

Anaesthesia in vascular surgery: my worst case



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Disclosure

- Bayer HealthCare
- LFB
- MSD
- Sanofi Aventis

- Mandatory, “a few days” before planned surgery (Décret n° 94-1050)
- A 75 years-old man, 1m80, 80 kg
- Medical history
 - Arterial hypertension ; Atrial fibrillation
 - Coronary stenting 7 months ago
 - Endoprosthesis for abdominal aortic aneurysm
- Medications
 - Apixaban: last intake at D-3 or D-5 in case of neuraxial puncture
 - Aspirin: to be continued
 - Amiodarone: to be continued
 - Nebivolol: to be continued
- Scheduled for a thoracic aortic fenestrated endoprosthesis
- Indication for cerebro-spinal fluid (CSF) drainage

Perioperative DOAC management according to haemorrhagic risk

	Low haemorrhagic risk	High haemorrhagic risk		
	Before the procedure	No drug the night before nor the morning of the procedure	rivaroxaban apixaban edoxaban	Cockroft ≥ 30 ml/min
	dabigatran		Cockroft ≥ 50 ml/min	Last intake at D-4
			<p>Neurosurgery, neuraxial anaesthesia or puncture: last intake at D-5 for all drugs. If needed, biological monitoring of DOAC may be considered</p> <p>During the early phase of DVT or PE (1st month), when high dose of DOAC are recommended, a personalized approach should be discussed by a multidisciplinary team</p>	
After the procedure	Resume the drug at usual schedule and at least 6 hours after the procedure	<p>Anticoagulation at “prophylactic” dose at least 6 hours after the invasive procedure , if venous thromboprophylaxis is necessary</p> <p>Anticoagulation at “curative” dose as soon as haemostasis allows it (for example after 24 to 72 hours)</p>		

Management of antiplatelet therapy in patients undergoing elective invasive procedures

			Procedure-associated bleeding risk <i>To assess with the surgeon or the operator</i>		
			Low	Moderate	High
Thrombotic risk of the patient	Aspirin for primary prevention		Stop or continue	Stop	Stop
	AP for secondary prevention <i>(cardiovascular prevention, lower extremity artery disease, history of ischaemic stroke)</i>	Aspirin monotherapy	Continue	Continue	Stop
		Clopidogrel monotherapy	Continue	Stop <u>and</u> bridge with aspirin	Stop
	DAPT for coronary artery disease <i>Postpone until completion of the full course of DAPT if no major life-threatening or functional risk</i>	<ul style="list-style-type: none"> • Stent <1 month • Stent <6 months with high thrombotic risk^a • MI <6 months 		Postpone	Postpone
None of the previous criteria			Non-deferrable surgery: continue both APs	Non-deferrable surgery: continue aspirin and stop P2Y ₁₂ inhibitor	Non-deferrable surgery: stop both APs ^b
			Continue both APs	Continue aspirin and stop P2Y ₁₂ inhibitor	Stop both APs

Procedure-associated bleeding risk
 Low: feasible in patients on DAPT (ex: cataract)
 Moderate: feasible in patients on aspirin alone (ex: colectomy)
 High: not feasible in patients on APs (ex: ampullectomy)

Duration of AP discontinuation: last intake of:
 • Aspirin on day -3 (day 0 = day of procedure)
 • Clopidogrel and ticagrelor on day -5
 • Prasugrel on day -7
 (Add 2 more days for intracranial neurosurgery)

Resume postoperatively as soon as possible according to the postoperative bleeding risk

