

Placenta percreta – a challenging case

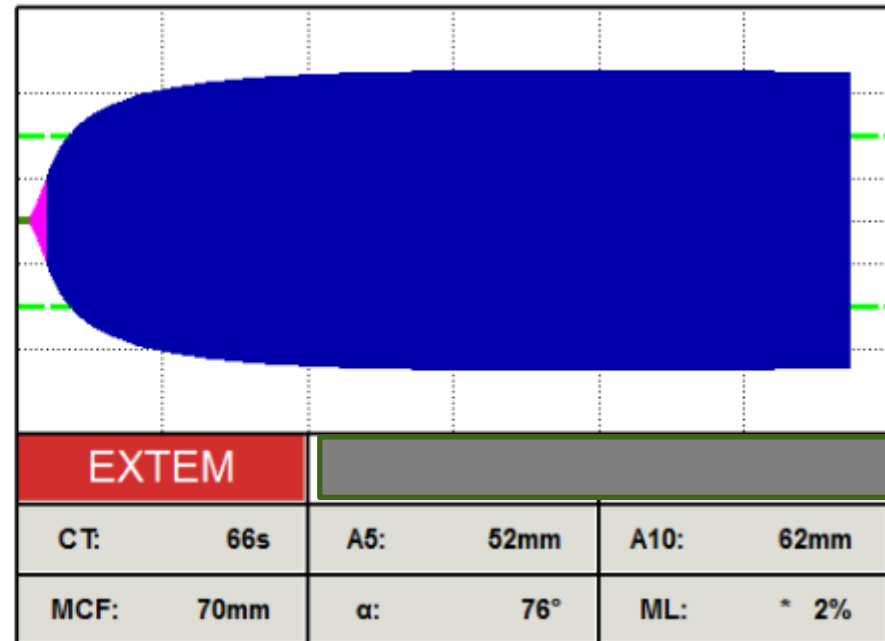
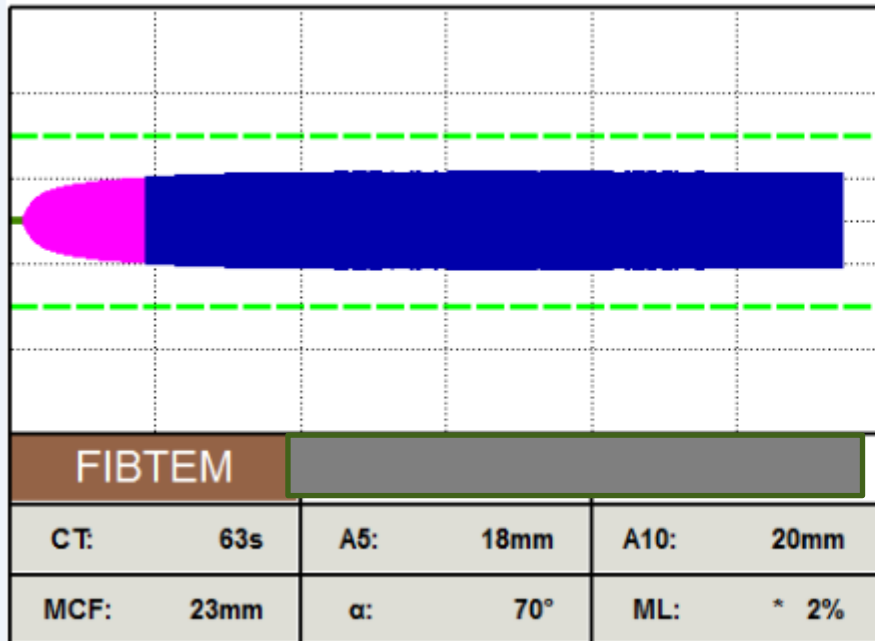
Disclaimer / Pre-amble

- These cases have been de-identified to protect the identity of the patient and the treating teams.
- These are all real cases and real ROTEMs. The individuals involved in these difficult cases have agreed to anonymously share these with us – thank you for your generosity.
- Successful management of the bleeding patient involves much more than just administration of blood products.
- The primary aim of these cases is to teach the use ROTEM guided blood product therapy. We have deliberately not included a lot of detail about some of the other aspects of management which might detract from this focus.

