



Schulich

MEDICINE & DENTISTRY

How I do it en traumatologie -

Arrêt traumatique

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18 Mai, 2023*



Conflit d'intérêts

- Conseiller médical pour Frontline Medical Technologies Inc.

Introduction

Arrêt traumatique \neq Arrêt medical

ACLS a une utilisation très limitée...
voire pas du tout



Sont-ils vraiment morts ou presque morts???

Pourquoi?

- Trauma pénétrant cardiaque qui se présente en état de choc – jusqu'à 35% de survie
- Tous les traumas pénétrants thoraciques – 15% de survie
- Tous les patients avec traumas contondants – 1-2% de survie

Prehospital traumatic cardiac arrest: Management and outcomes from the resuscitation outcomes consortium epistry-trauma and PROPHET registries

Christopher C.D. Evans, MD, Ashley Petersen, Eric N. Meier, MS, Jason E. Buick, MSc, PCP, Martin Schreiber, MD, Delores Kannas, RN, MSN, Michael A. Austin, MBBS, and the Resuscitation Outcomes Consortium Investigators, Kingston, Ontario, Canada

J Trauma Acute Care Surg. 2016;81: 285–293.

- 6,3% de survie à la sortie de l'hôpital
- La plupart avaient des signes vitaux à l'arrivée des ambulanciers

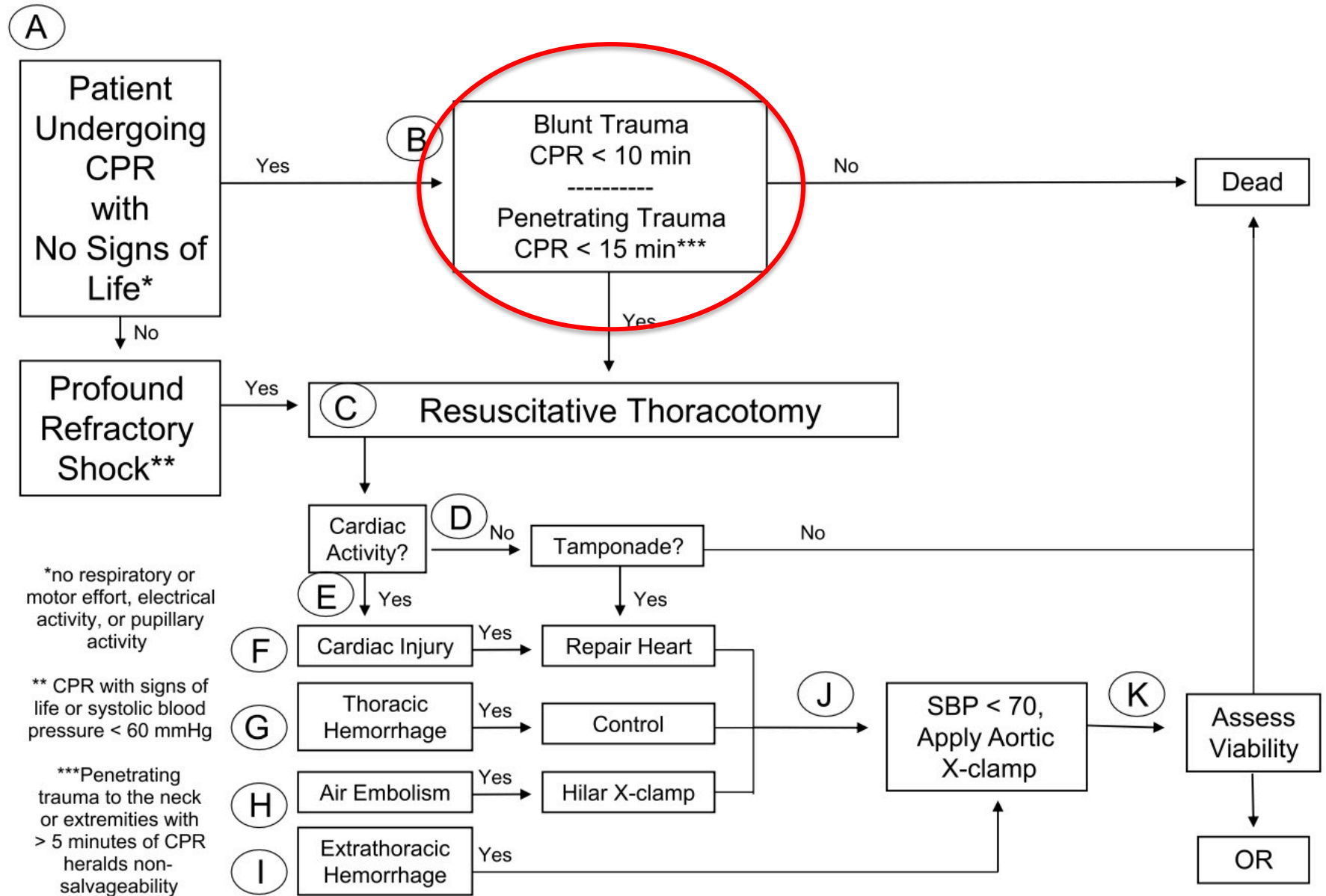
Qui?

WTA 2012 ALGORITHM

Western Trauma Association Critical Decisions in Trauma: Resuscitative thoracotomy

**Clay Cothren Burlew, MD, Ernest E. Moore, MD, Frederick A. Moore, MD, Raul Coimbra, MD,
Robert C. McIntyre, Jr., MD, James W. Davis, MD, Jason Sperry, MD,
and Walter L. Biffl, MD, Denver, Colorado**

Qui?



*no respiratory or motor effort, electrical activity, or pupillary activity

** CPR with signs of life or systolic blood pressure < 60 mmHg

***Penetrating trauma to the neck or extremities with > 5 minutes of CPR heralds non-salvageability

Qui?

An evidence-based approach to patient selection for emergency department thoracotomy: A practice management guideline from the Eastern Association for the Surgery of Trauma

Mark J. Seamon, MD, Elliott R. Haut, MD, PhD, Kyle Van Arendonk, MD, Ronald R. Barbosa, MD, William C. Chiu, MD, Christopher J. Dente, MD, Nicole Fox, MD, Randeep S. Jawa, MD, Kosar Khwaja, MD, J. Kayle Lee, MD, Louis J. Magnotti, MD, Julie A. Mayglothling, MD, Amy A. McDonald, MD, Susan Rowell, MD, MCR, Kathleen B. To, MD, Yngve Falck-Ytter, MD, and Peter Rhee, MD, MPH, Philadelphia, Pennsylvania

