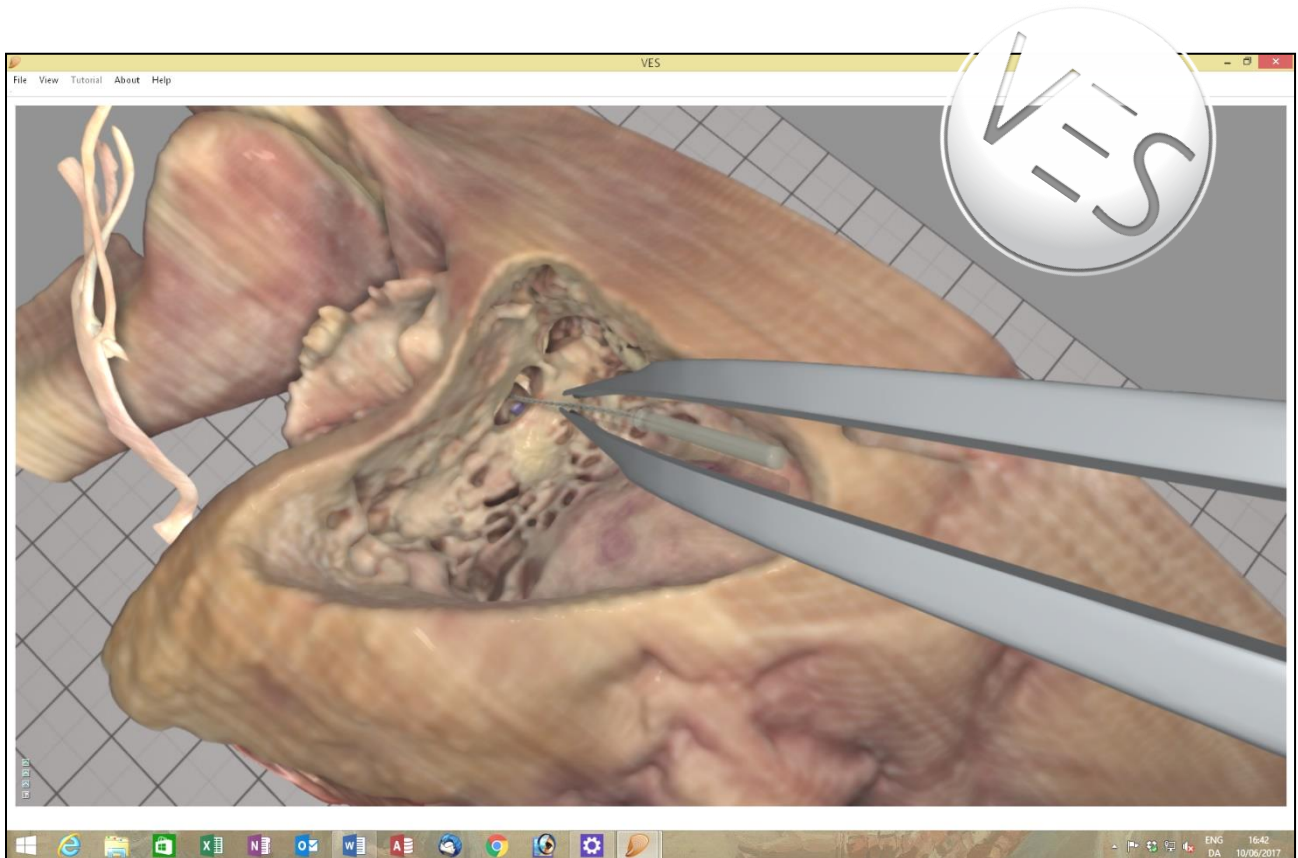


The Visible Ear Simulator Dissection Manual.



Stereoscopic Tutorialized Version 3.1, August 2017

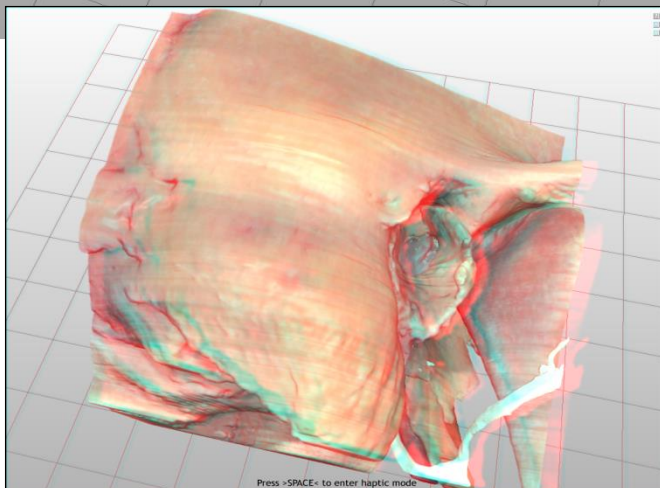
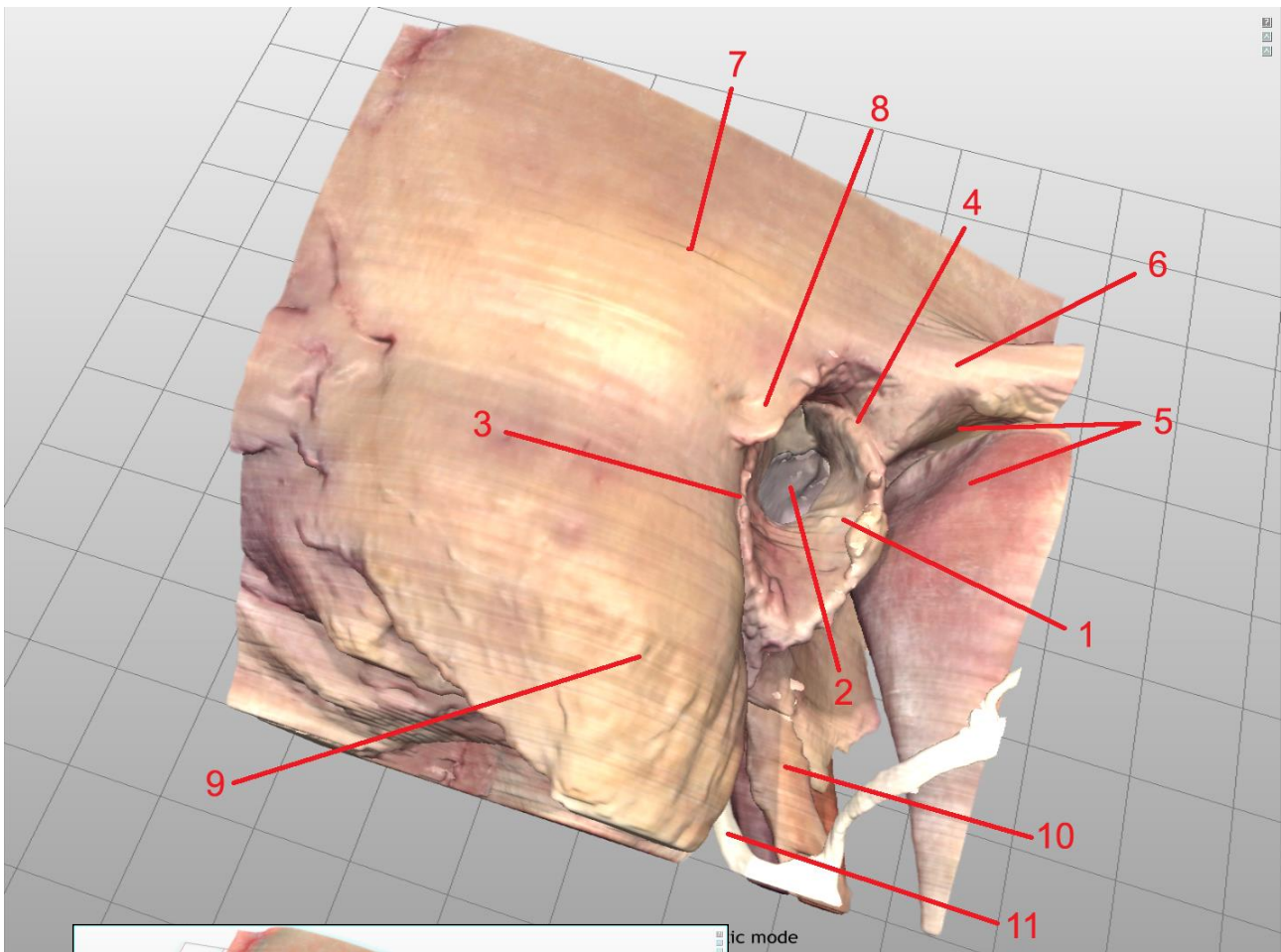


