



The patient I will never forget

Moderator: Eleni Arnaoutoglou

Tuesday, May 27, 2025

1. A PATIENT ON TICAGRELOR WHO NEEDED EMERGENCY SURGERY FOR PERITONITIS

Ecaterina Scarlatescu



PRESENTATION

- 73 year-old male patient who went to the ER with vomiting, diffuse abdominal pain, pale skin, fever, and confusion.
- He presented tachycardia, low blood pressure, oliguria, tachypnea, and SaO2 96%.
 - Comorbidities: high blood pressure, dyslipidemia, obesity, and DM2.
 - Myocardial infarction three weeks earlier, which required placing 2 stents.
 - Complication due to acute intrastent occlusion, resolved with the aspiration of the thrombus.
 - Treatment with ASA 10 mg/day and ticagrelor 90 mg x 2/day, among others.



DIAGNOSIS

- Anemia, leukocytosis, inflammatory reaction (↑ fibrinogen, ↑ PCR), ↑ creatinine, ↑ urea, ↑ billirrubin.
- CT scan: Gangrenous cholecystitis with gallbladder perforation, pneumoperitoneum.
- Chest Rx: enlarged heart, pulmonary congestion, interstitial edema, pleural effusion.

**EMERGENCY LAPAROTOMY INDICATED,
BUT THE PATIENT HAD TAKEN 90 MG OF TICAGRELOR LESS THAN 6 H BEFORE ADMISSION.**

HIGH THROMBOTIC RISK (STENTS)

Considering bridging with cangrelor (ultrashort action) or short-acting glycoprotein inhibitors IIb/IIIa¹⁻³.

HIGH HEMORRHAGIC RISK (GASTROINTESTINAL SURGERY)

Platelet transfusion to neutralize antiplatelet risk⁴.

TREATMENT OPTIONS TO BE CONSIDERED BEFORE SURGERY:

- ASA neutralization: Transfusion of 0,5-0,7 x 10¹¹ platelets / 10 kg.
- Ticagrelor neutralization:
 - ✗ Platelet transfusion is not efficient if taken within the last 24 h^{4,5}.
 - ✗ Bentracimab is the first antidote for ticagrelor⁶, but it is not currently available for clinical use.
 - ✗ Hemoadsorption: an intraoperative polymer hemofilter reduces the preoperative hemorrhage severity^{7,8}, but in this specific clinical case, there was not enough time to proceed with hemoadsorption.
 - ✗ Serum albumin: 99% of ticagrelor is associates to albumin, and albumin separates ticagrelor from platelets in vitro⁹.
 - ✗ Hemostatic agents (fibrinogen, FXIII, tranexamic) have an effect in hemostasis, but not in the platelet function¹⁰.



MANAGEMENT

- Central venous catheter and arterial line.
- 300 ml albumin infusion at 20 % (60 g) to achieve an albumin plasma level of 4.4 g/dL.
- It was not possible to repeat the platelet function test due to the lab operative hours.
- Surgery: cholecystectomy, abscess assessment, and minimal liver resection, washing and draining drainage of peritoneal cavity.
- 800-ml bleeding with no need of platelet transfusion, minimal vasopressor support, and 1 unit of transfused red blood cells (for Hb = 7.5 g /dL).

CONCLUSIONS OF THE CASE:

- Further data and recommendations are required on the management of patients treated with ticagrelor that must undergo an emergency surgery.
- Specific antidotes must be developed and protocols drafted.
- Management should be individualized through the assessment of the platelet function.
- The availability of the bridge therapy should be increased and education on its indications and uses should be promoted.



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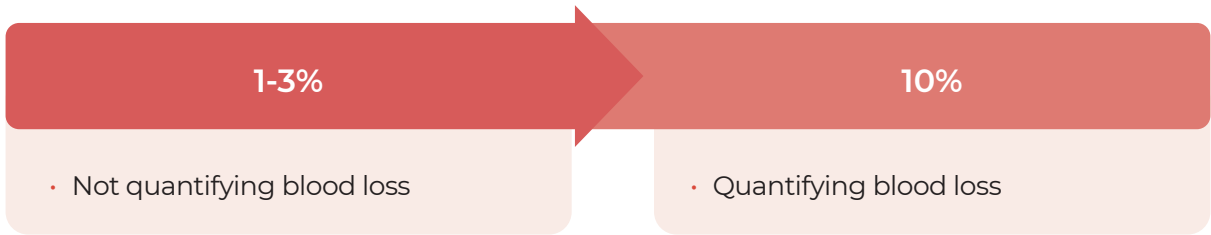
Moderator: Eleni Arnaoutoglou

