

In Reply:

We are pleased to note that Felipe Urdaneta, M.D., was motivated to comment on our recent Images in Anesthesiology manuscript.¹ Dr. Urdaneta correctly points out that evaluation of an airway is not always obvious. This fact highlights his caution that the ability to predict ease of visualization of the glottis is not assured. The references included in Dr. Urdaneta's letter to the editor are among the many in the anesthesiology literature that caution against a "glib" approach to "easy" tracheal intubation, especially when the laryngoscopic view is obscured as was the case with our patient.

Because tracheal intubation is not assured when airway visualization may be obscured, the clinical management safety mandate is to maintain the patient's spontaneous ventilation and have an otolaryngologist in the operating room with the full gamut of airway equipment to manage the difficult airway.

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Reference

1. Schwartz AJ, Javia L, Stricker PA, Nadeau P, Nguyen C: Intermittent airway obstruction in a neonate. *ANESTHESIOLOGY* 2011; 115:630

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Thromboelastography versus Thromboelastometry: Time for a Fair Appraisal

To the Editor:

In their review "Diagnostic performance and therapeutic consequence of thromboelastometry activated by kaolin versus a panel of specific reagents," Sorensen *et al.*¹ demonstrate a lack of scientific rigor in the conduct of the investigation, as well as factual omissions.

The authors draw their conclusions regarding thromboelastography (TEG®; Hemoscope, Niles, IL) by choosing a single reagent, kaolin, from the suite of TEG tests; using this reagent in a thromboelastometry analyzer (ROTEM®; Tem International GmbH, Munich, Germany); and then comparing the kaolin results to the full array of ROTEM tests. The mechanics of the two analyzers are quite different, and reagents are precisely designed for their respective systems. In the TEG analyzer, the cup in which the blood is placed oscillates; in the ROTEM analyzer, the pin oscillates while the cup remains fixed. The sample volumes are also different (360 µl for TEG and 340 µl for ROTEM). Although the authors acknowledge these mechanistic differ-

ences, they do not believe they impact the results. Unless this is demonstrated by actual data using a TEG analyzer, the scientific validity of the results is compromised.

The authors claim that ROTEM can differentiate between dilutional coagulopathy and thrombocytopenia by applying the FIBTEM functional fibrinogen assay, whereas the kaolin TEG cannot. For this to be a valid observation, the TEG functional fibrinogen assay must be used.

In the discussion of heparin detection, the authors state that heparin-induced coagulopathy can be determined with the ROTEM hep-tem® assay. They neglect to mention that the TEG heparinase cups identify heparin effect for both unfractionated heparin products, and those with low molecular weight. This is a major oversight.

Regarding time to results, the authors state that TEM assay results become available more rapidly than kaolin TEG results. They omit discussion of the RapidTEG assay, which uses both kaolin and tissue factor as activators and which provides an ACT value in seconds and overall clot strength results in 15 min, even in the most coagulopathic patients.² This assay has been used by investigators who have shown that the RapidTEG parameters are predictive of early and massive transfusion in trauma.^{2,3} The authors discuss the predictive value of ROTEM in massive transfusion but omit the TEG studies.

Finally, this paper evaluated healthy volunteers whose blood has been used to simulate clinical situations through the addition of various agents to the cups. A discussion of the use of the two analyzers to predict actual patient outcomes should be based on actual patient data. The lack of scientific validity based on not using a TEG analyzer, combined with the omission of key information regarding universally available TEG reagents and the lack of clinical significance to actual outcomes, contributes to a very misleading profile of TEG. We hope that the authors will clarify their omissions regarding TEG reagents in particular and look forward to the revised notation.

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References

1. Larsen OH, Fenger-Eriksen C, Christiansen K, Ingerslev J, Sørensen B: Diagnostic performance and therapeutic consequence of thromboelastometry activated by kaolin versus a panel of specific reagents. *ANESTHESIOLOGY* 2011; 115:294-302
2. Pezold M, Moore EE, Wohlaer M, Sauaia A, Gonzalez E, Banerjee A, Silliman CC: Viscoelastic clot strength predicts coagulation-related mortality within 15 minutes. *Surgery* 2012; 151:48-54
3. Cotton BA, Faz G, Hatch QM, Radwan ZA, Podbielski J, Wade C, Kozar RA, Holcomb JB: Rapid thromboelastography delivers real-time results that predict transfusion within 1 hour of admission. *J Trauma* 2011; 71:407-17

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