STELLATE GANGLION BLOCK PROCEDURE SIMULATOR
MOUNTING INSTRUCTIONS

KIT COMPOSITION

The kit for training in echo-guided Stellate Ganglion block procedures includes:

- A rigid pre-drilled base
- The spine and vertebral arteries block
- The trachea-thyroid block
- Neck arteries and veins
- Two collarbones
- A skin-like mould (divided into two halves) for casting the agar-based mixture to simulate soft tissues.

All the mentioned parts are illustrated in Figure 1.

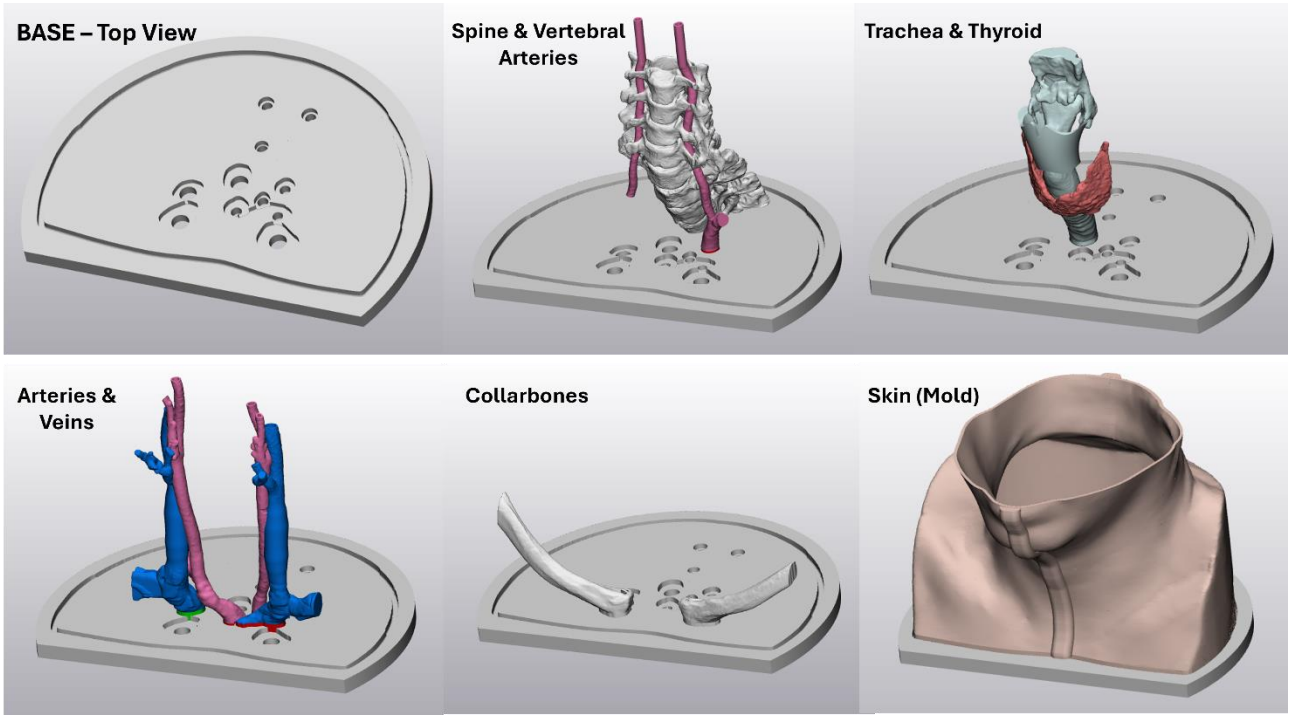

Figure 1: complete kit.

The anatomical structures are assembled and secured to the rigid base which is equipped with preformed slots and holes. Four M10-size (green) and seven M6-size screws are supplied for assembling – to be positioned in the bottom part of the base (Figure 2). We recommend tightening all screws only after all anatomical structures have been correctly positioned.

