

# What did we learn from Axel Cappelen ? 110 years later

Scandinavian Update 24 th May, 2007

Helga Loose

Vascular Surgical Dept., Stavanger  
University Hospital ,Norway

Or

Acute Sternotomy by non-  
cardiothoracic surgeon

Question: What have we learned?

Answer

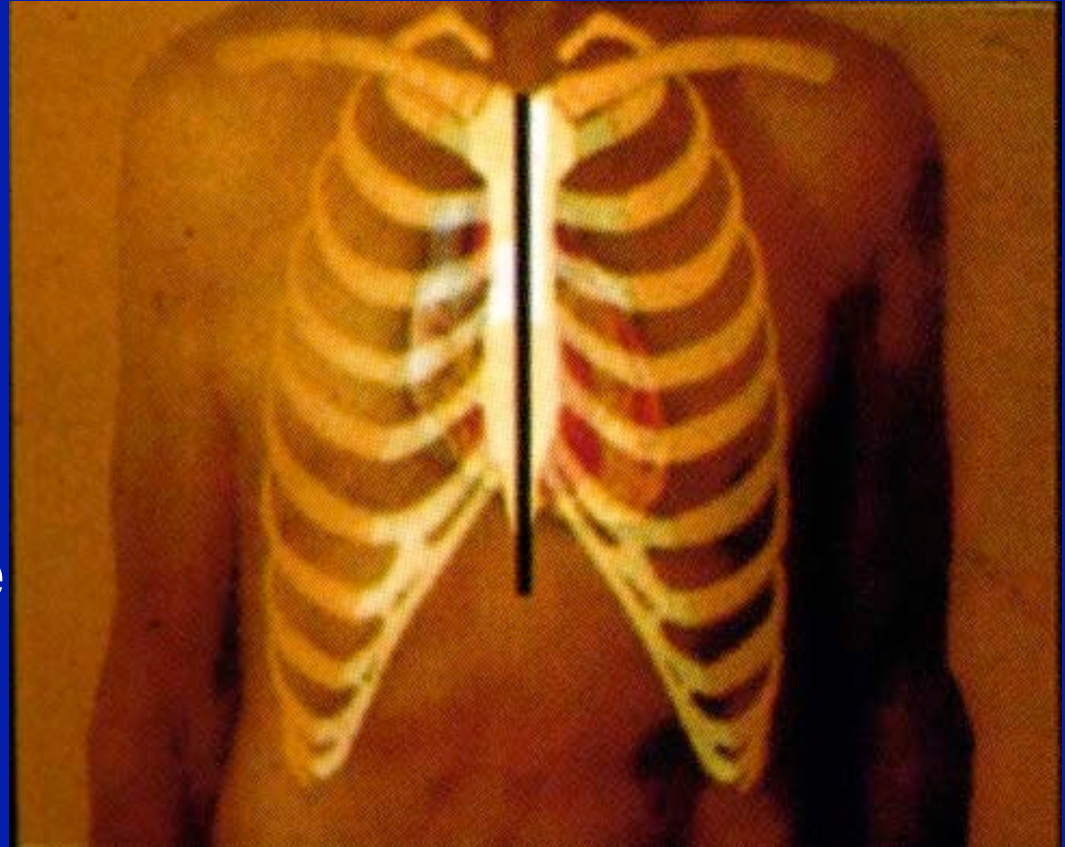
1. Possible
2. Rarely successful

The next 10 minutes

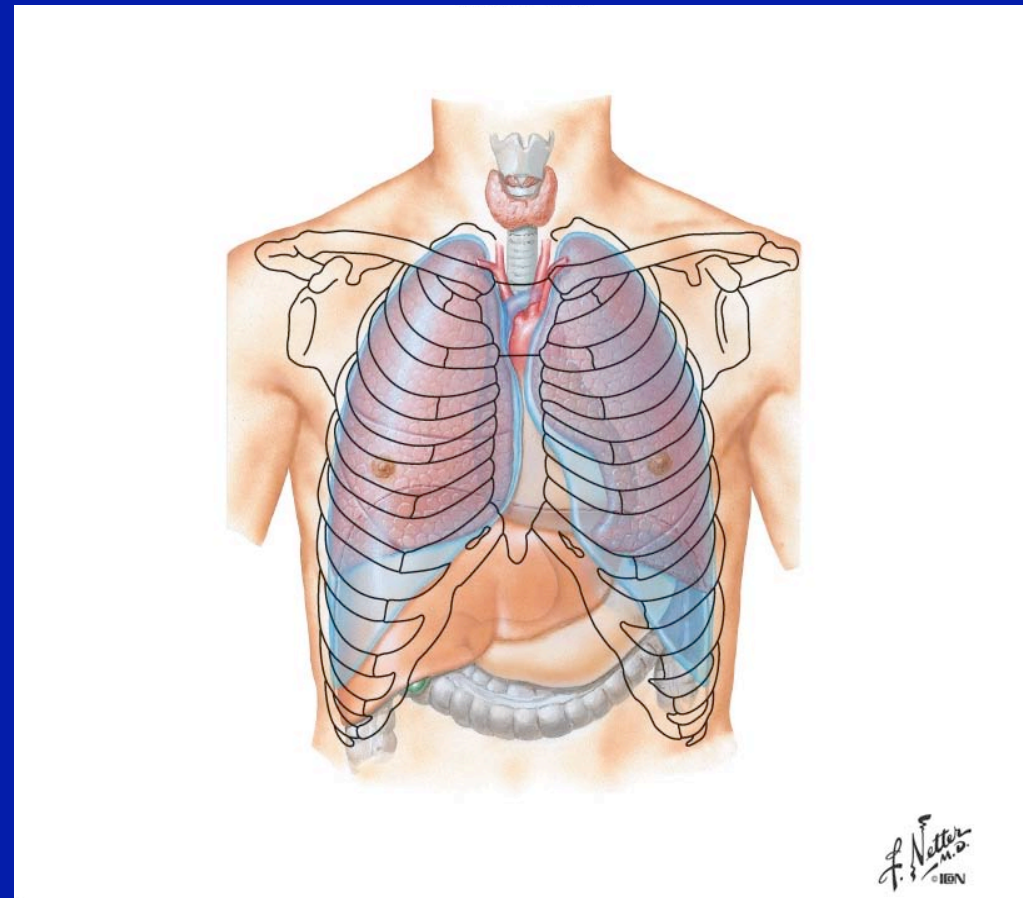
1. The technique of the procedure
2. Case presentation

# Acute median sternotomy

- Question:  
What is the aim ?
- Answer:  
Rapid access to the mediastinum in the unstable patient