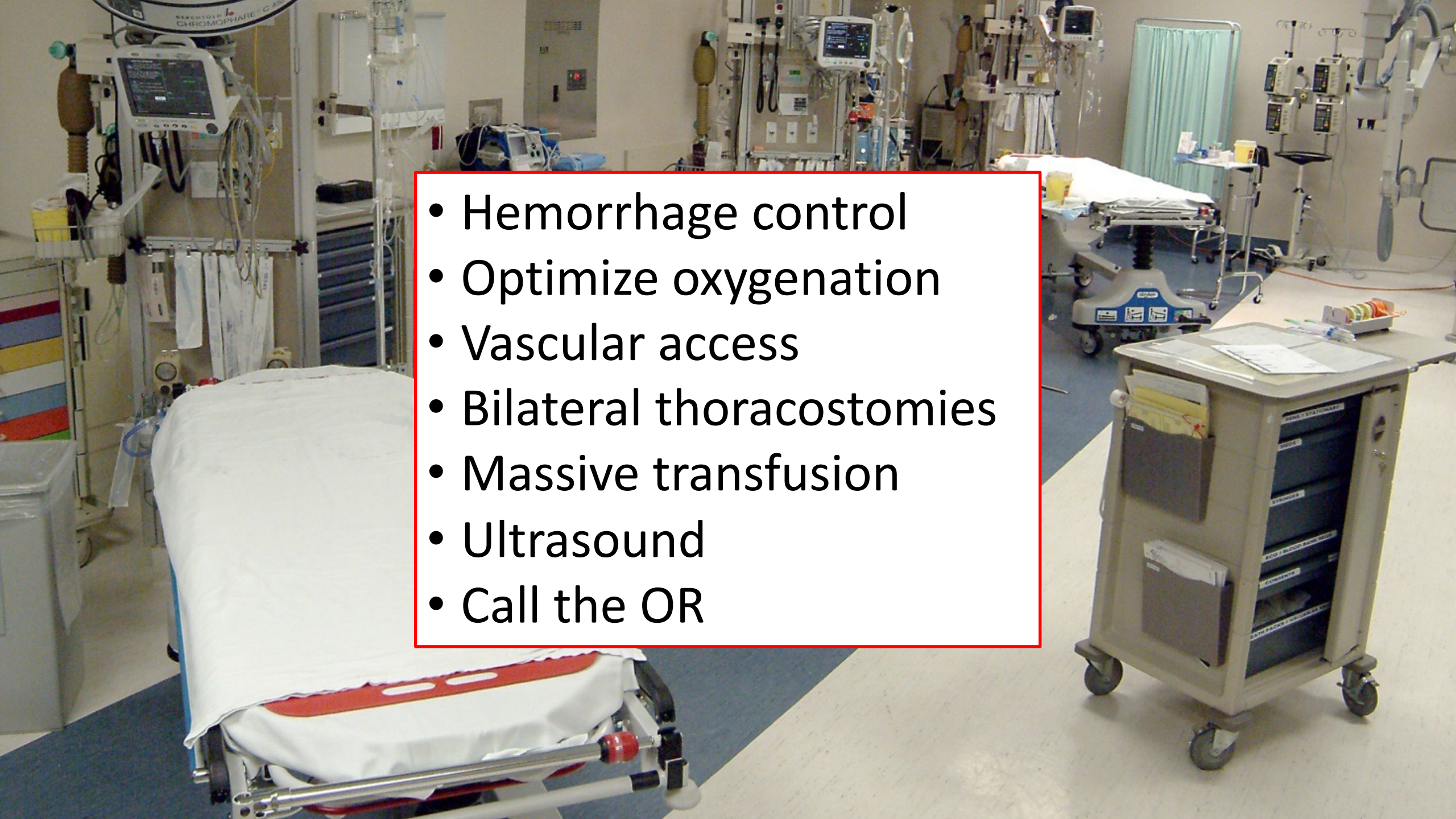
CONCLUSION:

We strongly recommend that patients who present pulseless with signs of life after penetrating thoracic injury undergo EDT. We conditionally recommend EDT for patients who present pulseless and have absent signs of life after penetrating thoracic injury, present or absent signs of life after penetrating extrathoracic injury, or present signs of life after blunt injury. Lastly, we conditionally recommend against EDT for pulseless patients without signs of life after blunt injury. (*J Trauma Acute Care Surg.* 2015;79: 159–173. Copyright © 2015 Wolters Kluwer Health, Inc. All rights reserved.)

Priorités avec l'arrêt traumatique

Identifier les causes réversibles:

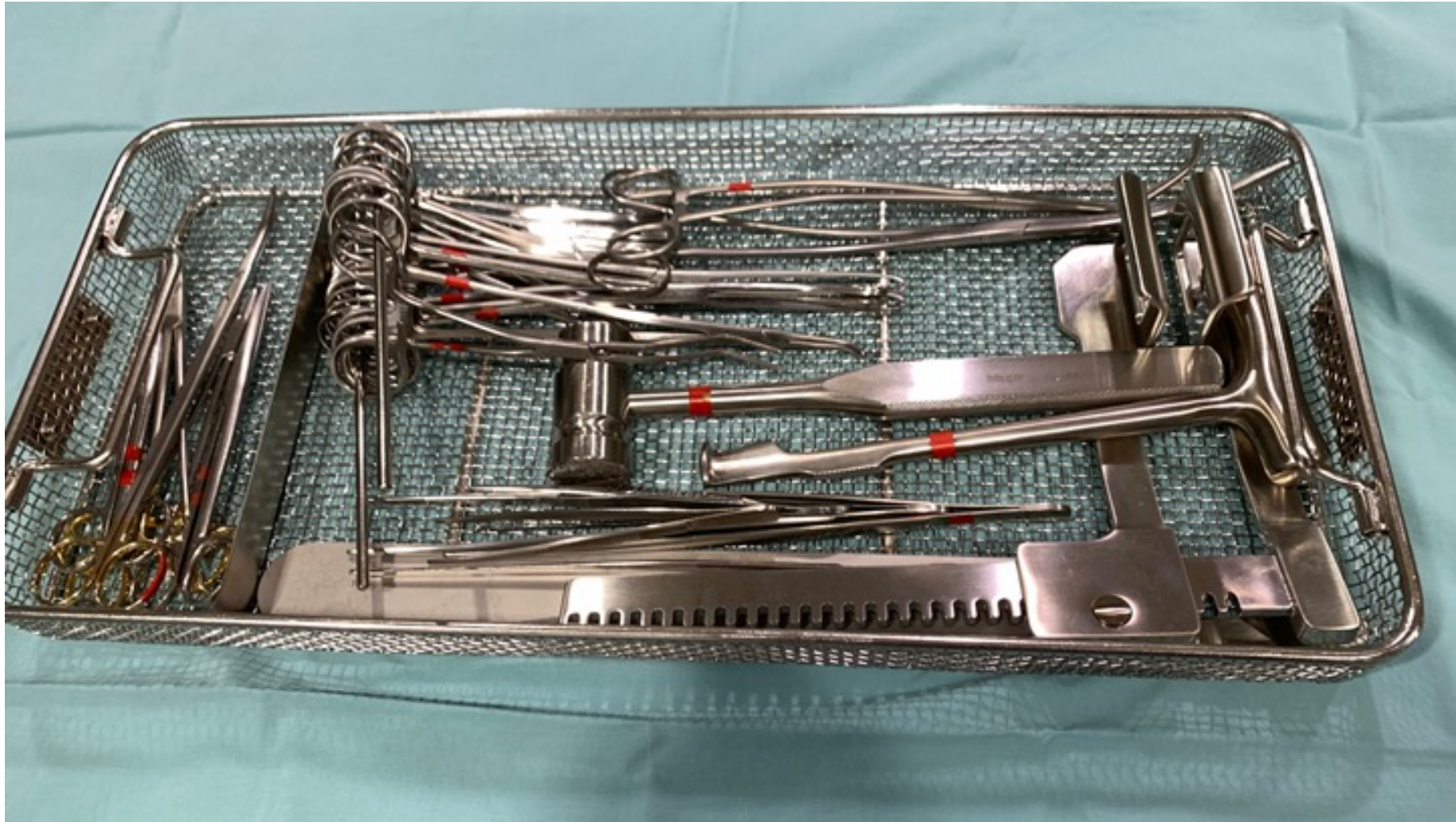
- Hémorragie
- Hypoxie
- Pneumothorax compressif
- Tamponnade cardiaque