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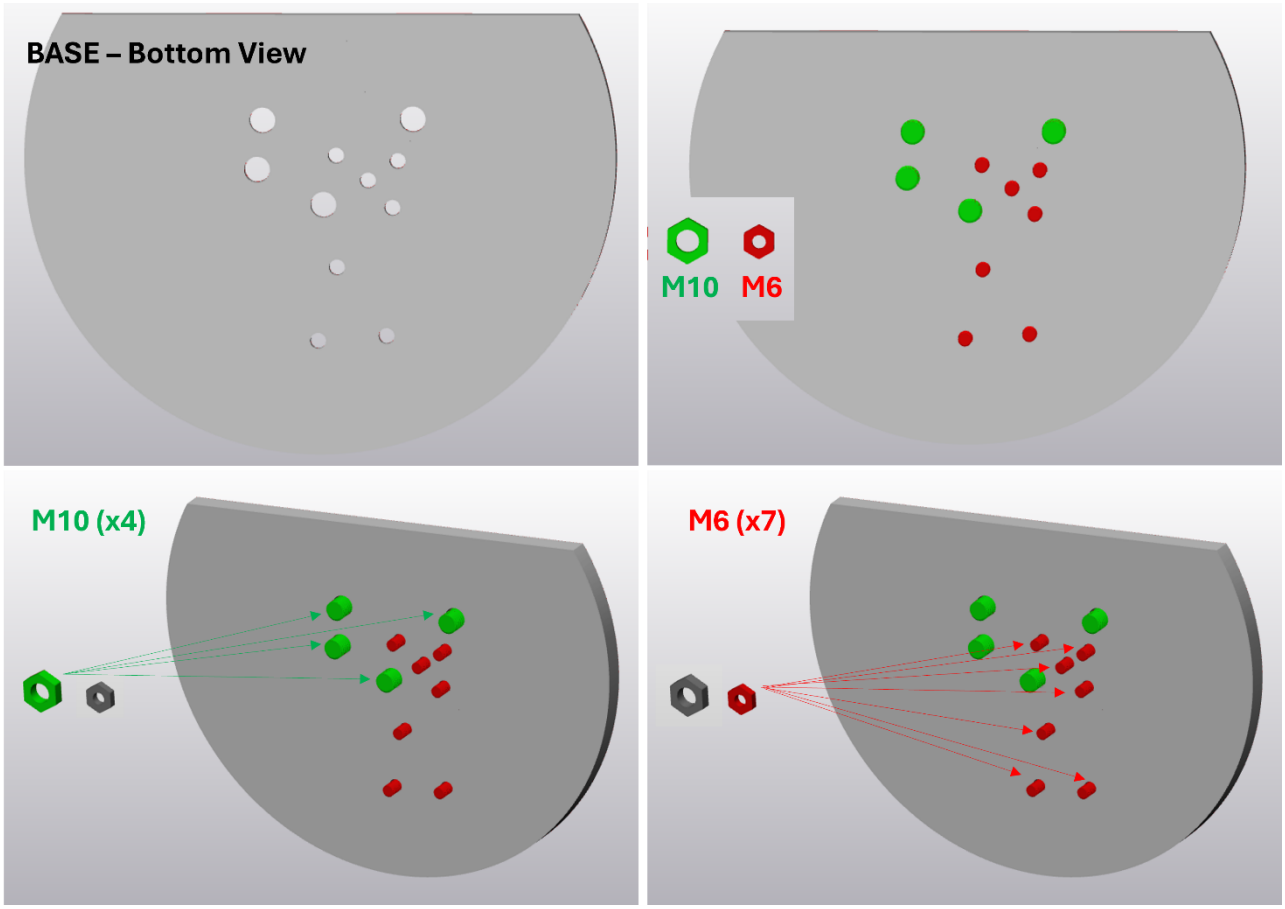

Figure 2: base bottom view with supplied screws.