CASE 1

- 33yr old, G3P2, 34weeks
- Patient with known placenta percreta
- Planned elective caesarean followed by immediate hysterectomy.
- 175cm, 108kg
- Otherwise healthy
- After insertion arterial line baseline ROTEM performed

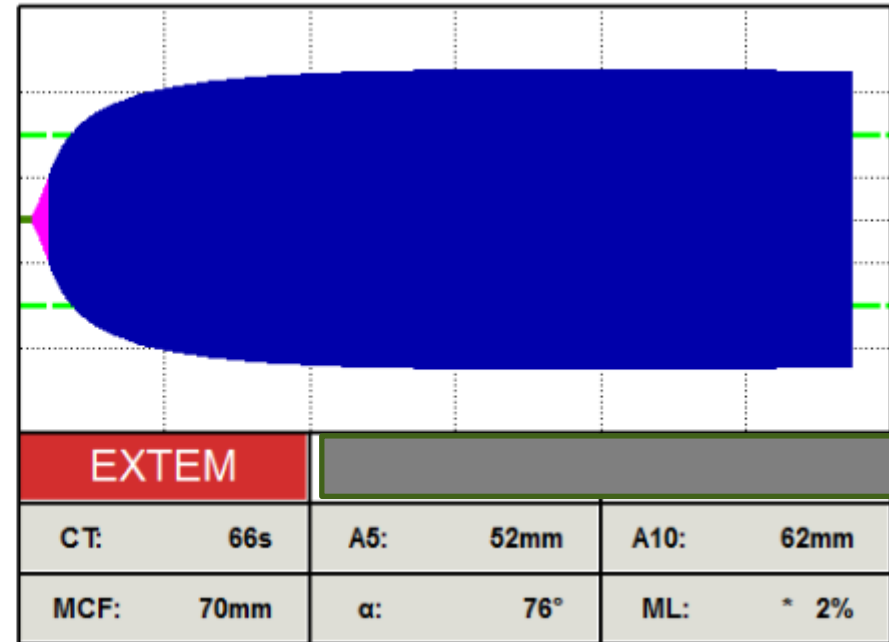
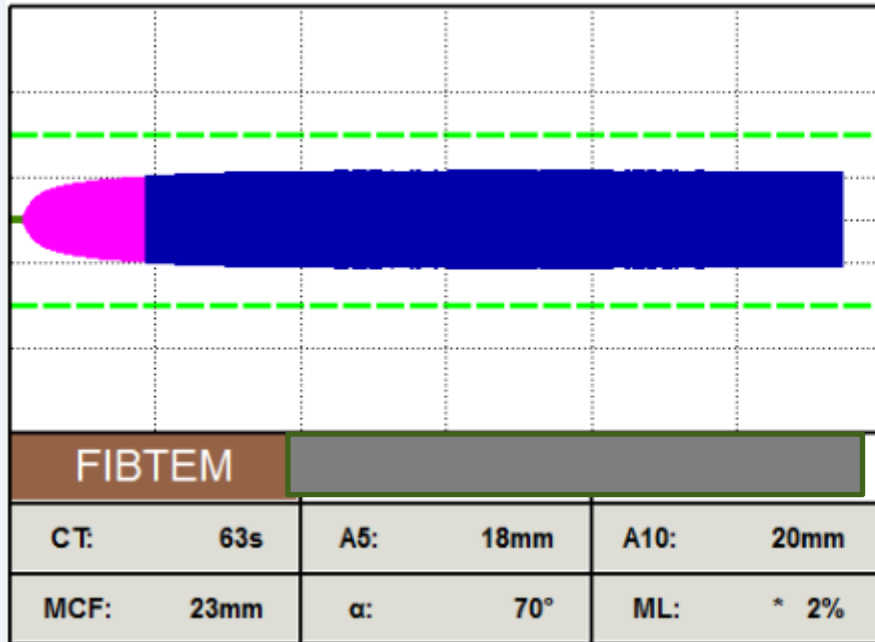
Baseline Rotem at 0950 (before surgery)



- Apply the KEMH ROTEM algorithm – even better use your hospitals if it has one.
- What do you think?
- Try and interpret it first with looking!