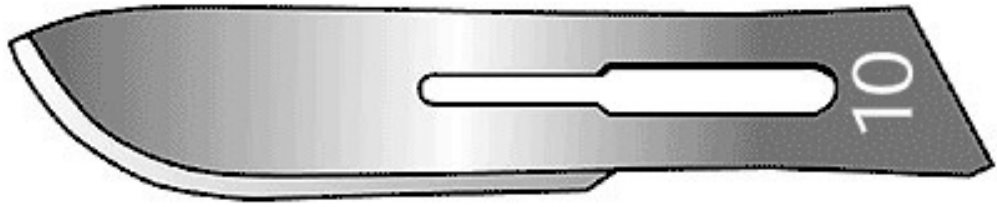
- 
- Hemorrhage control
 - Optimize oxygenation
 - Vascular access
 - Bilateral thoracostomies
 - Massive transfusion
 - Ultrasound
 - Call the OR

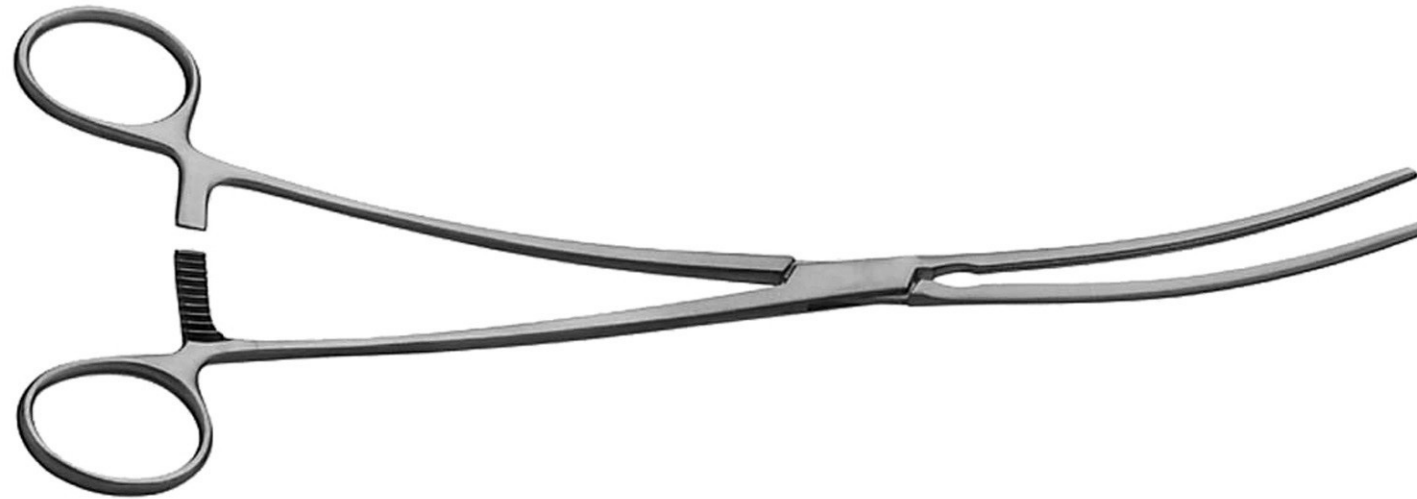
Decision...



Thoracotomie de réanimation



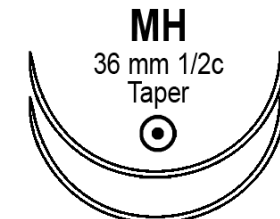




3-0
(2.0 metric)
36" (90 cm)

8842H

PROLENE*
(Polypropylene) Suture
BLUE MONOFILAMENT



ETHALLOY* NEEDLE ALLOY

3 DOZEN

EXP

LOT

ETHICON™


Disclaimer: Needle sizes displayed on the Ethicon Product Center may vary depending on computer/tablet/smartphone screen ratios.



