

Open Abdomen: Indications and Challenges

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3 Questions that I was asked to answer?

- Why should we leave the abdomen open?
- When should we return to OR?
- What happen if we leave the abdomen?

When should we
leave the
abdomen open?

When you have at hand a catastrophic abdominal situation and you:

1. When you cannot close the abdomen
2. When you should not close the abdomen
3. Patient's Physiology will not allow you to close the abdomen

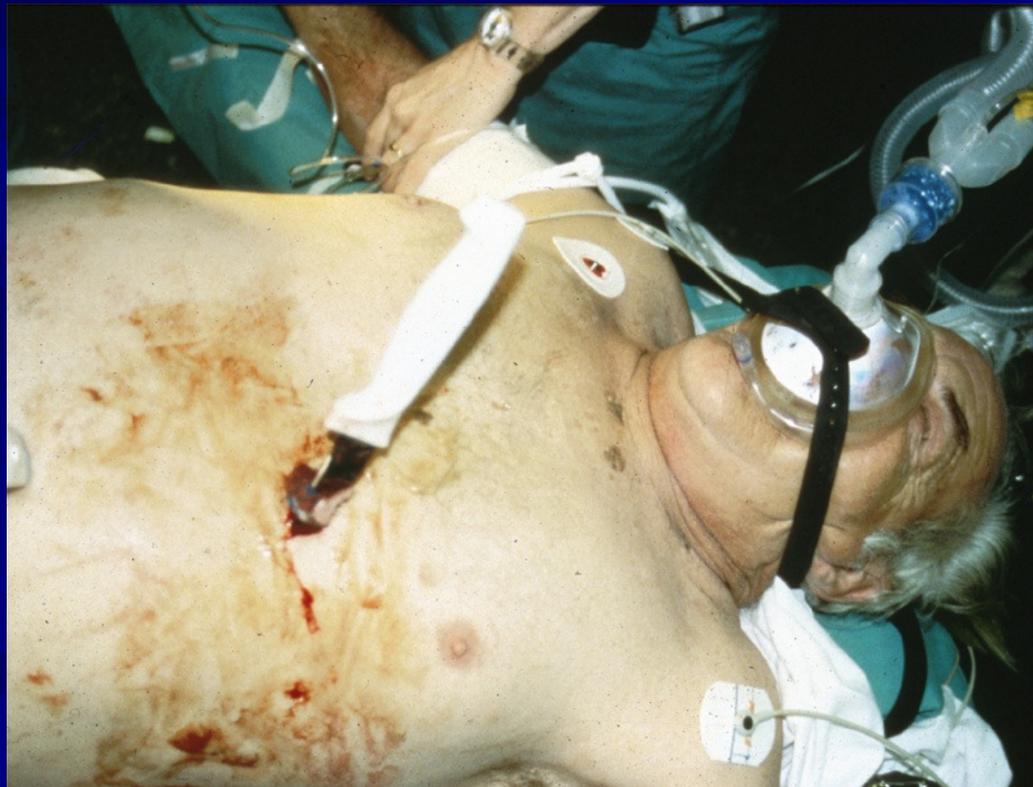


This means when you have

**A Catastrophic
Event in the
Abdomen**

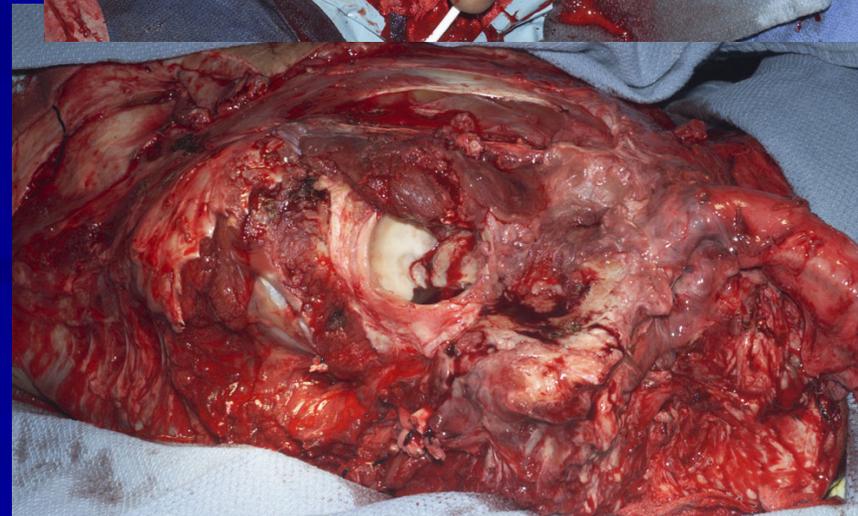
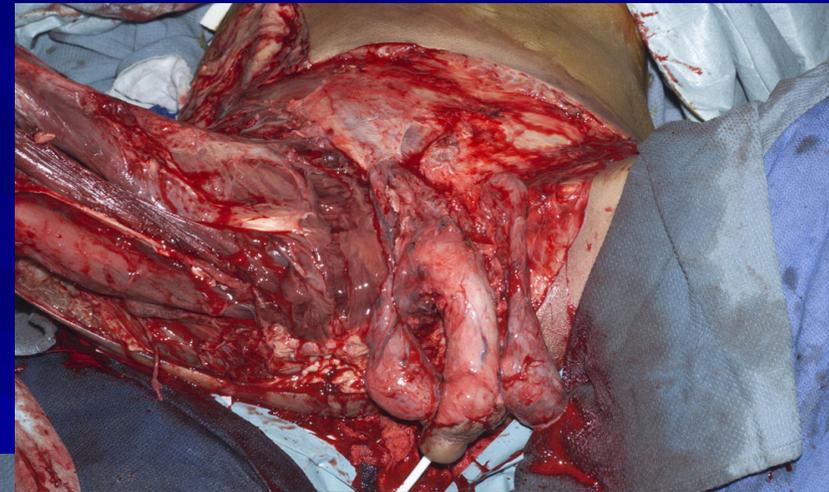
Definition of *CATASTROPHE*