^a **Stent with high thrombotic risk**

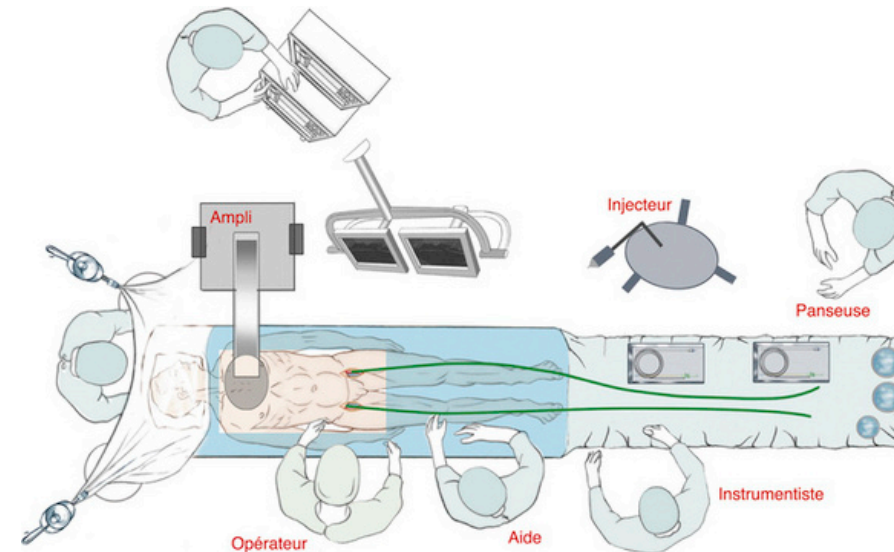
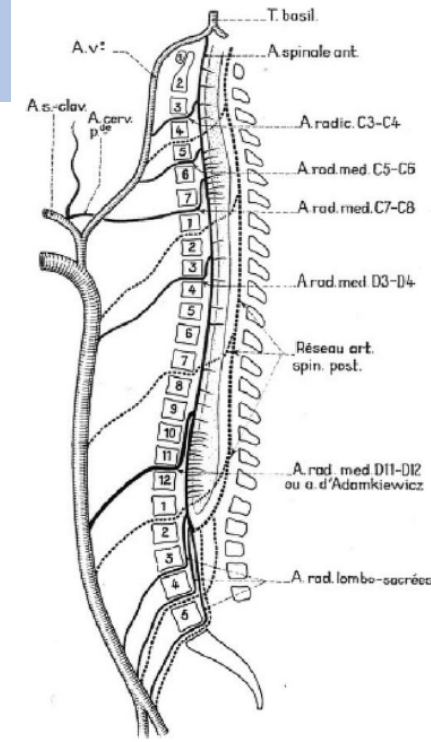
- Chronic kidney disease (i.e. CrCl < 60 mL/min)
- Diffuse multivessel disease especially in diabetic patients
- Prior stent thrombosis on adequate antiplatelet therapy
- Stenting of the last remaining patent coronary artery
- At least 3 stents implanted
- At least 3 lesions treated
- Bifurcation with 2 stents implanted
- Total stent length >60 mm
- Treatment of a chronic total occlusion

^b For stent <1 month, discuss bridging with intravenous APs

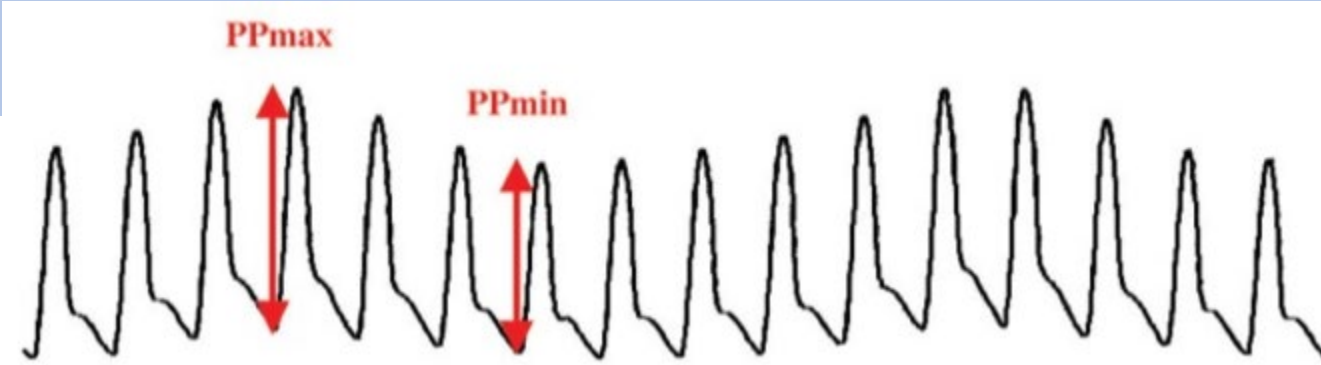
- Mandatory, “in the 24 hours” before surgery (Décret N° 2018-934)
- To check blood results; cardio-pulmonary exams
- To check medications discontinuation
 - DOAC dosage?
- To answer last questions from patient and family

D0, in the operating room

- Attempt of CSF drainage by senior anaesthetist
 - 2 punctures; blood -> failure and stop
 - Discussion with surgeon - > the surgical procedure has to be done
- Two arms in the operating field
 - Arterial line connected to an introducer
- Difficulty to warm the patient
- A struggle for space...



