

## Letters to the Editor

## **e** Landmark of Ultrasound-Guided Trigeminal Block: Lateral Pterygoid Muscle

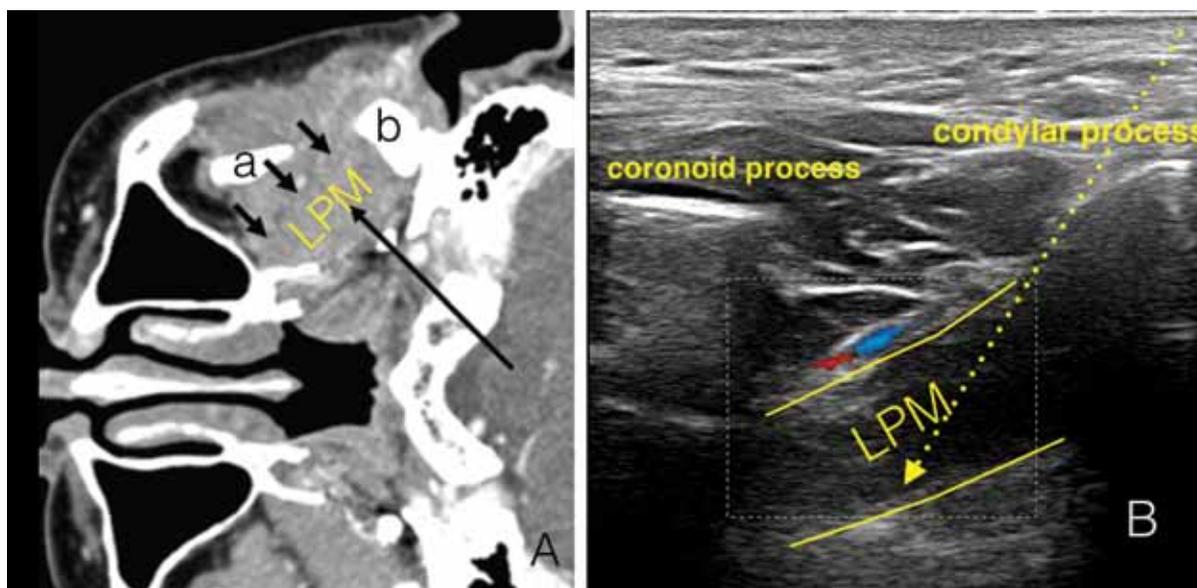
### **TO THE EDITOR**

I read with great interest the recent article by Antoun Nader and colleagues (1) and a similar technique present in another article (2). From an anatomical point, insertion into the lateral pterygoid muscle is on the lateral pterygoid plate and the origin is the mandible. From the computed tomography image (3), we can understand that the lateral pterygoid muscle can be detected by ultrasound between the condylar process and coronoid process of the mandible. So here we offer a corresponding image for the technique of ultrasound-guided trigeminal nerve block. In the ultrasound picture, we can identify the coronoid/condylar process of the mandible clearly as in the computed tomography scan. In between these 2 bony landmarks, there is a pulsating maxillary artery, which can be detected clearly on color Doppler. Beneath this artery is the lateral pterygoid muscle. While performing the ultrasound-guided injection, the

needle was advanced from lateral to medial and from posterior to anterior, just passing through the lateral pterygoid muscle while being careful not to damage the maxillary artery. We successfully used this alternative approach to treat trigeminal neuralgia by ultrasound guidance in an office setting.

Ya-Wen Chuang, MD  
Division of Nephrology  
Department of Internal Medicine  
Taichung Veterans General Hospital  
Taichung, Taiwan  
E-mail: colaladr@yahoo.com.tw

Chien-Hsing Chen, MD  
Division of Nephrology  
Department of Internal Medicine  
Taichung Veterans General Hospital  
Taichung, Taiwan  
E-mail: doctorbls@icloud.com



*Fig 1A. a: coronoid process of mandible. b: condylar process of mandible. LPM: lateral pterygoid muscle. 1B: Corresponding ultrasound picture of the computed tomography with a Esaote Mylab Class C and a 18-6 MHz liner transducer (Esaote S.p.A, Genova, Italy). Maxillary artery detected by color flow Doppler. Dotted line= needle trajectory*

## REFERENCES

1. Nader A, Bendok BR, Prine JJ, Kendall MC. Ultrasound-guided pulsed radiofrequency application via the pterygopalatine fossa: A practical approach to treat refractory trigeminal neuralgia. *Pain Physician* 2015; 18:E411-E415.
2. Nader A, Kendall MC, De Oliveira GS, Chen JQ, Vanderby B, Rosenow JM, Bendock BR. Ultrasound-guided trigeminal nerve block via the pterygopalatine fossa: An effective treatment for trigeminal neuralgia and atypical facial pain. *Pain Physician* 2013; 16: E37-E45.
3. Kang JH, Huh KH, Kho HS. Non-infectious myositis of the lateral pterygoid muscle: A report of four cases. *Int J Oral Maxillofac Surg* 2015; 44:226-228.

