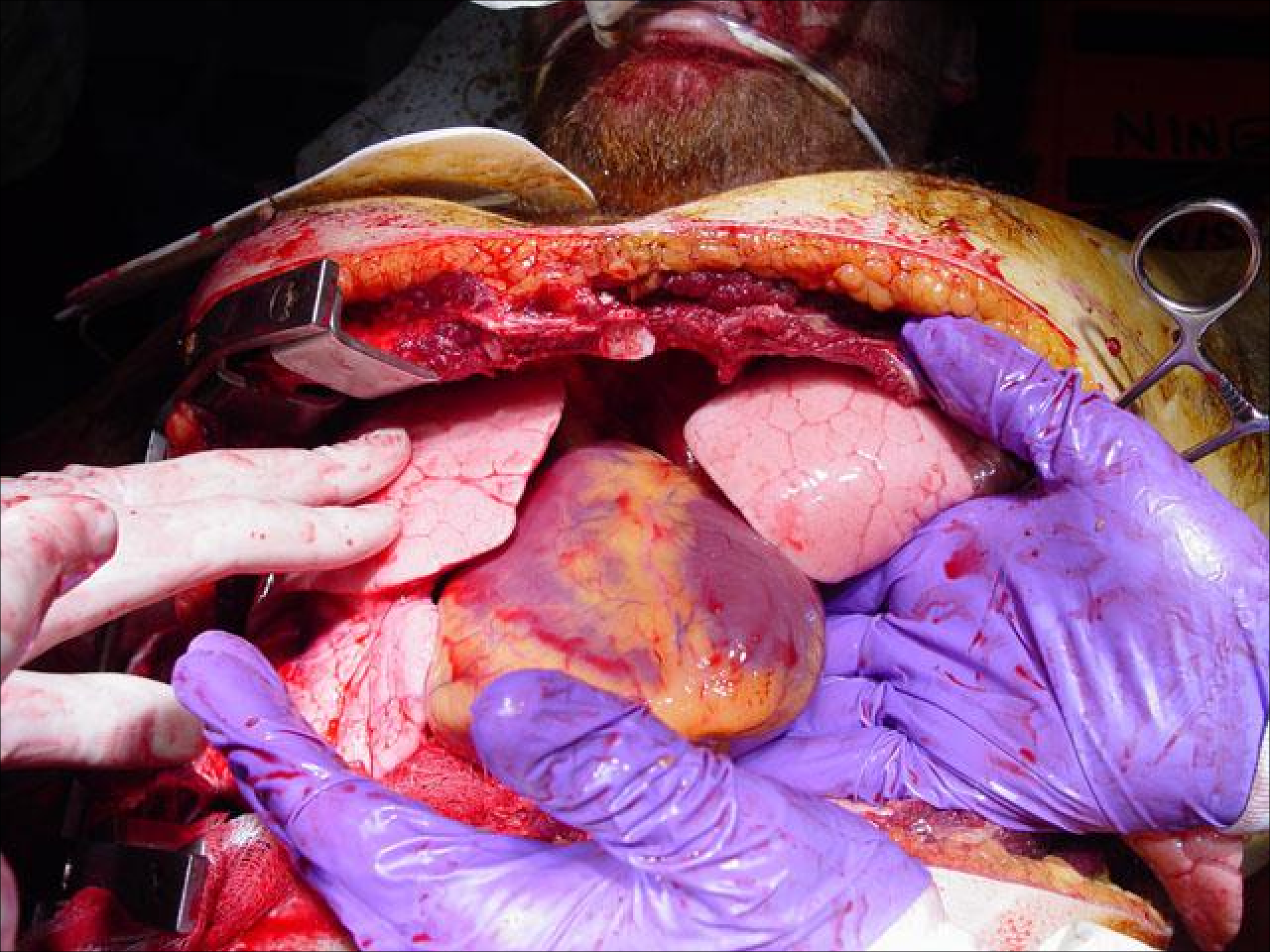
XI congresso nazionale
simeu

Toracotomia Resuscitativa e REBOA
- siamo davvero pronti? -

Dr. Matteo Borselli – DEA Ospedale Misericordia - Grosseto

HOPELESS

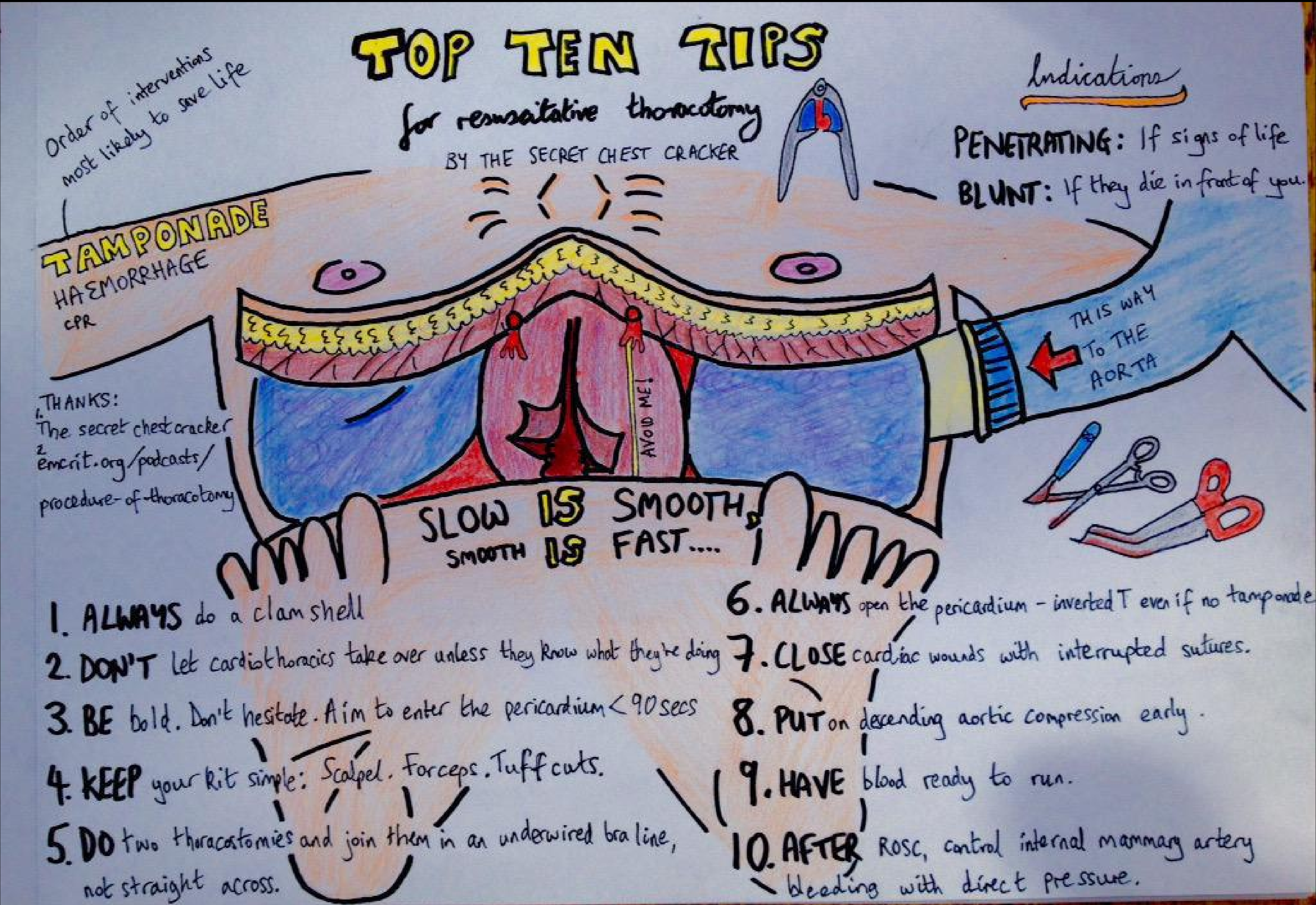


HEROIC PROCEDURE

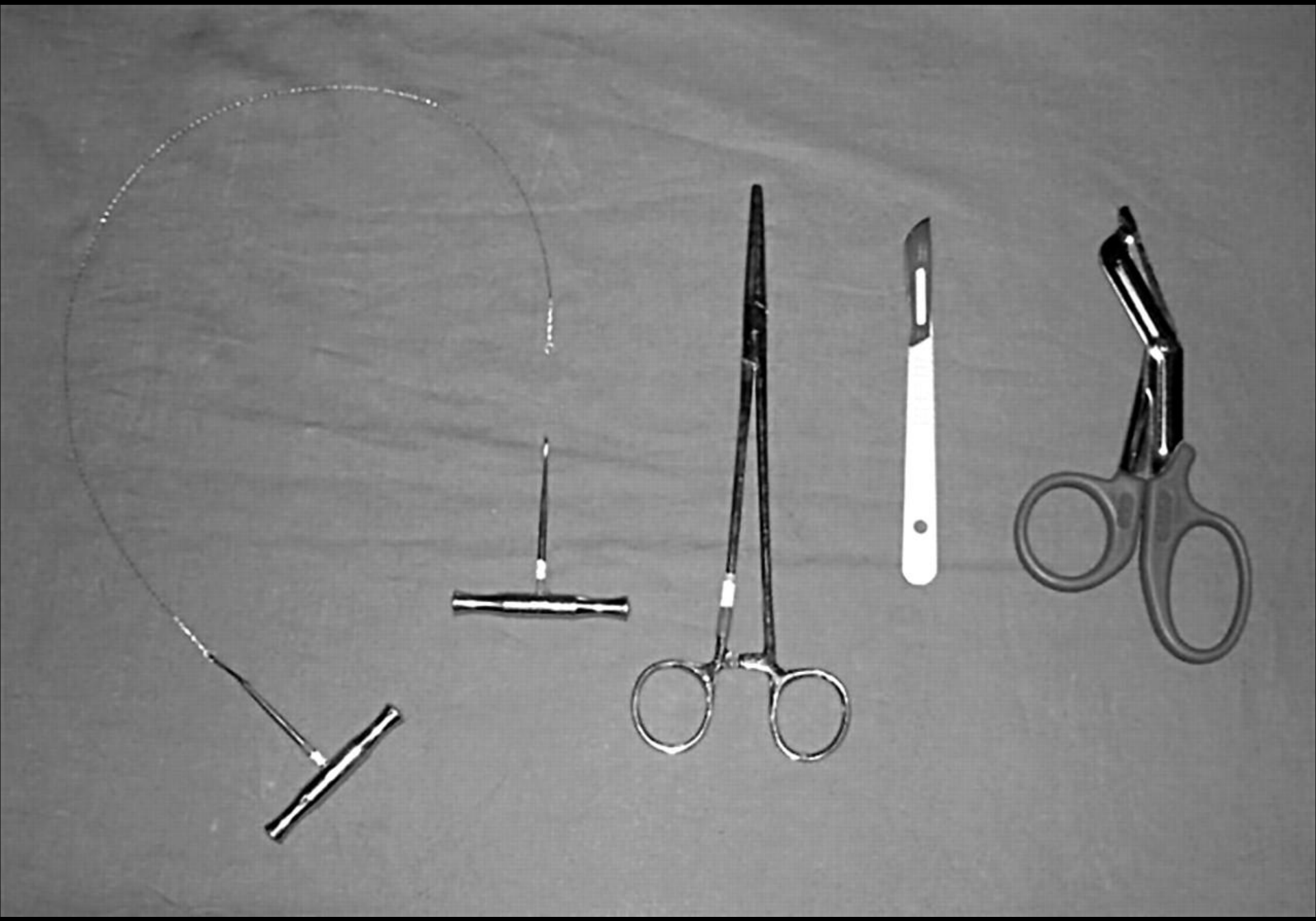
HIGHLY SELECTED PATIENTS

MIGHT SAVE LIVES


CPR



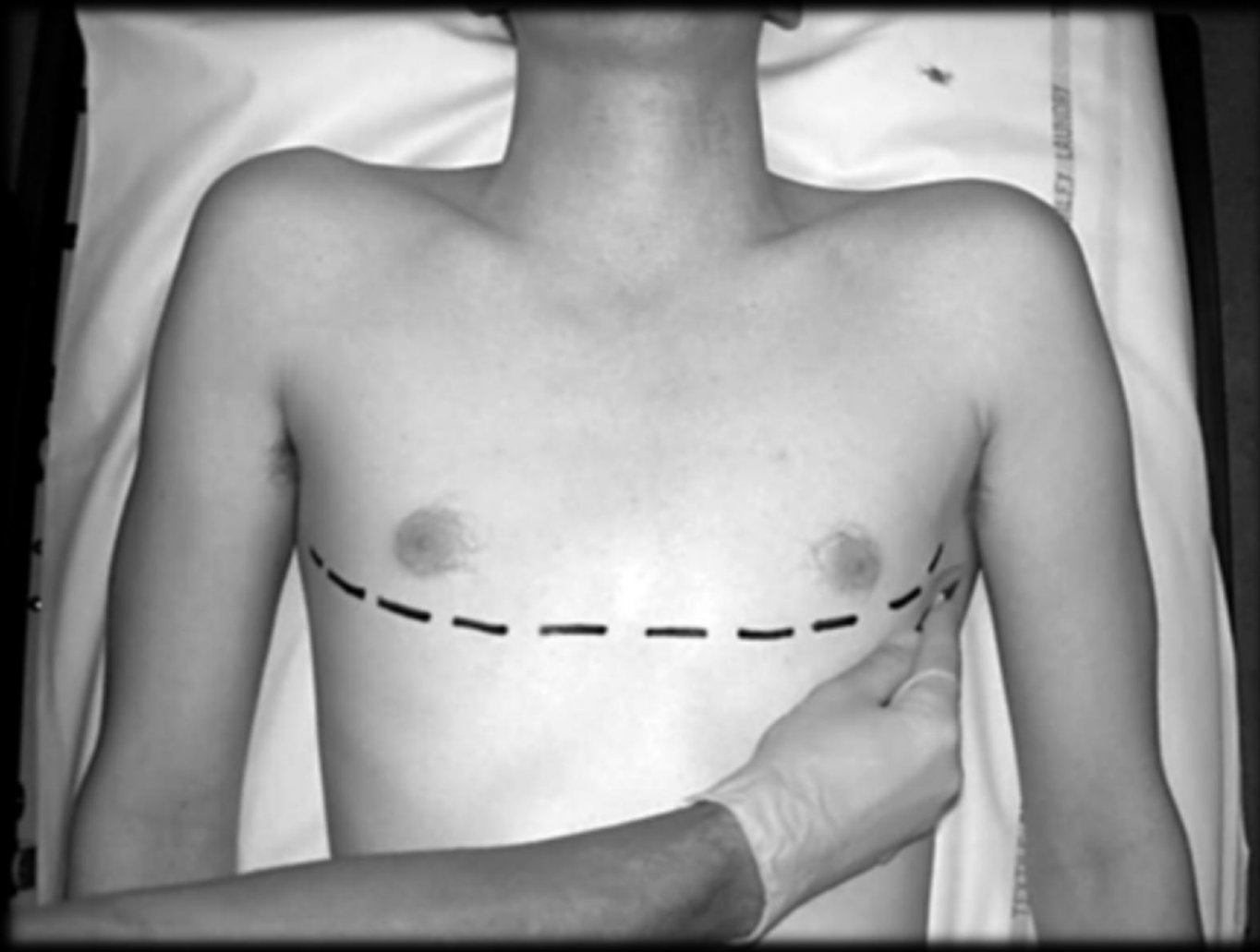
TOP TEN TIPS
for resuscitative thoracotomy
BY THE SECRET CHEST CRACKER
Order of interventions most likely to save life
TAMPONADE
HAEMORRHAGE
CPR
Indications
PENETRATING: If signs of life
BLUNT: If they die in front of you.
THIS WAY TO THE AORTA
AVOID ME!
THANKS:
1. The secret chest cracker
2. emcrit.org/podcasts/procedure-of-thoracotomy
SLOW IS SMOOTH, SMOOTH IS FAST....
1. ALWAYS do a clam shell
2. DON'T let cardiothoracics take over unless they know what they're doing
3. BE bold. Don't hesitate. Aim to enter the pericardium < 90 secs
4. KEEP your kit simple: Scalpel. Forceps. Tuff cuts.
5. DO two thoracostomies and join them in an underwired bra line, not straight across.
6. ALWAYS open the pericardium - inverted T even if no tamponade
7. CLOSE cardiac wounds with interrupted sutures.
8. PUT on descending aortic compression early.
9. HAVE blood ready to run.
10. AFTER ROSC, control internal mammary artery bleeding with direct pressure.

