

Plasminogen Activator Inhibitor Deficiency In Pregnancy

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BACKGROUND

- **Plasminogen Activator Inhibitor**

- Tissue plasminogen activator binds plasminogen to form plasmin³
- Plasmin binds fibrin and breaks fibrin down into fibrin degradation products, leading to relatively increased bleeding time
- Plasminogen activator inhibitor binds tPA to prevent fibrin breakdown, leading to increased clot burden and hypercoagulable state

- **PAI Deficiency**

- Without PAI, unregulated breakdown of fibrin into fibrin degradation products

- **Epidural hematoma**

- Occurs in 0.2 per 100,000 neuraxial procedures⁵
- Increased risk of bleeding increases risk of epidural hematoma and neurovascular injury

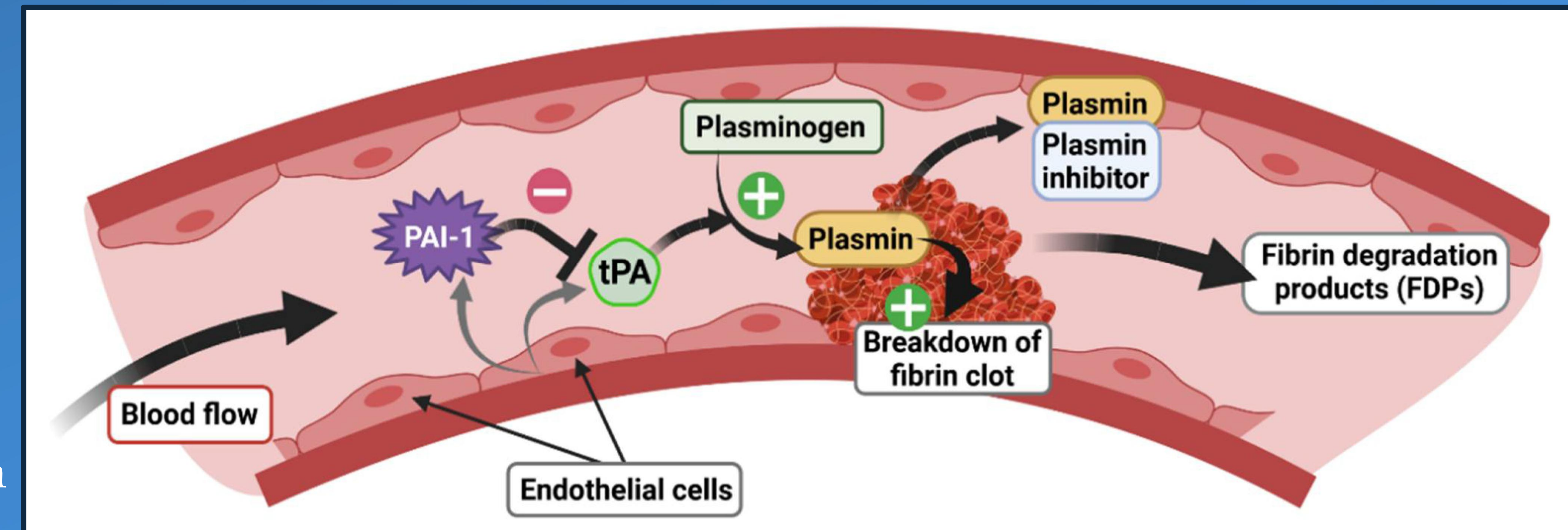


Figure 1: Fibrinolysis and Plasminogen activator inhibitor

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CASE

Patient

- A 26-year-old G11P1091 patient at 38 weeks gestation presented for induction of labor

Past Medical Hx

- PAI-1 deficiency when she was a child after her sibling had excessive bleeding following tonsillectomy
- She was not offered neuraxial anesthesia with her first pregnancy due to concern for bleeding

L&D Planning

- Hematology was consulted and recommended 25 mg/kg of TXA three times daily while inpatient and for 2 weeks postpartum
- Baseline thromboelastography (TEG) and complete blood count were performed upon admission with values being within normal limits
- Initially declined neuraxial but later changed her mind

Delivery

- SVD with adequate epidural analgesia without complications
- EBL with delivery approximately 180 mL

Postpartum

- TEG was performed prior to epidural removal
- Results were WNL and epidural was removed without complication
- Patient was closely monitored until discharge without evidence of epidural hematoma or neurovascular injury