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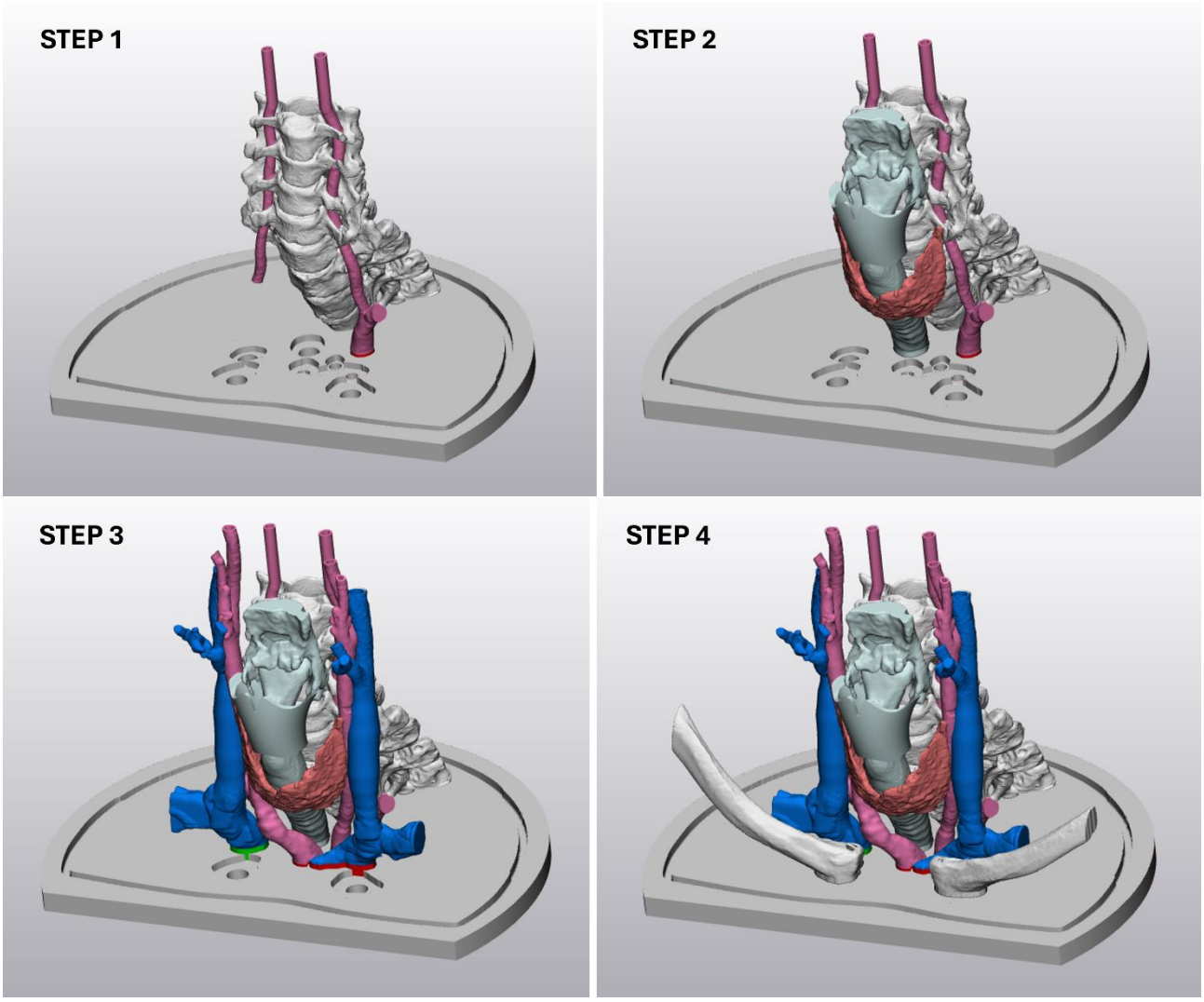
SIMULATOR ASSEMBLY INSTRUCTIONS

STEP 1: Place the spine and vertebral arteries block on the base and secure it with four M6 screws.
STEP 2: Attach the trachea – thyroid block to the base with an M10 screw.
STEP 3: Position the arteries and veins in the respective slots and fasten them at the bottom with three M6 and one M10 screw.
STEP 4: Position the collarbones in the front section of the base and secure them with two M10 screws.
Once all the structures are positioned, tighten all screws using pliers.