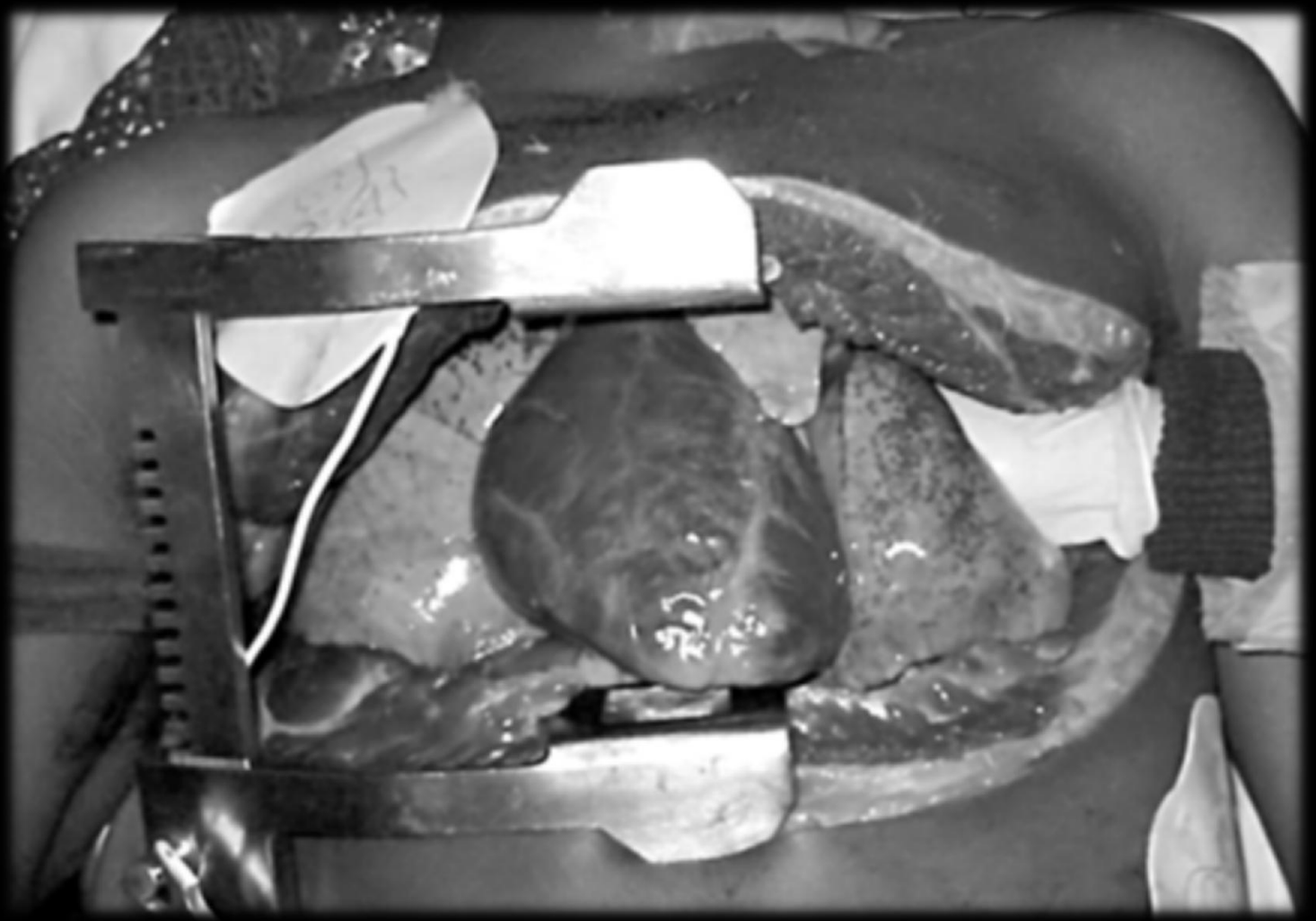


PROTOCOLLO TRASFUSIONI MASSIVE

CARDIOCHIRURGIA E CH.TORACICA

TEAM PRONTO ED ADDESTRATO



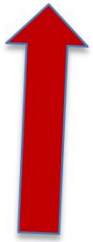


SOUTH YORKSHIRE MAJOR TRAUMA
OPERATIONAL DELIVERY NETWORK

SOUTH YORKSHIRE MAJOR TRAUMA
OPERATIONAL DELIVERY NETWORK

Before commencing a procedure such as Resuscitative Thoracotomy, stop and ask 'and then what?'.

Assuming a restoration of circulation (eg by relieving a cardiac tamponade) or the finding of an injury that is quickly amenable to treatment then restoration of circulation (eg placing a finger in a myocardial wound) then formal exploration, definitive repair and closure will be required. Consider how, where and when this is going to happen. If any of these present significant problems then the procedure should not be commenced.



SOUTH YORKSHIRE MAJOR TRAUMA
OPERATIONAL DELIVERY NETWORK

TRAUMA PENETRANTE DEL TORACE CON ARRESTO CARDIACO

ENTRO 10 MINUTI DALL'ARRESTO

Potential Benefits:

The primary aims of emergency thoracotomy are:

- Release of cardiac tamponade
- Release of tension pneumothorax
- Control of haemorrhage
- Allow access for internal cardiac massage

Secondary manoeuvres include pressure on/cross-clamping of the descending thoracic aorta.

Practice Management Guidelines for Emergency Department Thoracotomy

Working Group, Ad Hoc Subcommittee on Outcomes, American College of Surgeons–Committee on Trauma

Important questions include:

1) Which patients should be subjected to this procedure?
2) Are there any prospectively validated physiologic predictors of outcomes that can safely and accurately identify patients who will benefit from the procedure and also safely exclude those that will not?
3) What are the true survival rates of this procedure?
4) Of the surviving patients, how many survive with severe neurologic impairment or remain in a persistent vegetative state?
5) How can we ensure that individuals performing this procedure are qualified?

Practice Management Guidelines for Emergency Department Thoracotomy

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Series dealing with emergency department thoracotomy

In the 42 series dealing with emergency department thoracotomy[1-42] (see Table 1), there were a total of 7,035 emergency department thoracotomies and 551 survivors, for a survival rate of 7.83%. Stratified by mechanism of injury, there were 4,482 thoracotomies for penetrating injuries; 500 patients survived, yielding a survival rate of 11.16%. There were 2,193 thoracotomies performed for blunt injuries; 35 patients survived, for a survival rate of 1.6%.

Practice Management Guidelines for Emergency Department Thoracotomy

Working Group, Ad Hoc Subcommittee on Outcomes, American College of Surgeons–Committee on Trauma

Series dealing with penetrating cardiac injuries

In the series dealing with penetrating cardiac injuries[43-88] (see Table 2), 363 patients survived a total of 1,165 emergency department thoracotomies, yielding a survival rate of 31.1%.

Practice Management Guidelines for Emergency Department Thoracotomy

Working Group, Ad Hoc Subcommittee on Outcomes, American College of Surgeons–Committee on Trauma

Level I

There is insufficient evidence to support a Level I recommendation for this practice guideline. This topic does not lend itself to be studied with prospective randomized controlled trials.