# Surgical procedure: Sternotomy



# Procedure: Acute sternotomy

- Requires simple equipment
- For opening:
  1. Hammer
  2. Chisel



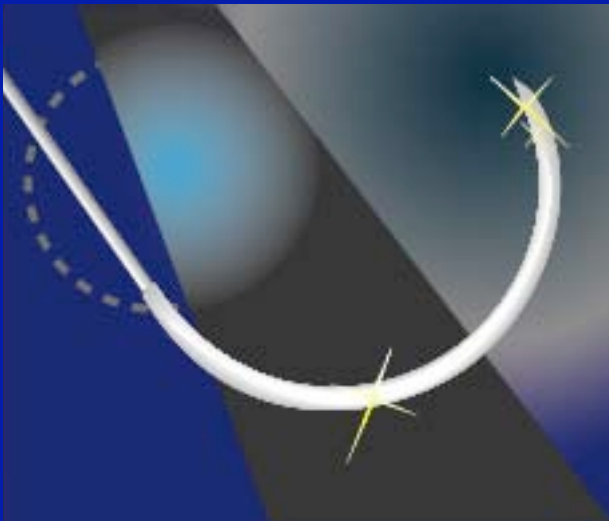
# Procedure: Acute sternotomy

- Requires simple equipment
- Or :  
for opening:  
an electric saw



# Procedure: Acute sternotomy

- Requires simple equipment
