.

4.3.5. Take 4 M3x12 screws and break off the socket heads using wire cutters and pliers.

4.3.6. Using pliers, insert the 4 headless screws halfway into the Mandible Mount with the removed socket end facing up.

4.3.7. Take 4 Disposable Reflective Marker Spheres and thread them onto the screws until they are snug. See figure below for reference.

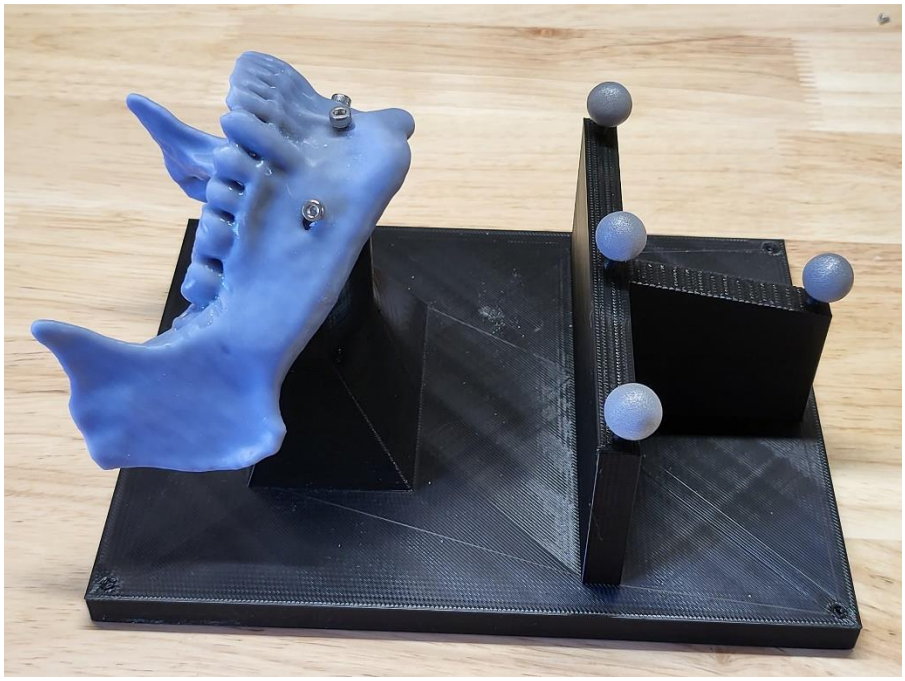

Figure 3. Mandible mounting setup.

4.3.8. Place the mandible phantom on the Mandible Mount as shown in the figure above.

4.3.8.1. If the mandible does not fit, use wire cutters to remove any remaining support material that could interfere with mating.

4.3.9. Using an Allen wrench, screw 1 M3x30 socket screw in the middle of the mandible and 2 M3x20 screw on either side of the mandible as shown in the figure.

4.4. Testing and Approval

4.4.1. Mandible Mounting will be tested by a physician using an Anspach EG1 drill and drill adaptor connected to the Galen robot. Physician will verify if the setup allows for proper execution of the procedure.

4.4.2. Signature documenting physician's approval will be recorded below.

Approval of mounting setup outlined in this procedure:

Name	Signature	Date

Name	Signature	Date