COMPETENZE
RISORSE
PREPARAZIONE
PROTOCOLLI CONDIVISI

REBOA

(Resuscitative Endovascular Balloon Occlusion of the Aorta)

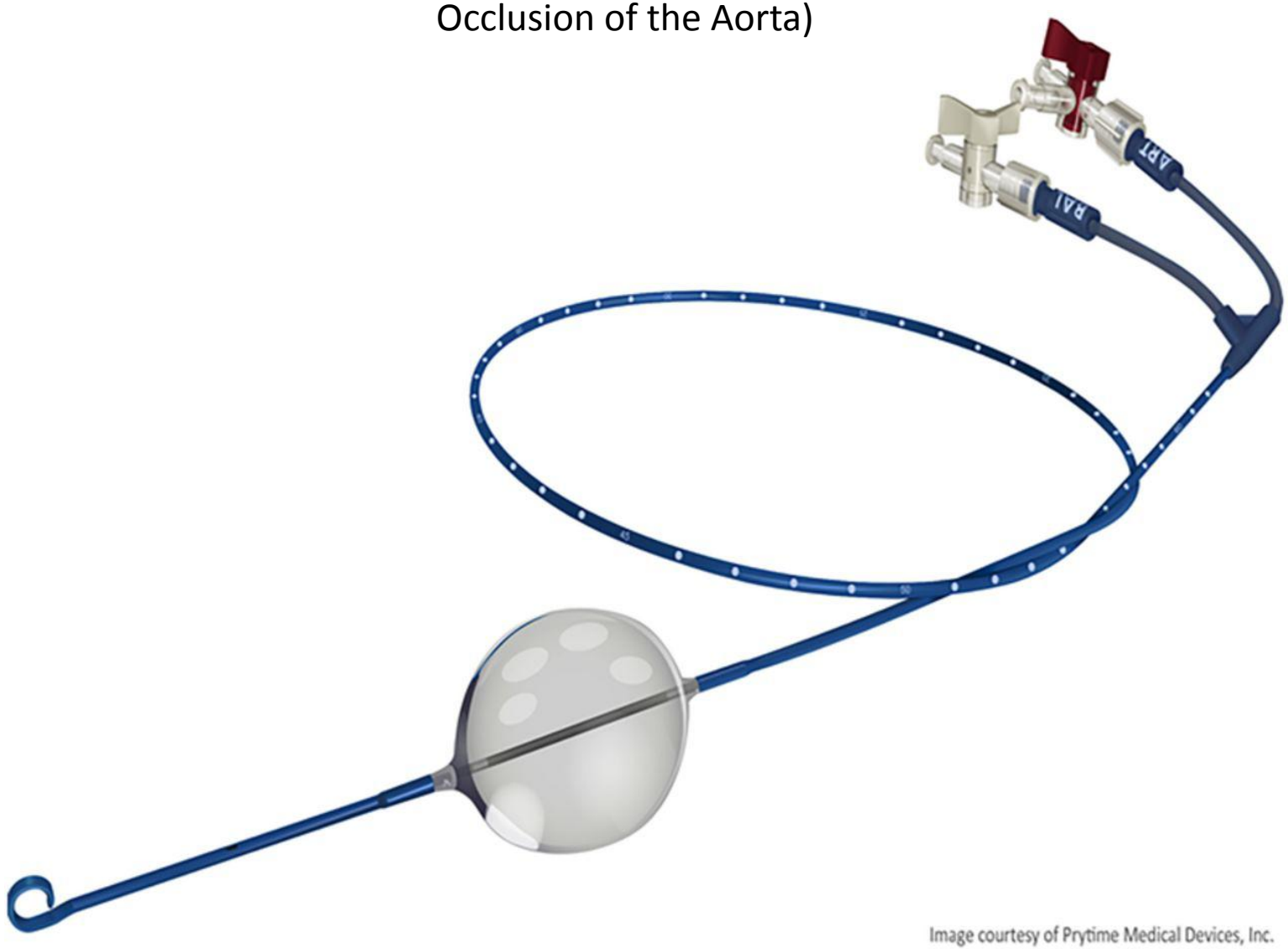
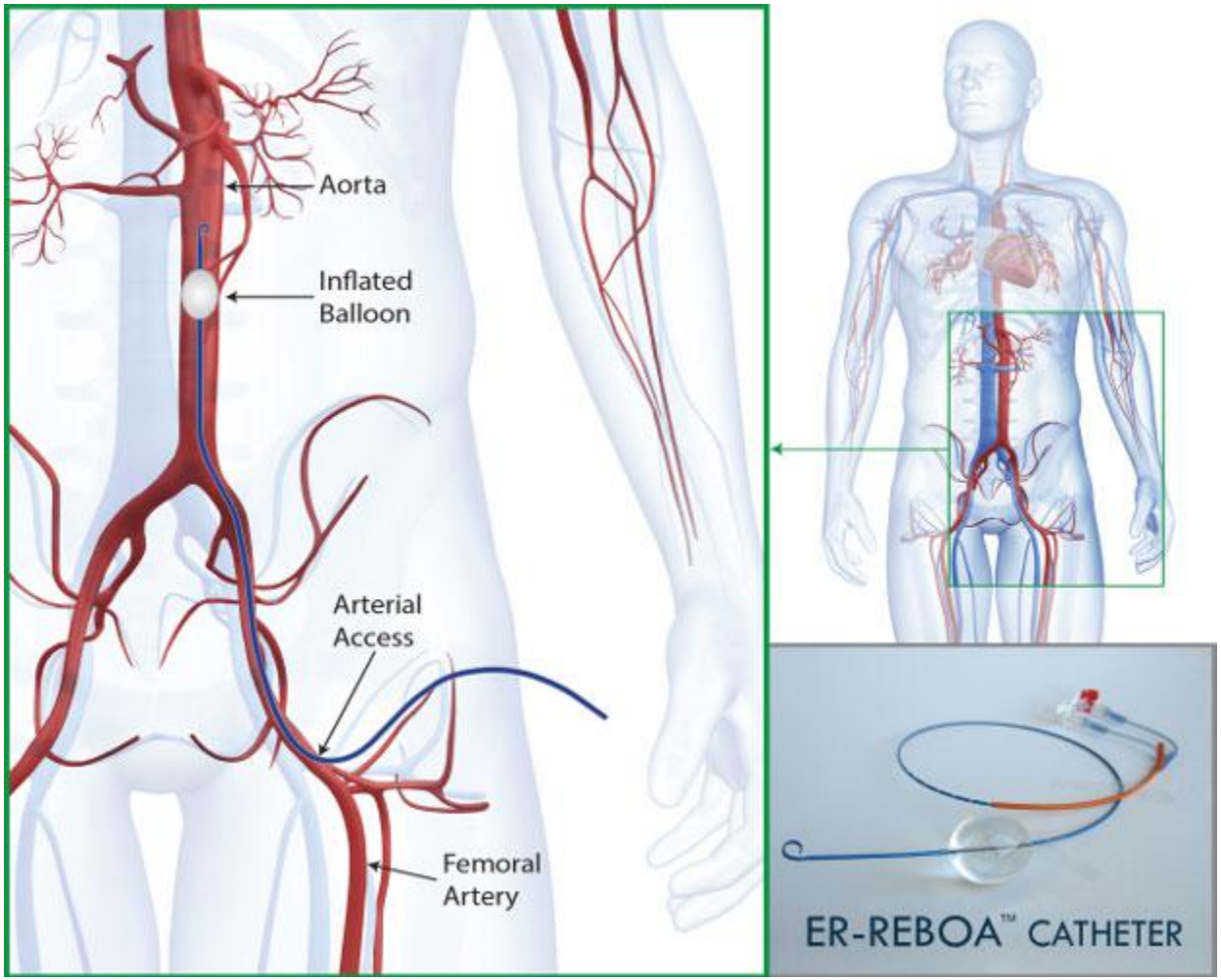