- “ The final event of the dramatic action especially of a tragedy:



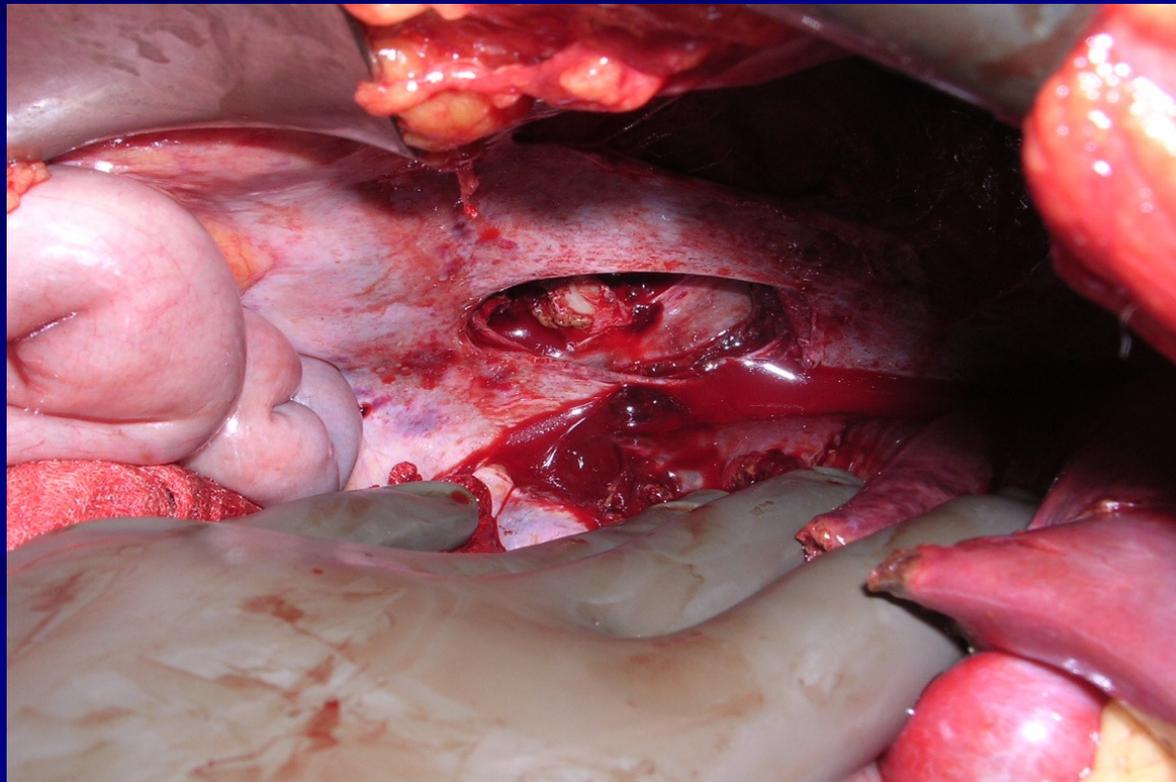
Definition of *CATASTROPHE*

- “A momentous tragic event ranging from extreme misfortune to utter overthrow or ruin:



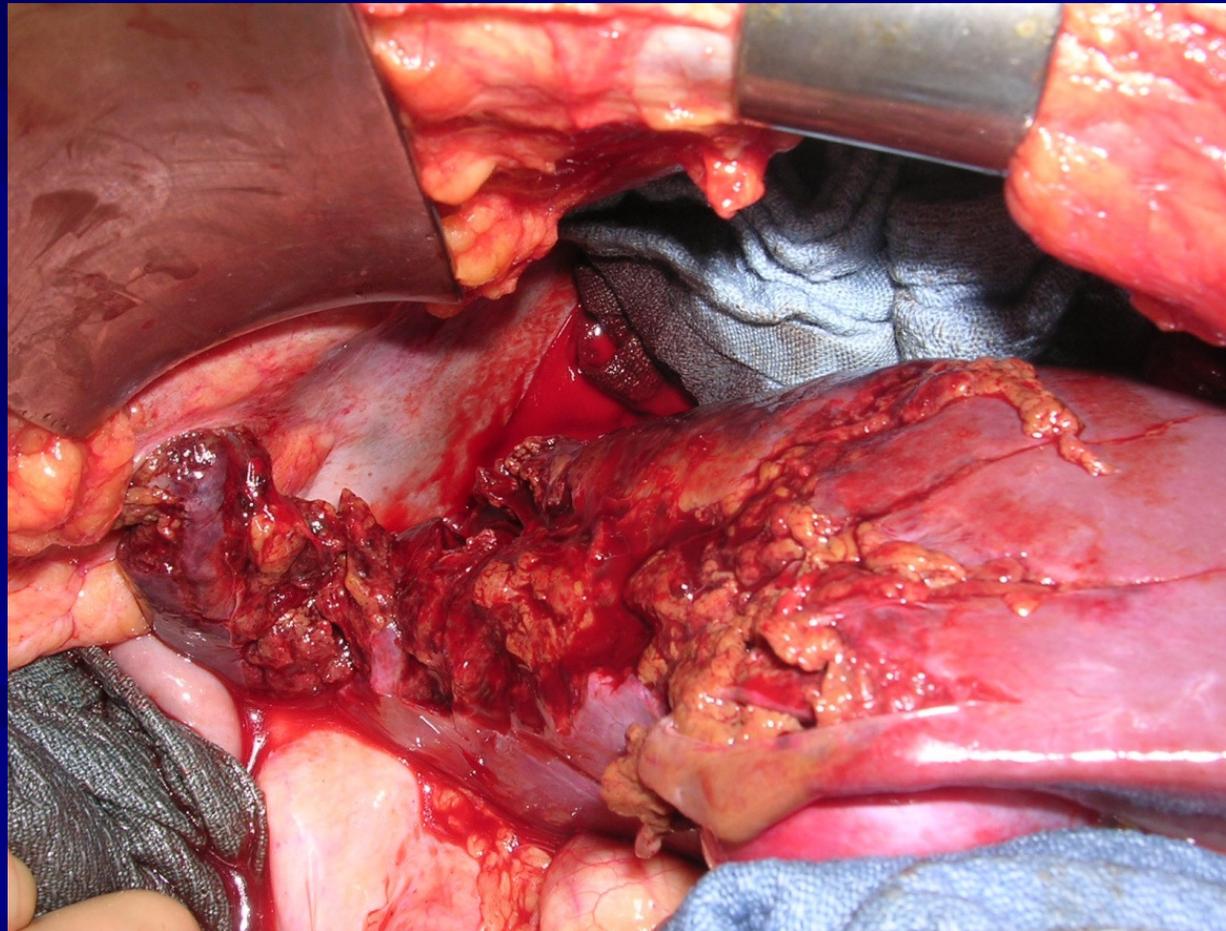
Definition of *CATASTROPHE*

“ A violent, usually destructive, natural event (as a supernova);
utter failure



Definition of *CATASTROPHE*

- “...fiasco; the party was a *catastrophe*.”



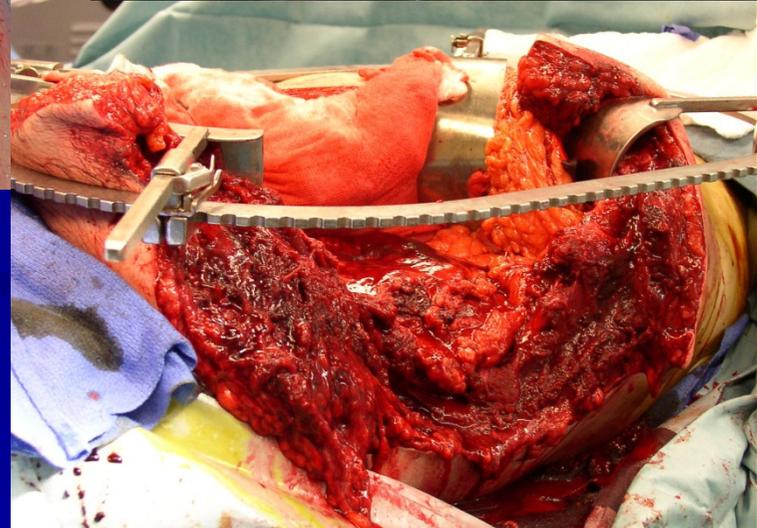
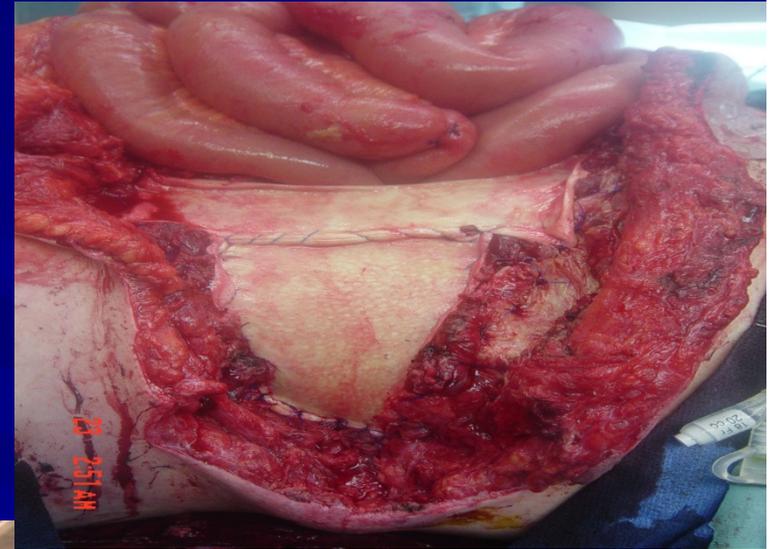
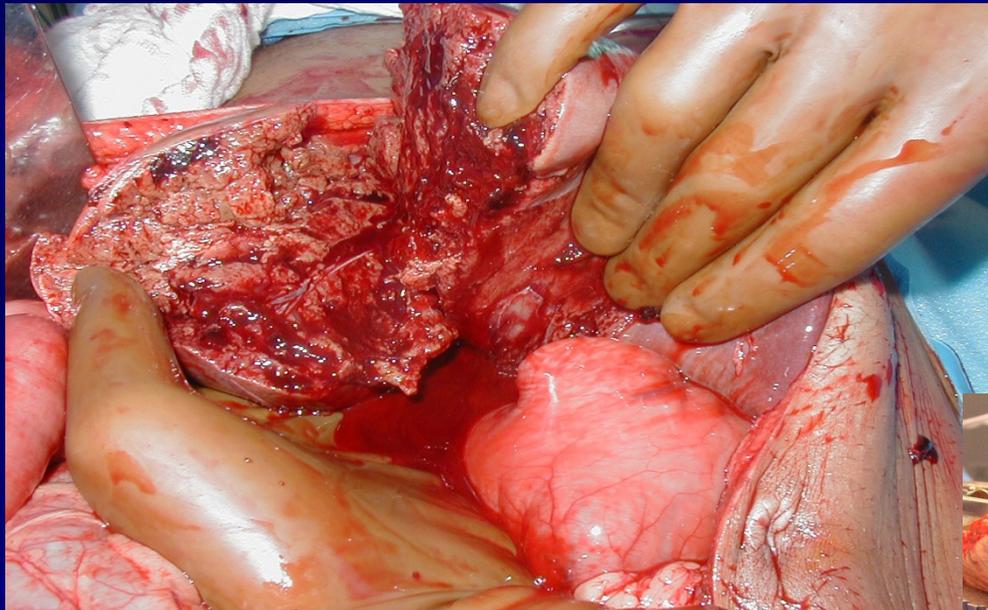
Definition of *CATASTROPHE*

