CORRESPONDENCE

Anatomical correctness

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To the Editor,

I read with interest the article by Echaniz *et al.* regarding their anatomical study of an ultrasound-guided maxillary nerve block using a *suprazygomatic* approach.¹ Several aspects of their study warrant comment and clarification. As with any anatomical study, the correct identification of the structures seen or imaged is important. The images in their Fig. 3B, C, and D, all appear to be similar imaging planes with the transducer in the *infrazygomatic* area with the superficial hyperechoic structure with posterior acoustic shadowing posterior to the maxilla identified by these authors and others^{2,3} as the sphenoid bone. Nevertheless, imaging from this position shows parts of the mandible in the image, which also appears as a superficial hyperechoic structure with posterior shadowing. A simple way to discern that the structure is the mandible is to move the mandible while imaging. The greater wing of the sphenoid can easily be imaged with the transducer in the *suprazygomatic* area but not from the *infrazygomatic* area. When doing this, the lateral pterygoid plate of the sphenoid bone can be seen in the far field as a linear horizontal hyperechoic structure⁴ with the *infrazygomatic* approach.

It is important to understand the orientation of the imaging plane and the needle direction when using the *suprazygomatic* approach. The upper part of the ultrasound image represents superficial, inferior, and lateral structures while the lower aspect represents deep, medial, and superior structures. The needle is inserted in a medial, inferior, and posterior direction. Assuming that the linear

hyperechoic structure seen at the bottom of the image is the superior part of the lateral pterygoid plate, when the needle is seen in the imaging plane the tip must be inferior to this area and the needle would most likely anchor into the lateral pterygoid plate and not into the nasal bones (which form the bridge of the nose) as suggested by the authors.

Another aspect of the Echaniz *et al.* paper that needs clarification relates to the distance measurements from their elderly adult female cadavers that appear to be very similar to those reported by Sola *et al.*² in live infants; it is uncertain how these would correlate with a live adult.

Finally, one has to wonder if the use of ultrasound adds to the safety of the technique. The neural structures are not visible and the area is highly vascularized. While colour Doppler can be used to identify vessels, there is a considerable blind spot when using an out-of-plane ultrasound approach due to the interposition of the zygomatic bone. In addition, the maneuvers normally used to track the needle tip-transducer angulation, transducer movement, and needle angulation step-down technique are not effective. The authors used an 8–13 MHz linear transducer for their study. Nevertheless, as the technique largely depends on bony landmarks, and the soft tissue images are poorly defined, and an imaging depth of at least 3 cm is needed (to identify the lateral pterygoid plate), the use of a lower frequency curvilinear probe may produce better image quality in adults.

Conflicts of interest None.

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Editor's note The authors of the article: Can J Anesth 2020; <https://doi.org/10.1007/s12630-019-01481-x>, respectfully declined an invitation to submit a reply to the above letter due to limitations related to current pandemic conditions.

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