- INR 1.0
- APTT 38.5
- Fibrinogen 3.7
- Hb 109

Baseline Rotem before surgery



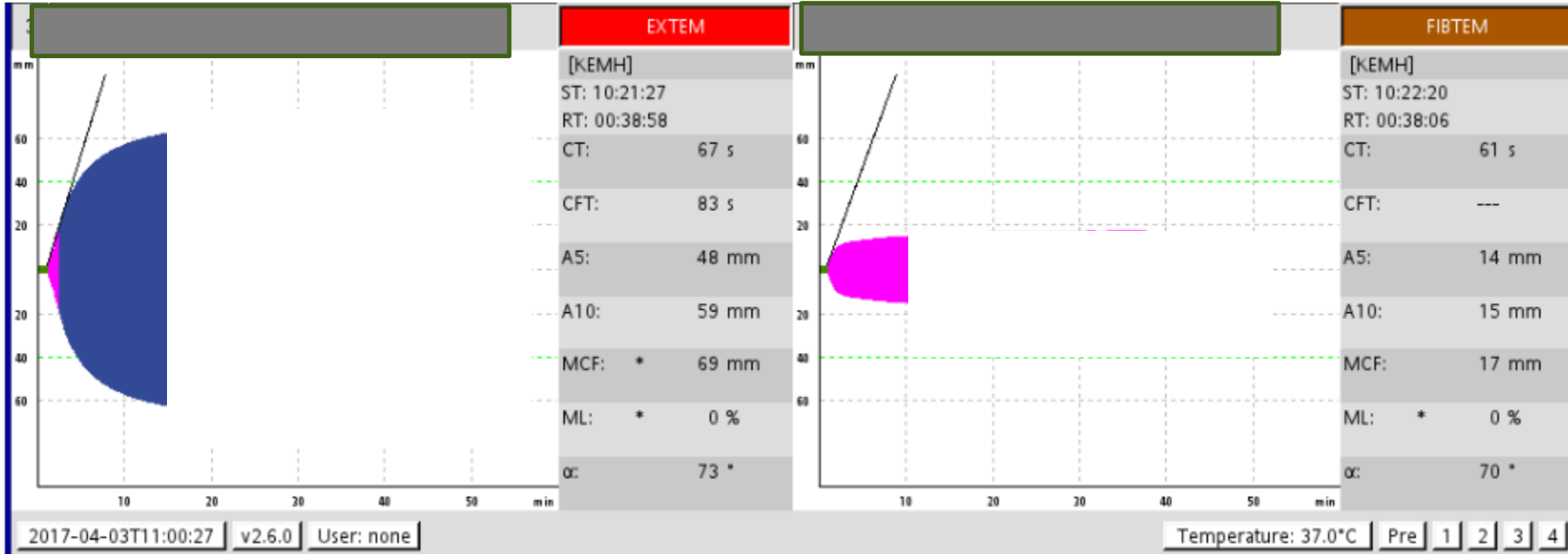
- Pretty normal for 3rd trimester
- High normal extem and fibtem A5 values – reassuring that she has some reserves for the possibly large blood loss about to occur!