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DISCUSSION

Neuraxial Anesthesia in PAI-1 deficiency

- Limited studies exist
- One case report noted neuraxial anesthesia was not offered due to concern for epidural hematoma⁴
- Another study evaluated use of TEG prior to single shot spinal but did not discuss postpartum bleeding²

Adjuncts to Care

- Important adjunct to provide safe neuraxial anesthesia in this patient population
- TXA administration to offset unregulated fibrinolysis²

Future Considerations

- Important framework to provide safe labor analgesia for patients with PAI-1 deficiency
- Potential to decrease risk of postpartum hemorrhage in this patient population

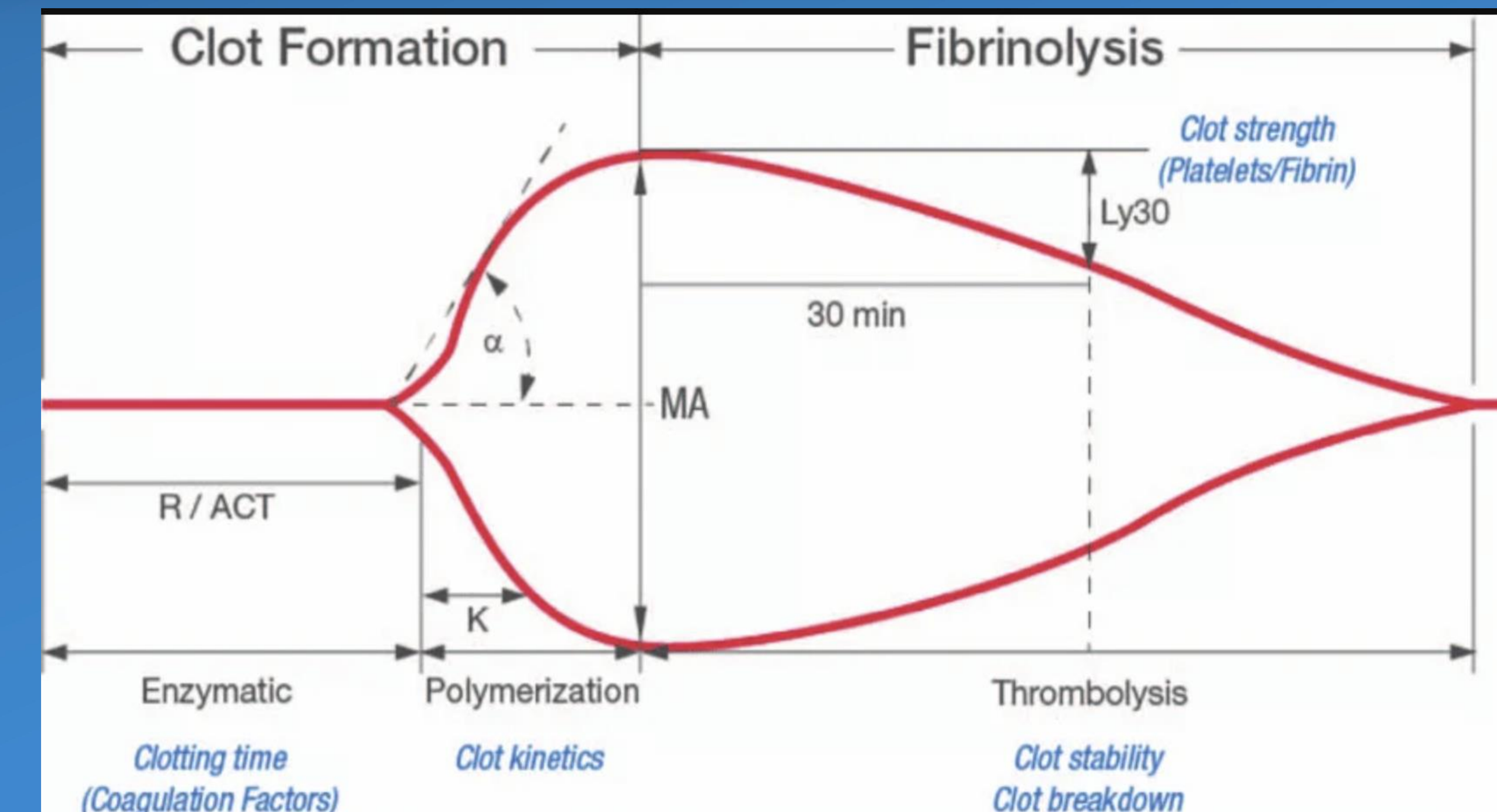


Figure 2: TEG tracing⁵

References