## Response:

We appreciate the comments by Drs. Chen and Chuang. The authors are in agreement with our previous investigation regarding the technique of ultrasound-guided trigeminal nerve block (1). We agree that the lateral pterygoid muscle can be detected by ultrasonography between the condylar process and the coronoid process of the mandible. However, we believe the ideal location for injection is more cephalad than where the authors have depicted in their corresponding computed tomography image.

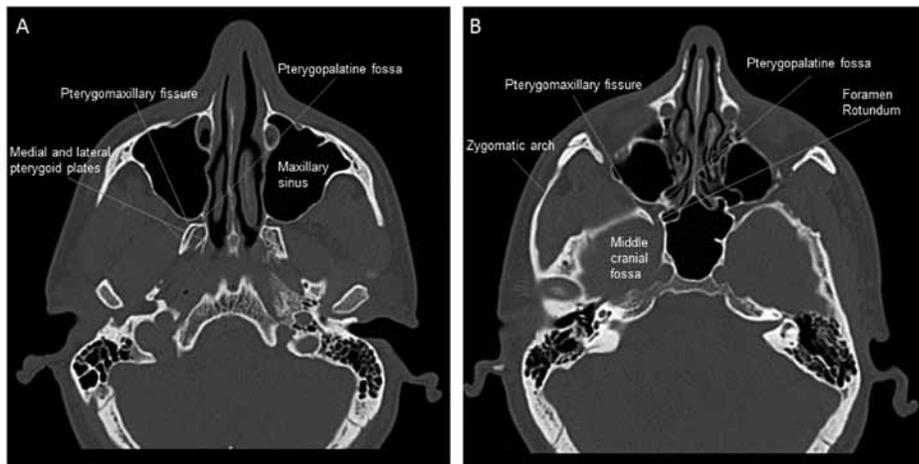
With the transducer probe positioned just below the zygomatic bone superior to the mandibular notch, the angle of the probe should be pointed cephalad toward the pterygopalatine fossa. This angle position allows the injectate to be placed deep into the superior head of the lateral pterygoid muscle along the pterygomaxillary fissure into the pterygopalatine fossa (Fig 1A) to reach the foramen rotundum (Fig 1B). As we reported previously, this needle trajectory achieved complete sensory analgesia in V1, V2, and V3 distribution within 15 minutes of the injection in all patients and prolonged good or excellent pain relief in 66% of

patients (2).

We are pleased to hear that other practitioners are achieving success to treat trigeminal neuralgia and atypical facial pain with this radiation and magnetization-free approach.

Antoun Nader, MD  
 Professor of Anesthesiology and Orthopedics  
 Medical Director, Pain Medicine  
 Section Chief  
 Acute Pain and Regional Anesthesiology  
 Feinberg School of Medicine  
 Northwestern University

Mark C. Kendall, MD  
 Department of Anesthesiology  
 Feinberg School of Medicine  
 Northwestern University  
 251 E. Huron, F5-704  
 Chicago, IL 60611  
 E-mail: m-kendall@northwestern.edu



(A) Axial CT scan at the lower level of the pterygopalatine fossa showing the pterygomaxillary fissure communicating with the pterygopalatine fossa and (B) Axial CT scan at the upper level of the pterygopalatine fossa showing the communication between the pterygopalatine fossa and the foramen rotundum.

## REFERENCES

1. Nader A, Schitteck H, Kendall MC. Lateral pterygoid muscle and maxillary artery are key anatomical landmarks for ultrasound-guided trigeminal nerve block. *Anesthesiology* 2013; 118:957.
2. Nader A, Kendall MC, De Oliveira GS, Chen JQ, Vanderby B, Rosenow JM, Bendock BR. Ultrasound-guided trigeminal nerve block via the pterygopalatine fossa: An effective treatment for trigeminal neuralgia and atypical facial pain. *Pain Physician* 2013; 16:E37-E45.