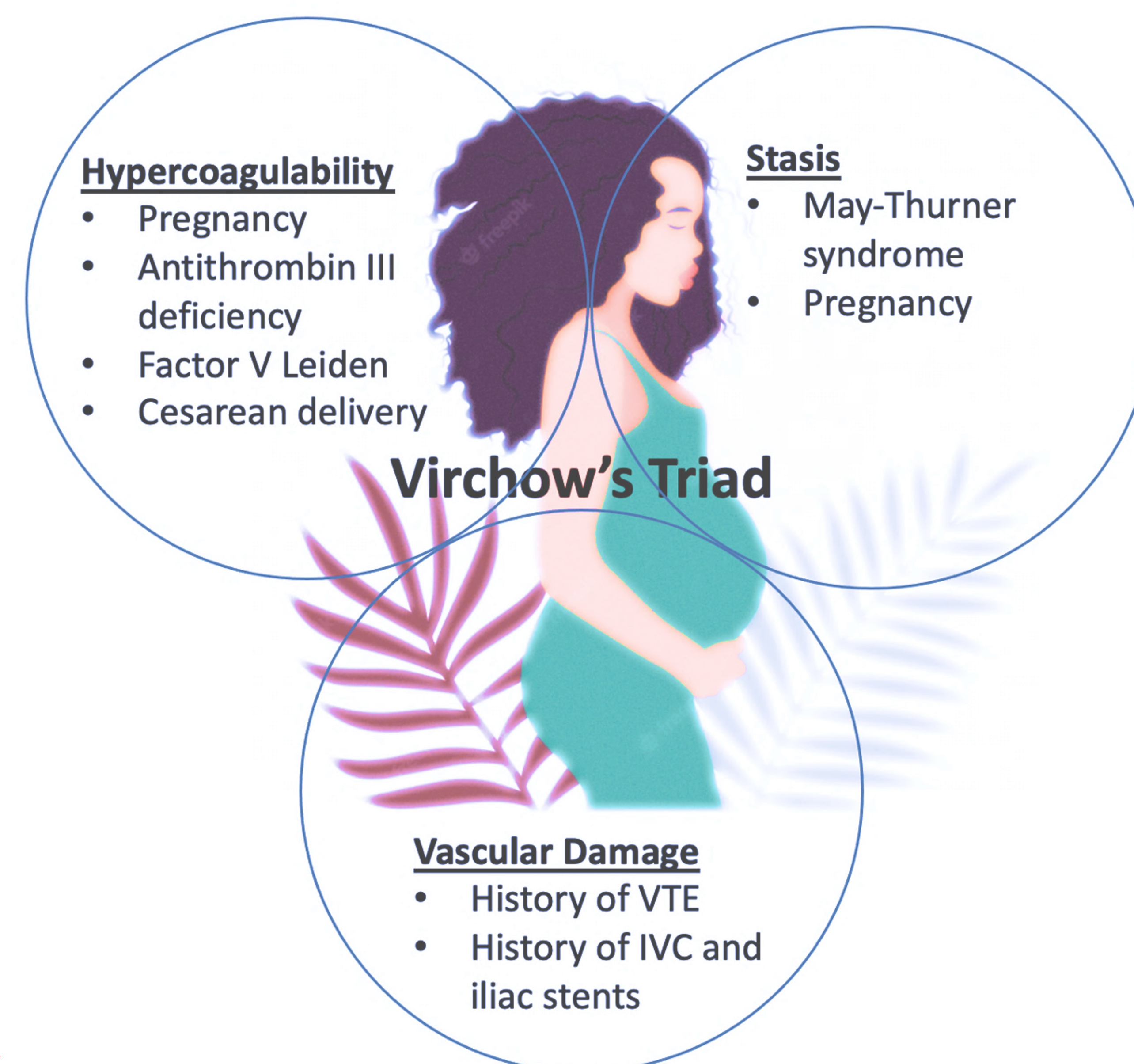


Introduction

- The hypercoagulable state of pregnancy increases the risk of venous thromboembolism (VTE) (1).
- Parturients have a **4- to 5-fold** increased risk of VTE compared to nonpregnant females (1).
- The mechanism for the hypercoagulable state is due to an increase in **fibrinogen** and **factor VII** with a concomitant decrease in **antithrombin (AT) III** and **protein S**.
- AT III is an inhibitor of thrombin and factor Xa. Heparin potentiates the action of AT III.
- The incidence of maternal VTE is **1 in 1000**. VTE accounts for **10% of maternal mortality** (1).
- Women who have acquired or inherited thrombophilia are at a substantially higher risk of VTE.