- INR 1.0
- APTT 38.5
- Fibrinogen 3.7
- Hb 109

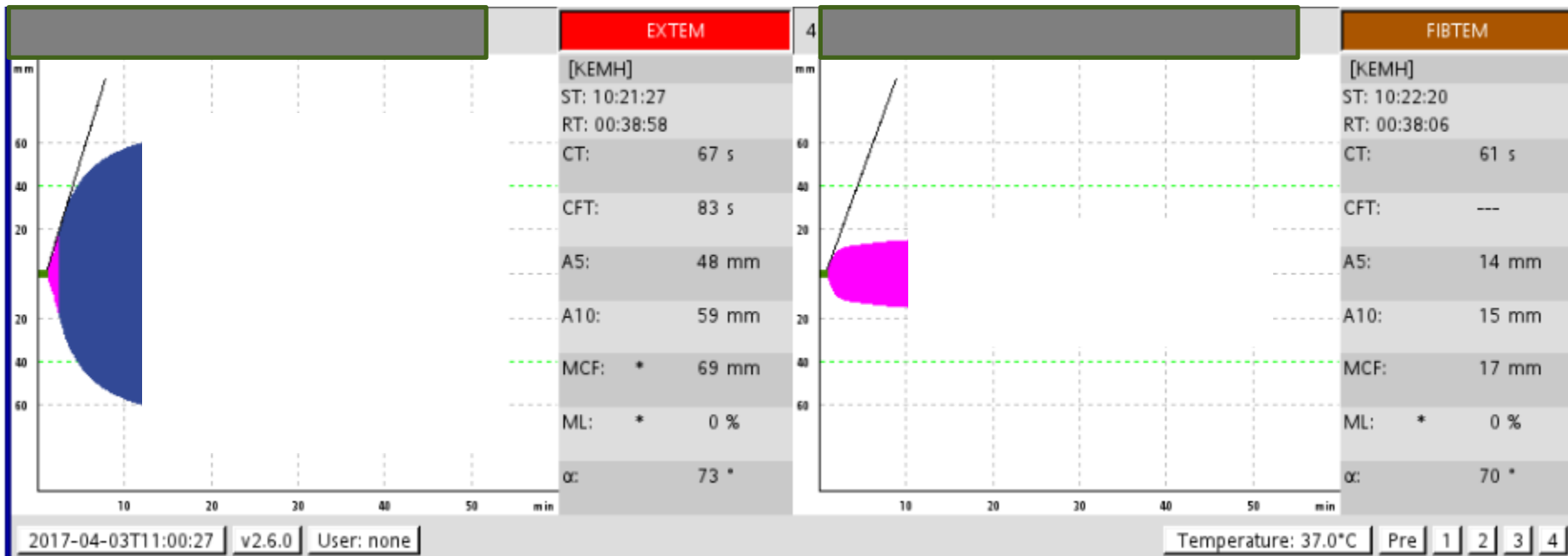
What happened

- Baby delivered
- Tranexamic acid 1g started post-delivery as planned prophylaxis
- Major haemorrhage with severe hypotension after closure of uterus
- Four packed red cells
- 500mL albumin 5%

ROTEM at 1022



- Apply the KEMH ROTEM algorithm – even better use your hospitals if it has one.
- What blood products will you give?
- Don't cheat & look at the next slide until you have written down what you think you should give.



Typical ROTEM changes you would expect when starting with high normal and then experiencing very rapid torrential bleeding - consumption and dilution (with only red cells and fluids)

- **Fibrinolysis:** nil present – has already had prophylactic TXA
- **Fibrinogen:** Fibtet A5 = 14mm – falling due to rapid loss – getting close to the traditional trigger levels of 10 (to 12mm)
- **Platelets:** Extem A5 = 48mm – still well above 35mm Platelets unlikely to be reqd
- **Factors:** Extem CT = 67s. Good thrombin generation, no PTX or FFP needed.

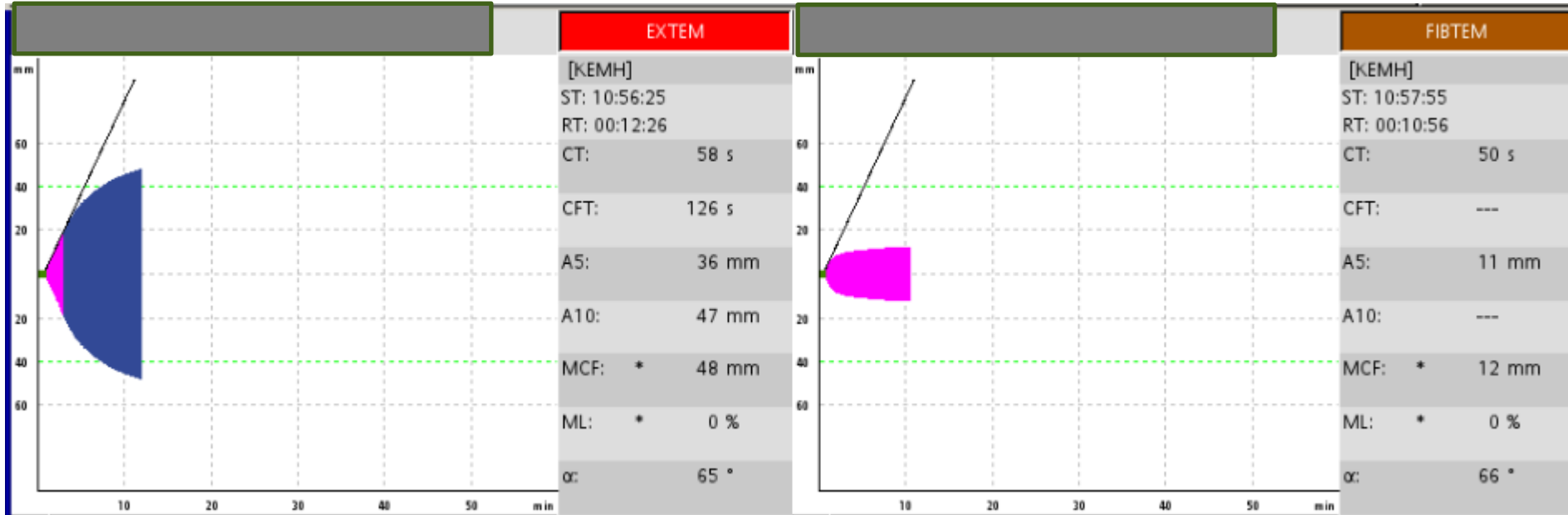
What happened

- 10 units of cryoprecipitate
- Albumin ongoing – additional 500mL
- Some manual aortic compression required to stabilise severe hypotension.