Incision pour thoracotomie de réanimation

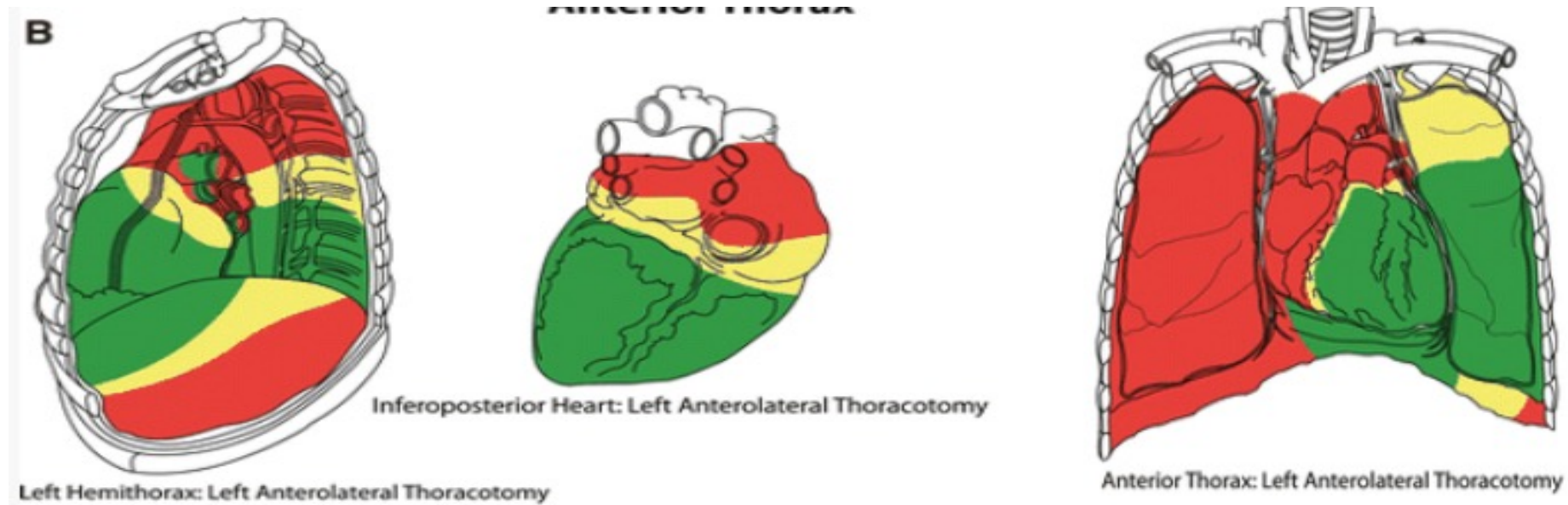
Objectifs

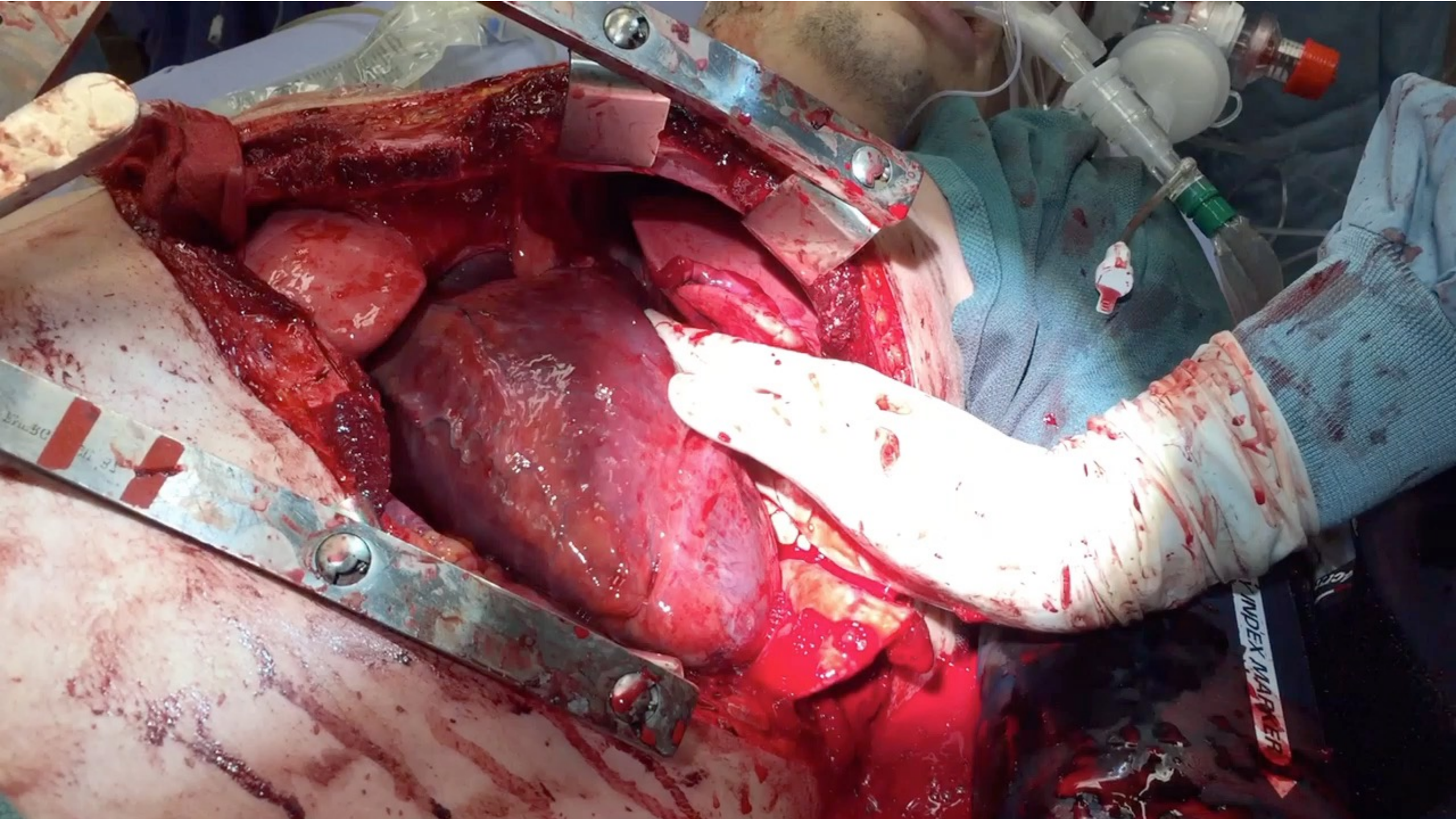
- Ouvrir le péricarde – contrôler l'hémorragie.
- Comprimer/clamper l'aorte thoracique descendante au-dessus du diaphragme
- Inspecter les poumons pour tout saignement - considérer clamper le hile pulmonaire
- Commencer la compression/défibriation cardiaque au besoin
- Vers la salle d'operation



