



Cesarean Section in a COVID Positive Patient for Non-Reassuring BPP

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Introduction

Recent studies have shown that COVID infection in pregnancy increases risk of preterm birth, cesarean birth, and stillbirth.¹ There are case reports of COVID infection and acute coagulopathy in pregnancy.² Here, we present a case of a pregnant patient in her third trimester that sustained a COVID infection which was followed by fulminant DIC and fetal distress requiring urgent cesarean section.

Case Presentation

- 32 yo G2P0 with PMH of Hgb C trait, active COVID who presented for primary cesarean delivery at 30+1 for urgent cesarean for 2/10 BPP.
- **Triage:** Vital signs were unremarkable. Patient's labs were significant for drop in platelets from 294 (4 months prior) to 72. Stat coags and fibrinogen were sent and ROTEM performed which revealed significant coagulopathy (*Fig 1*).
 - **Operating room:** The FHR was reassuring upon arrival to the OR so the OB and Anesthesia teams decided collaboratively to start resuscitation prior to incision. Three 18g IVs were placed and MTP initiated.
 - Patient was given 2 of cryo, 2 of FFP, 1 of platelets, 1 g of TXA and 5.5 g of fibrinogen concentrate.
 - Induction was a straightforward RSI with propofol and succinylcholine and followed by arterial line placement.
 - Delivery was 3 minutes after induction. Infant required intubation and transfer to NICU.
 - Patient was given additional 2 of cryo, 2 of FFP, 1 of platelet and 3 units of pRBCs. Patient received methergine, intrauterine carboprost, and misoprostol.
 - EBL was 2 L and patient was extubated in OR.
 - ROTEM results during the case improved (*Fig 1*).

