Pre-operative Thromboelastography Predicts Transfusion During Liver Transplantation

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Introduction

Orthotopic liver transplantation (OLT) can require large volumes of blood products. Identifying patients unlikely to need platelet transfusion would conserve inventory. This study demonstrates that pre-operative thromboelastography (TEG) predicts which patients will not need platelet transfusion.
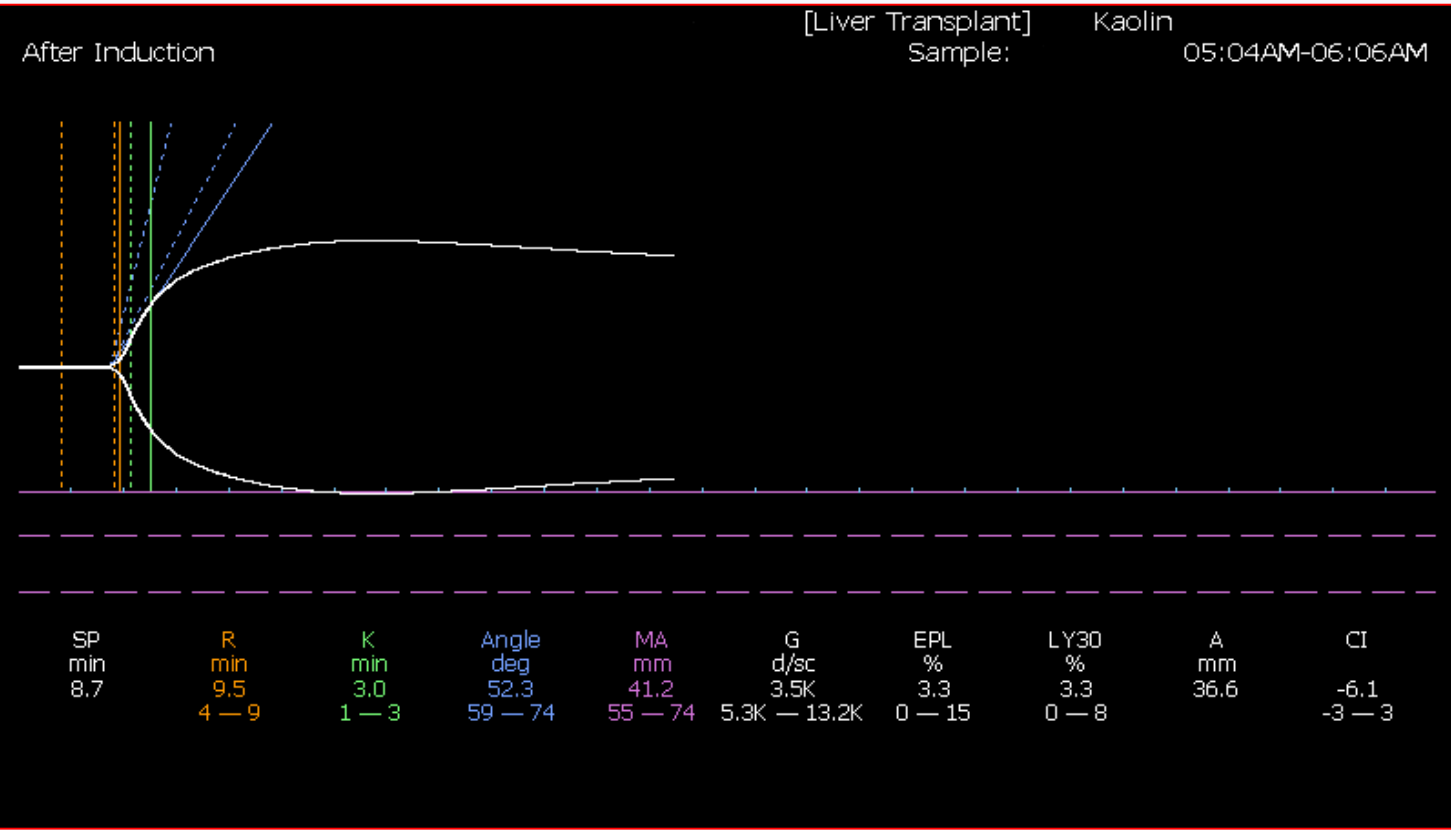