- For closing:
  - a needle holder
  - sternal wires



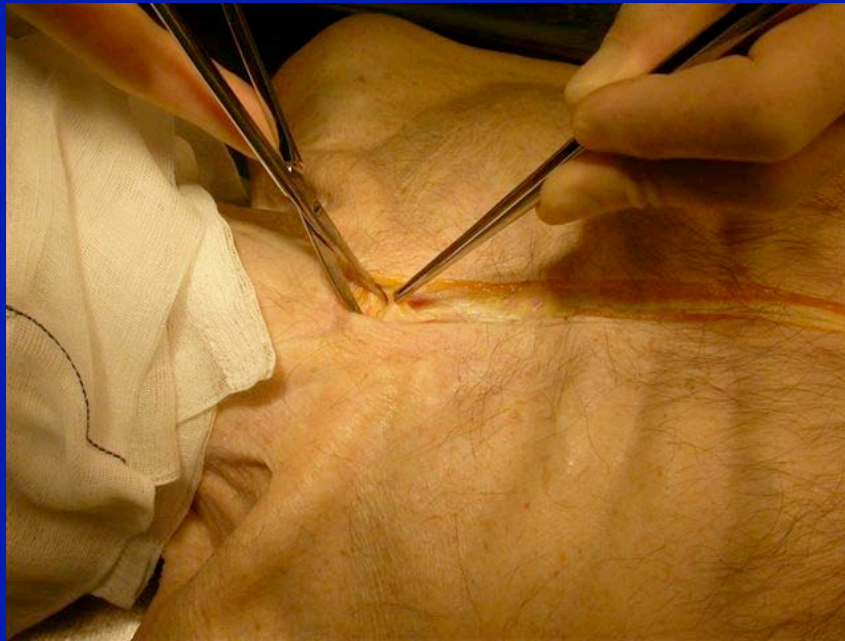
# Procedure: Acute sternotomy

## 1. Incision of skin



# Procedure: Acute sternotomy

## 2. Dissection of the jugular region

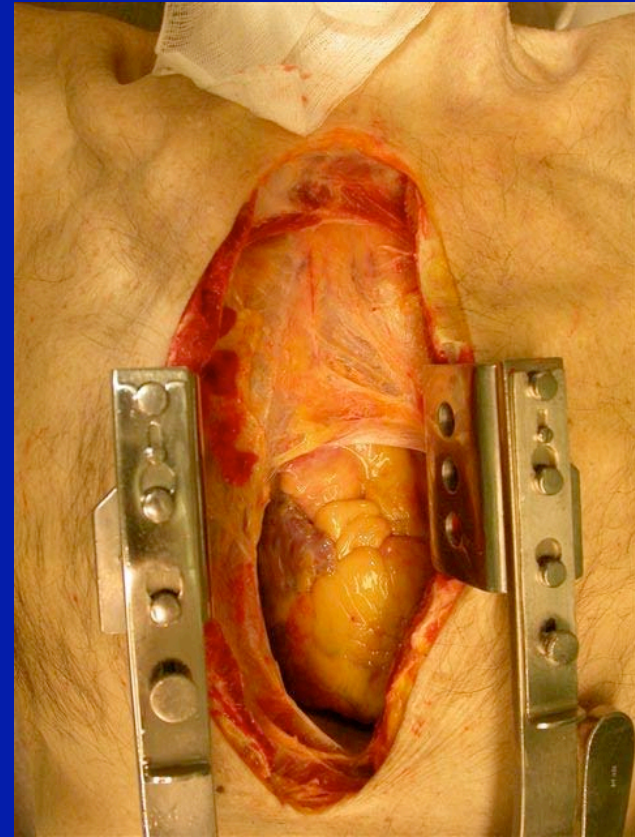
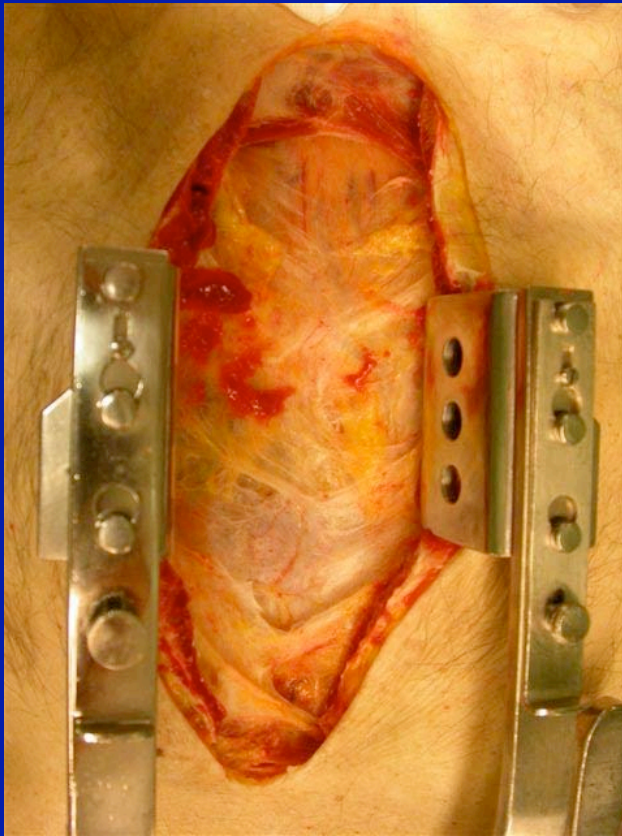


