

## References

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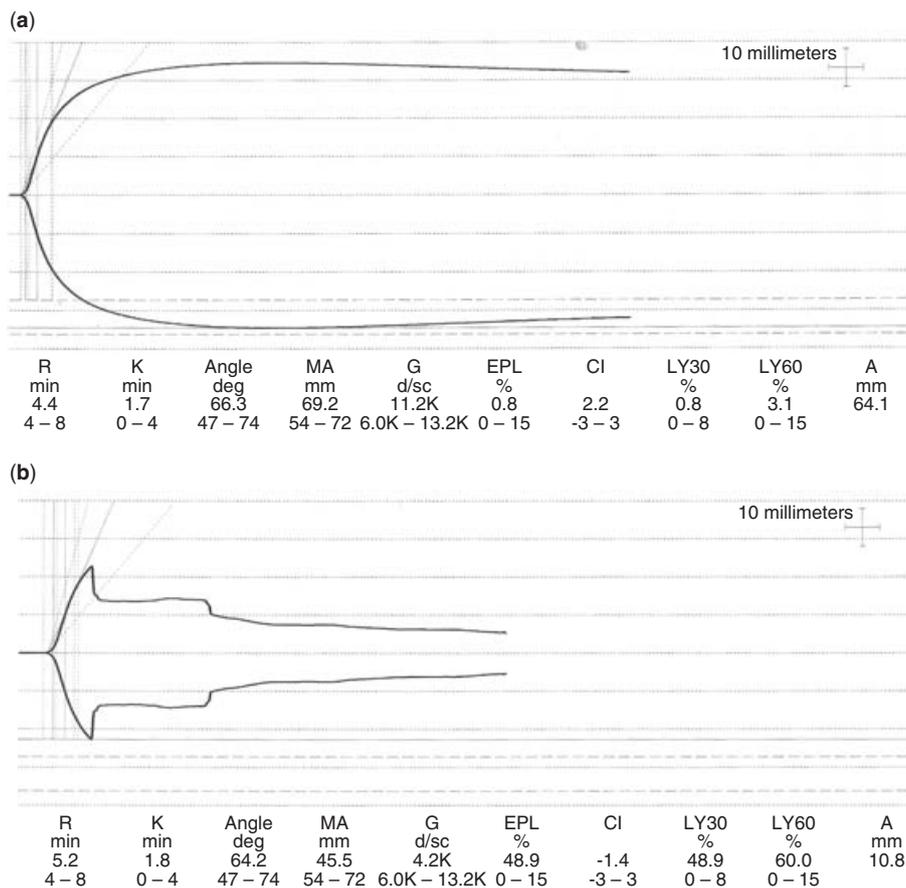
## Pitfall in interpretation of TEG results

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## EDITOR:

Thromboelastograph (TEG) displays the viscoelastic properties [1] of the clot formed, which in turn reflects the functions of different factors involved in the coagulation process [2] and also the interaction between these factors. TEG is considered to be better than the conventional coagulation tests

[3] and is becoming more popular among peri-operative clinicians in managing coagulopathies. TEG machines are often located away from the theatre where surgery takes place (often placed near cardiac/vascular theatre or cardiac ICU). When TEG is performed away from where patients are treated, results are often conveyed to treating clinicians by



**Figure 1.**

TEG graphs: (a) normal – heparinase cup (b) abnormal – plain cup.

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phone, especially in emergency situations, as it is not possible for clinicians to review the TEG graph themselves (which may be still ongoing). I would like to bring to attention a potential error that can happen with this practice.

### Case report

A 65-yr-old male who had undergone aortic valve replacement had postoperative bleeding in cardiac surgical intensive care. TEG was performed to find out whether the bleeding was secondary to coagulation dysfunction or due to surgical failure to attain adequate haemostasis. As this patient had undergone heparinization for cardiopulmonary bypass, TEG was performed using a plain cup as well as a heparinase cup. The TEG results were normal with the heparinase cup (Fig. 1a) and abnormal with the plain cup (Fig. 1b), even though it was done with the same sample of blood.

### Discussion

The abnormal graph generated by TEG using the plain cup did not fit with the typical graph generated with coagulopathies. This could have been attributed to abnormal coagulation (effect of residual heparin in this case, even though it did not fit into the typical effect of residual heparin) by clinicians who have limited experience with TEG. Values generated from the plain cup in

this case could also be interpreted as abnormal clot lysis, if plain cup result was interpreted alone.

The abnormal TEG in the plain cup was due to a mechanical disturbance to the TEG machine, resulting in the breakage of the formed clot generating an abnormal graph and values. A mechanical disturbance typically occurs if someone tries to load another sample in the second channel of the same TEG machine. In these circumstances if the clinician is not able to review the TEG graph and a wrong diagnosis of coagulopathy is made, inappropriate treatment might be initiated with potentially disastrous consequences. This case highlights the importance of reviewing the TEG graph along with the values before embarking on treatment based on TEG results.

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## Definition of difficult tracheal intubation

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### EDITOR:

We read with interest the article by Yildiz and colleagues [1] about the prediction of difficult tracheal intubation. In the paper, there is a point that needs clarification. The authors state that the ASA Task Force on Management of the Difficult Airway defines difficult tracheal intubation as follows: 'when proper insertion of the tracheal tube with conventional laryngoscopy requires more than three attempts or more than 10 min' [1]. That definition belongs to the 1993 ASA guidelines [2]. In the 2003 updated report, the ASA Task Force has

revised the old numerical definition and now defines difficult tracheal intubation simply as 'requiring multiple attempts' [3].

Repeated airway interventions may potentiate tissue trauma, bleeding and mucosal oedema and may transform an airway that can be ventilated to one that cannot (cannot ventilate, cannot intubate situation) [4]. A recent study confirmed that the rate of complications was directly related to the number of laryngoscopic attempts during emergency airway management [5]. The risk of airway and even haemodynamic complications increased with the second laryngoscopic attempt and rapidly accelerated with three or more attempts [5]. In particular, the third intubation attempt during airway manipulation was found to be a risk factor contributing to cardiac arrest [6]. The latest analysis of the ASA closed claims database for management of the difficult airway

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