STEP 5: Connect the right vertebral artery with the brachiocephalic trunk using forceps. Any type of glue can be used. Using a quick-setting glue for convenience. To ensure a better seal, the joint can be covered with a thin layer of commercial silicone.
STEP 6: Place the two skin parts in the grooves on the base. Apply commercial silicone to all joints. Wait 12/24 hours before proceeding to the next step. Use scotch tape to hold the mould in place while the silicone is applied and dries.

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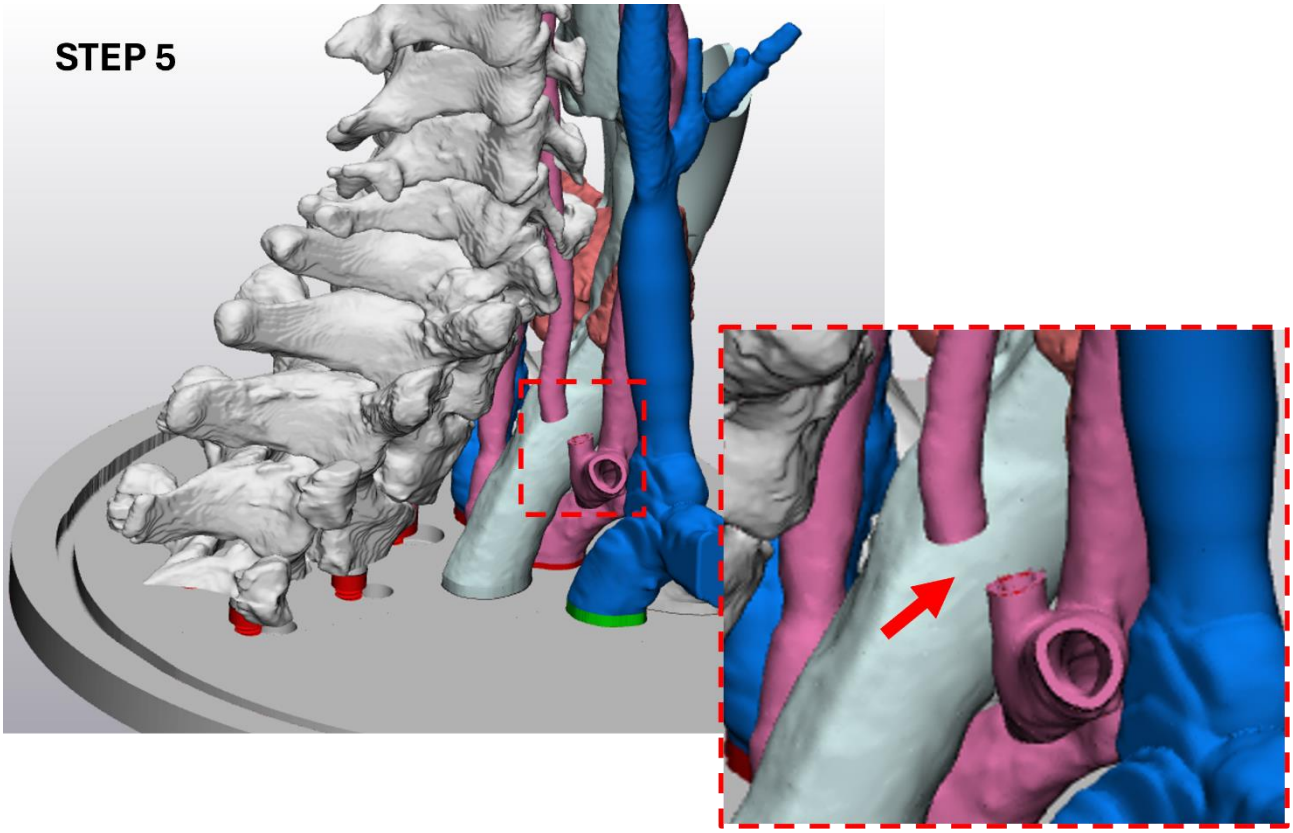
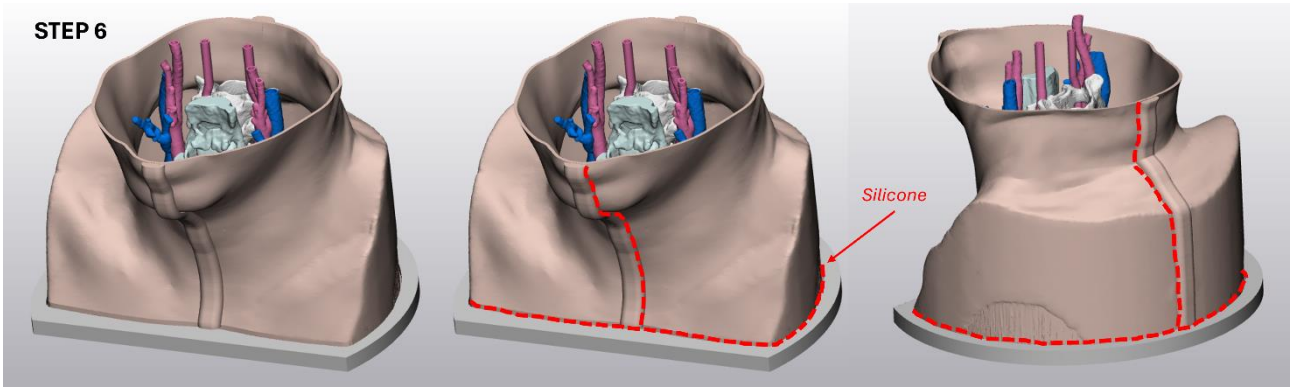
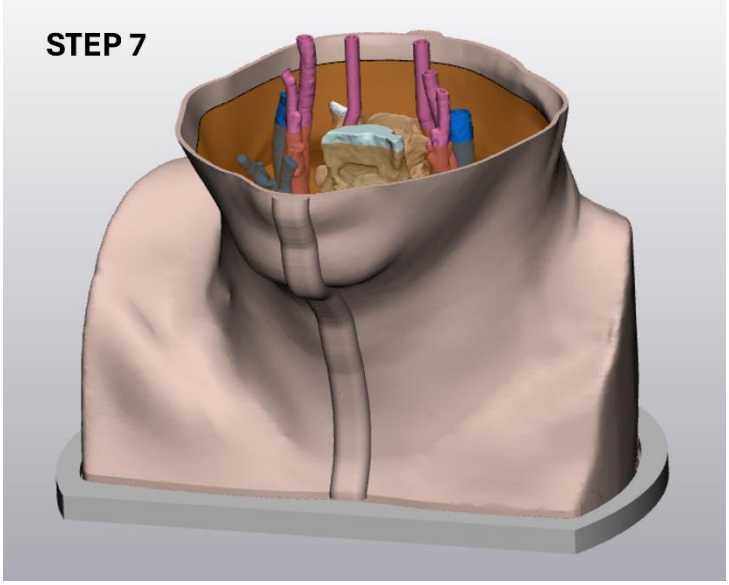
STEP 7: Prepare the agar-based mixture following the instructions in the Section "*AGAR-BASED MIXTURE RECIPE*". Once the agar-based mixture is ready wait until it reaches 60/70 °C to pour it into the mould. Fill the simulator up to the top of the trachea, paying attention that the solution does not enter in the blood vessels. After 2/3 hours, the simulator can be place into a refrigerator. Allow 12/24 hours for the mixture to set.







STEP 8: Once the agar-based mixture has solidified, carefully open the simulator and remove the skin. Use a box cutter to cut the silicone and gently remove the two halves of the mould. DO NOT remove the screws from the lower base: they must remain in place throughout the simulator's use to ensure stability.