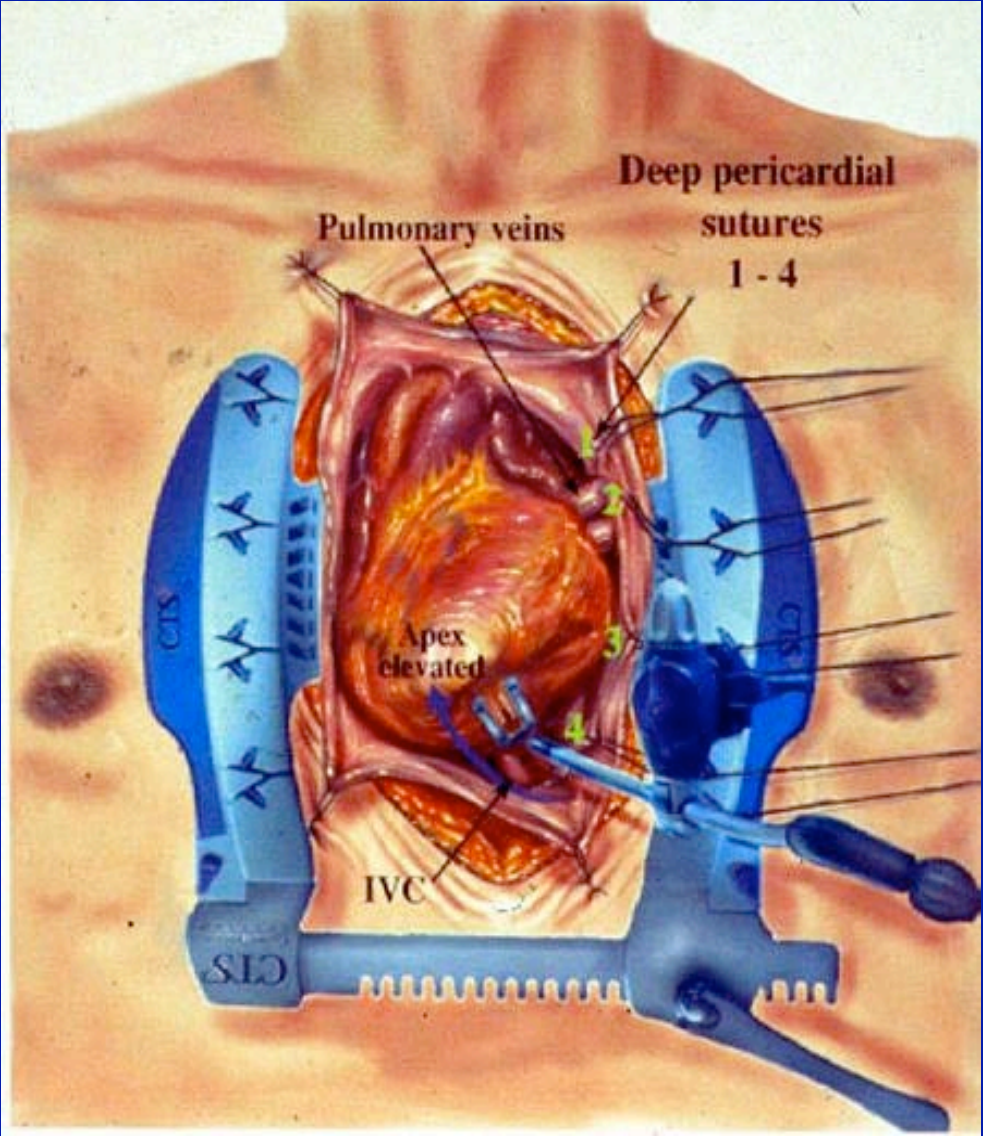
# Procedure: Acute sternotomy

## 3. Opening of the sternum



# Procedure: Acute sternotomy

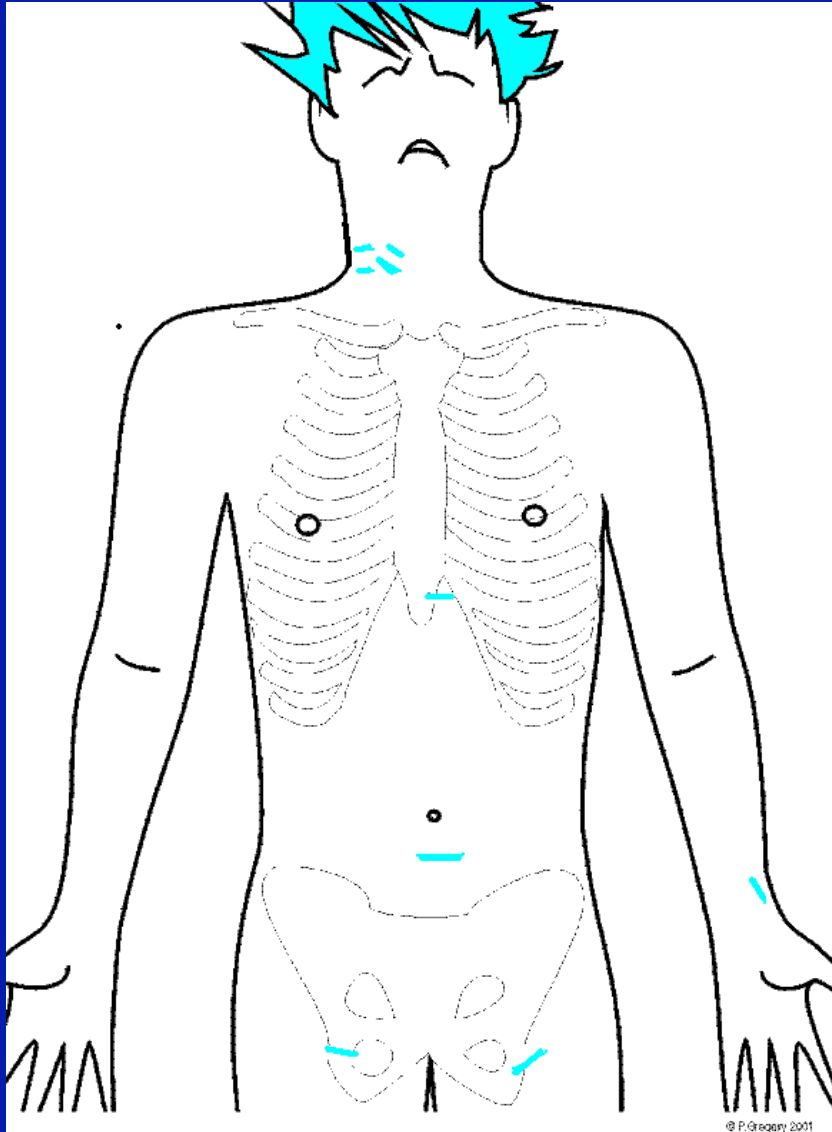




# Case presentation

- Young , previously healthy person
- Multiple stab wounds
- Patient in shock
- Significant bloodloss
- Intubated on arrival at hospital
- Directly to OR

# Number of stab wounds : 9



- Location :
  - Neck
  - Chest
  - Abdomen
  - Groins
  - Extremity

# Sequence of actions

1. Thoracic drainage bilateraly
  - Minimal amount of blood from left side . Right side negative.No air leakage
2. US pericardium
  - Negative
3. Laparotomy
  - Minor bowel injury. Sutured
4. Exploration of groin wounds
  - Profuse bleeding from common femoral vein-suture and packing