Ongoing Resuscitation

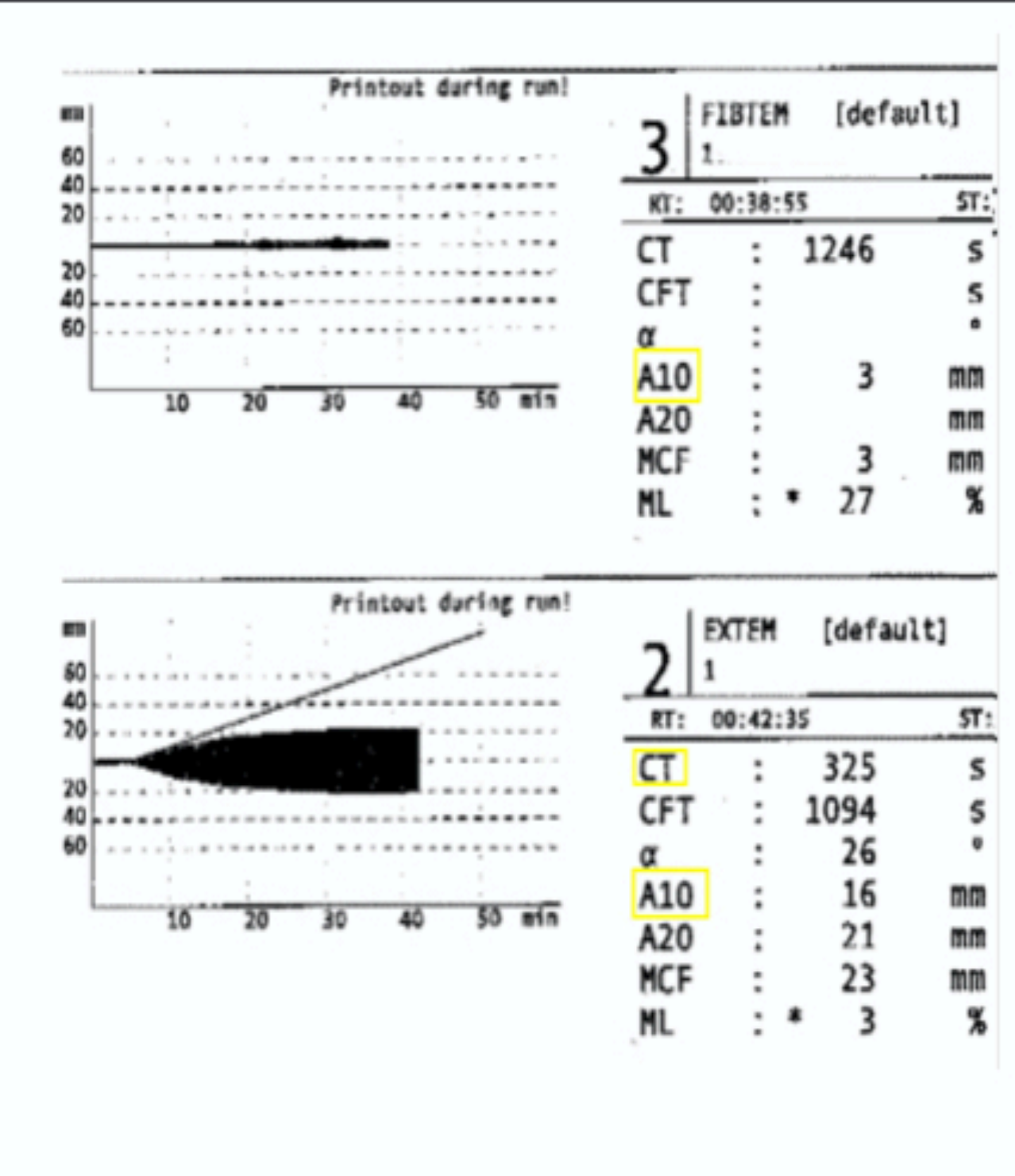
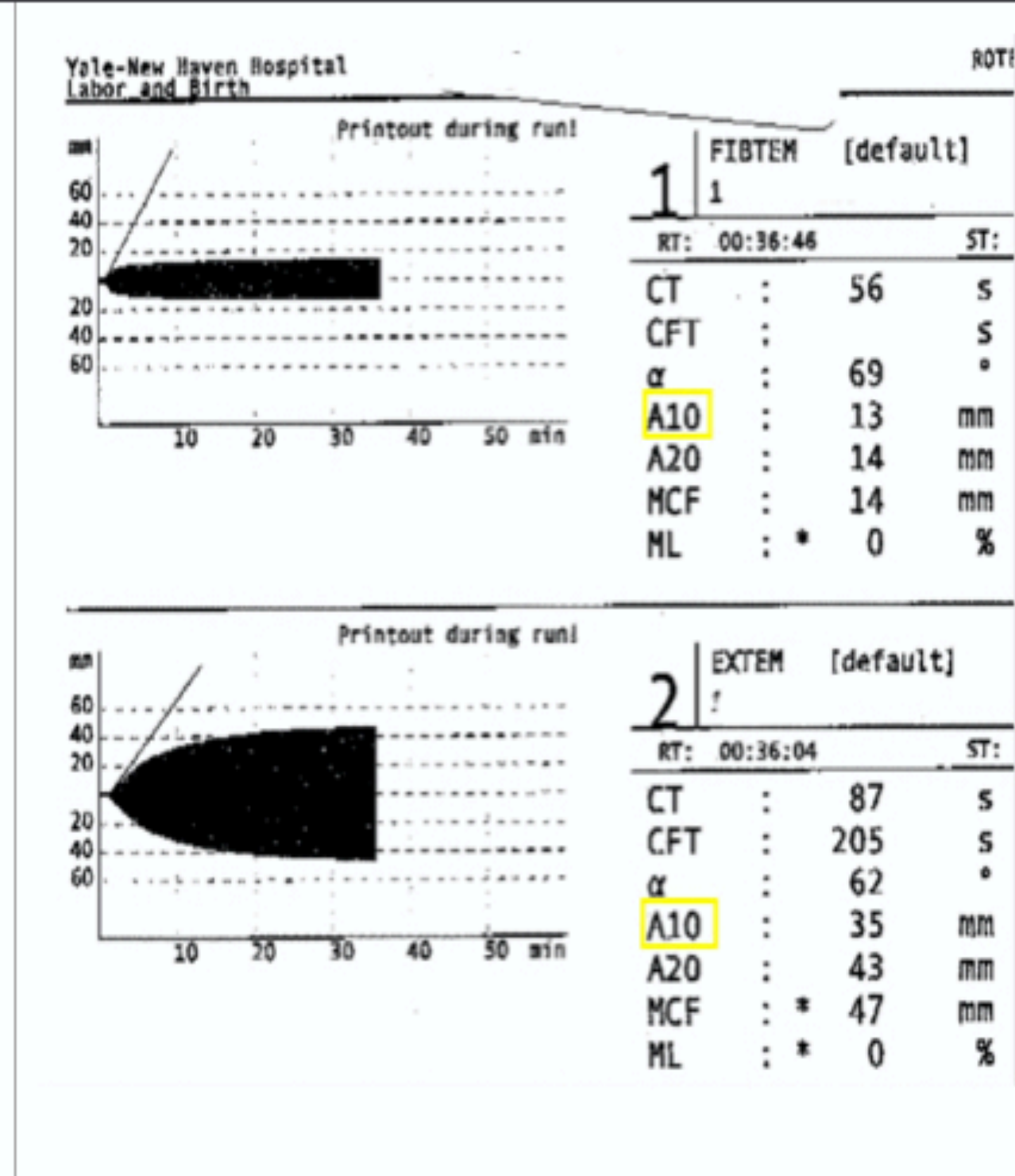