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Copenhagen, Denmark

<http://ves.alexandra.dk/>

Get to know your bone. Identify the:

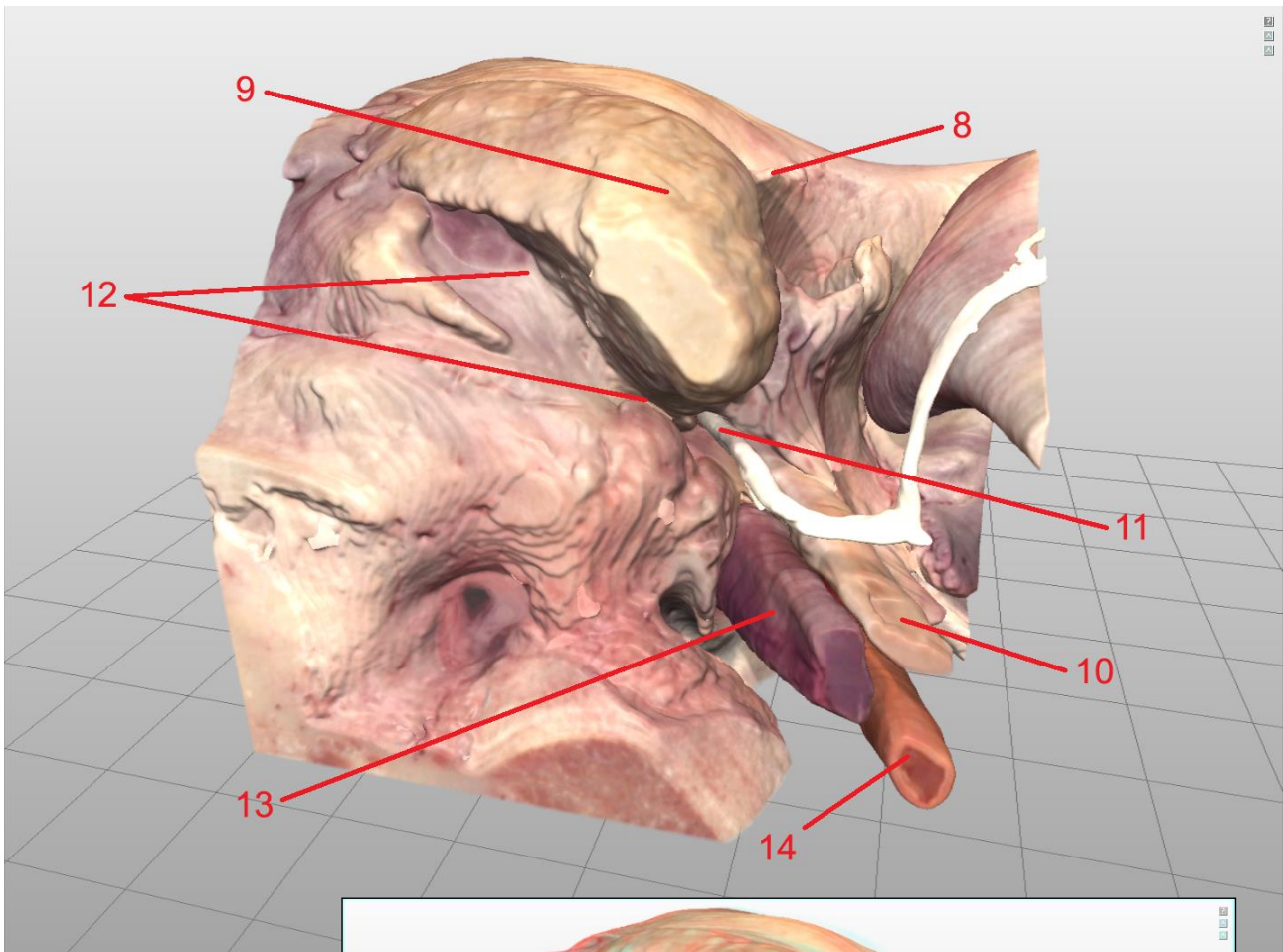
1. External auditory meatus
2. Tympanic membrane
3. Tympano-mastoidal suture
4. Tympano-squamous suture
5. Mandibular condyle/ -fossa
6. Root of the zygomatic arch
7. Temporal line/ suprameatal ridge (posterior extension of 6.)
8. Henle's spine
9. Mastoid process
10. Styloid process
11. Facial nerve



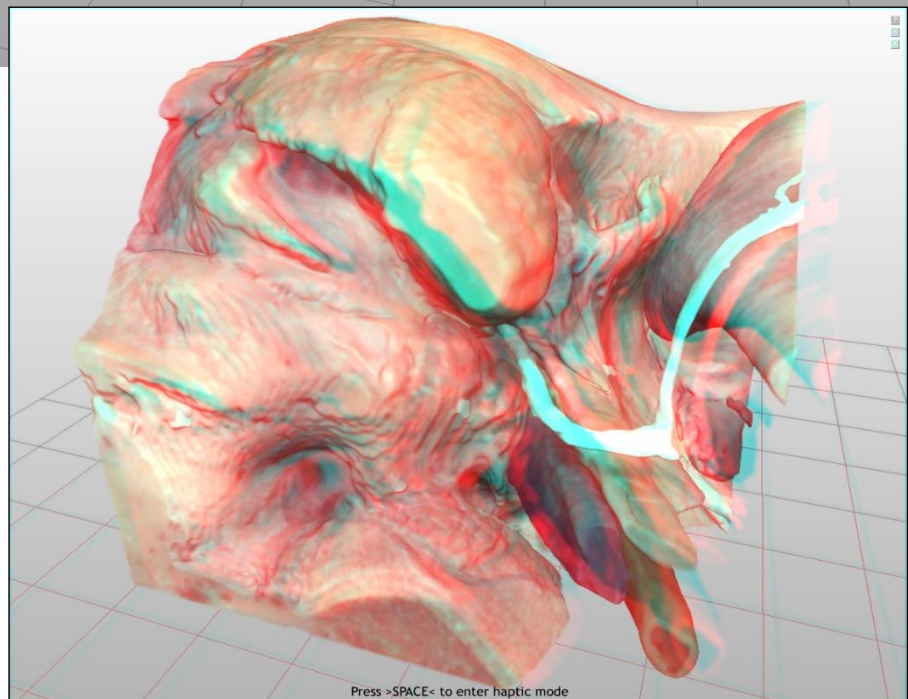
(VES 1.3 images)

Turn your bone upside down to identify the:

8. Henle's spine
9. Mastoid process
10. Styloid process
11. Facial nerve exiting the stylomastoid foramen
12. Digastric groove (picture the corresponding digastric ridge inside mastoid)
13. Jugular vein
14. Carotid artery



(VES 1.3 images)



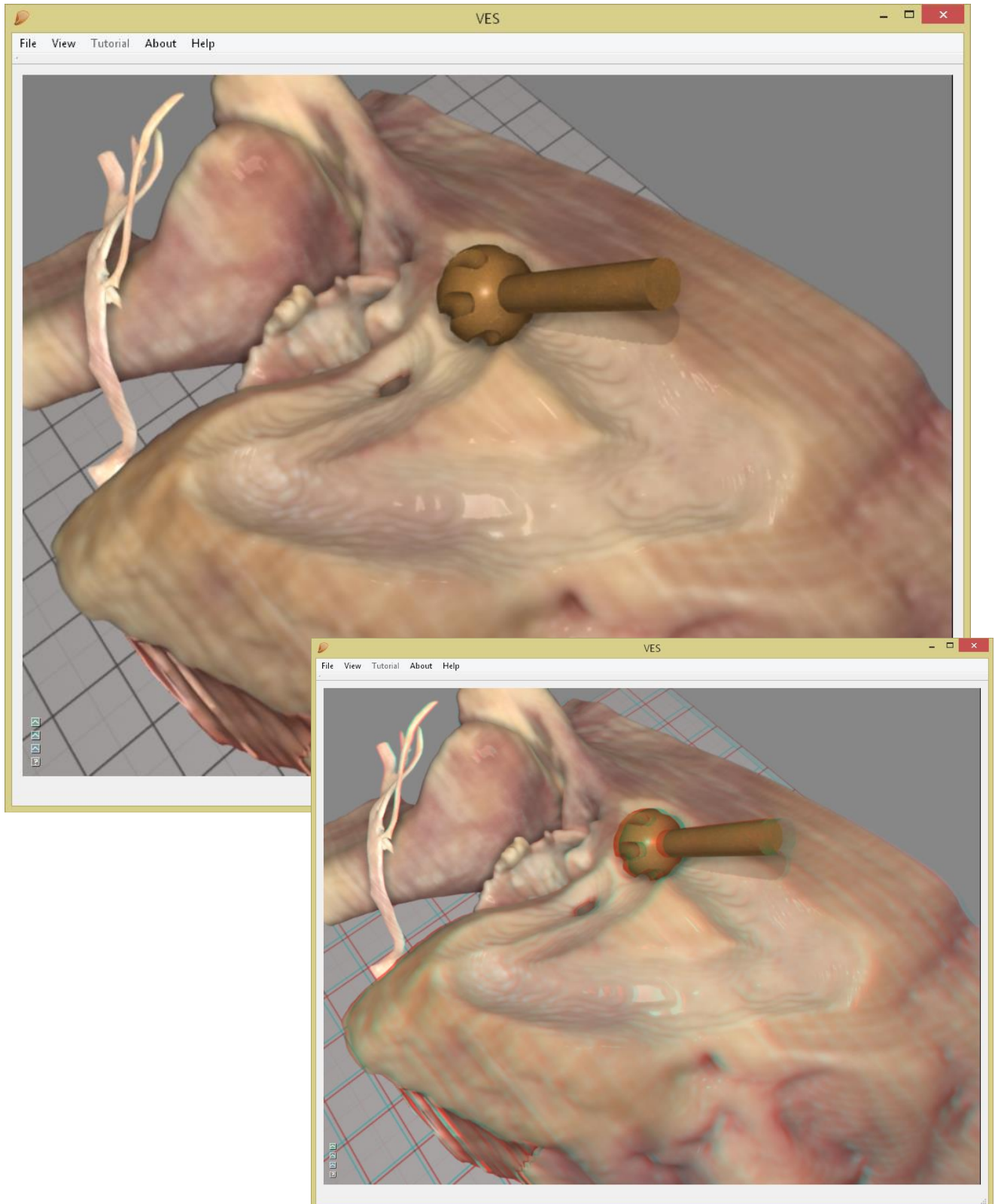
Drill your bone from A-Z (an anatomical mastoidectomy procedure)

Identify and cut out the future borders of the mastoidectomy: **(VES-A)**

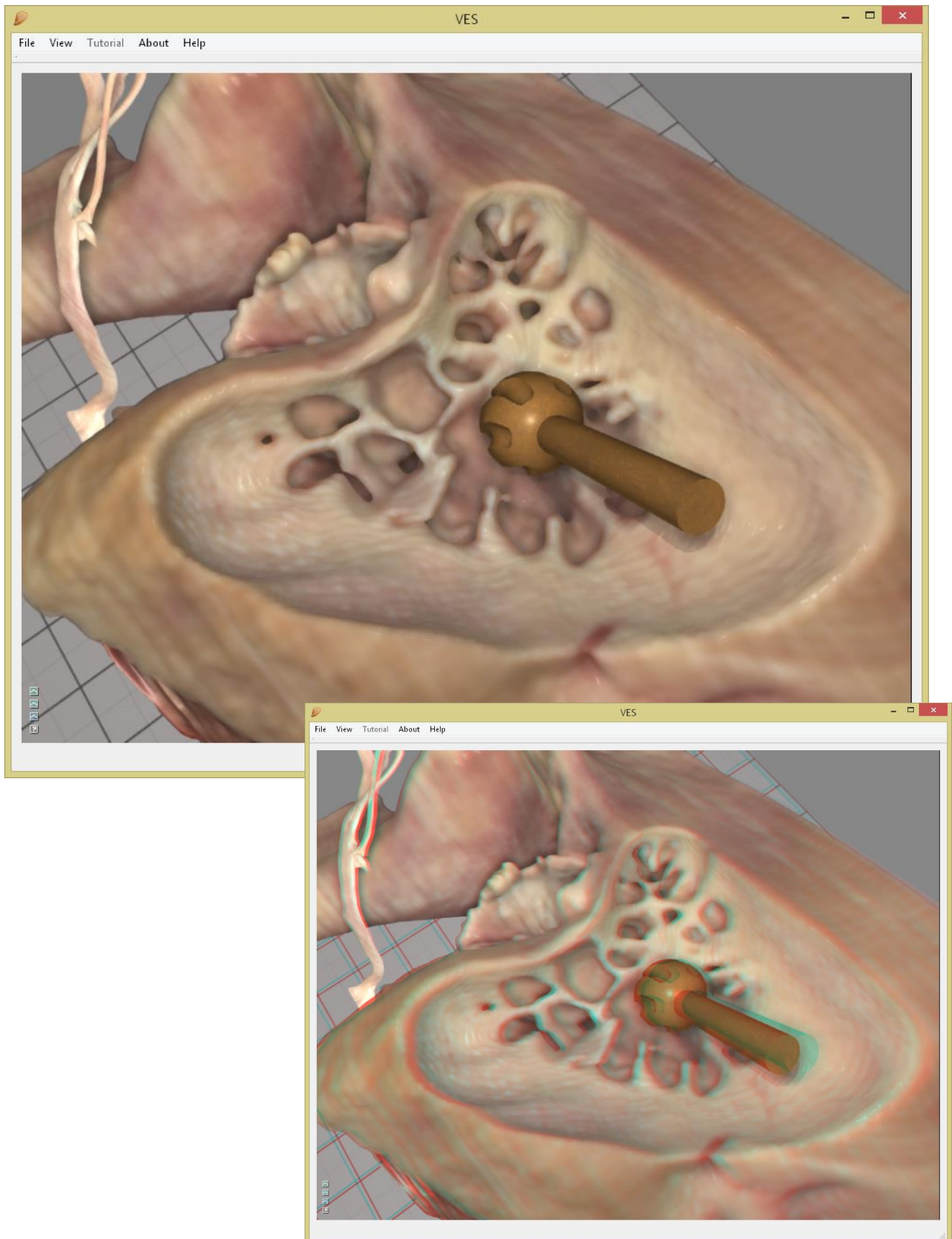
The posterior wall of the external auditory canal.