# Sequence of actions

5. Exploration of the subxiphoid area

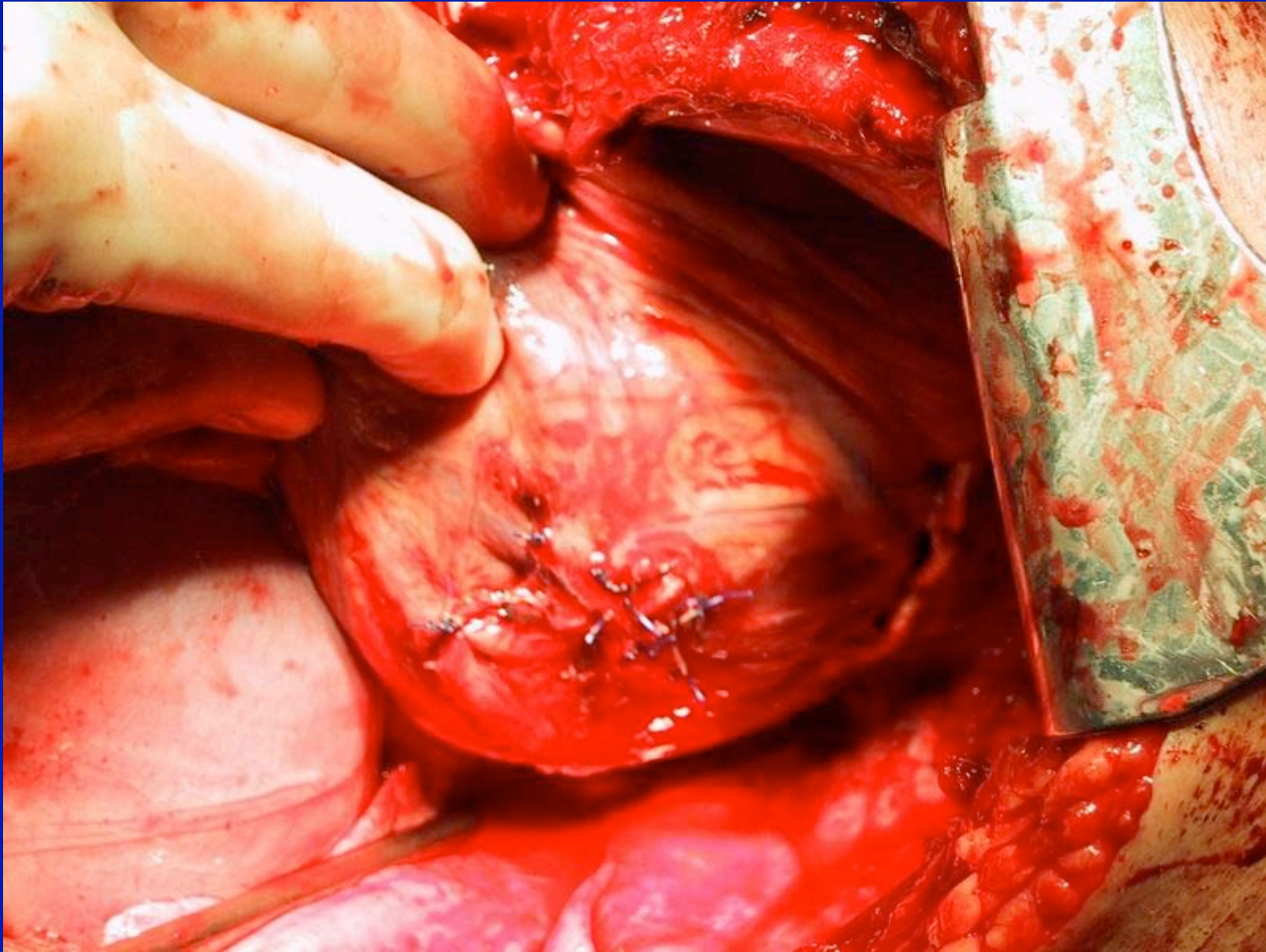
- Minimal bleeding

6. Median sternotomy

- Two penetrating wounds on the heart's right side. Sutured

7. Perioperative cardiac arrest

- Open heart compression
- Defibrillation twice



- *Photo: Petrone P, SJS. 96;1:2007*

# DAMAGE CONTROL SURGERY

- Bleeding controlled...
  - Definitive closure of chest
  - Temporary closure of abdomen (towel clips).  
Packing of right groin.
  - Bringing patient to the **ICU** for stabilization
  - Scheduled for second look and "un-packing" the next day .
- 
- The patient survived

# Time for contemplation

- Also when things go well
- Did we do the right choices at the correct moment?
- Should we have been even quicker ?
- What did we learn?
- Doing the sternotomy was obviously the correct thing to do . Why did we hesitate ?  
.....( for 30 seconds)

# Why hesitate ??

- "Grab a knife and dive into the chest"  
(Hirshberg and Mattox) in "Top Knife"
- Worst case scenario:
  - Maybe it isn't necessary ...
  - Mutilating incision ...
  - Many possible complications ...  
(bleeding, infection..)
  - Failure ...

# Factors of success

## 1. Communication

- OR nurses – Anesthesiologists - Surgeons

## 2. Preparedness:

- Trauma-team on-call
- Trauma treatment guidelines
- Mental preparedness / visualization
- Resources
- Practice and training

# Conclusion

*” The more I practice the luckier I get”*

Thank you for your attention