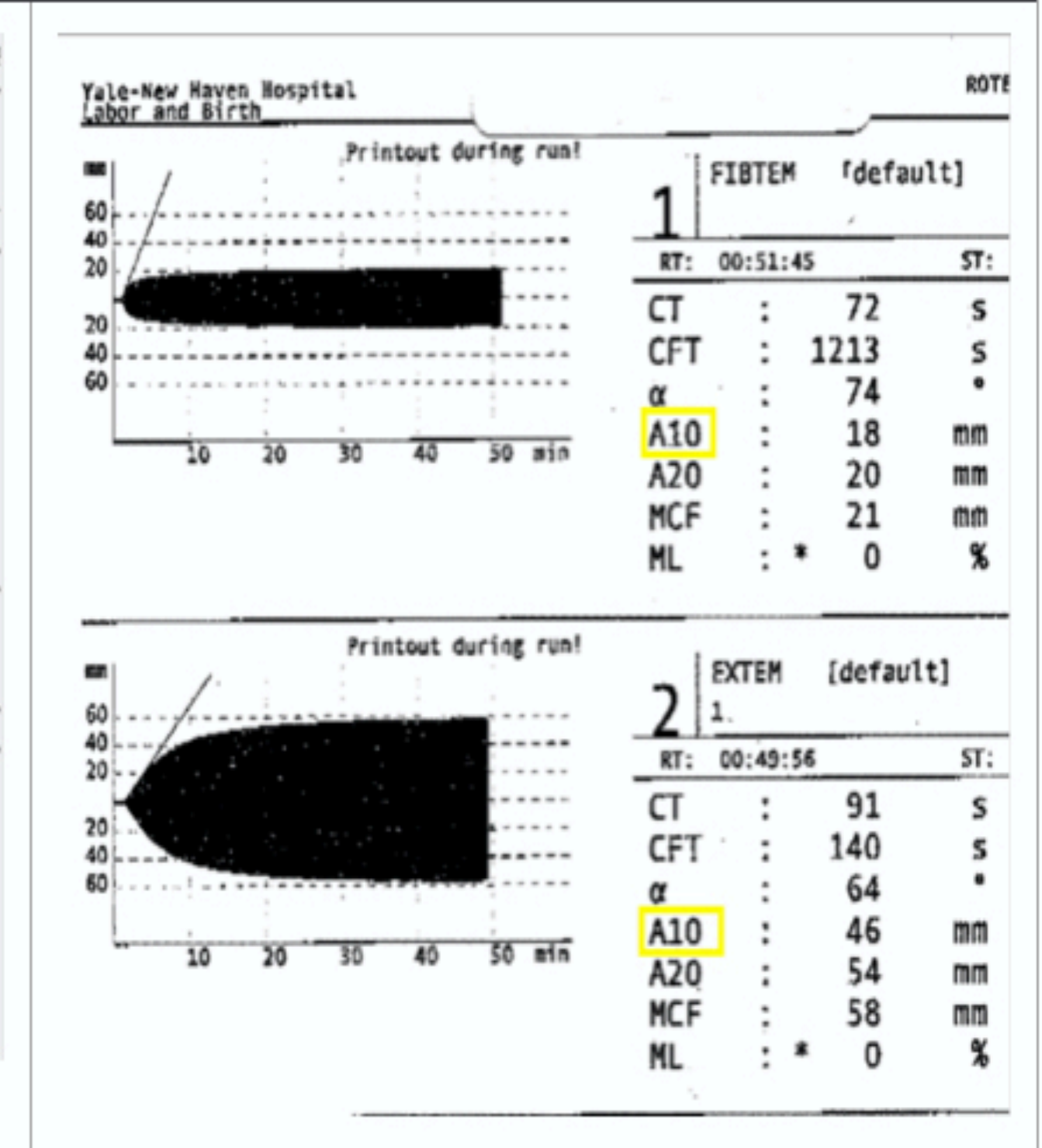
A: Initial	B: During Case	C: Post-op
		