**Rib spreader
placed with
handle in axilla**

Thoracotomie antérolatérale gauche



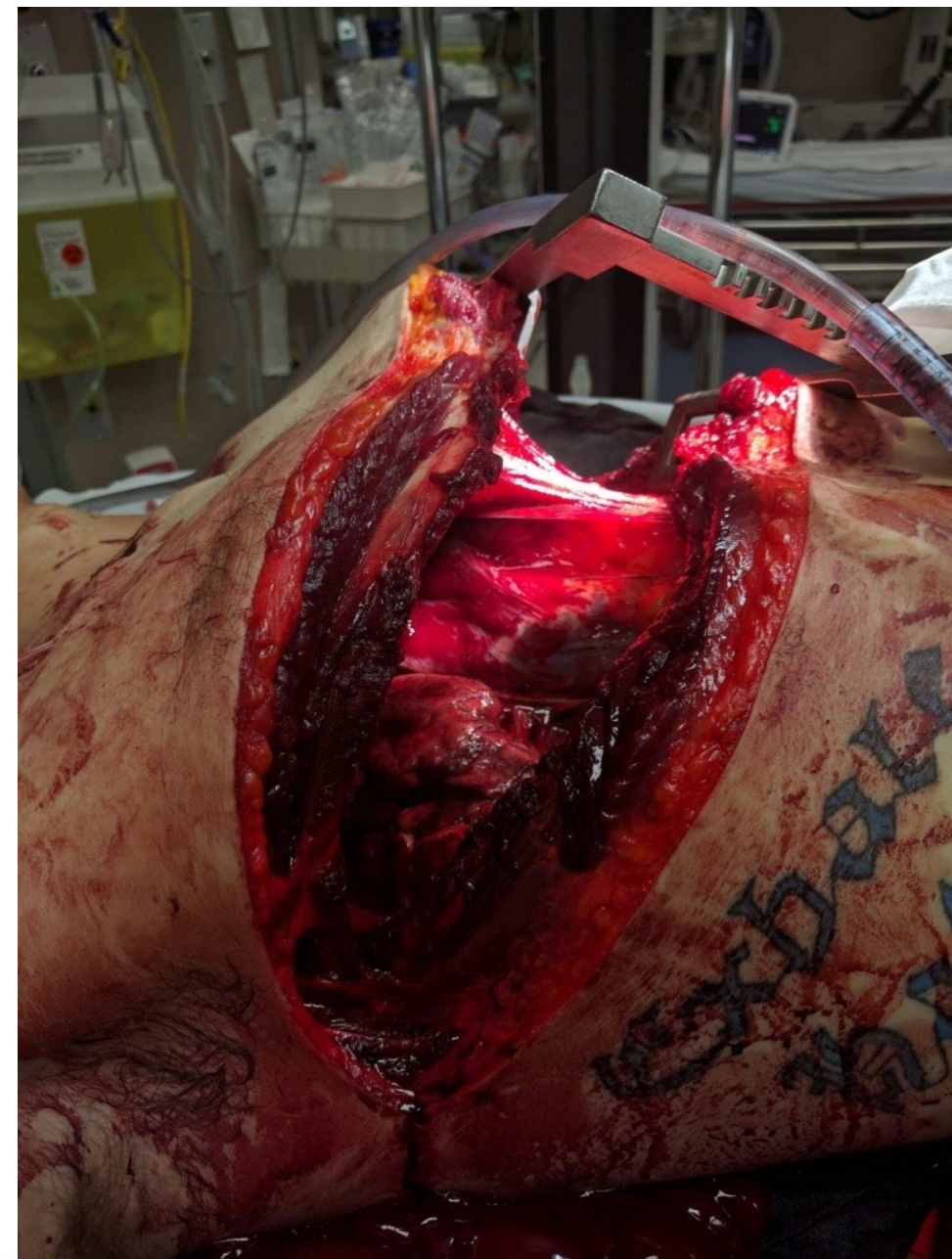
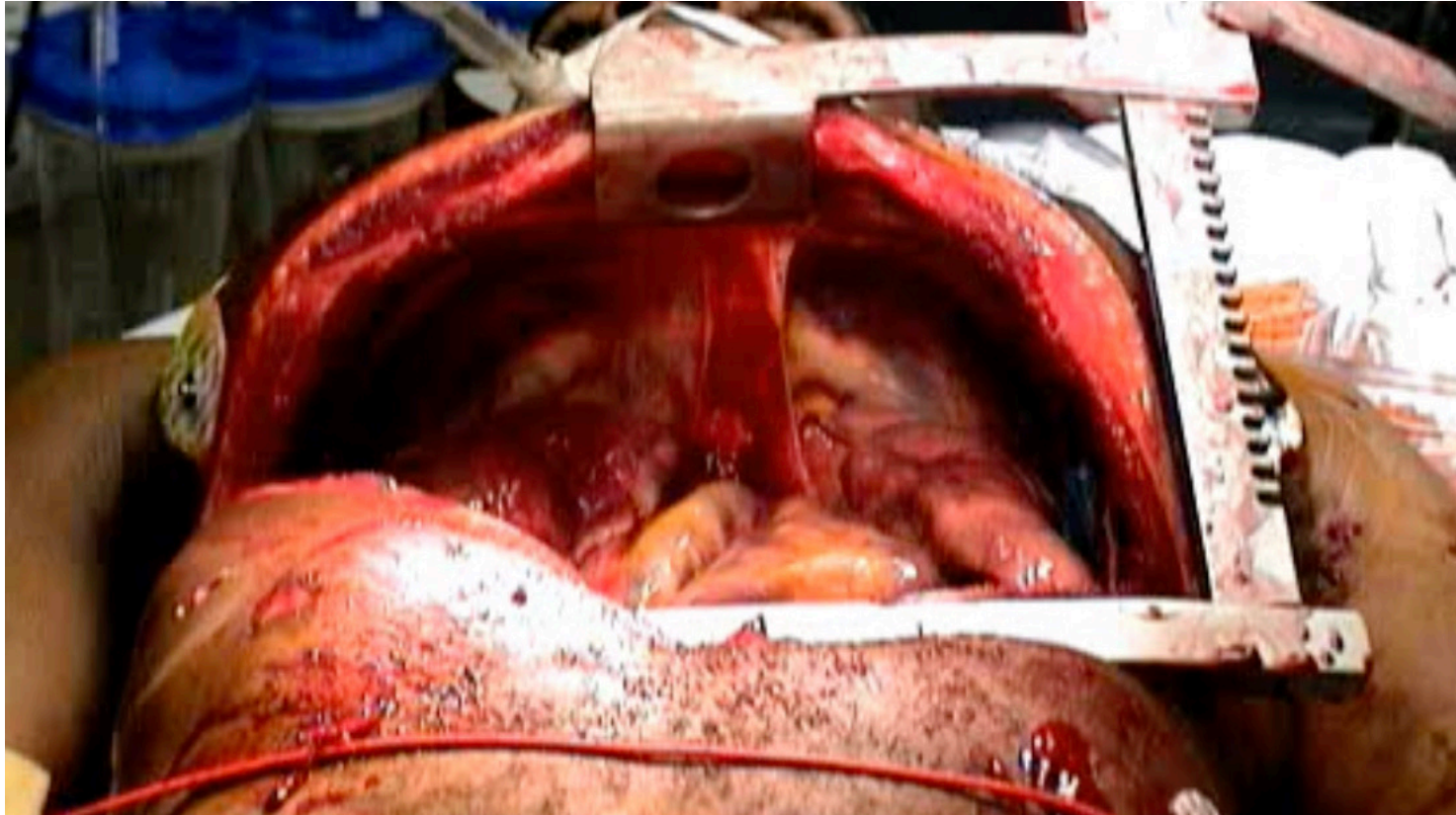


INDEX MARKER

**The Sternum is divided
using a Lebske Knife**



Clamshell



Thoracotomie clamshell

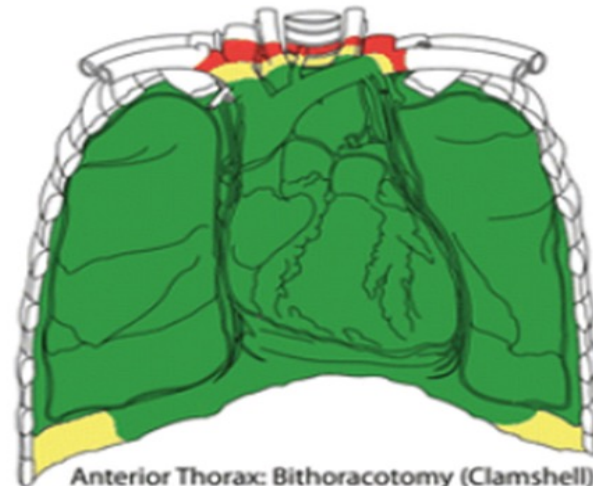
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Left Hemithorax: Bithoracotomy (Clamshell)