“A violent and sudden change in a feature of the earth”



Definition of *CATASTROPHE*

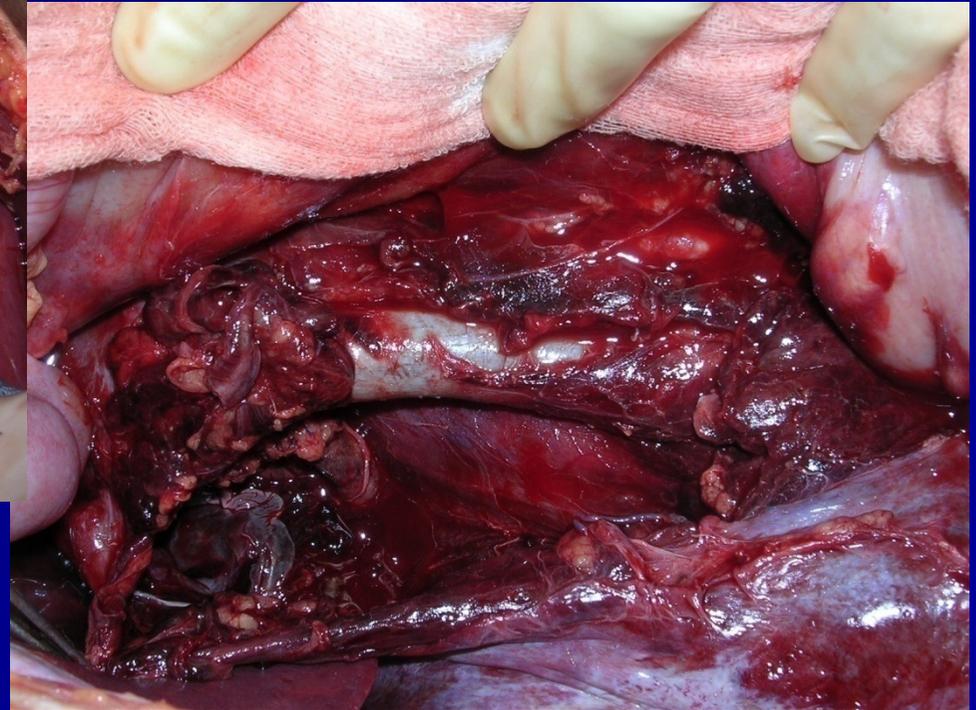
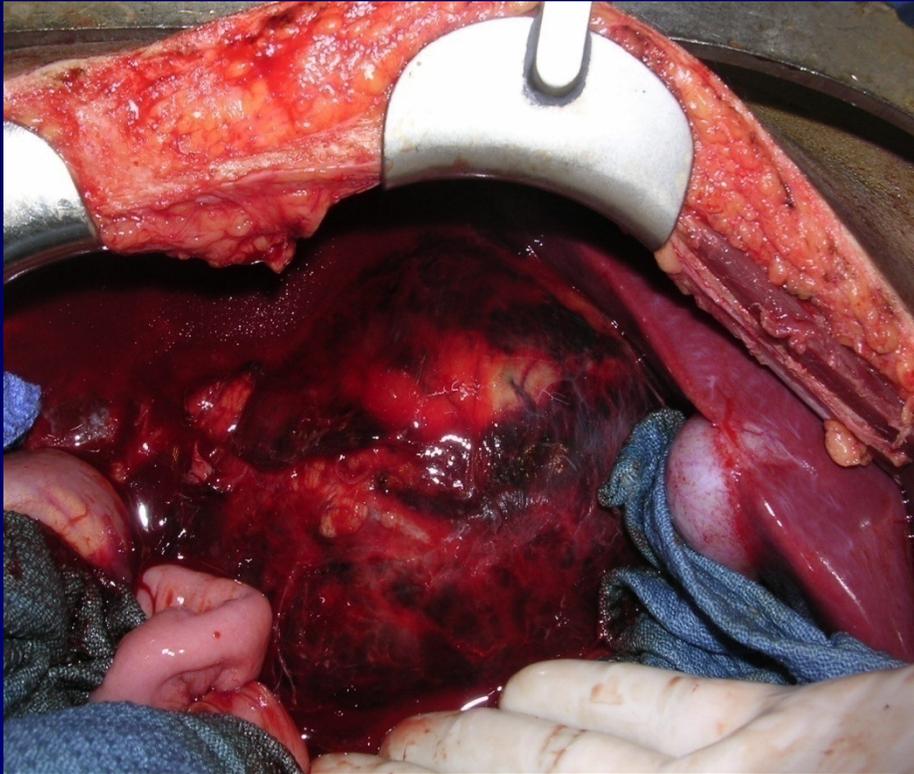
- “A violent, usually destructive, (un) natural event;