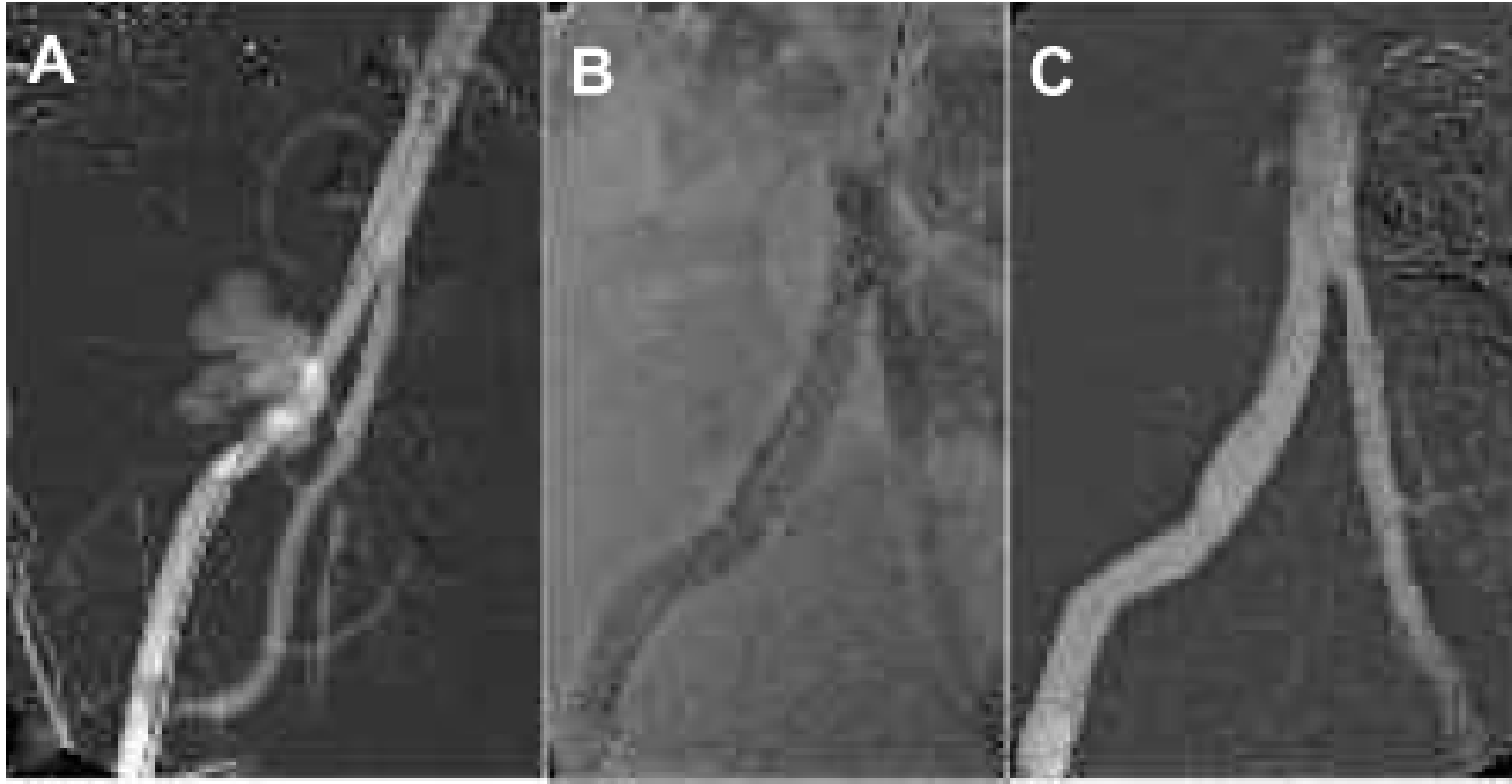
Some time after surgical incision



- Sudden drop in EtCO₂
- Followed by a drop in blood pressure and an increase in PPV
- Without tachycardia because of beta-blockade treatment
- Surgeon says nothing about bleeding but...