Right Thorax: Bithoracotomy (Clamshell)

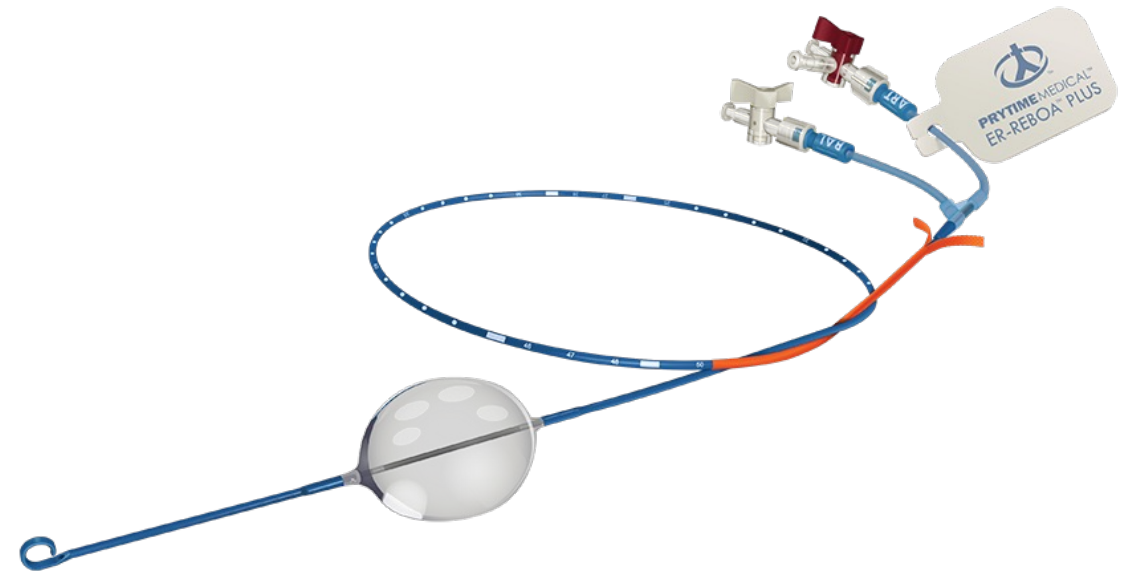
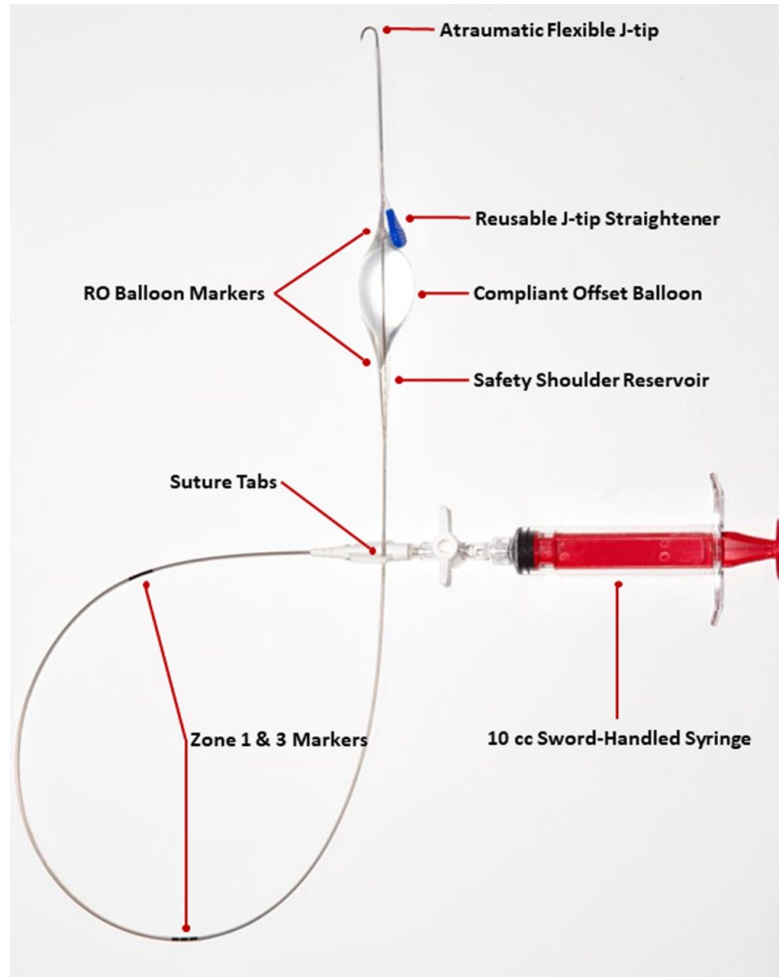


Anterior Thorax: Bithoracotomy (Clamshell)

