

# Ultrasound in Emergency Medicine

## EXAMINER POSITION IN OCULAR POINT-OF-CARE ULTRASOUND: A PROPOSED TECHNIQUE

Eyad Khattab, MD, MPH,<sup>\*†</sup> Beatrice Hoffmann, MD,<sup>\*</sup> Jesse Schafer, MD,<sup>\*</sup> Leily Naraghi, MD,<sup>\*</sup> John Hardin, MD,<sup>\*</sup> Daniel Balk, MD,<sup>\*</sup> and Tyler Beals, MD<sup>\*</sup>

<sup>\*</sup>Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Boston, Massachusetts and <sup>†</sup>Department of Emergency Medicine, King Saud University, College of Medicine, King Khalid University Hospital, Riyadh, Saudi Arabia

Reprint Address: Eyad Khattab, MD, MPH, Department of Emergency Medicine, Beth Israel Deaconess Medical Center, One Deaconess Road, Rosenberg Building, Boston, MA 02215

**Abstract—Background:** Ocular point-of-care ultrasound (POCUS) is a fast and safe non-invasive procedure used to evaluate the structural integrity and pathology of the eye. Ocular POCUS can be used for evaluation of posterior chamber and orbital pathology, including retinal detachment, vitreous detachment or hemorrhage, foreign body, lens dislocation, and increased intracranial pressure. **Discussion:** The purpose of this brief communication is to describe a technique for conducting an ocular POCUS that may in some cases be easier and more comfortable by adjusting the position of the sonographer relative to the patient. **Conclusions:** To our knowledge, this proposed technique has not been described in previous literature and may result in greater comfort for both sonographer and patient. © 2019 Elsevier Inc. All rights reserved.

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### INTRODUCTION

Point-of-care ultrasound (POCUS) is useful in ocular pathology and, for more than 4 decades, it has been used in the evaluation of ocular pathologies (1–5). In this brief communication, we describe a technique for ocular POCUS in which the sonographer's position is reversed and the patient's forehead is used as a brace rather than

the face, potentially allowing for a more comfortable examination.

### DISCUSSION

#### Technique

In both the standard and proposed technique, prior to the scan, the patient is placed in a supine or semi-sitting



**Figure 1.** Demonstration of the proposed ocular point-of-care ultrasound technique. The examiner uses his right hand to control the transducer and secures his hand using the patient's forehead.

**Table 1. Ocular Point-of-Care Ultrasound Comparison of Old Technique (Right Anterior) and Proposed Technique (Left Posterior)**

Variable	Old Technique (Right Anterior)	Proposed Technique (Left Posterior)
Patient position	Supine or semi-sitting position	Semi-sitting position (preferred) or supine
Provider position	Stands at the right side of the bed facing the patient's head	Stands at the left side of the bed facing toward the patient's feet
US probe to be used	High-frequency linear	High-frequency linear
US screen	Examiner and patient have same prospective to see the US screen	Patient unable to see the US screen
Bracing hand	Hands rest on the face or nose	Hands rest on the forehead
Downward pressure control	Less	More
Comfort	Less	More
Patient anxiety level	More	Less
Safety	Less	More
Efficiency (scanning both eyes)	Less	More

US = ultrasound.

position and a gel pillow is extruded onto the eyelid. A transparent dressing (eg, Tegaderm) can also be placed over the closed eye prior to the addition of the gel pillow, although it can sometimes affect imaging quality if bubbles form. A high-frequency linear transducer is placed over the closed eye and fanned once horizontally for an axial view (transverse view) and once vertically for a sagittal view of the eye, in either order. The examination is repeated on the other eye for comparative purposes.

In the standard technique, as described in most if not all of the literature on ocular US, the sonographer stands at the right side of the bed facing the patient's head and approaches the patient with the transducer in the right hand (or vice versa for left-handed sonographers). From this approach, part of the hand with the transducer rests on the cheek or nose of the patient. Patients may find this technique uncomfortable because of the way the hands rest on the face and because of some potential challenges to controlling the downward pressure of the transducer.

The proposed technique differs from the standard technique described above in that the sonographer stands near the head and facing the patient's feet. For right-hand dominant sonographers, that means standing on the patient's left side while holding the transducer in the right hand (vice versa for left-handed sonographers). The transducer is gripped between the thumb and index finger. The other fingers are fanned out to brace the hand on the patient's forehead (see Figure 1). It is important to note that the transducer is positioned the same way in this new technique as in the traditional technique. That is, in the sagittal view, the indicator is still positioned to the patient's head, and in the transverse view, indicator is still positioned to the patient's right. By keeping the indicator-to-screen orientation the same, the image produced is not affected. The only changes in this new technique are the position of the sonographer, whose position is rotated 180°, and the position of the US screen, which is rotated to match sonographer's new vantage point (Table 1).

The sonographers in our team were able to adjust to their new orientation within 10 s. Furthermore, in our experience, being able to rest the hand on the forehead can be more comfortable for both the patient and sonographer, compared to resting it on the cheek, nose, or any other part of the face. As the largest and smoothest surface on the head, the forehead may also provide an easier way to anchor the hand, perhaps lowering the likelihood of the hand slipping out of position and placing accidental pressure on the eye. Additionally, we have found that the US cord can be wrapped behind the neck and over the shoulder to reduce downward pull and allow for better control of the downward pressure exerted on the transducer (see Figure 2).

## CONCLUSIONS

To our knowledge, this proposed ocular POCUS technique has not been described in previous literature. This technique can result in greater comfort for both sonographer and patient. Additionally, it may result in improved transducer control afforded by anchoring the hand to the



**Figure 2.** The examiner stands on the left side of the bed, and ultrasound cord wrapped behind the neck and over the shoulder.

forehead. This proposed technique has no known contraindications beyond any that already exist for the standard technique. These potential benefits are based solely on our clinical experiences, so there is a lack of widespread testing and data on the safety and benefits of this technique. Further research would be needed to determine changes in any outcomes.

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