Figure 1. Sample TEG tracing

Method

- IRB-approved retrospective chart review (Jan2012 – Jan2018)
  - 51 pts transfused 1+ platelet intraoperatively
  - 40 pts not transfused any platelets intraoperatively
- Compared pre-incision Maximum Amplitude (MA), K time, and Angle between pts transfused 1+ platelet (transfused group) versus pts not transfused any platelets (non-transfused group)
- Same analysis for cryoprecipitate
- Secondarily, compared MA, K time, and Angle against the number of platelets transfused
- Excluded cases missing data and cases with anatomic / pathologic cause for hemorrhage

Primary Results

- Platelet transfused group
  - 68% male, mean age 56 years
  - Mean EBL 3,345 ml
- Platelet non-transfused group
  - 63% male, mean age 54 years
  - Mean EBL 1,182 ml
- **MA, K time, and Angle were significant between the two groups according to T-test (Table 1)**

	Plt Transfused	Plt Non-transfused	P-value
MA (mm)	43.7 (10.9)	56.4 (11.9)	<0.0001
K-time (minutes)	3.8 (2.7)	2.3 (1.4)	0.0008
Angle	54.5 (12.4)	64.8 (11.9)	0.0001

Table 1. Comparison of TEG parameters between the platelet transfused and non-transfused groups

	Cryo Transfused	Cryo Non-transfused	P-value
MA (mm)	43.1	55.1	0.0001
K-time (minutes)	4.1	2.3	<0.0001
Angle	53.8	63.9	0.0003

Table 2. Comparison of TEG parameters between the cryoprecipitate transfused and non-transfused groups

Secondary Results

- Within the platelet-transfused group
  - **MA (figure 2) and K time (figure 3) correlate with number of plts transfused**
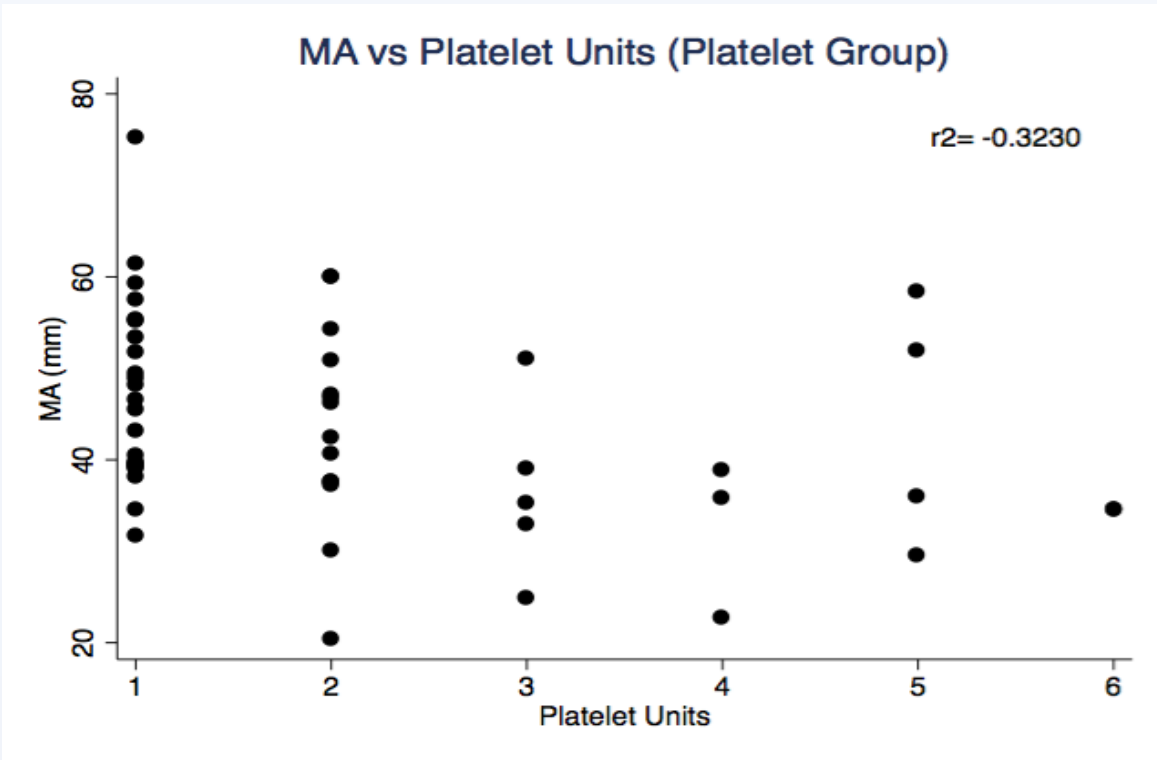 - Angle did not correlate with number of plts transfused