The temporal line, extending posteriorly from the zygomatic root.

The projection of the sigmoid sinus on the mastoid surface.

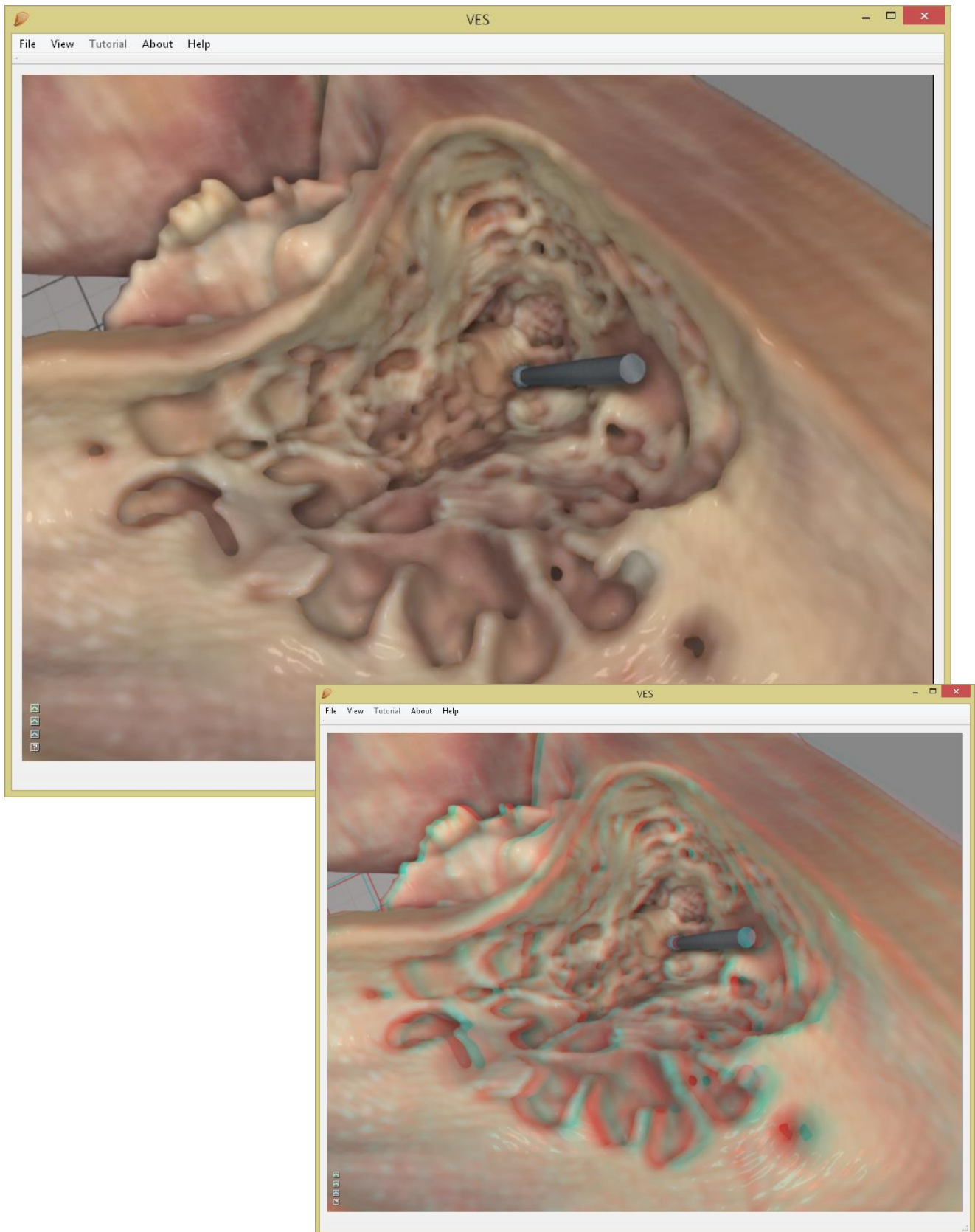


Remove the cortical bone systematically using a 6-7mm sharp drill to “saucerise” the developing cavity. Use safe strokes along the surface and keep moving so you never drill where you can't see. **(VES-A-B)**



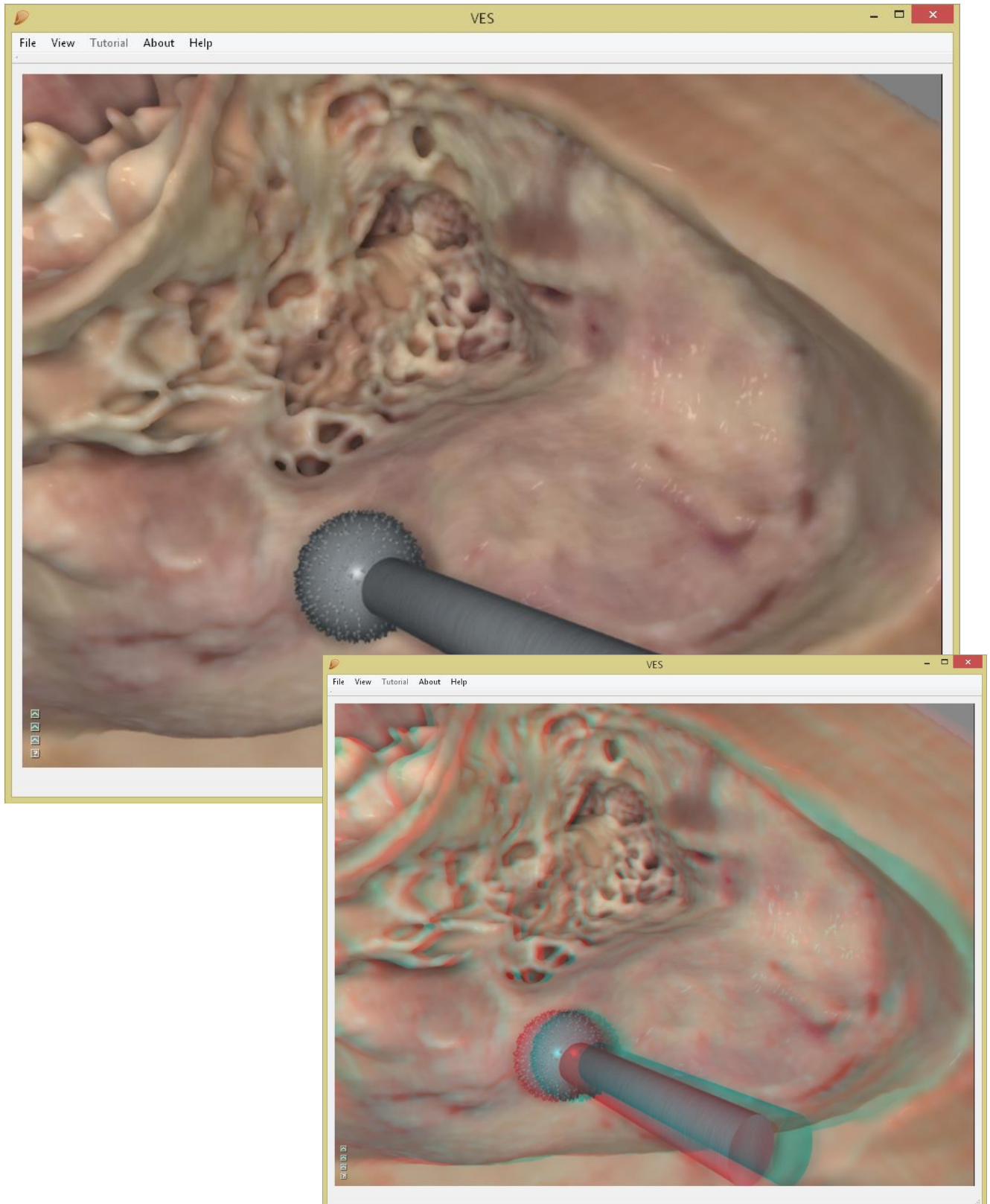
Follow the air cells at the zygomatic root down to the large antral air cells.
When you enter the antrum note the position and the depth of the lateral semicircular canal on the medial wall – but don't drill it! (**VES-B-D1**)