Case Presentation

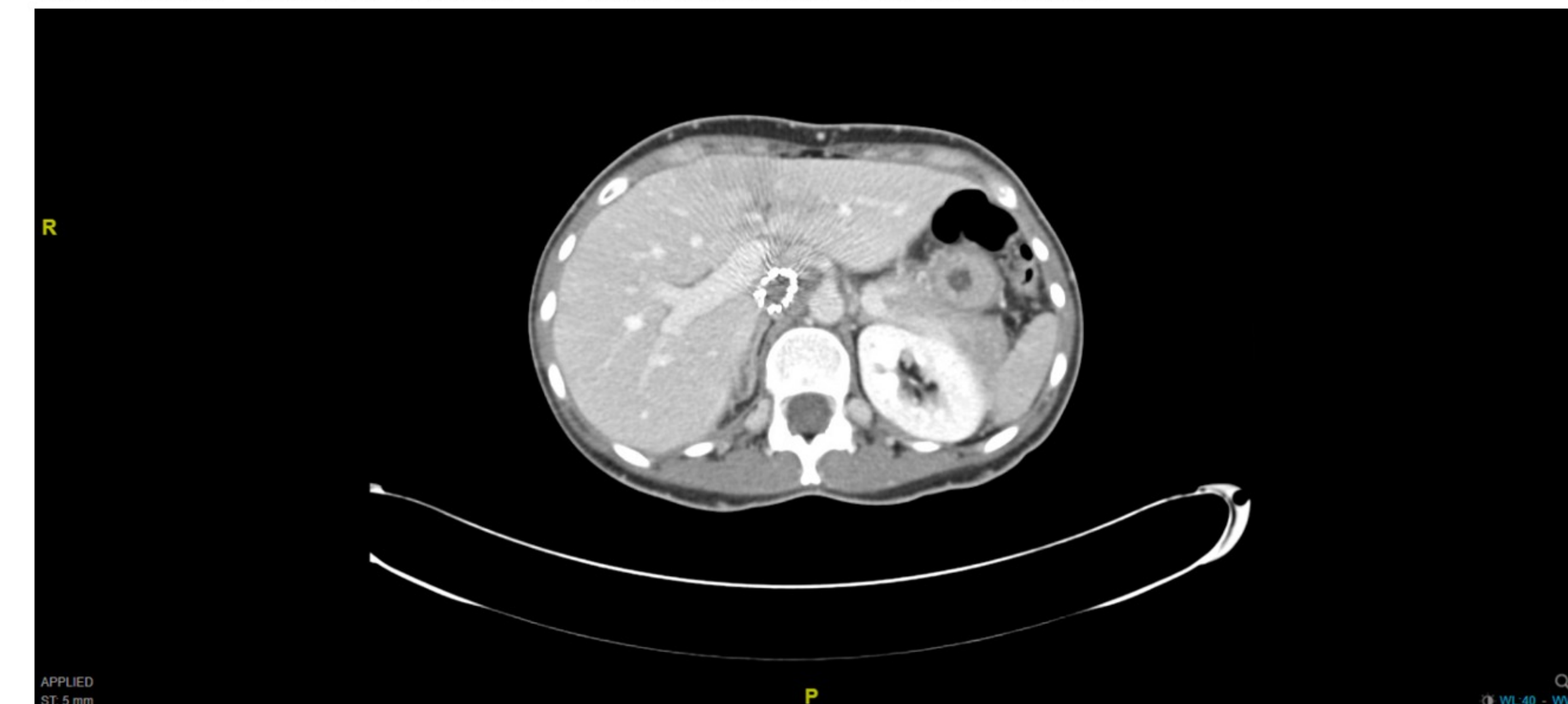
- 32yo **G2P0** at 33 wks presented for scheduled IOL and cesarean delivery.



