



## Pneumothorax Diagnosis by Extended Focused Assessment With Sonography for Trauma

**To the Editor:** The study by Brook et al<sup>1</sup> of traumatic pneumothorax detection by extended focused assessment with sonography for trauma (eFAST) used a diagnostic criterion of absence of both lung slide and comet tail signs. The resultant sensitivity of 47%, whereas substantially better than the 16% of plain chest radiography, was reasonably concluded to be “insufficient for ruling out small pneumothoraces.” For those study patients with computed tomographically diagnosed pneumothorax, were there instances where only 1 of the 2 sonographic signs was absent? If such a modified criterion were applied to the study group, would the resulting improvement in sensitivity justify the anticipated decrement in specificity? As the specificity reported in the study was 99%, one might argue that there exists some “specificity to spare.”

Chest insonation in the study was done with the same 3.5-MHz curved transducer used for the abdominal portion of eFAST, with “decreasing the scan depth and approximating the focus level to the pleura.” We agree with a previous suggestion<sup>2</sup> that higher-frequency linear transducers (as permitted by patient habitus) produce finer resolution and better visualization of sliding and comet tailing. Transducer rapid switch/toggle capabilities of current instruments permit eFAST completion without incurring undue delays. We have attached a video of imaging with a linear transducer, shallow depth, and, additionally, application of power Doppler sonography in assessment of the “power slide” sign, indicating absence of pneumothorax (Video 1).

The power slide was first reported in 2002<sup>3</sup> and was used thereafter in some of the eFAST studies cited by the authors.<sup>2,4</sup> Produced by the relative motion of visceral on parietal pleura, it can establish or corroborate absence of interposed pneumothorax. It can also document on a single static image the dynamic sliding process and, as such, could have partially mitigated the authors’ lack of video recording capability. The subsequently described M-mode “seashore sign,”<sup>5</sup> an additional indicator of normal pleural anatomy, shares this documentation trait.

Although studies using such additional sonographic signs achieved higher sensitivities than the presently reported 47%, not all explicitly quantified the contribution of each sign to overall performance. As the authors point out, differences in criterion standards and in patient characteristics (eg, pneumothorax size) further complicate study comparisons. Greater clinician experience with signal-processing options and the signs they produce will hopefully lead to a combination having optimal receiver operator characteristics. In conjunction with refinements in bedside insonation techniques and protocols, the overall accuracy of eFAST should continue to improve.

**Peter J. Mariani, MD**

**Linnea Wittick, MD**

Department of Emergency Medicine  
State University of New York Upstate Medical University  
Syracuse, New York USA

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