Image courtesy of Prytime Medical Devices, Inc.

REBOA

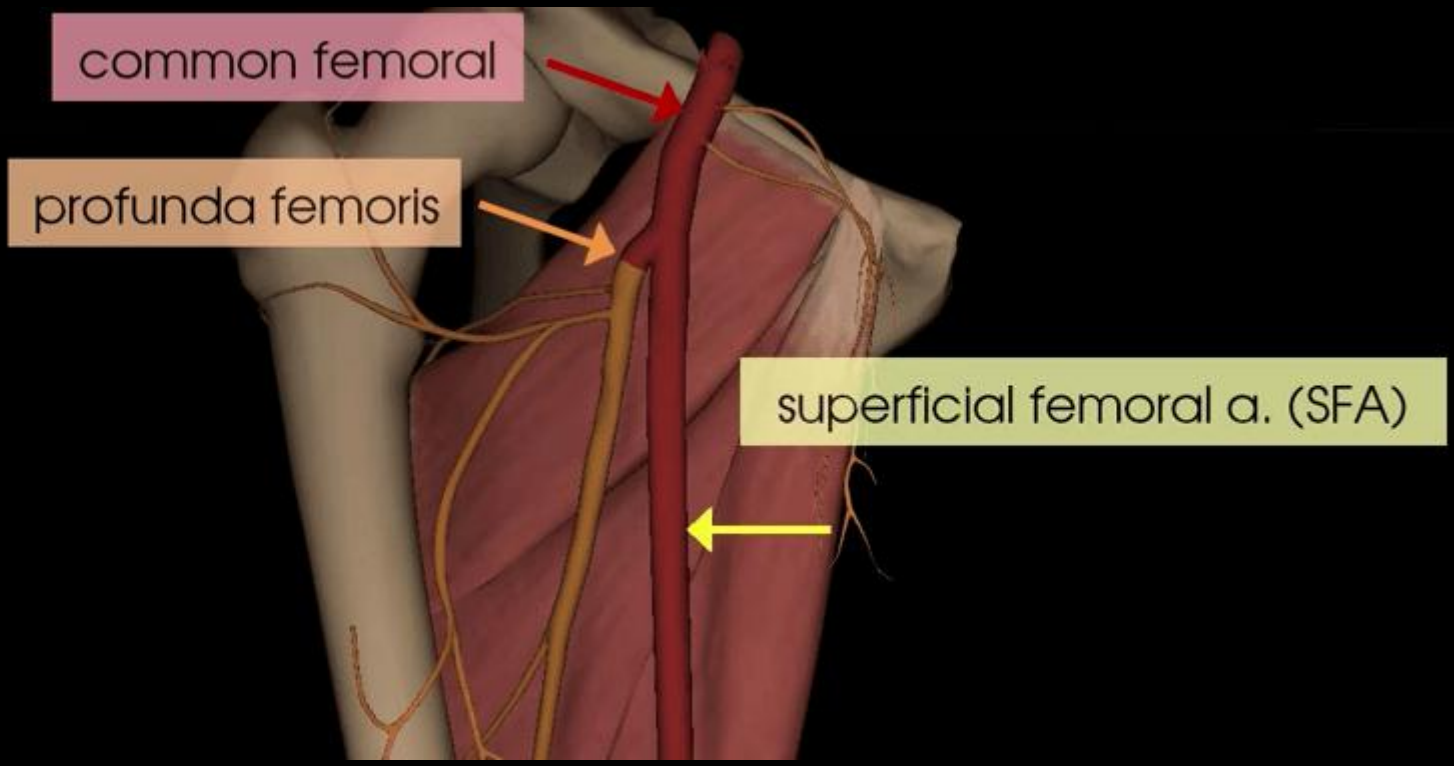
(Resuscitative Endovascular Balloon