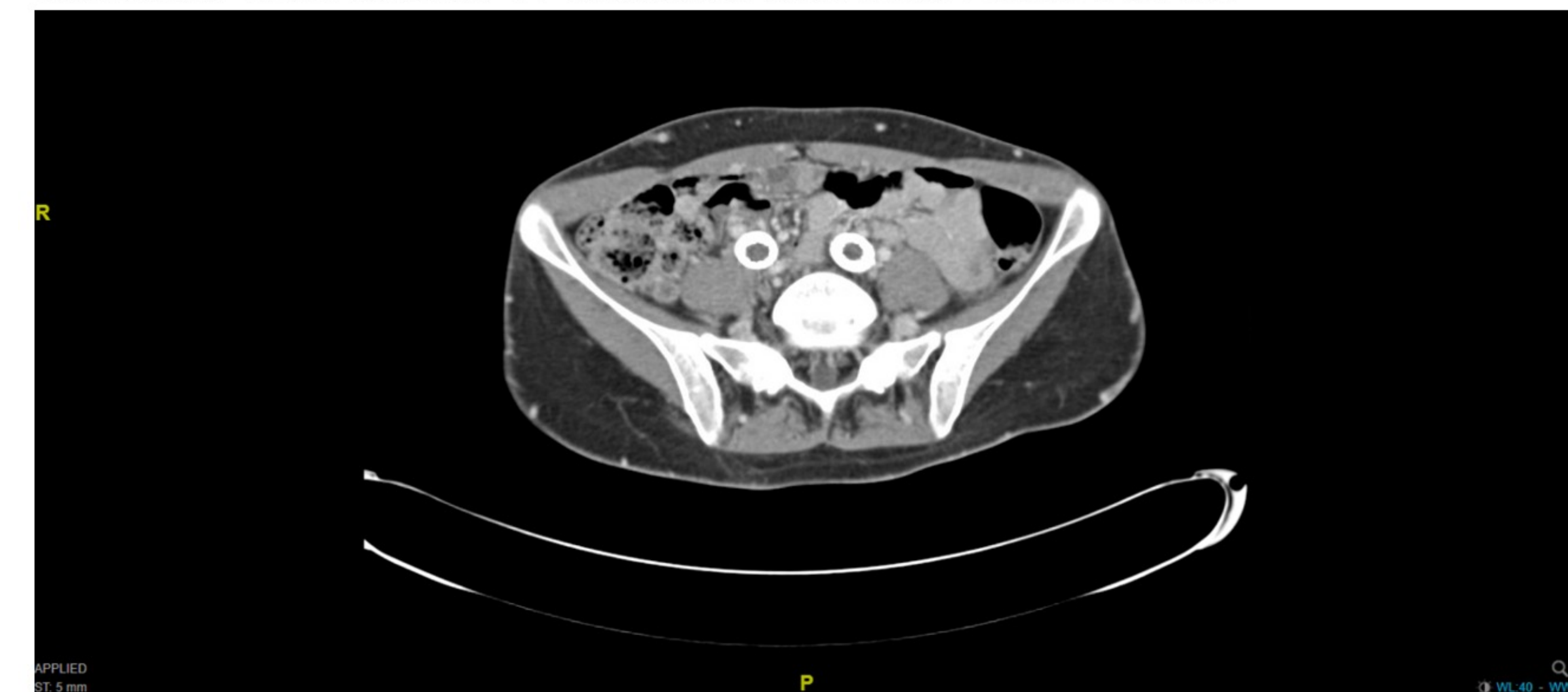
PMHx

- Homozygous **AT III deficiency**, homozygous **Factor V Leiden**; baseline AT III activity **19%** of normal
- May-Thurner syndrome
- Spontaneous abortion at 8 weeks
- Clots and stents in pelvic and lower extremity veins

Computerized tomography of the abdomen and pelvis with contrast with a stent in the inferior vena cava.



Computerized tomography of the abdomen and pelvis with contrast with stents in bilateral common iliac veins.