Hgb 12.6 Platelets 72 INR 1.54 PTT 49.1 Fibrinogen <50	Hgb 7.9 Platelets 63 INR 0.97 PTT 35.0 Fibrinogen 267	Hgb 12.8 Platelets 81 INR 0.92 PTT 30.9 Fibrinogen 387
Resuscitation given pre-incision:	Resuscitation given after incision:	Recommended values for pregnant women:
2 units of cryoprecipitate 2 units of FFP 1 pool of platelets 5.5g fibrinogen concentrate 1g bolus TXA	2g fibrinogen concentrate 2 units of cryoprecipitate 2 units of FFP 1 pool platelets 3 units RBCs	Fibtem A10 >16mm Extem A10 >45mm Extem CT <82seconds Fibrinogen ≥ 250-300

Figure 1: Lab values and resuscitation

Discussion

- This challenging case required coordination between obstetric and anesthesia teams for management of a critically ill mother and a fetus in distress.
- ROTEM testing allowed for rapid, repetitive assessment of patient's coagulation; testing which was triggered by the patient's drop in platelets and active COVID.
- ROTEM testing guided goal-directed transfusion management compared to standard coagulation tests due to faster turnaround time and more complete information.
- Even with resuscitation prior to incision, the patient had significant blood loss and it is likely that immediate incision would have been disastrous.
- This case shows the effects of COVID and pregnancy status on coagulation, an interaction which is still being explored.

Outcome

- **Post-op:** Patient was diuresed for new O2 requirement and given 2 g fibrinogen concentrate. Labs drawn 5 hours after the case showed normalization of most values. Post-operative TAP blocks were performed without issue.
- Patient was discharged home on POD #3 after an uneventful postoperative course.
- Infant was extubated first to HFNC and then to room air over extended NICU stay in the setting of prematurity.

References

1. Metz, T. D., Clifton, R. G., Hughes, B. L., Sandoval, G., Saade, G. R., Grobman, W. A., ... & Macones, G. A. (2021). Disease severity and perinatal outcomes of pregnant patients with coronavirus disease 2019 (COVID-19). *Obstetrics and gynecology*, 137(4), 571.
2. Vlachodimitropoulou Koumoutsea, E., Vivanti, A. J., Shehata, N., Benachi, A., Le Gouez, A., Desconclois, C., ... & Malinowski, A. K. (2020). COVID-19 and acute coagulopathy in pregnancy. *Journal of Thrombosis and Haemostasis*, 18(7), 1648-1652