Tuesday, May 27, 2025

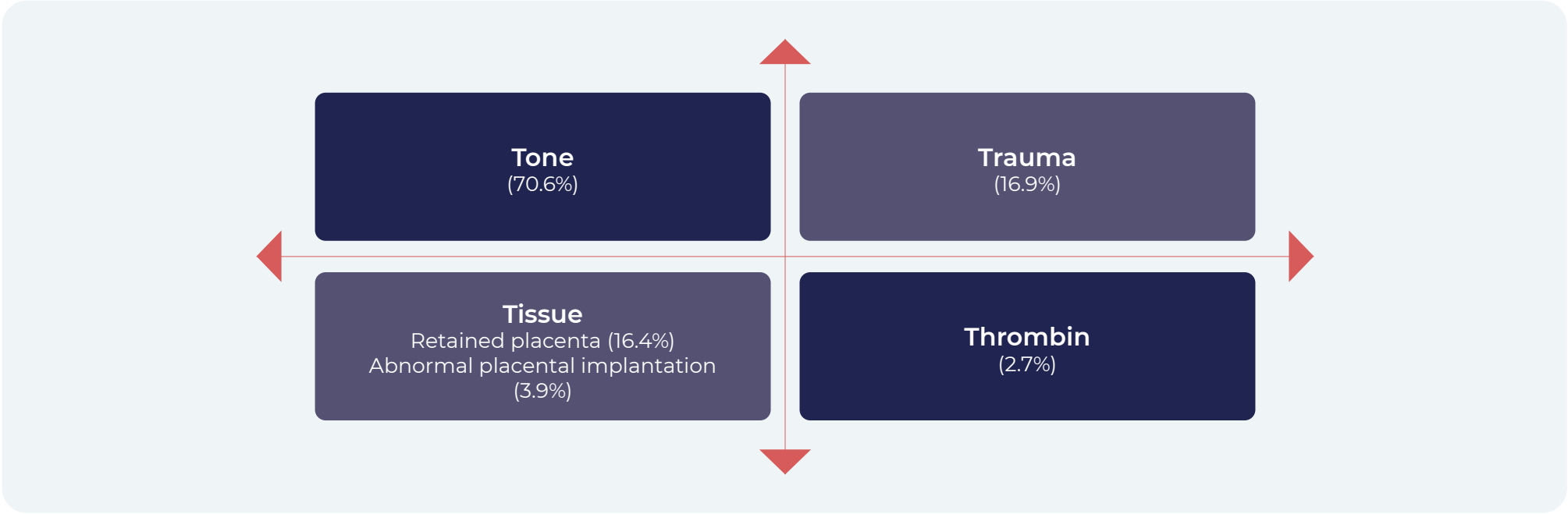
2. PERIPARTUM HAEMORRHAGE: A CHALLENGING SITUATION

Christian von Heymann

The current definition of postpartum hemorrhage (PPH) includes the identification of circulatory shock symptoms besides blood loss^{11,12}. The incidence of PPH has increased in the last few years, probably due to a higher use of oxytocin. The incidence of identified PPH increases if the volume of blood lost is quantified



The cause for PPH may be diverse and multifactorial¹³:



There are also several risk factors classified according to their level of association with PPH. Those with OR > 2 are highly associated¹³.



PRESENTATION

Healthy 24 year-old female patient, with no coagulation disorder, with scheduled C-section.

- Intraoperative hemorrhage due to uterine atony.
- Uterotonics were administered: oxytocin ➡ sulprostone ➡ PGE2, as well as tranexamic acid.
- Later on, the hemorrhage was reduced and the patient was hemodynamically stable, with no need for transfusion.
- Referral to postoperative ICU.



EVOLUTION IN POSTOPERATIVE ICU

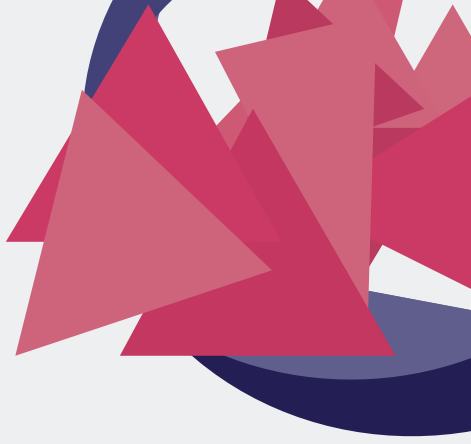
- Persistent hemorrhage without genital tract trauma ➡ blood transfusion for Hb 5-7 g/dL.
- Since the patient was still hemodynamically unstable despite growing doses of norepinephrine ➡ laparotomy: surgical hemostasis + B-Lynch sutures.
- Some hours later, vaginal bleeding increased again and the following measures were applied, stopping the bleeding:
 - Manual uterine compression
 - Prothrombin complex concentrate and fibrinogen
 - rFVIIa
- Final transfusion measures applied:
 - 18 units of red blood cells
 - 12 units of fresh frozen plasma
 - 3 platelet concentrates
- The morning after, sulprostone is withdrawn and the hemorrhage increases again, with new transfusion requirements:
 - 4 units of red blood cells
 - 3 units of fresh frozen plasma
- Ultimately, a hysterectomy was performed and the following were administered:
 - 12 units of red blood cells
 - 10 units of fresh frozen plasma