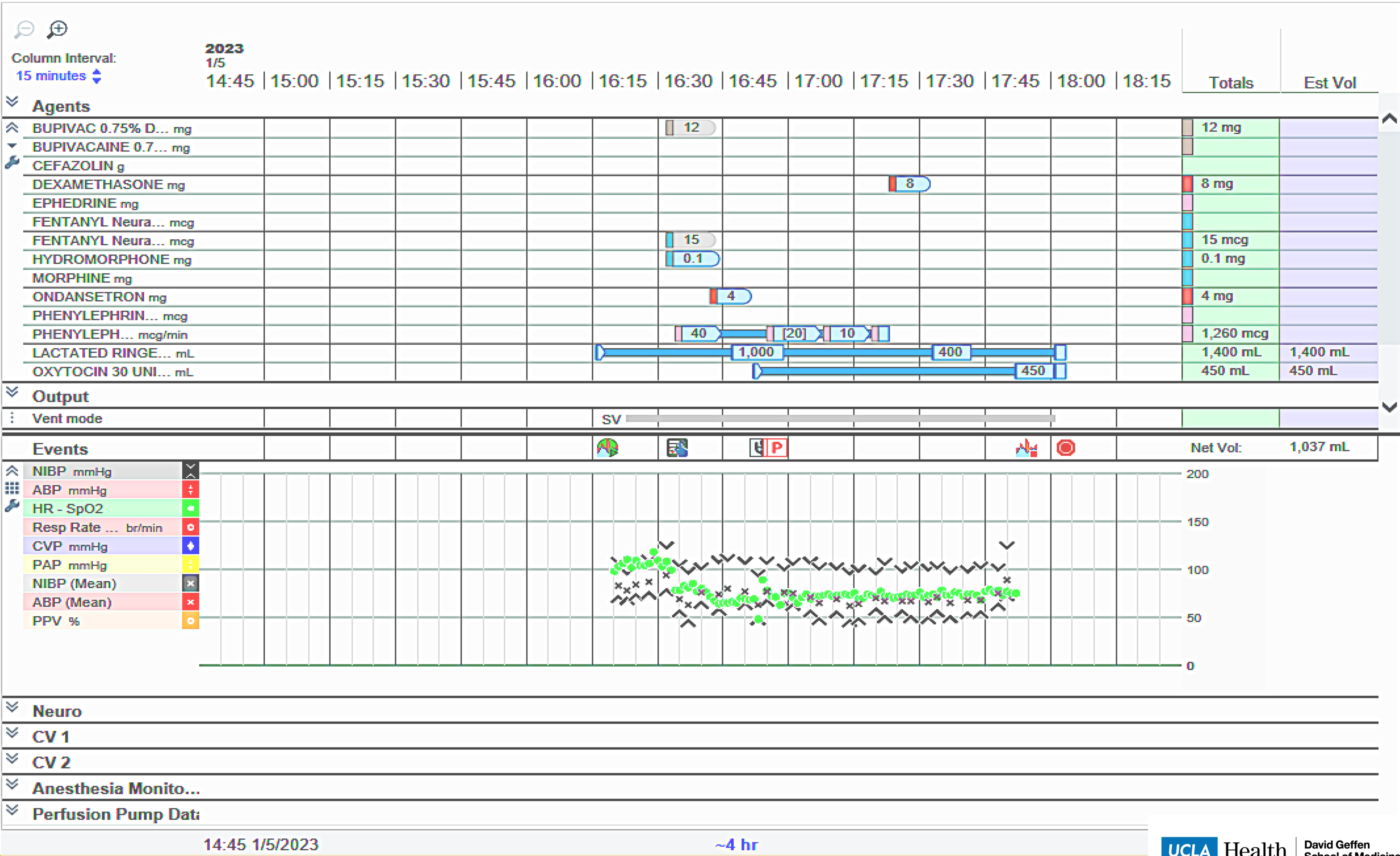
A Case Report of Management of Homozygous Antithrombin III Deficiency for Cesarean Delivery

Brittany N. Burton, MD, MHS, MAS, Jordan Francke, MD, MPH, Cristianna Vallera, MD
Department of Anesthesiology & Perioperative Medicine, David Geffen School of Medicine, UCLA



Intraoperative Course

- Per multidisciplinary discussion, the **goal** was to maintain her AT III activity at 80-120% of normal.
- Her **anti-Factor Xa** levels for enoxaparin were **subtherapeutic**, suggesting increased risk for VTE and NOT bleeding.
- She received **spinal** anesthesia with 12 mg of 0.75% bupivacaine, 15 mcg of preservative-free fentanyl, and 100 mcg of hydromorphone.
- Last dose of SubQ heparin 5,000 units was **five** hours before spinal anesthesia.
- Last dose of enoxaparin was her outpatient dose of 60 mg, and was **< 24 hours** from spinal anesthesia.
- Intraoperative course was uncomplicated; EBL was 800 mL.
- On POD 1, she had moderate pain with no neuro deficits.