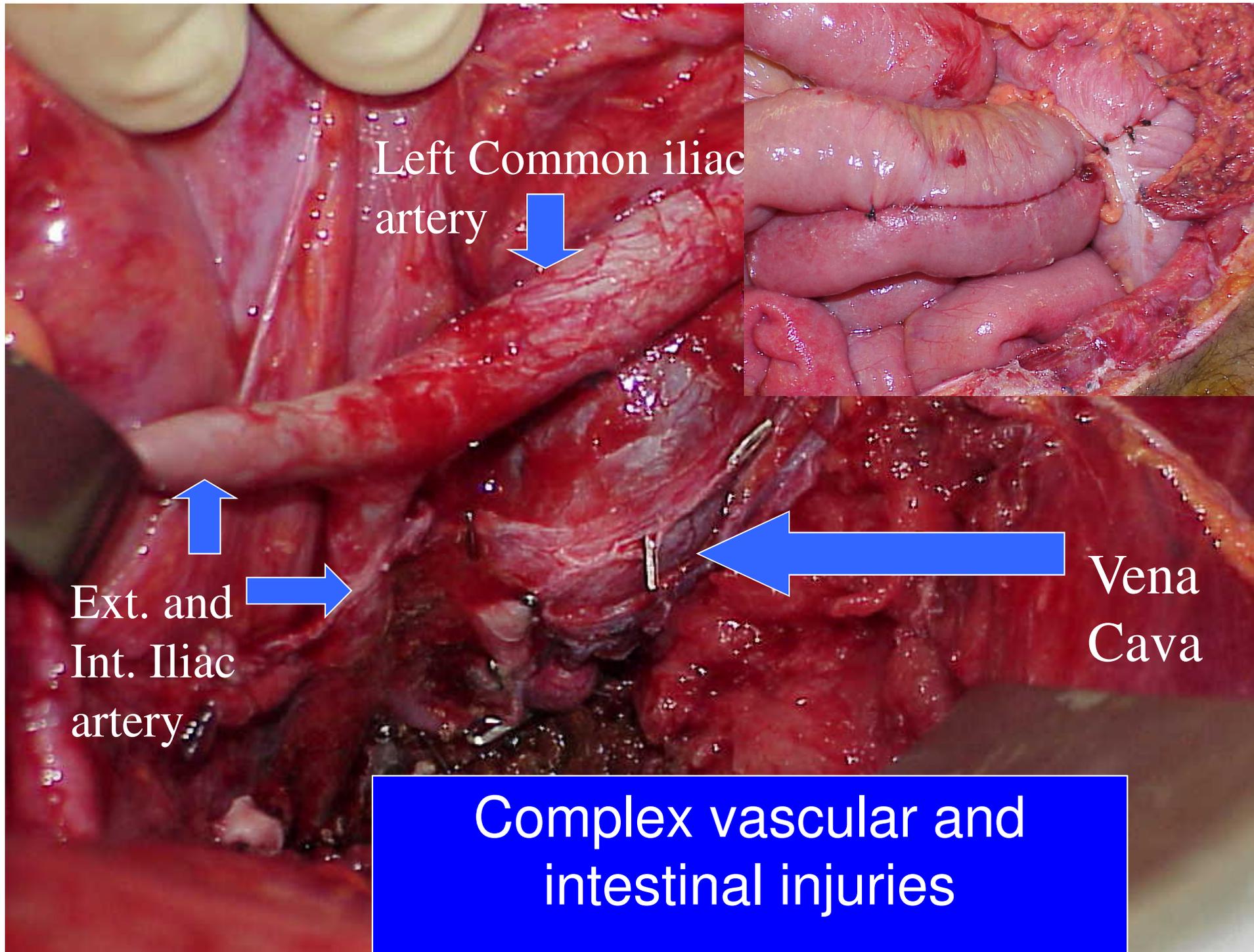


What kind of
catastrophe we can
have?