CONCLUSIONS OF THE CASE:

- The patient presented uncontrolled uterine atony with refractory bleeding, leading to a hysterectomy.
- Massive transfusion kept the patient hemodynamically stable, but the hemorrhage could only be stopped through a hysterectomy.

DISCUSSION

ITEMS OF GOOD MANAGEMENT	ASPECTS TO IMPROVE	WHAT WOULD THE CURRENT MANAGEMENT BE
• Communication • Prevention of secondary organ failure • Interdisciplinary treatment protocol	• Womb monitoring through ultrasound • Angiography to stop the bleeding • Coagulation test at the point of care • Early use of Bakri balloon and rFVIIa • Reoperation	• Early application of taponade with Celox® with sutures • Early use of angiography • Use of a blood recovery device



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3. EPIDURAL HAEMATOMA IN A PATIENT UNDER ANTIPLATELET THERAPY THAT UNDERWENT ENDOVASCULAR TREATMENT FOR ABDOMINAL AORTIC ANEURYSM UNDER SPINAL ANAESTHESIA

Panagiota Stratigopoulou



PRESENTATION

- 72 year-old male patient with high blood pressure and stable coronary artery disease, with elective percutaneous coronary intervention 5 months prior.
- In treatment with dual antiplatelet therapy with aspirin and clopidogrel, and therapy with statins, ACEIs, and beta blockers.
- The patient presents infrarenal abdominal aortic aneurysm.

Questions arising with a patient with dual antiplatelet therapy that has to undergo elective vascular surgery:

- ? Bleeding risk from surgery
 - ? Patient's thrombotic risk
 - ? Antiplatelet treatment to discontinue
 - ? Indication of bridging therapy
 - ? Choice of the anesthetic technique.
- According to the classification of the bleeding risk in non-cardiac surgeries by the *European Society of Cardiology*, this would be a high-bleeding-risk operation, both because of the aneurysm and the lumbar puncture¹⁴.
 - According to the same guides, thrombotic risk was not high, and so it was decided to stay on ASA and to discontinue clopidogrel five days before surgery¹⁴.
 - Neuraxial anesthesia is acceptable if the ASA dose is low and clopidogrel is appropriately discontinued¹⁵.



SURGICAL PROCEDURE

- Anesthesia in L3-L4 with fentanyl and ropivacaine, and 5000 UI of heparin are administered 30 minutes after anesthesia.
- 3-5-hour surgery, the patient being hemodynamically stable.

EVOLUTION IN POSTOPERATIVE ICU

- The patient presented lower limb flaccid paralysis, with no muscular strength, movement,or reflex.
- ROTEM and coagulation test within normal limits.
- CT scan with no pathological findings.
- Referral to hospital with NMR and neurosurgery department



DIAGNOSIS

- Spinal cord compression due to epidural hematoma ➡ Emergency surgery and discharge after 7 days with mild sensitive and residual motor deficiency.

Epidural hematoma features¹⁶

Signs and symptoms	Diagnosis	Management
• Sudden back pain • Motor and sensitive deficiency • Increased pain with pressure, coughing, or sneezing	• Full-spine NMR	• Emergency consultation to Neurology • Decompression in 8 hours maximum, since the sequels depend on the severity and duration of the initial deficiency

Considerations regarding anesthesia in cases of Endovascular Aneurysm Repair (EVAR):

1. Anesthetic technique

According to a recent meta-analysis, regional anesthesia is associated to a lower mortality, number of MACEs, admission to the ICU, and shorter hospital stays for EVAR¹⁷.

2. Administration of heparin

2018 guides recommend at least 1 hour to reduce the risk of spinal hematoma¹⁸.

There is no evidence from RCTs, but the goal should be to maintain a 2-2.5 x baseline activated clotting time.

3. Activated clotting timeo

4. Suitability of the dual antithrombotic therapy with ASA and IV heparin

CONCLUSIONS OF THE CASE:

- Surgical patients on dual antithrombotic therapy require a multidisciplinary cooperative management between surgeons, cardiologists, and anesthetists to be prepared for the unexpected.
- Guidelines are required to manage these patients.
- Management should be individualized.
- It is advisable to strongly suspect epidural hematoma after the neuraxial anesthesia in patients with bleeding risk, even if it is mild.

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