Comment: In this situation of extremely rapid blood loss the team wisely chose to prevent a coagulopathy from developing by pre-emptively giving what they knew from experience would develop first (e.g. fibrinogen deficiency). Note they gave cryo (Unlike traditional pre-emptive MTP approaches which utilise large volumes of FFP).

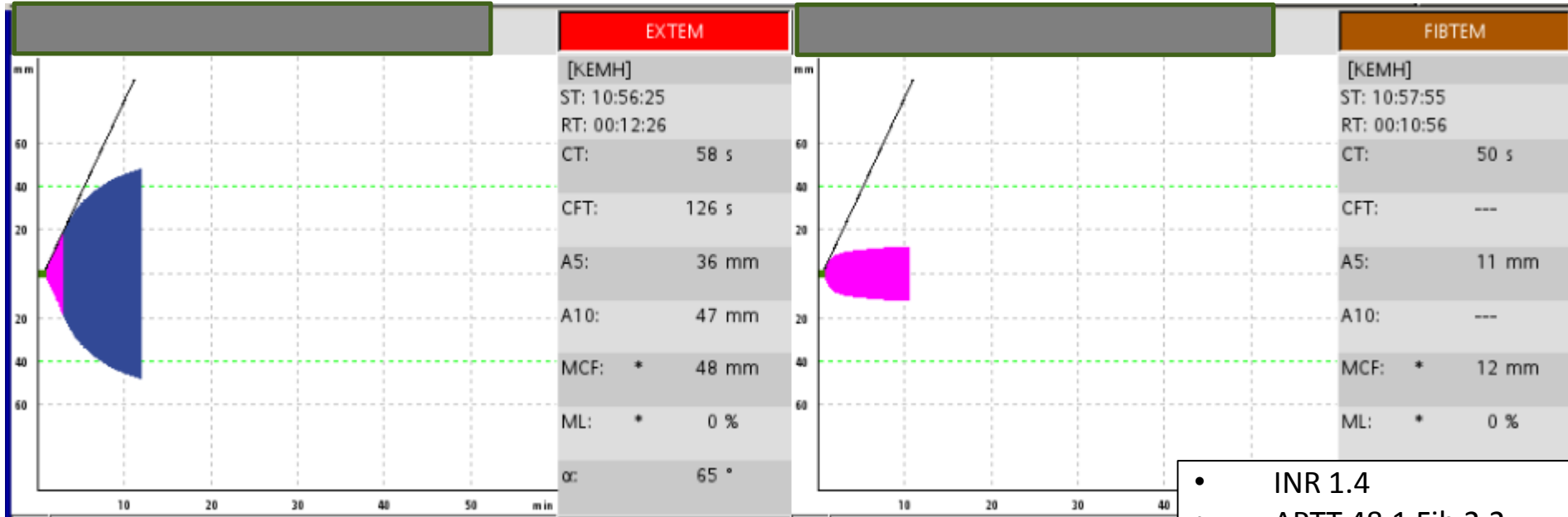
- Another ROTEM was then taken:

ROTEM at 1056



- Apply the KEMH ROTEM algorithm – even better use your hospitals if it has one.
- What blood products will you give?
- Don't cheat & look at the next slide until you have written down what you think you should give.