STEP 9: To achieve optimal ultrasound visibility, use a syringe to fill the upper end of all blood vessels with water. Seal the ends with commercial silicone. Allow 2/4 hours for the silicone to dry (depending on the technical specification of the silicone employed) before handling the simulator. The simulator can be stored in the refrigerator for 48/72 hours.

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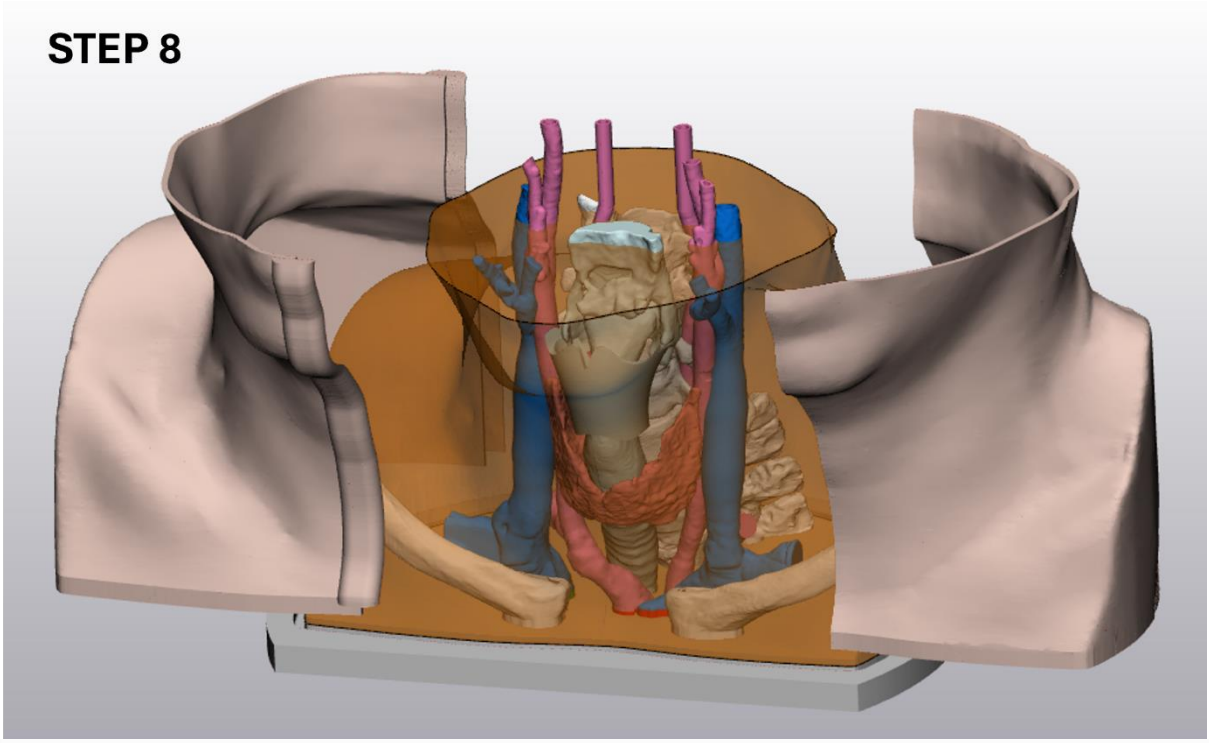

