# Comparative Thromboelastography on Peripheral vs Uterine Blood as an Early Marker of Postpartum Coagulation Changes

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## Introduction

Postpartum hemorrhage (PPH): Leading cause of maternal mortality worldwide[1]

Early prediction of systemic coagulopathy may facilitate prompt treatment

Viscoelastic Testing (TEG & ROTEM): Rapid detection of coagulopathy, targeted therapy[2]

Prior case series of ROTEM during early PPH → coagulopathy in vaginal vs peripheral blood[3]

**AIM:** Compare **peripheral** and **uterine** blood using TEG in routine cesarean delivery (CD)

1. Say et al, 2014. 2. Collins et al, 2022. 3. Ma'ayeh et al, 2021

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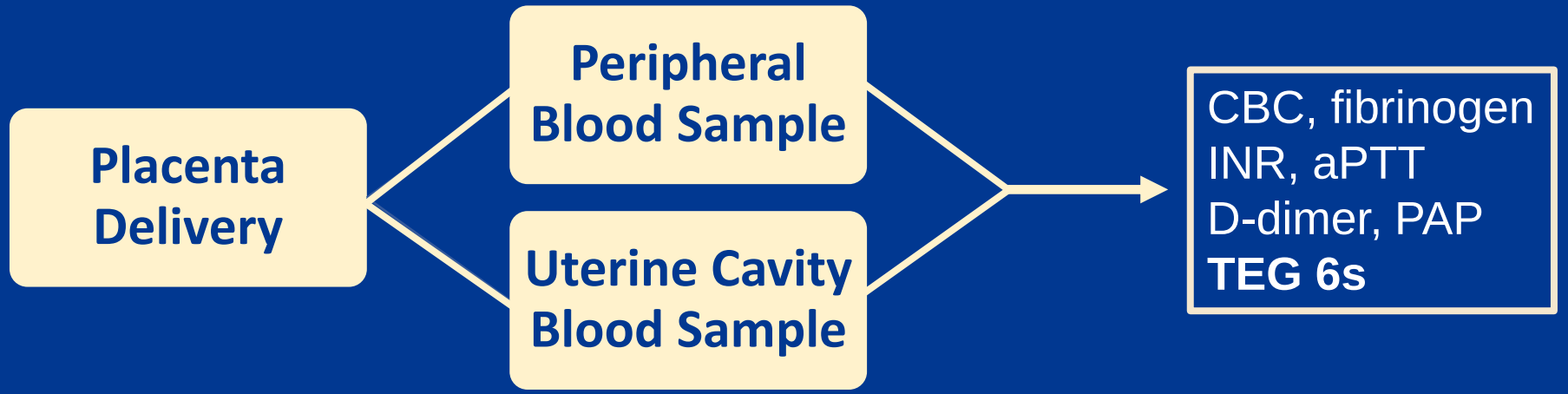
# Methods

Inclusion: Non-urgent intrapartum or scheduled CD at term gestation

Exclusion: Known coagulopathy, anticoagulation therapy, or general anesthesia




A priori power analysis for paired comparison: n=7 to detect a 30% reduction in TEG maximum amplitude between peripheral and uterine samples

# Results

n=10

Peripheral TEG samples → n=10, normal coagulation for pregnant patients

Uterine cavity TEG samples → n=5, rapid clotting, unable to perform TEG
→ n=5, clot in citrated tube, TEG showed profound coagulopathy

No association between PPH & uterine TEG coagulopathy (p=0.524)

Unable to compare traditional labs – all uterine samples rejected due to clot

# Discussion

Ma'ayeh *et al.* demonstrated profound **coagulopathy of vaginal blood** compared to **normal peripheral coagulation** in 3 patients with PPH.

**Confounders**: Amniotic fluid, cervical mucosa, vaginal fluid, vaginal flora, and clot

Some similarity with our TEG results …

Figure 1: Peripheral blood TEG normal coagulation.