ROTEM at 1056



- INR 1.4
- APTT 48.1 Fib 2.2
- Hb 76 PC 140
- Ionised calcium 0.76

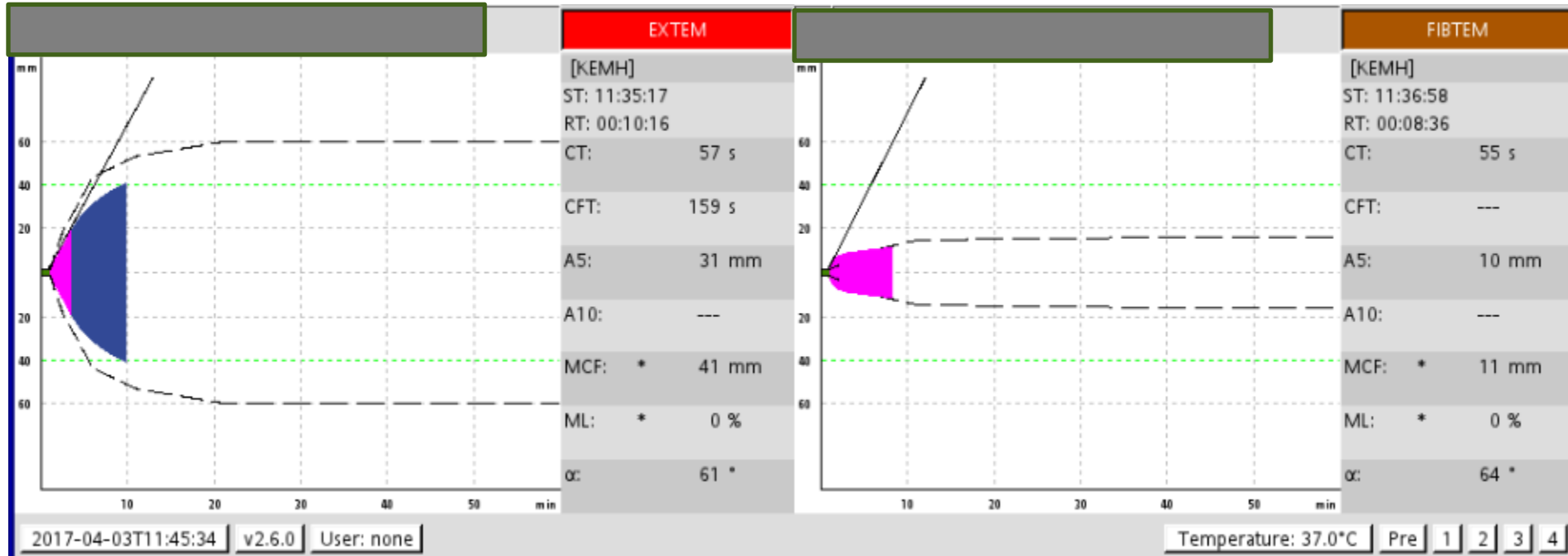
Typical ROTEM changes you would expect with rapid blood loss.

- Fibrinolysis: nil present – has already had prophylactic TXA
- Fibrinogen: Fibttem A5 = 11mm – still falling due to rapid loss despite the cryo 10 units! – getting close to the traditional trigger levels of 10 (to 12mm)
- Platelets: Extem A5 = 36mm – still above 35mm Platelets not reqd. (– Platelet count was actually 140)
- Factors: Extem CT = 58s. Good thrombin generation, no PTX or FFP needed.

What happened

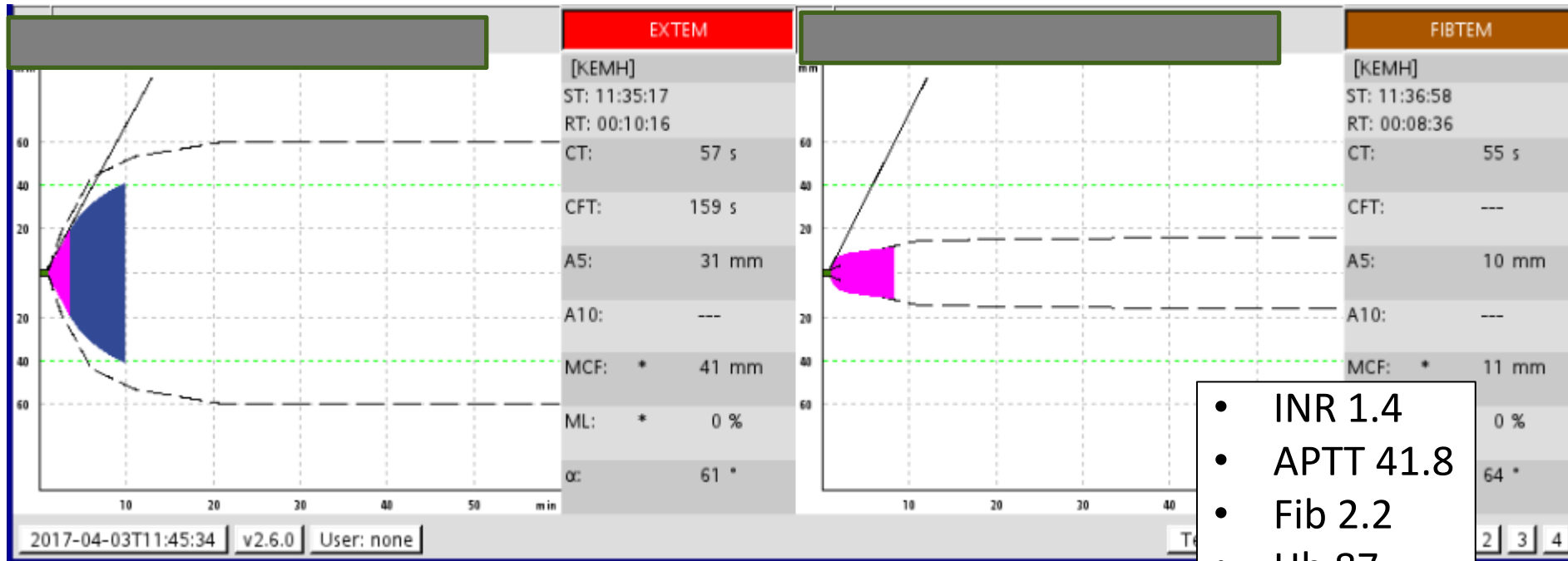
- Further 10 units of cryoprecipitate
- Further albumin
- Additional 4 packed red cells
- Cell salvage return approximately 1000mL
- 10mL 10% Calcium chloride