The drill is pointing at the lateral semi-circular canal in the mastoid antrum.

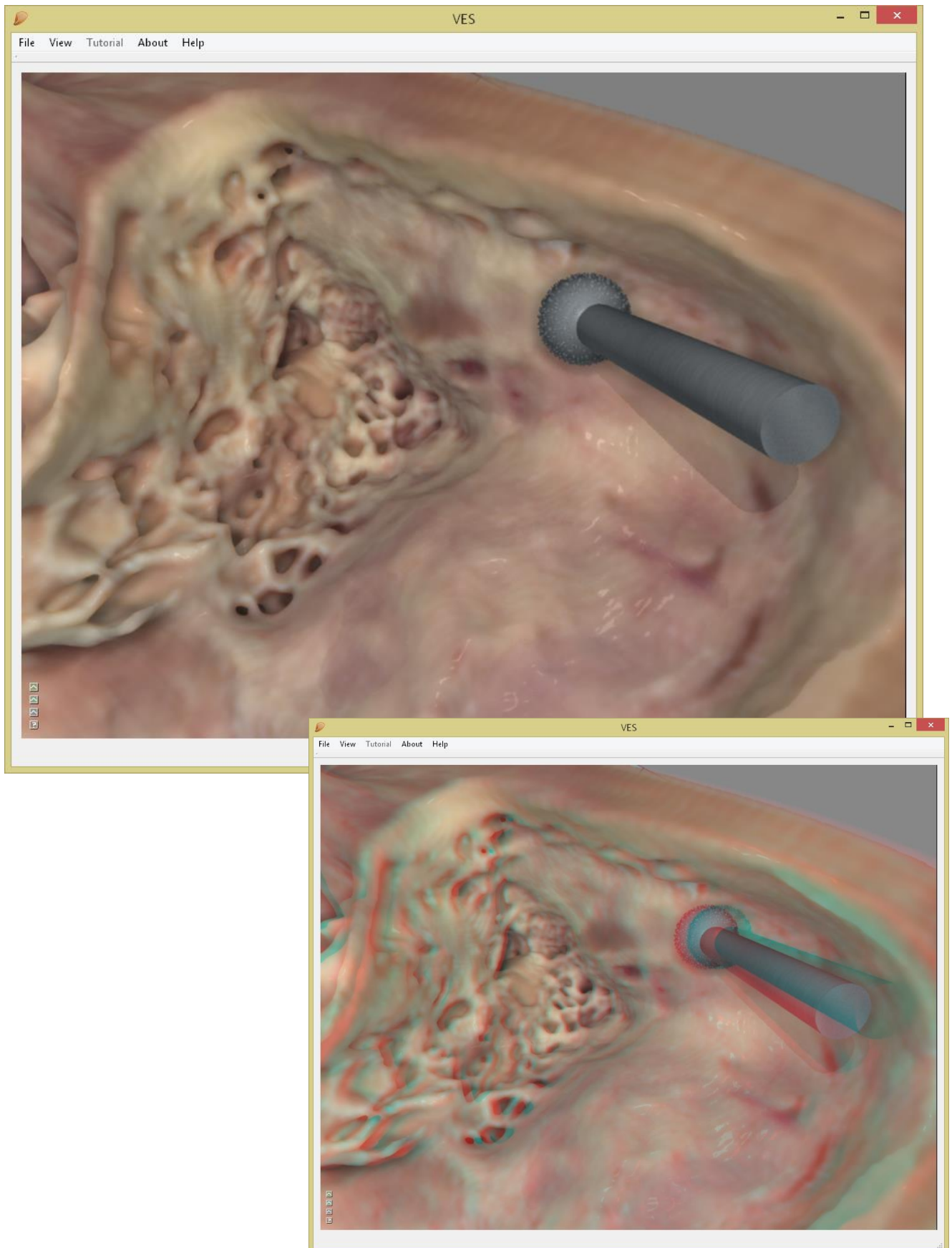


Clear out the air cells on the posterior part of the sigmoid sinus, on the dura of the mastoid attic and in the sino-dural angle. Look for the vascular texture of the dura visible through a thin layer of compact bone. Use a coarse diamond drill and never go beyond the bottom of the last air cell. **(VES-D-E)**

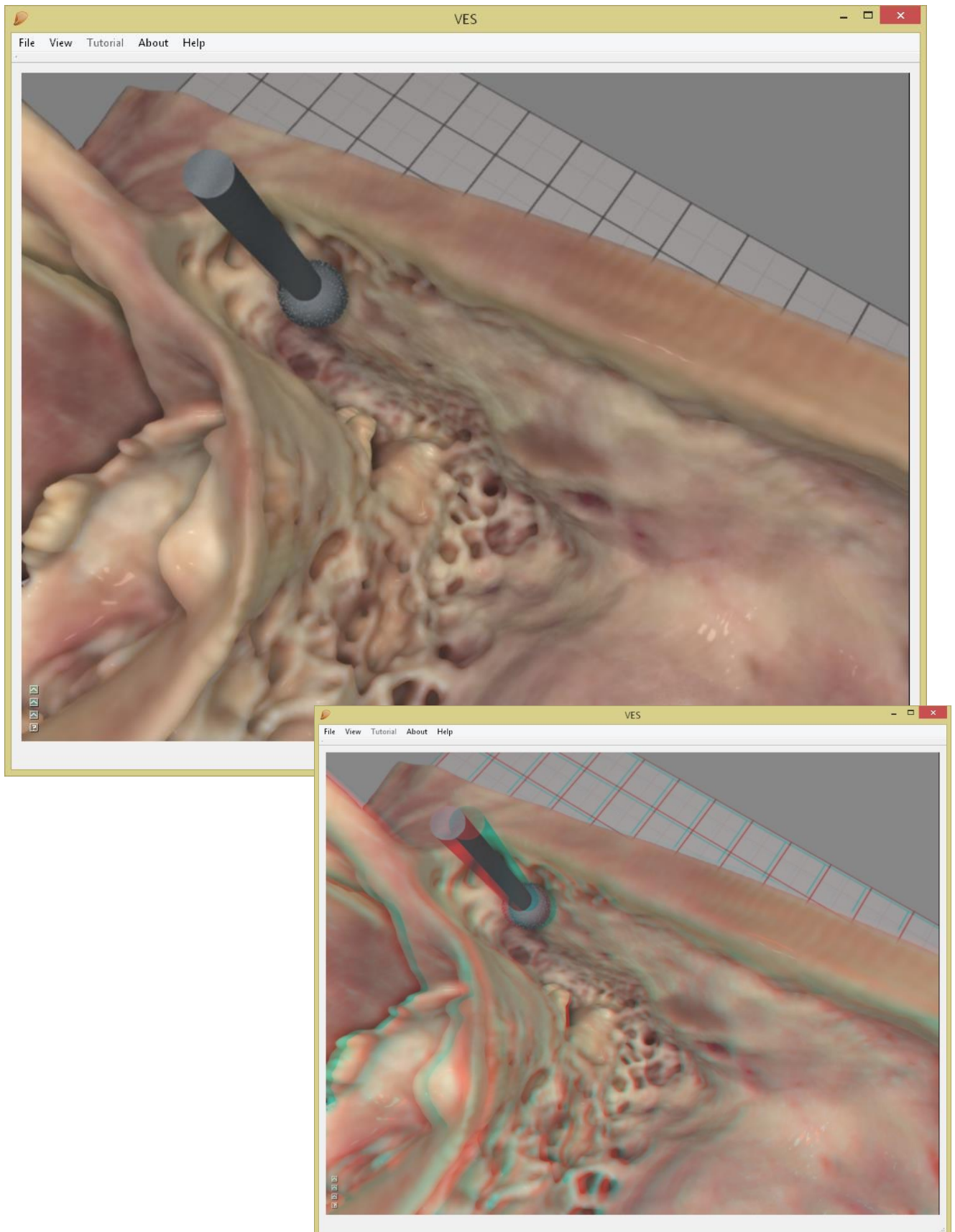
The drill is on the skeletonised sigmoid sinus. Further on up is the sino-dural angle, and then the dura on the medial fossa.