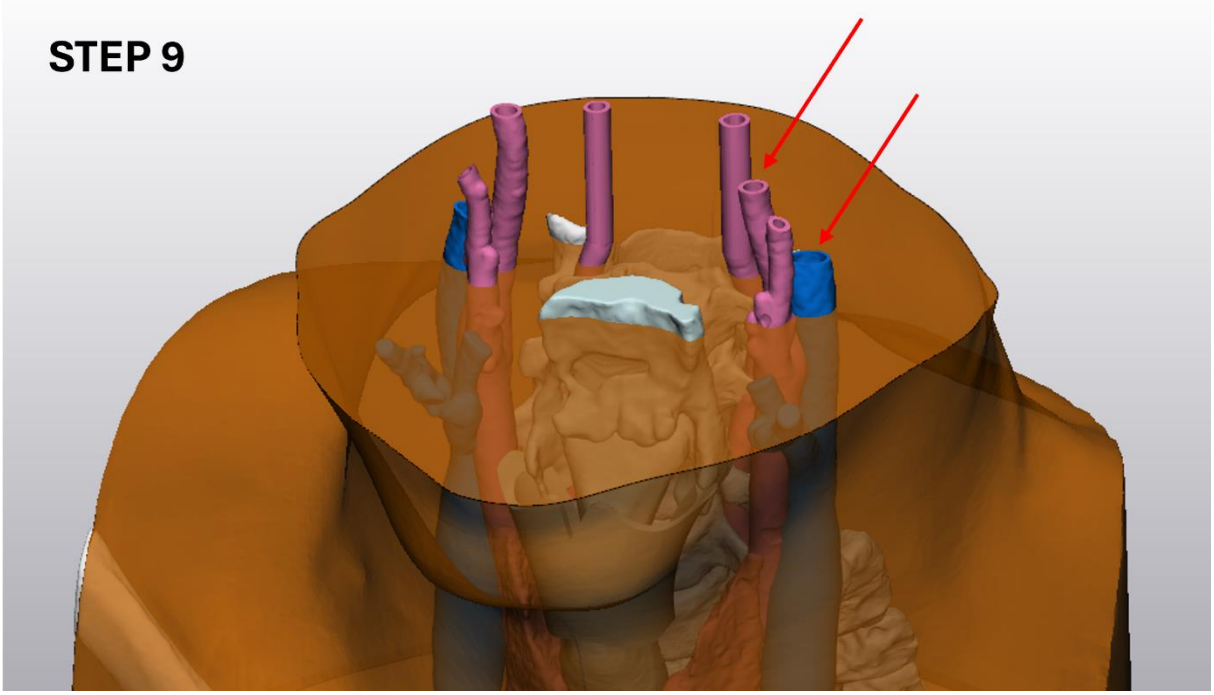

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SIMULATOR DISASSEMBLY INSTRUCTIONS

After 48-72 hours, the simulator may begin to develop mould, depending on whether chlorhexidine and alcohol were used in the mixture. Once training is complete, it is recommended to proceed with cleaning as soon as possible.

STEP 1: Remove as much of the agar-based mixture as possible using a spatula.

STEP 2: Once the inner structures are sufficiently exposed, loosen the nuts and carefully remove the anatomical structures from the base.

STEP 3: Clean all components using tepid water, an abrasive sponge, and handwashing soap. Remove possible traces of silicone.

STEP 4: Ensure all components are thoroughly dried before storing.

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AGAR-BASED MIXTURE RECIPE

MATERIALS & INSTRUMENTATION

- Water (3 L)
- Agar powder (150 g)
- Flour (18 g)
- Cooking thermometer
- Whisk
- Pot
- Jug/pouring vessel
- (Optional) Chlorhexidine (22,5 ml)
- (Optional) Denatured alcohol at least 90° (30 ml)

PROCEDURE

STEP 1: Mix cold water and agar gel in a pot, stirring with a whisk until the agar is fully suspended in the water without clumps.

STEP 2: Bring the mixture to a boil, stirring periodically. Note: Do not boil water before adding the agar, as this will cause clumping.

STEP 3: Add the flour, taking care to avoid forming clumps. Stir until the mixture appears homogeneous.

STEP 4: (Optional) To extend the simulator's lifespan and delay mould formation, add chlorhexidine and denatured alcohol. Stir well.

STEP 5: Pour the mixture into a jug or pouring vessel, and monitor the temperature with a kitchen thermometer until it reaches 60–70°C. The mixture is now ready to be poured into the mould.

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