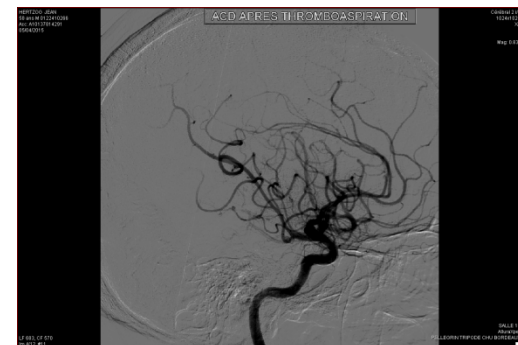
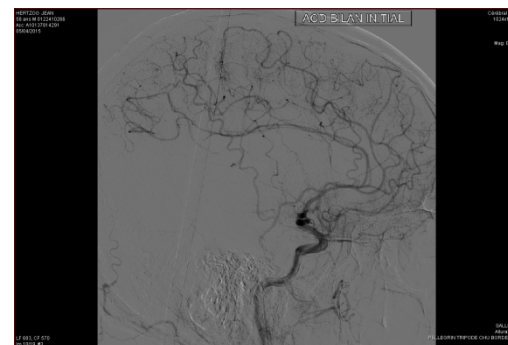
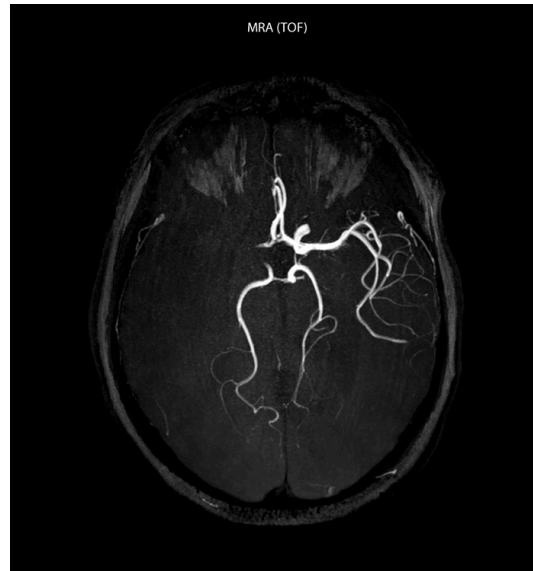


Iliac artery rupture



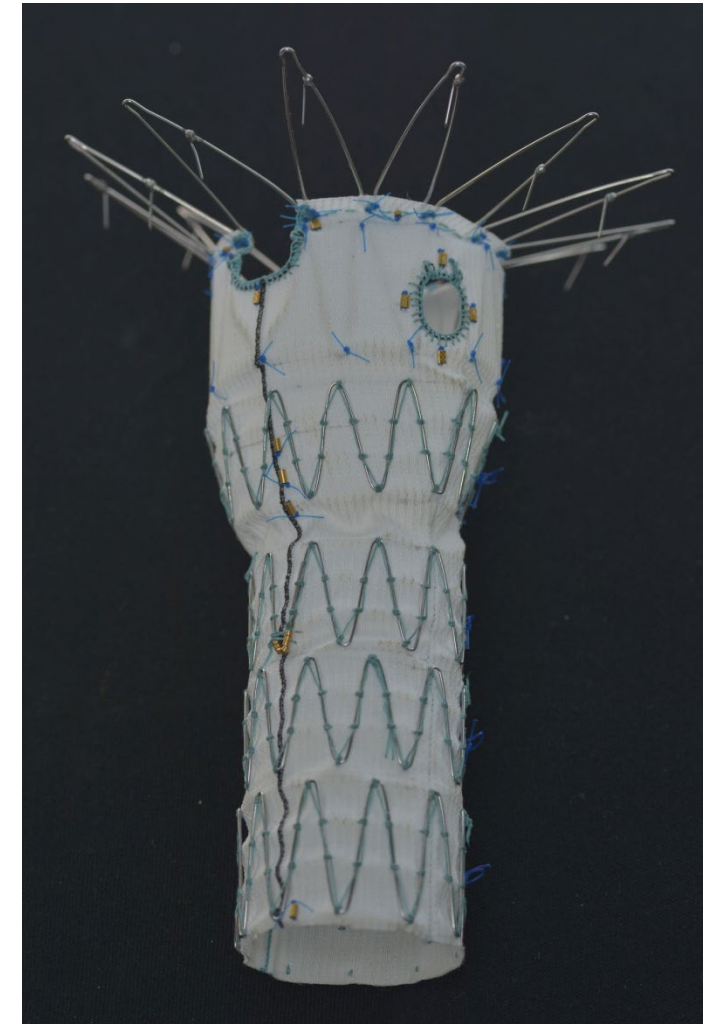
In the PACU

- Haemodynamic stability; after adequate endovascular repair, vascular filling and transfusion
- Tracheal extubation
- But... left hemiplegia with facial paralysis
 - Haemodynamic and respiratory optimization
 - Emergency cerebral MRI
 - Intra-cerebral thrombectomy



- Even a « simple » endoprosthesis can be a nightmare, on one side or the other of the operating field, and sometimes on both sides
- Importance of anticipation, communication, collaboration
 - Haemodynamic monitoring
 - Venous access
 - Patient's warming is part of haemostasis





« Technically speaking, the skill was perfect! »