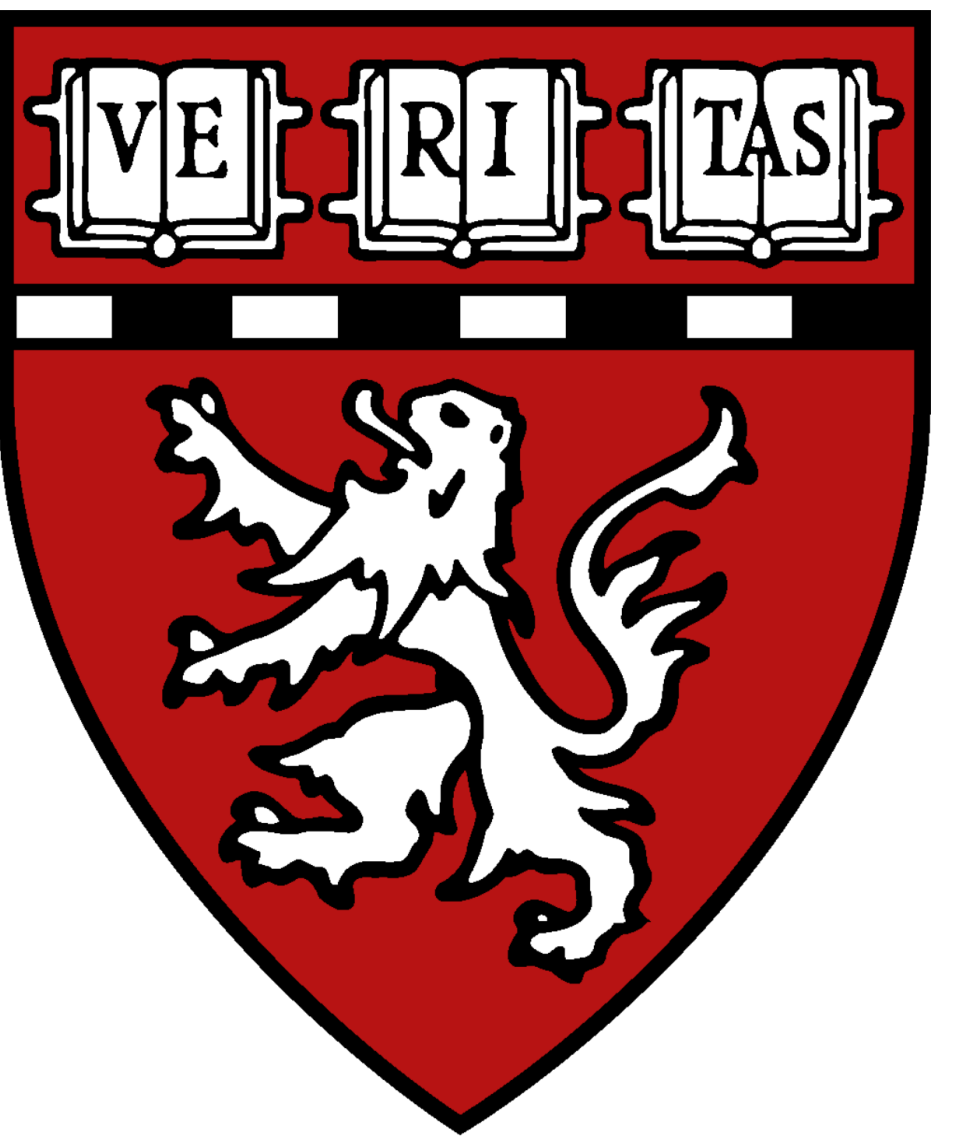




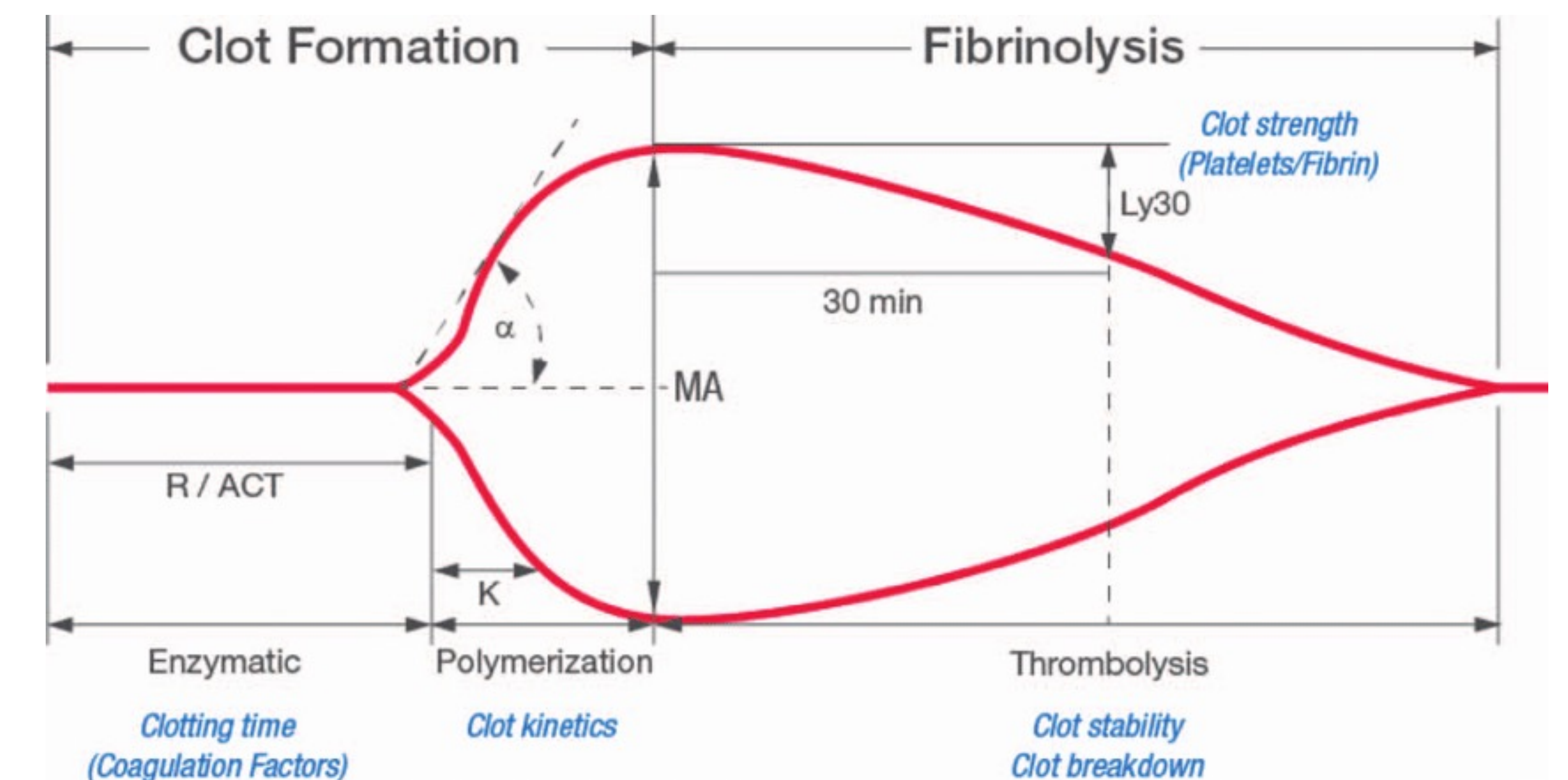
# Thromboelastography Guided Neuraxial Placement in Parturients with HELLP: A Case Report



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## Background

- Approximately 1% of pregnancies are affected by moderate to severe thrombocytopenia with platelet counts less than  $100,000 \times 10^6/L^1$ .
- The Society for Obstetric Anesthesia and Perinatology (SOAP) Consensus Statement on Neuraxial Procedures in Obstetric Patients with Thrombocytopenia acknowledges the paucity of data to guide safety of neuraxial procedures for patients with platelet counts that range between  $50,000 \times 10^6/L$  and  $70,000 \times 10^6/L^2$ .
- Neuraxial anesthesia has myriad advantages over general anesthesia<sup>3-5</sup>. There may be scenarios when the risk-benefit ratio justifies moving forward with a neuraxial procedure.
- Viscoelastic testing including thromboelastography (TEG) provides point-of-care assessment of functional clotting, and the use in obstetrics is expanding<sup>6</sup>.
- This case report describes two parturients with hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome who underwent TEG evaluation with the TEG®6S (Haemonetics Corporation, Boston, MA) prior to placement of neuraxial blockade.