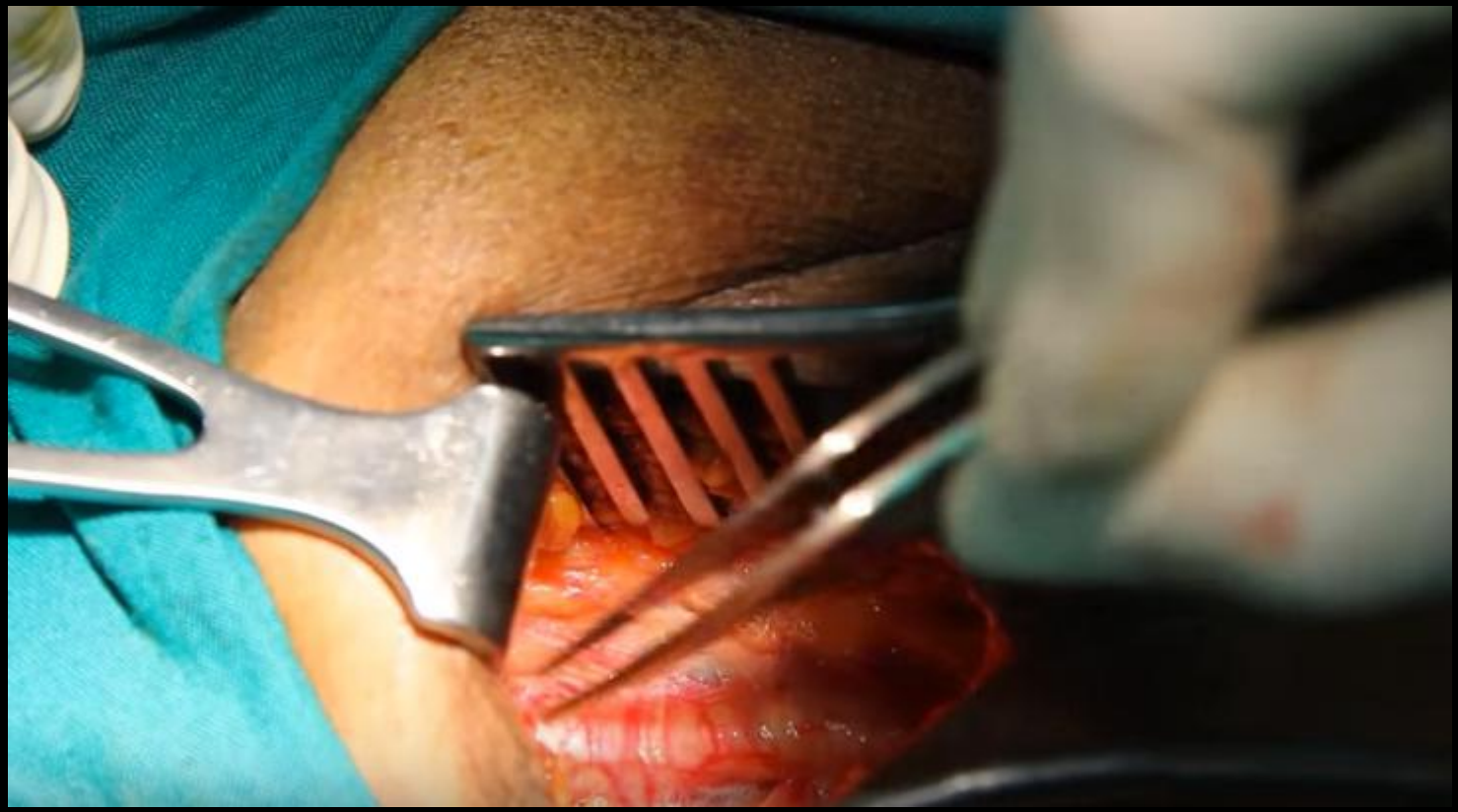
INDICAZIONE

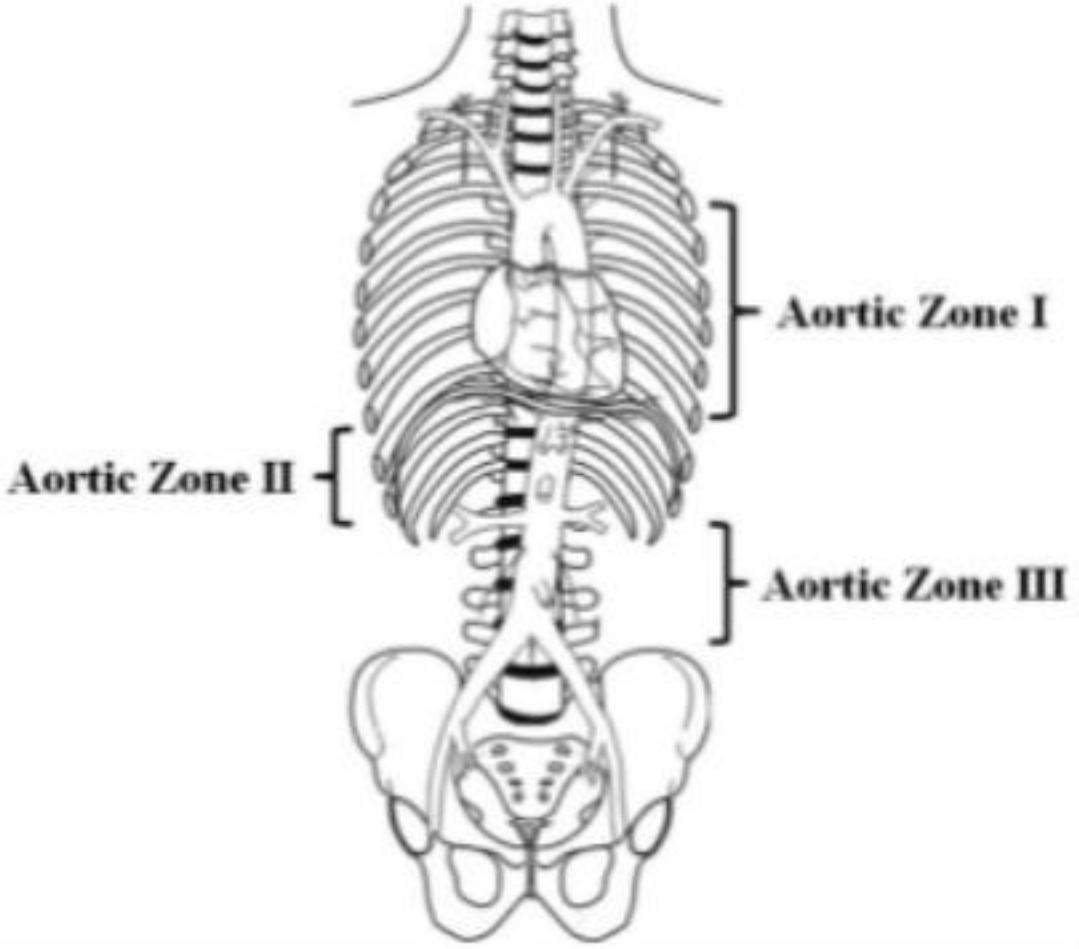
CONTROLLO DELLE EMORRAGIE NON COMPRIMIBILI DEL TRONCO (TORACE, ADDOME, BACINO)