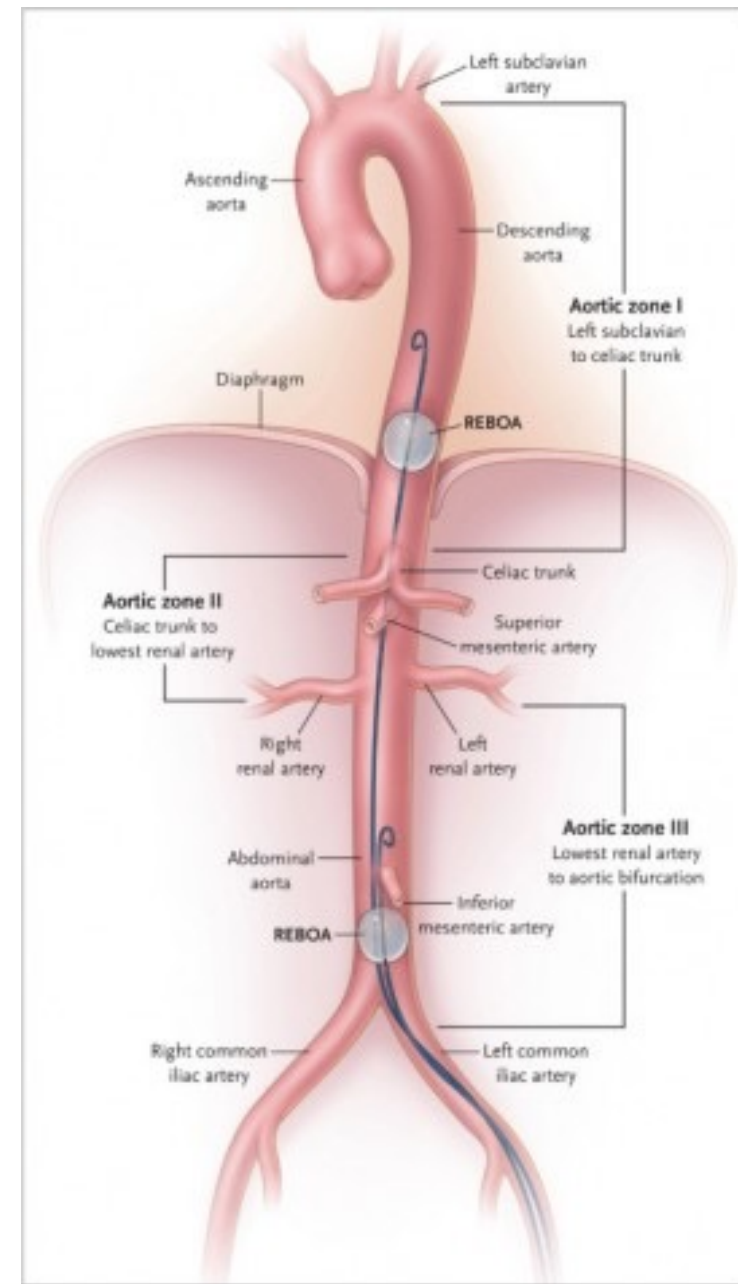
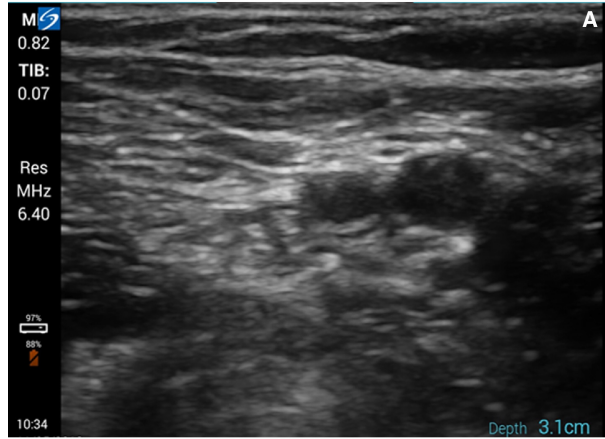


Inferoposterior Heart: Bithoracotomy

REBOA



REBOA



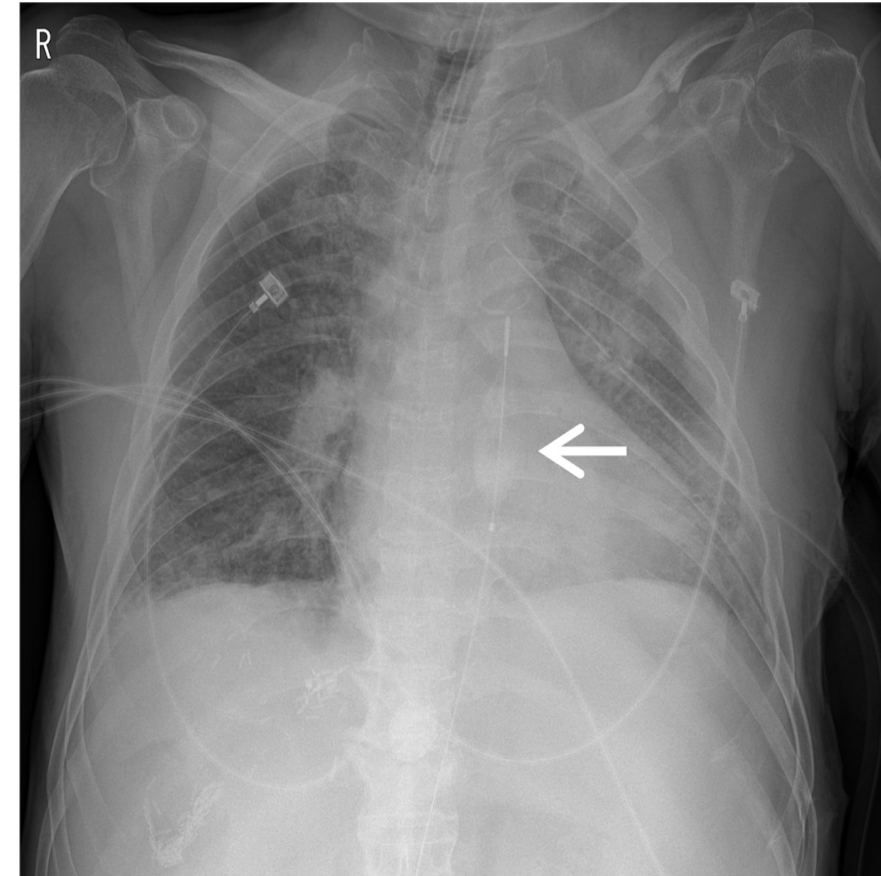
REBOA

Utilisé plus avec “presque morts”