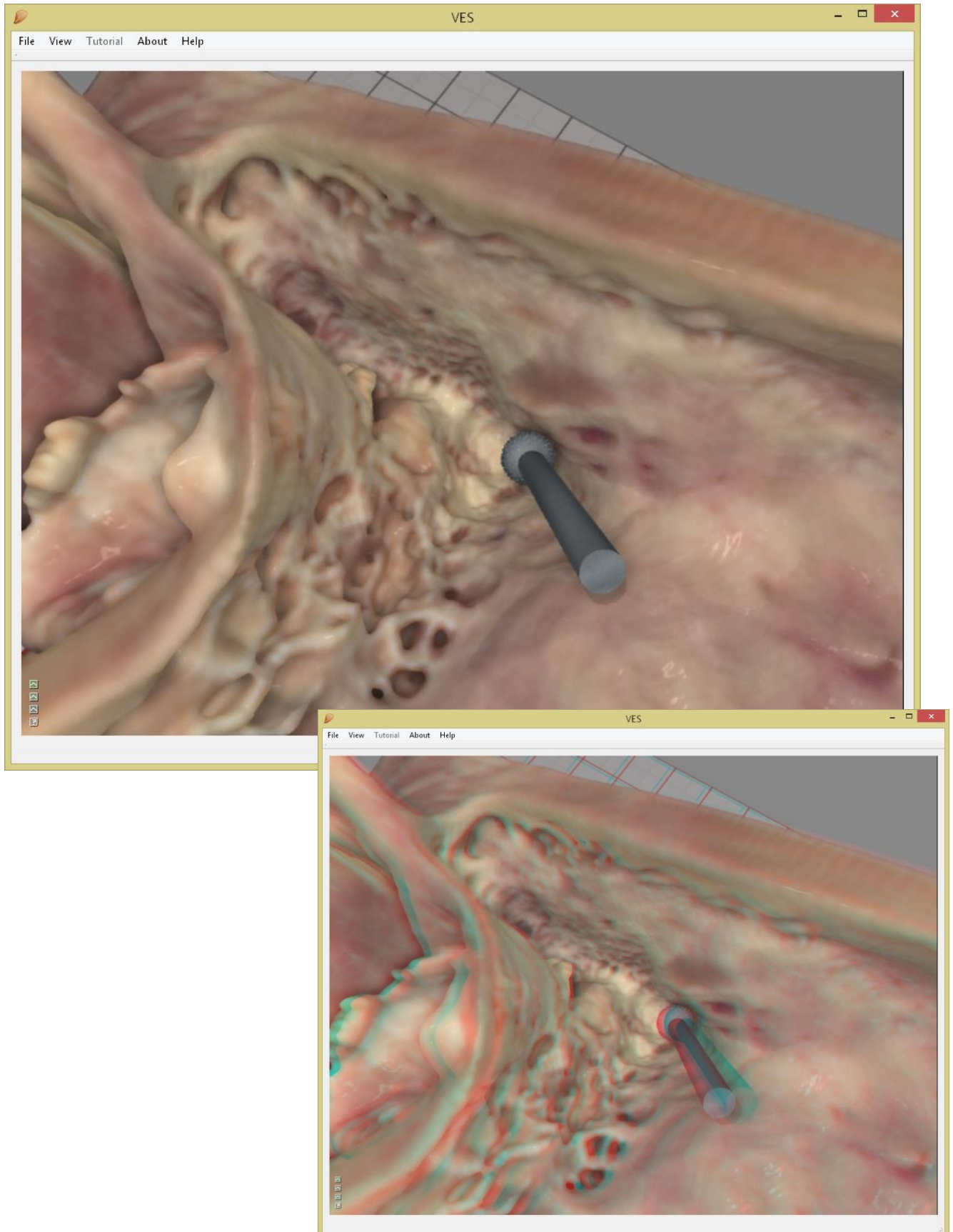
Remove the remaining air cells from the mastoid attic. Use a coarse diamond drill and never go beyond the bottom of the last air cell **(VES-E-F-G)**