A Case Report of Management of Homozygous Antithrombin III Deficiency for Cesarean Delivery

Brittany N. Burton, MD, MHS, MAS, Jordan Francke, MD, MPH, Cristianna Vallera, MD

Department of Anesthesiology & Perioperative Medicine, David Geffen School of Medicine, UCLA

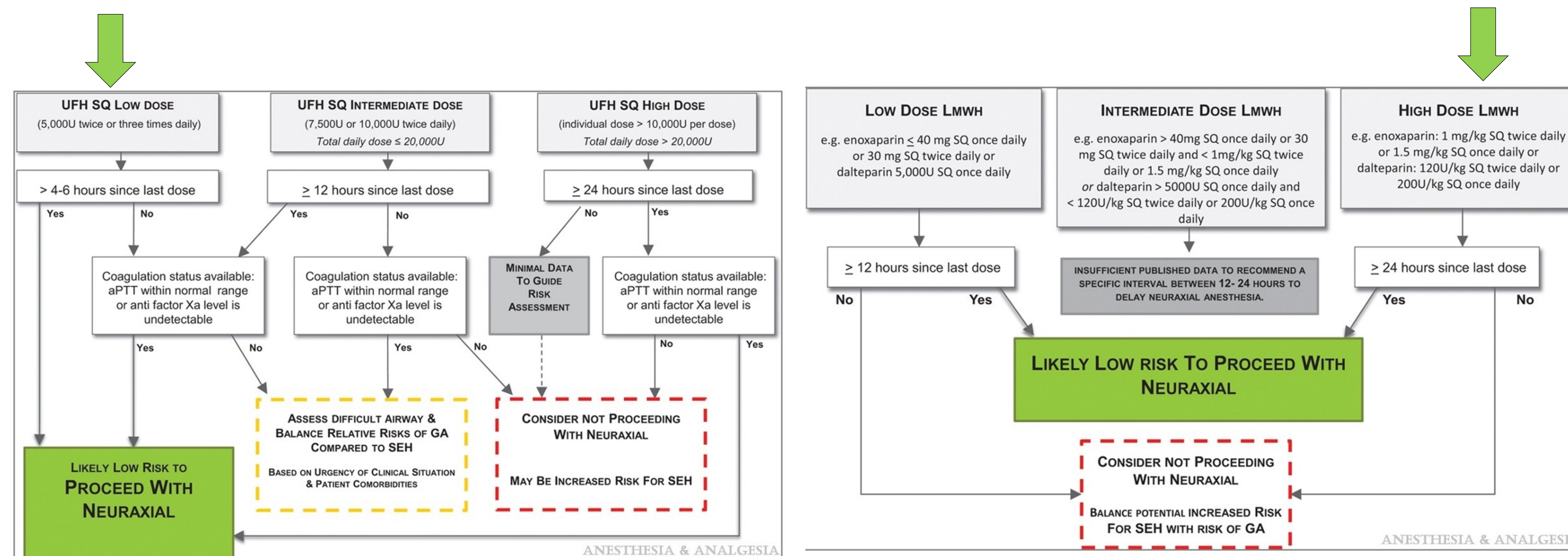


Discussion

- Her VTE history included a prior spontaneous abortion, clots in her IVC, bilateral iliac, common and deep femoral, and popliteal veins.
- She had several lower extremity venograms, thrombolysis, and stent procedures.
- On admission to L&D, she was continued on her AT III infusion and started on SubQ heparin 5,000 units BID.
- She received spinal anesthesia < **24 hours** from her last therapeutic outpatient dose of enoxaparin.
- ✓ *Anti-factor Xa levels were subtherapeutic.*
- She was discharged on POD 5 on warfarin and enoxaparin with hematology follow-up.

Conclusion

- Per SOAP guidelines, we waited **4-6 hours** from last dose of SubQ heparin for spinal anesthesia (2,3).
- SOAP guidelines recommend **waiting 24 hours** for neuraxial anesthesia if a patient is receiving therapeutic enoxaparin (3).



*Decision tree illustrations from Leffert et al. Anesthesia and Analgesia. March 2018

References

- (1) James AH. Pregnancy-associated thrombosis. Hematology Am Soc Hematol Educ Program. 2009:277-285.
- (2) Horlocker TT, Vandermeulen E, Kopp SL, Gogarten W, Leffert LR, Benzon HT. Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines (Fourth Edition). Reg Anesth Pain Med. 2018;43(3):263-309.
- (3) Leffert, Lisa MD*; Butwick, Alexander MBBS, FRCA, MS†; Carvalho, Brendan MBBCh, FRCA, MDCH†; Arendt, Katherine MD‡; Bates, Shannon M. MDCM, MSc § ; Friedman, Alex MD||; Horlocker, Terese MD‡; Houle, Timothy PhD*; Landau, Ruth MD¶; the members of the SOAP VTE Taskforce. The Society for Obstetric Anesthesia and Perinatology Consensus Statement on the Anesthetic Management of Pregnant and Postpartum Women Receiving Thromboprophylaxis or Higher Dose Anticoagulants. Anesthesia & Analgesia 126(3):p 928-944, March 2018.