L'hémorragie doit être sous le diaphragme

Contre-indications

- Trauma pénétrant thoracique/cou
- Trauma de l'aorte contondant



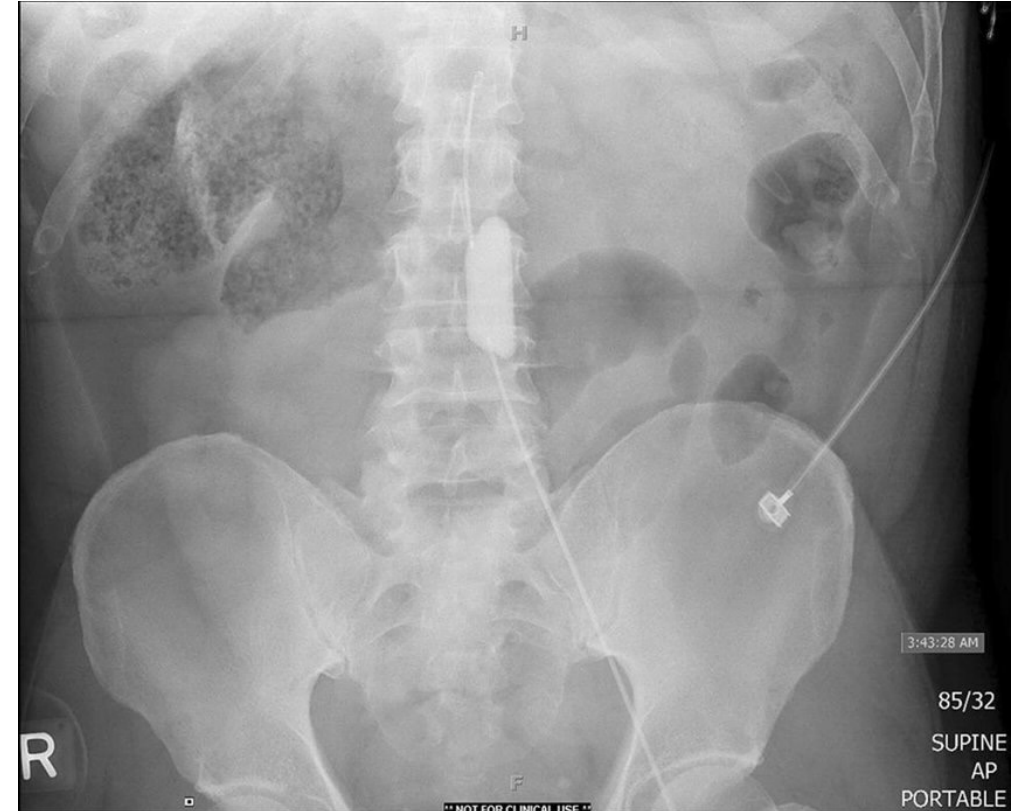
REBOA

Avantages

- Moins invasif
- Occlusion aortique partielle/REBOA

Controverses

- Plus rapide/plus lent?
- Qui devrait le déployer



Conclusion

- Bon système
- Identifier les causes réversibles
- Thoracotomie de reanimation pour tous trauma penetrant thoracique
- REBOA pour “presque mort” et thoracotomie de reanimation pour “vraiment mort”???

Remerciements



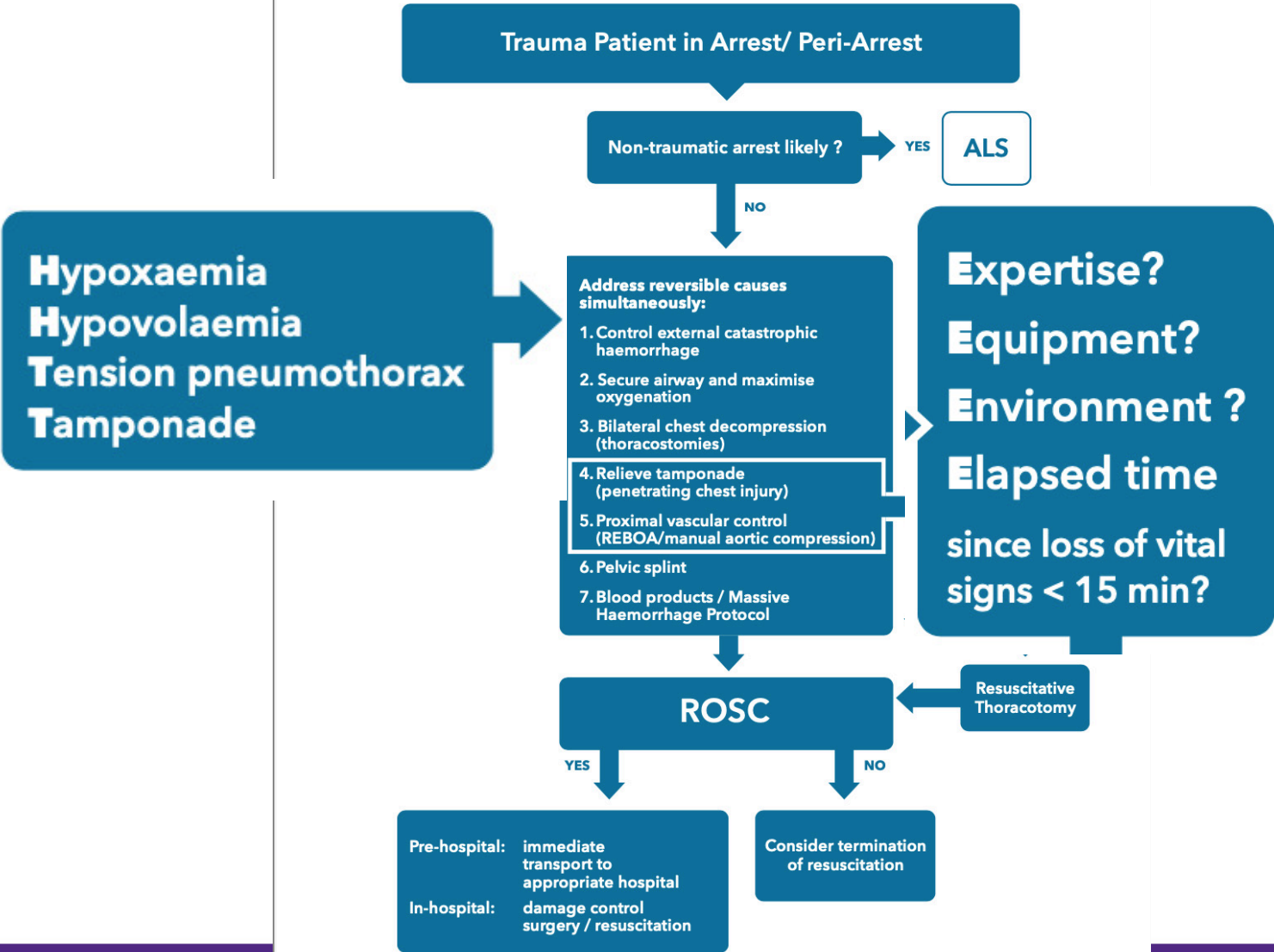
MERCI





Western
UNIVERSITY • CANADA

TRAUMATIC CARDIAC ARREST/ PERI-ARREST ALGORITHM



Royal College of
Emergency
Medicine, UK
September 2019

TRAUMATIC CARDIAC ARREST ALGORITHM

High Energy Mechanism

Confirm Cardiac Arrest

- No Signs of Life
- No palpable pulses

Box 1. Initial Life Saving Interventions

- Haemorrhage Control incl. pelvic binder
- Optimise Oxygenation / Ventilation
- Vascular Access
- Bilateral Thoracostomies
- Rapid warmed blood and blood product transfusion

Consider Resus Thoracotomy
especially penetrating trauma

ROSC

- Consider transfer to theatre for Damage Control Surgery (DCS)
- Consider vasopressors in Head Injury post-ROSC, pre-DCS
- Keep warm and address the coagulopathy
- Consider CT Imaging
- Arrange ICU transfer

If Probable Medical Cause of Cardiac Arrest
eg. drowning or cardiac event preceding a collapse
Follow Standard ALS algorithms

Reversible Causes

- Hypoxia
- Hypovolaemia
- Tension Pneumothorax
- Cardiac Tamponade

Prioritise

- Box 1 Interventions
- Cardiac Ultrasound

De-Prioritise

- ECC
- Defibrillation
- Vasopressors

Resus Thoracotomy

- Cardiac Tamponade
- Massive unilateral haemothorax

Decision to STOP Resuscitation guided by:

- Duration of Cardiac Arrest
- Lack of response to life saving interventions
- Persistently low ETCO₂
- Cardiac standstill on ultrasound