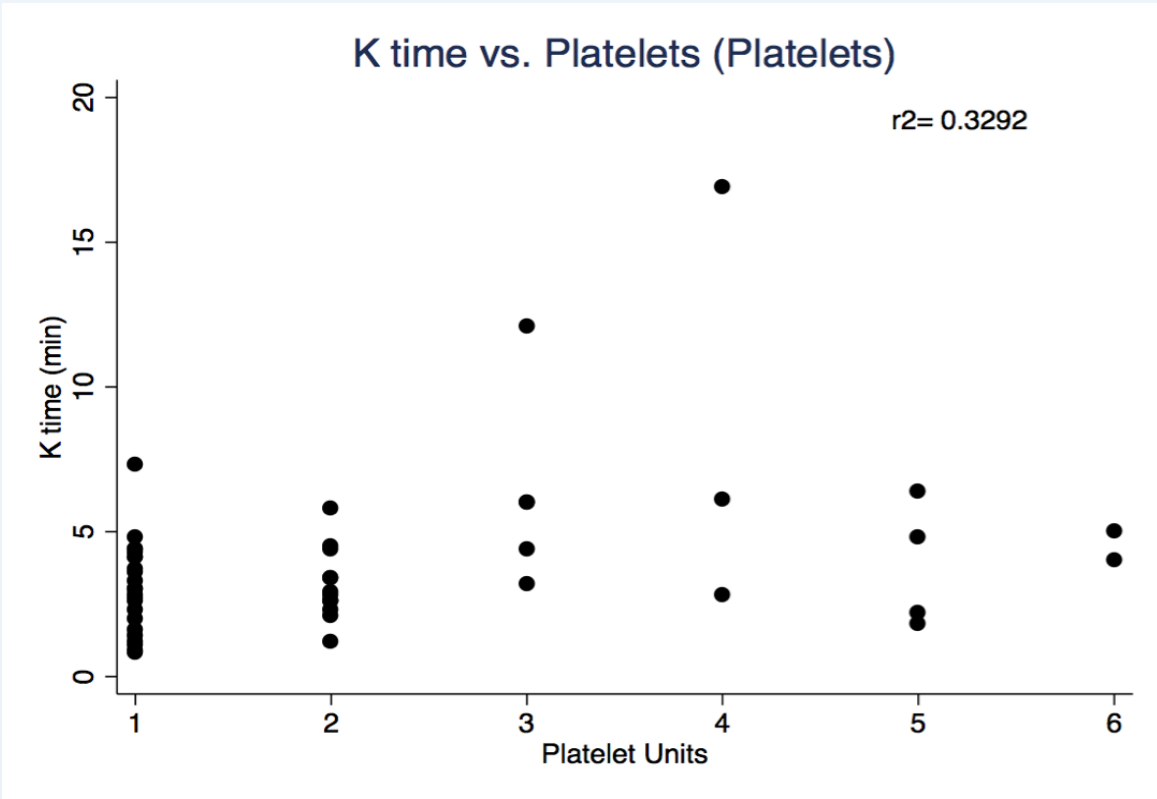Figure 2. MA vs number of plts transfused in transfused group

Figure 3. K-time vs number of plts transfused in transfused group

Conclusion

Pre-operative thromboelastography MA, K time, and angle can identify transplant patients unlikely to need intraoperative platelet transfusion.

References

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Conflict of Interest Statement

In relation to this presentation, I declare that there are no conflicts of interests.