Thromboelastography (TEG) tracing and the accompanying parameters<sup>7</sup>.

a: alpha angle

ACT: activated clotting time

K: coagulation time

LY30: percentage of lysis 30 min after MA

MA: maximum amplitude

R: reaction time

# Case Report

## • Case 1

- 37yo G1P0 at 28w0d with anxiety, OCD, ADHD, Chiari I malformation, pilocytic astrocytoma s/p resection, preeclampsia with severe features, and HELLP syndrome scheduled for C-section.
- Received betamethasone for 2 days prior to delivery.
- Underwent combined spinal epidural (CSE) with 17G Tuohy and 25G Whitacre needles.
- Course was complicated by postpartum hemorrhage (PPH), intraoperative EBL 1,200 ml. Received 2u RBC, 2u FFP, 1 pack platelets, and TXA.

## • Case 2

- 38yo G2P0 at 34w4d with A1GDM presenting for induction of labor in the setting of preeclampsia and HELLP syndrome. She had a vaginal delivery.
- Received betamethasone for 1 day prior to delivery.
- Underwent epidural placement with 17G Tuohy needle.
- Course complicated by lower uterine segment atony; intraoperative EBL 400 mL. Received Pitocin, Hemabate, and TXA.
- Neuraxial procedures were performed under ultrasound guidance by attending physicians with obstetric anesthesia fellowship training.
- No complications from neuraxial anesthesia were observed.

|                                             | Case 1                      | Case 2                       |
|---------------------------------------------|-----------------------------|------------------------------|
| Platelet count prior to neuraxial procedure | 65,000 × 10 <sup>6</sup> /L | 60,000 × 10 <sup>6</sup> /L  |
| PT<br>Normal: 11.5-14.5 sec                 | 13.8                        | 13.3                         |
| INR<br>Normal: 0.9-1.1                      | 1.1                         | 1                            |
| PTT<br>Normal: 22.0-36.6                    | 32.5                        | 33.8                         |
| Fibrinogen<br>Normal: 150-400 mg/dL         | 597                         | 569                          |
| R (CK)<br>Normal: 4.6-9.1 min               | 8.5                         | 7.7                          |
| MA (CRT*)<br>Normal: 52-70 mm               | 67.5                        | 65.6                         |
| MA (CFF**)<br>Normal: 15-32 mm              | 40                          | 32                           |
| LY30<br>Normal: 0-2.6%                      | 0                           | 0                            |
| Platelet count at time of epidural removal  | 82,000 × 10 <sup>6</sup> /L | 114,000 × 10 <sup>6</sup> /L |

\*CRT: Citrated Rapid TEG

\*\*CFF: Citrated Functional Fibrinogen

## Discussion

- Despite presence of thrombocytopenia, both patients had essentially normal TEG results.
- Neither of the patients with HELLP syndrome experienced complications associated with neuraxial anesthesia, including no spinal epidural hematomas.
- The literature regarding the utility of viscoelastic testing for neuraxial procedures in the setting of thrombocytopenia is limited to case reports and case series<sup>8</sup>.

## Conclusion

- Thromboelastography may be considered to guide decision-making for patients with platelet counts between  $50,000 \times 10^6/L$  and  $70,000 \times 10^6/L$ .
- Further study of viscoelastic testing is needed to help support its use to guide clinical decisions for parturients with thrombocytopenia.

## References

1. Reese JA et al. NEJM 2018.
2. Bauer ME et al. Anesth Analg 2021.
3. Alfolabi BB et al. Cochrane 2012.
4. Anim-Somuoah M et al. Cochrane 2018.
5. Jones L et al. Cochrane 2012.
6. Amgalan A et al. J Thromb Haem 2020.
7. Dias et al. Arch Pathol Lab Med 2017.
8. Huang et al. AANA J. 2014;82:127–130.