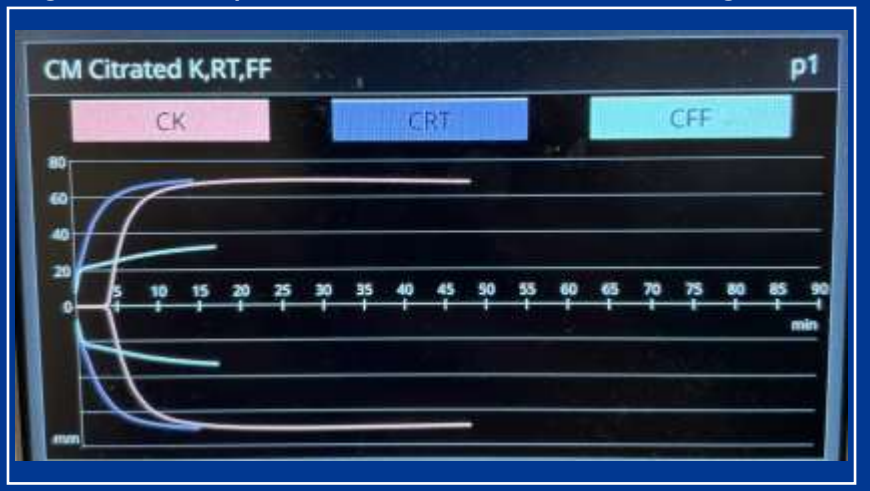
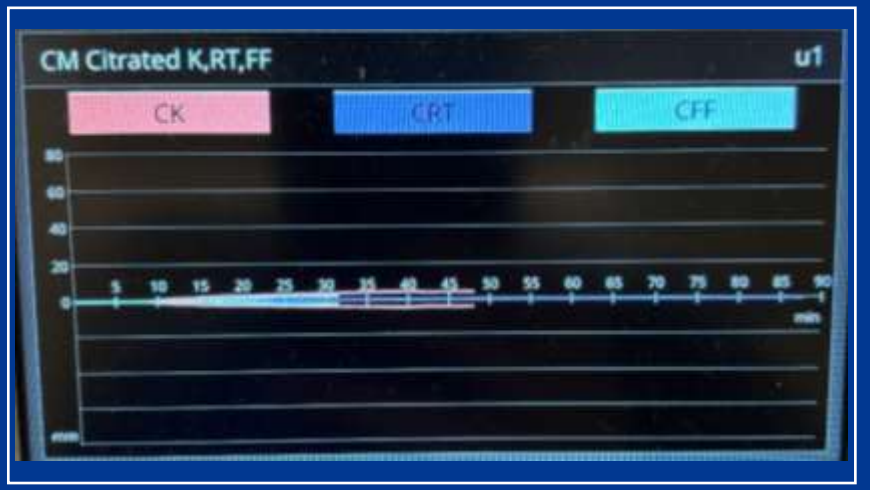



Figure 2: Uterine blood TEG profound coagulopathy.




References: 1. Ma'ayeh et al, 2021.

# Discussion

Formation of **clot despite citrate**. Likely unable to inhibit since clotting cascade already initiated.

**Limitations**:

- Applies only to uterine samples
- TEG 6s uses microfluidic channels to transport sample

Figure 3: Citrated vacutainer of uterine blood sample.

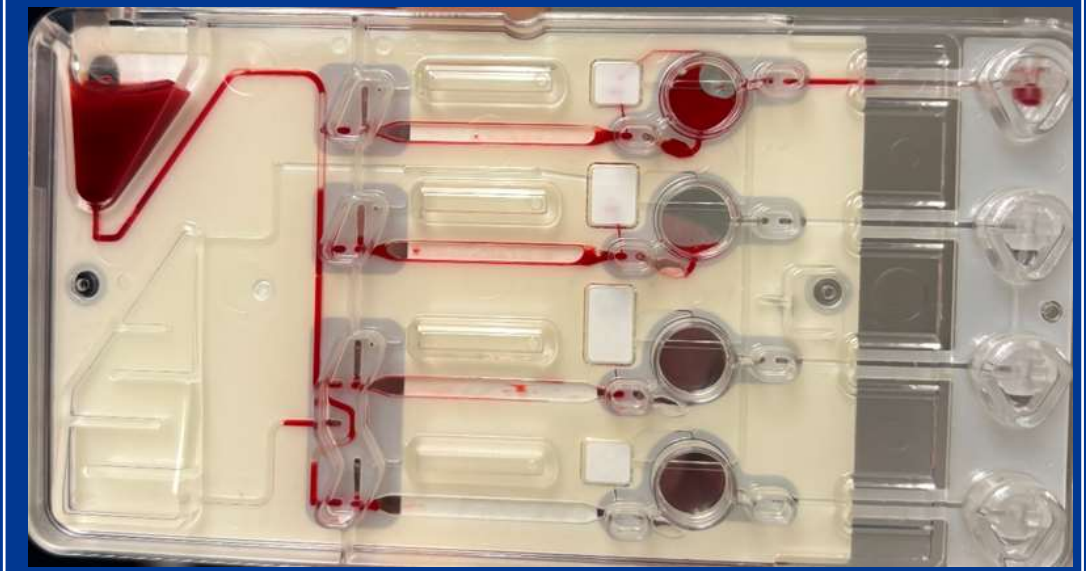


Figure 4: Clotted TEG cartridge from uterine blood sample.

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## Discussion

Uterine vs peripheral blood coagulation at time of delivery, prior to PPH, demonstrates **immediate clotting** of the **uterine** samples.

**No correlation** between PPH and ability to run TEG on uterine blood samples.

Uterine blood appears to be a **non-viable** method of assessing **early coagulopathy** at the time of hysterotomy closure.

Figure 5: Fresh uterine sample, immediate clot formation.

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