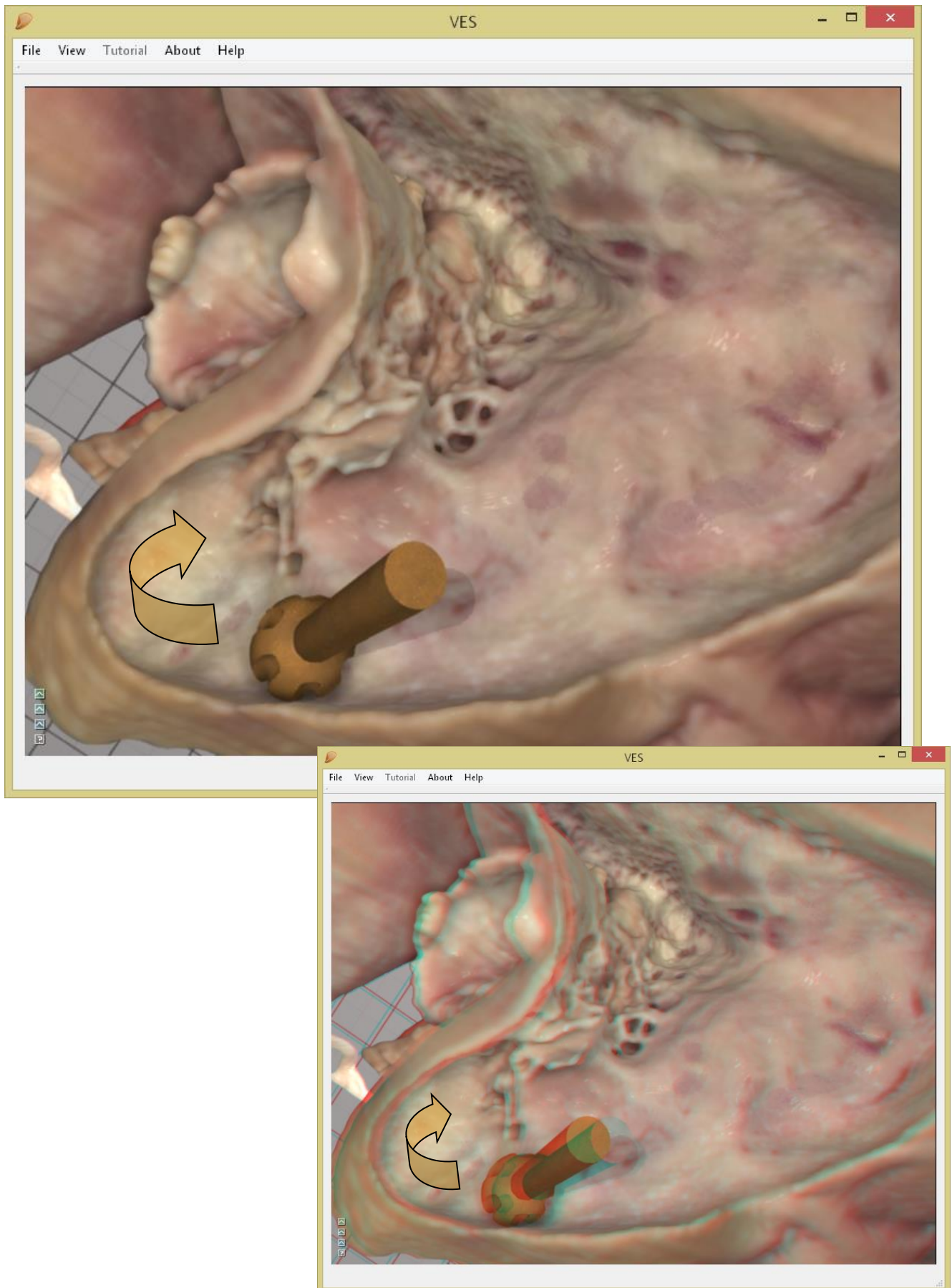
Proceed anteriorly to remove air cells from the tympanic attic. Be careful not to touch the incus and the head of the malleus, as they appear successively.



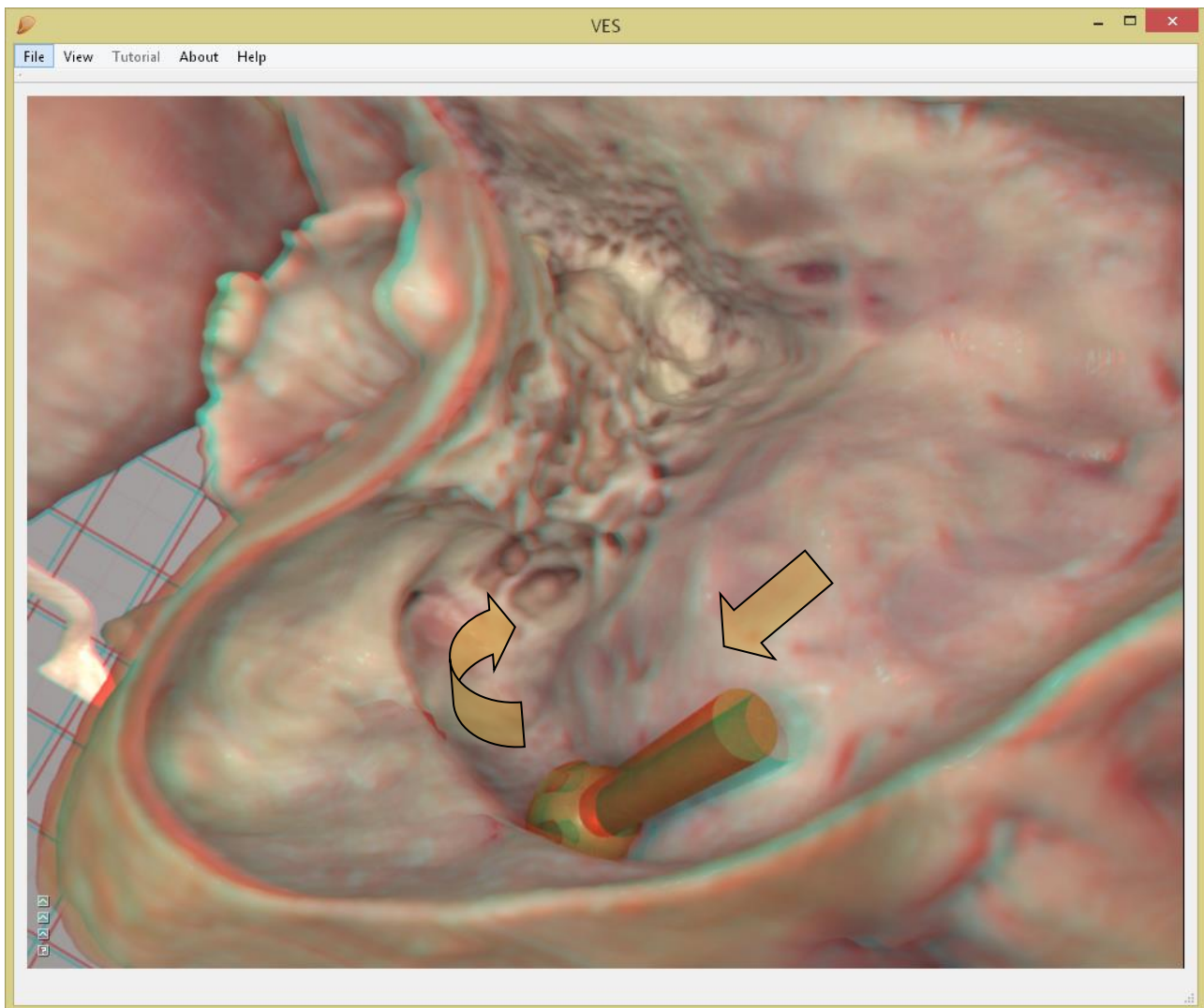
Skeletonise the dura along the entire superior face of your cavity. Use a fine diamond drill and leave a thin layer of bone on the dura. Look for the vascular texture of the dura.
(VES-G-H)



Exenterate the mastoid tip. (VES-H-I)