Rotem at 1136



- Apply the KEMH ROTEM algorithm – even better use your hospitals if it has one.
- What blood products will you give?
- Don't cheat & look at the next slide until you have written down what you think you should give.

Rotem at 1136



- INR 1.4
- APTT 41.8
- Fib 2.2
- Hb 87
- PC 110

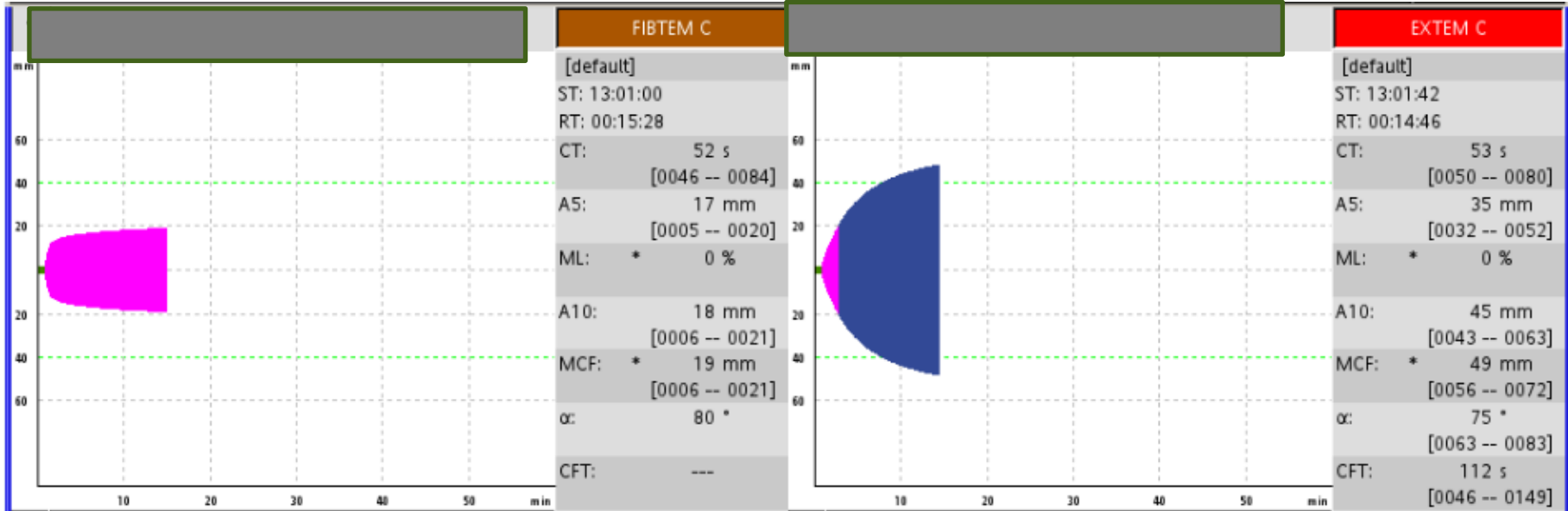
Typical ROTEM changes with further ongoing rapid blood loss.

- **Fibrinolysis:** nil present – has already had prophylactic TXA but consider repeating this at some stage if massive blood loss still occurring.
- **Fibrinogen:** Fibtetm A5 = 10mm – falling again due to rapid loss despite another cryo 10 units! At the traditional trigger levels of 10 – consider treating again
- **Platelets:** Extem A5 = 31mm – borderline fibtem though so possibly due to low fibrinogen. Platelets may be needed soon. (– Platelet count was actually 110)
- **Factors:** Extem CT = 57s. Good thrombin generation still! no PTX or FFP needed.