- Vascular- major vessels
- Trauma to the liver, porta hepatis;
- Major Intestinal perforation;
anastomotic leaks; (Planned
laparotomy- 24-36 hours later)
- Intestinal ischemia; thrombosis
- Intestinal fistulas
- Loss of abdominal domain
- Intraoperative adventures....

Inferior Vena Cava





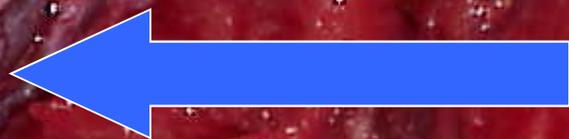
Left Common iliac
artery



Ext. and
Int. Iliac
artery

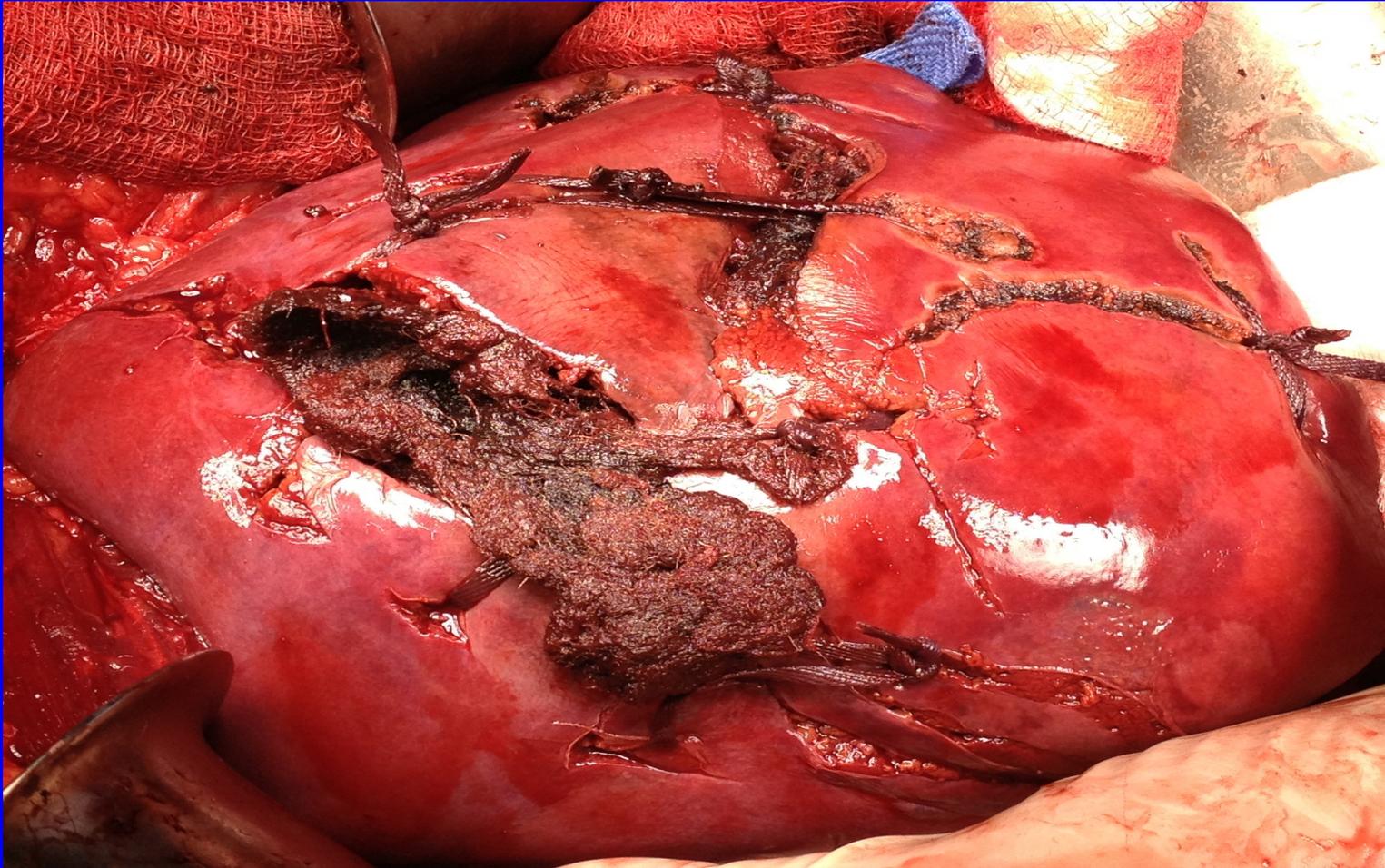


Vena
Cava

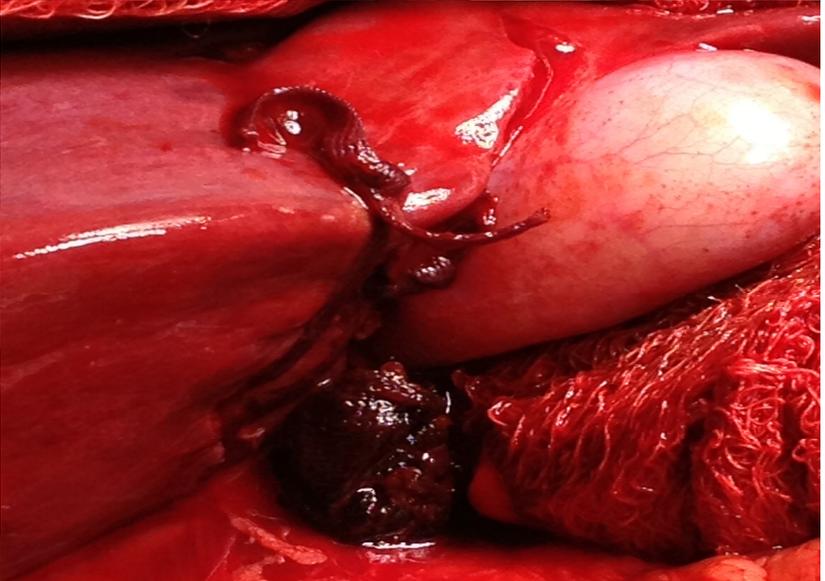
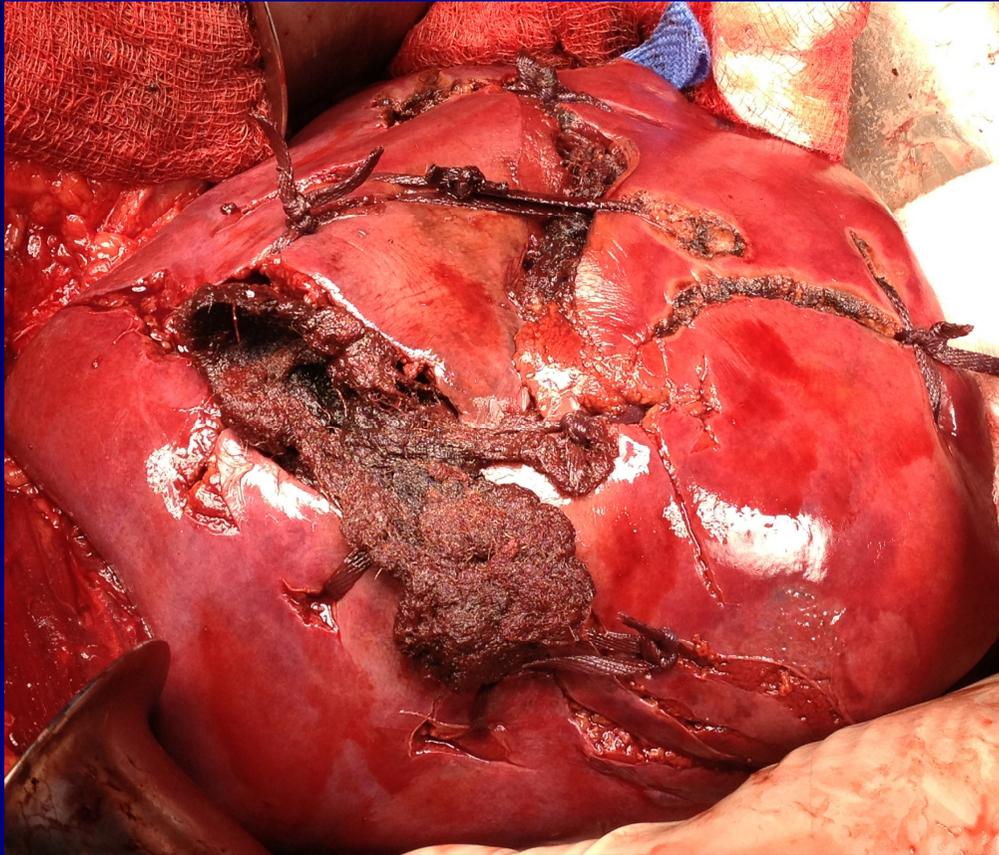