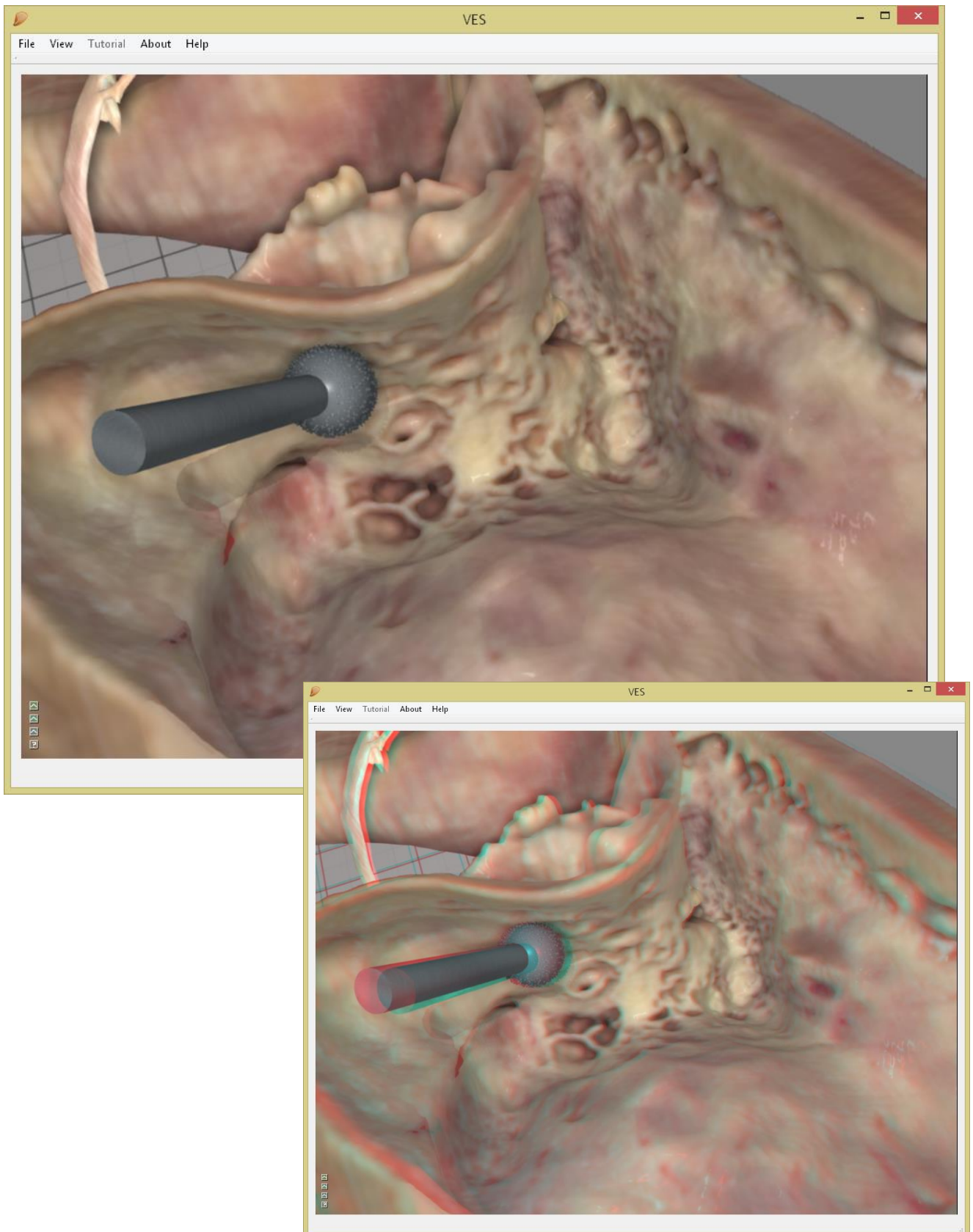
Next, skeletonize the sigmoid sinus as it courses anteriorly and inferiorly.



Identify the digastric ridge separating the two excavations (most likely you cannot avoid exposing part of the underlying digastric muscle). Note the direction of the stylo-mastoid foramen where the ridge terminates anteriorly

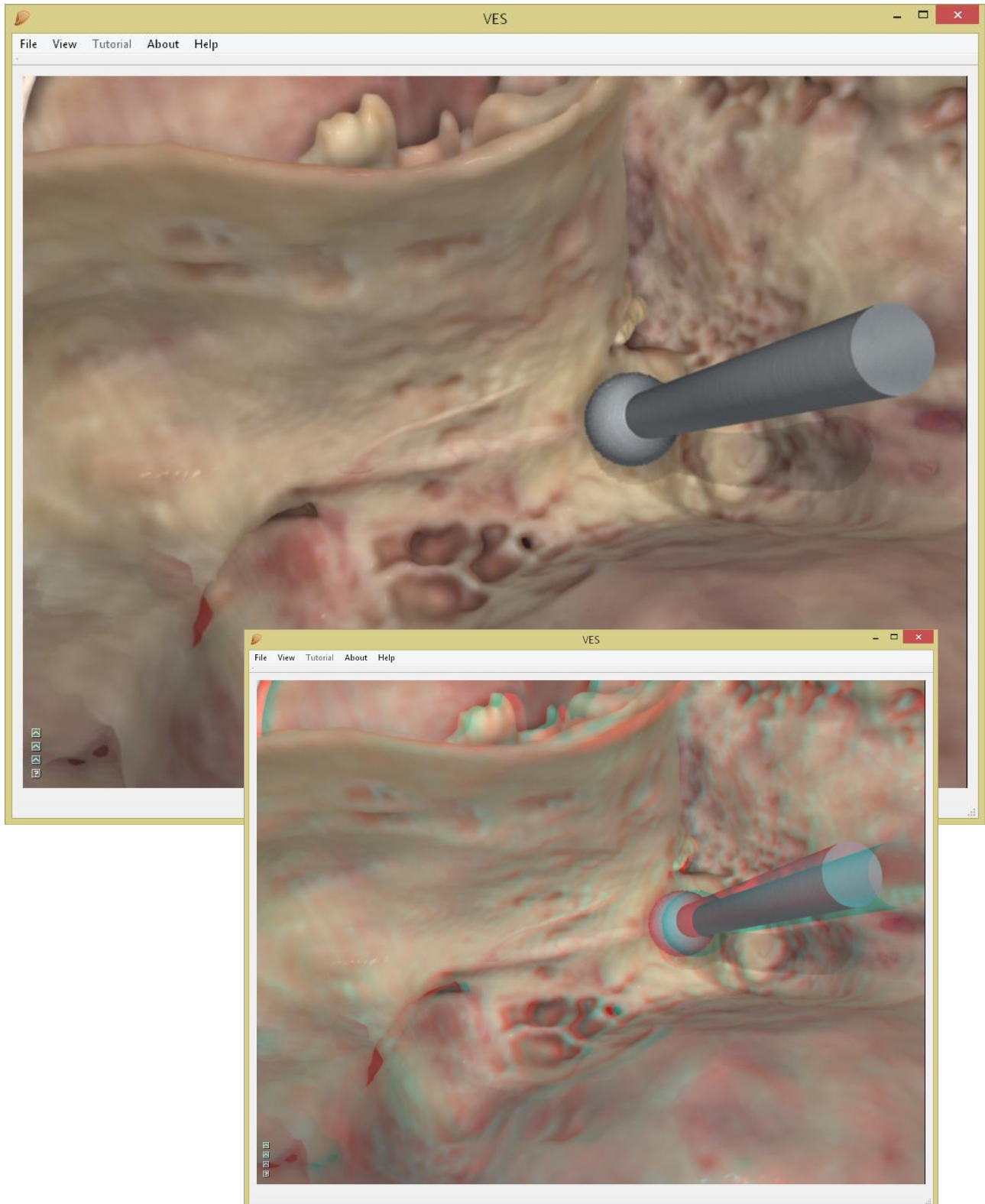
Clear the remaining large air cells from the posterior ear canal wall using a coarse diamond drill. **(VES-I-L)**

To anticipate the route of the facial nerve inside the posterior wall, use the incus (pointing to the cranial end of the vertical nerve portion), the lateral semicircular canal (indicating the depth) and the digastric ridge (pointing to the lower end of the vertical nerve portion) as landmarks.



Use light strokes and a 3-mm fine diamond drill to thin the posterior wall until the facial nerve and the tympanic chorda are just visible through a thin layer of bone. Look for the vascular texture of the nerves. Don't perforate the wall or expose the nerve sheath. **(VES-L-N)**

The first time you do this, you might want to use the “Bone Transparency” slider to increase transparency and get a preview of the nerves, but if you take your time the default “natural” transparency is all you need.



Use a 2-mm fine diamond drill bit to excavate the triangular bony plate framed by the (superior) incudal fossa, the (medial) facial nerve and the (lateral) tympanic chorda. Penetrate to enter the facial recess at the wider cranial end of the excavation, but leave a bony bridge (the Buttress) at the incudal fossa. **(VES-N-O)**