What happened

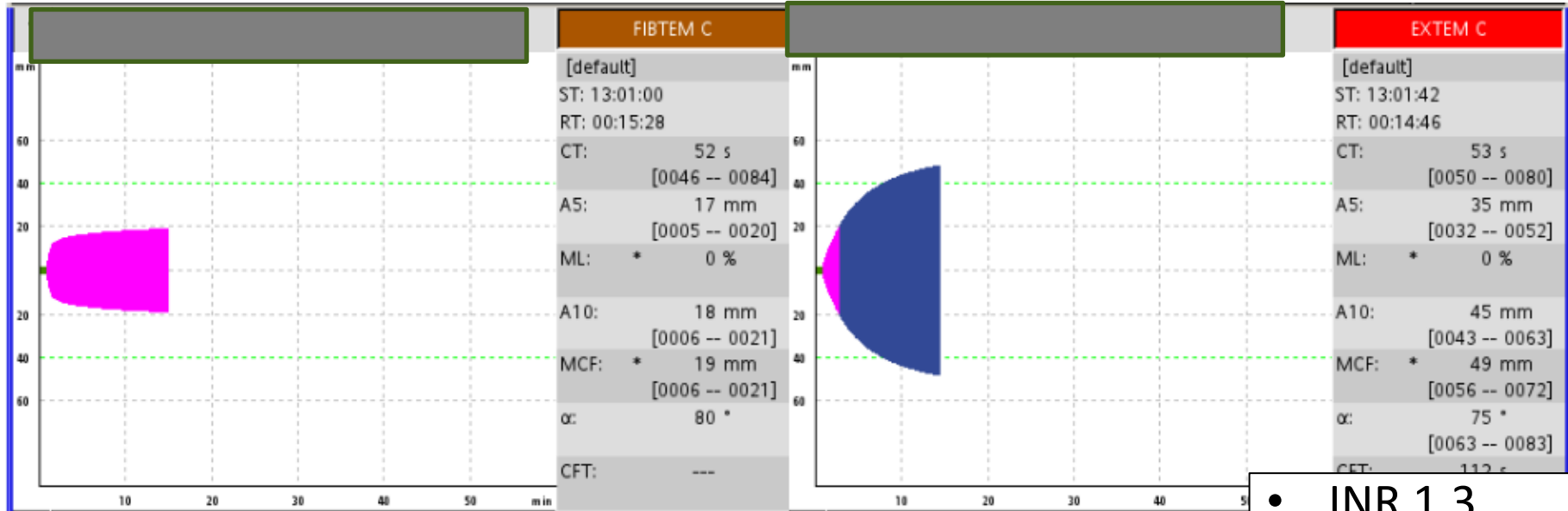
- Consideration of administration of platelets
- Ultimately decided on further 10 units of cryoprecipitate and reassess
- Additional 1g tranexamic acid
- Additional cell salvage returned approximately 500mL

Rotem at 1302



- Apply the KEMH ROTEM algorithm – even better use your hospitals if it has one.
- What blood products will you give?
- Don't cheat & look at the next slide until you have written down what you think you should give.

Rotem at 1302



Consistent with fibrinogen therapy and no further bleeding.

- Fibrinolysis: nil present – has already had prophylactic TXA x 2 doses.
- Fibrinogen: Fibtet A5 = 17mm – much better after third dose of cryo
- Platelets: Extem A5 = 35mm – better now but borderline so if further bleeding occurs will probably benefit from platelets
- Factors: Extem CT = 52s. Good thrombin generation still! no PTX or FFP needed.

- INR 1.3
- APTT 42.1
- Fib 3.3
- Hb 93

Clinical Course

- The hysterectomy and surgery were complete and bleeding has now ceased.
- Extubated and sent to high dependency ward
- No vasopressor support
- No respiratory support
- No significant organ dysfunction
- Relatively uncomplicated recovery and postoperative course

Summary

- Overall Blood Loss 8litres
- Red cells 8 units
- Salvaged blood 1500ml
- Cryoprecipitate 30units
 - First 10 units single units
 - Subsequent units apheresis
- 2000mL albumin 5%
- 3000mL CSL
- TXA 2g
- 10mL 10% calcium chloride

Take Home Points

1. In massive blood loss consider preventing coagulopathy from developing with pre-emptive therapy.
2. Do this using TXA and fibrinogen.
3. You should still use ROTEM to monitor your therapy and anticipate problems.
4. FFP was not needed even after 8 litres of blood loss.