INCANNULARE LA CFA

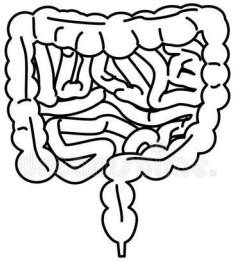


INCANNULARE LA CFA
CON ACCESSO CHIRURGICO





Zone 1 is from the take-off of the left subclavian artery down to the celiac trunk. Zone 2 is from the celiac trunk to the lowest renal artery. Zone 3 is from the lowest renal artery to the bifurcation. (Stannard, 2011)



NON E’ POSSIBILE STABILIRE L’ESATTA COLLOCAZIONE DEL PALLONCINO

Manzano Nunez et al. World Journal of Emergency Surgery (2017) 12:30
DOI 10.1186/s13017-017-0142-5

World Journal of Emergency Surgery

REVIEW Open Access

A meta-analysis of resuscitative endovascular balloon occlusion of the aorta (REBOA) or open aortic cross-clamping by resuscitative thoracotomy in non-compressible torso hemorrhage patients

Ramiro Manzano Nunez[1], Maria Paula Naranjo[1], Esteban Foianini[2*], Paula Ferrada[3], Erika Rincon[1], Herney Andrés García-Perdomo[4], Paola Burbano[7], Juan Pablo Herrera[6], Alberto F. García[4,5] and Carlos A. Ordoñez[4,5]

Abstract

Background: The objective of this systematic review and meta-analysis was to determine the effect of REBOA, compared to resuscitative thoracotomy, on mortality and among non-compressible torso hemorrhage trauma patients.

Methods: Relevant articles were identified by a literature search in MEDLINE and EMBASE. We included studies involving trauma patients suffering non-compressible torso hemorrhage. Studies were eligible if they evaluated REBOA and compared it to resuscitative thoracotomy. Two investigators independently assessed articles for inclusion and exclusion criteria and selected studies for final analysis. We conducted meta-analysis using random effect models.

Results: We included three studies in our systematic review. These studies included a total of 1276 patients. An initial analysis found that although lower in REBOA-treated patients, the odds of mortality did not differ between the compared groups (OR 0.42; 95% CI 0.17–1.03). Sensitivity analysis showed that the risk of mortality was significantly lower among patients who underwent REBOA, compared to those who underwent resuscitative thoracotomy (RT) (RR 0.81; 95% CI 0.68–0.97).

Conclusion: Our meta-analysis, mainly from observational data, suggests a positive effect of REBOA on mortality among non-compressible torso hemorrhage patients. However, these results deserve further investigation.

Keywords: Injuries, Non-compressible torso hemorrhage, REBOA, Resuscitation strategies, Traumatic shock, Endovascular procedures

Trauma Surgery & Acute Care Open

Joint statement from the American College of Surgeons Committee on Trauma (ACS COT) and the American College of Emergency Physicians (ACEP) regarding the clinical use of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA)

Megan Brenner,[1] Eileen M Bulger,[2] Debra G Perina,[3] Sharon Henry,[1] Christopher S Kang,[4] Michael F Rotondo,[5] Michael C Chang,[6] Leonard J Weireter,[7] Michael Coburn,[8] Robert J Winchell,[9] Ronald M Stewart[10]

INDICATIONS FOR REBOA

- REBOA is indicated for traumatic life-threatening hemorrhage below the diaphragm in patients in hemorrhagic shock who are unresponsive or transiently responsive to resuscitation.
- REBOA is indicated for patients arriving in arrest from injury due to presumed life-threatening hemorrhage below the diaphragm. No evidence exists for the recommended duration of arrest and use of REBOA but should be used within the same time period as would resuscitative thoracotomy.
- The balloon catheter may be inflated at the distal thoracic aorta (Zone 1) for control of severe intra-abdominal or retroperitoneal hemorrhage, or those with traumatic arrest.
- The balloon catheter may be inflated at the distal abdominal aorta (Zone 3) for patients with severe pelvic, junctional, or proximal lower extremity hemorrhage.

COMPLICATIONS OF REBOA

- Reported femoral access complications include arterial disruption, dissection, pseudoaneurysms, hematoma, thromboemboli, and extremity ischemia.[5 10]
- These complications have resulted in patch repairs, complex arterial reconstructions, bypasses, limb ischemia, and amputations.
- Reported aortoiliac injuries include intimal tear, dissection, thrombosis, and rupture which may be fatal or cause limb loss.
- Balloon rupture may occur with over inflation of the balloon relative to the aortic diameter.
- Unintended inflation of the balloon in the iliac vessels may lead to rupture or thrombosis.
- Prolonged aortic occlusion alone may lead to fatal complications or spinal cord injury due to prolonged organ ischemia.

MANAGEMENT OF THE PATIENT WITH REBOA

There are no rigorous clinical data to guide absolute duration of full or partial aortic occlusion. However, the following guidelines are current best practice:

- REBOA in Zone 1 should only be performed if the anticipated time to start of operation is less than 15 min.
- REBOA in Zone 3 may be tolerated for longer periods of time and as such may be used as an immediate adjunctive bleeding control prior to angioembolization, preperitoneal packing or exploration. Once Zone 3 aortic occlusion has been performed, urgent operative or interventional hemostasis should occur, and the balloon deflated as soon as possible.
- Partial balloon inflation at either location may prolong this interval; however, this is not well studied. Furthermore, this can result in distal migration of the balloon catheter which may cause intimal injury if the balloon is not completely deflated or is reinflated in the iliac vessels.
- The balloon should be deflated as soon as possible, and the catheter and sheath removed as soon as possible. Vigilant

- Emergency medicine (EM) physicians with added certification in critical care (EMCC) trained in REBOA, may train and perform REBOA in conjunction with an acute care surgeon or vascular surgeon trained in REBOA, as long as the surgeon(s) is/are immediately available to definitively control the focused source of bleeding.

BE CAREFUL

COMPETENZE

PREPARAZIONE

ORGANIZZAZIONE

Toracotomia Resuscitativa e REBOA
- siamo davvero pronti? -

NO – non ancora


PINK
FLOYD
THE
WALL