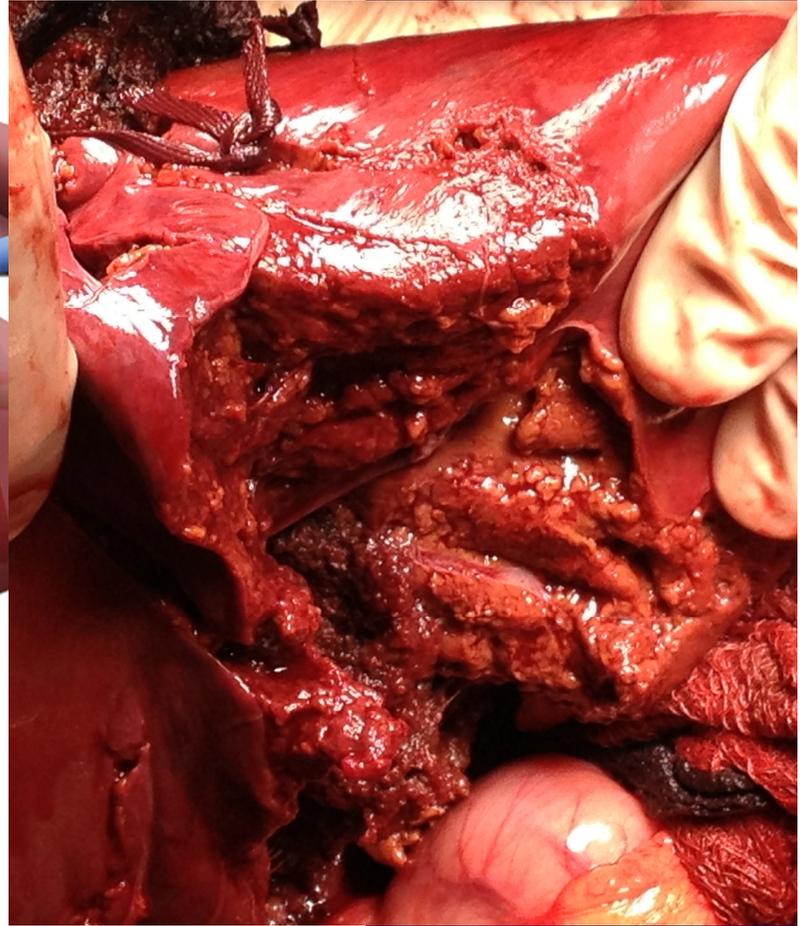
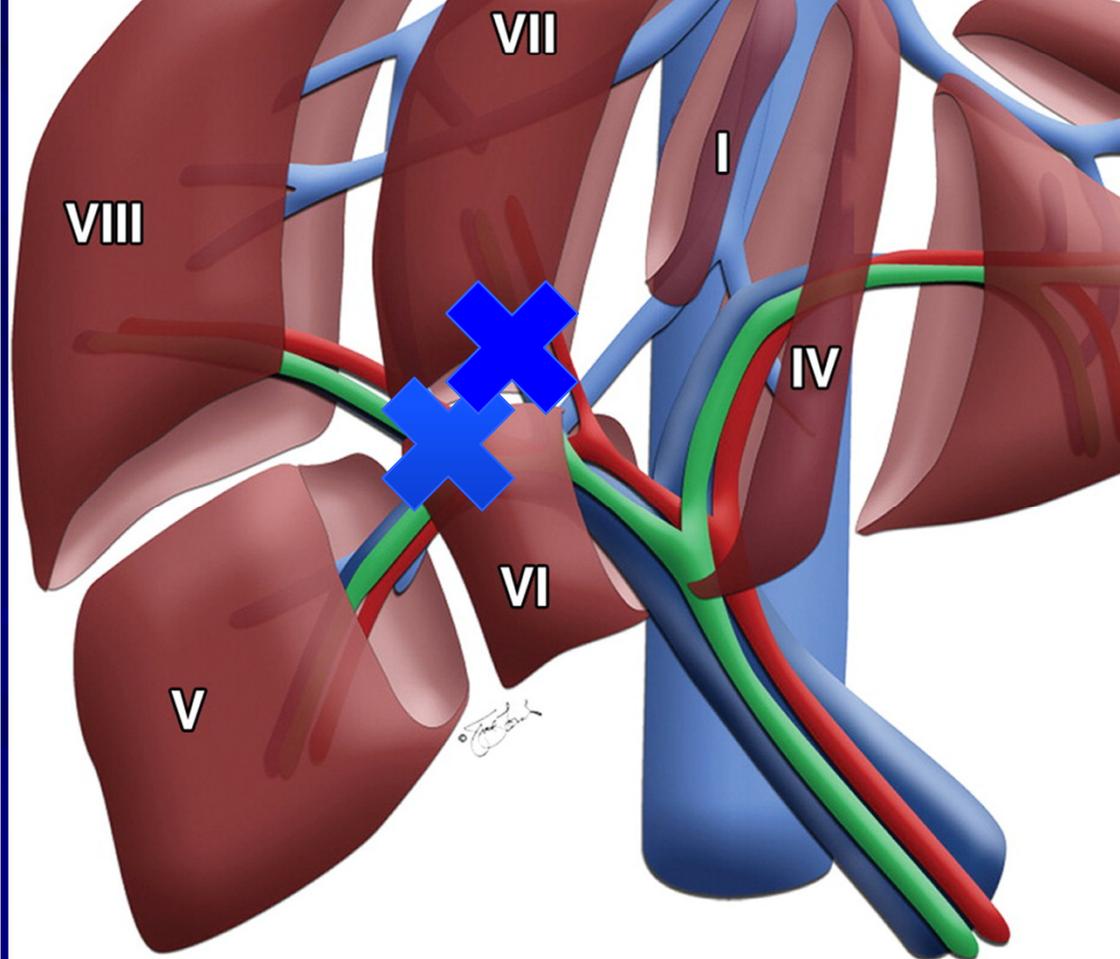
Complex vascular and
intestinal injuries

- Major liver injury : blunt grade 5 right-lobe liver injury in severe hypovolemic shock

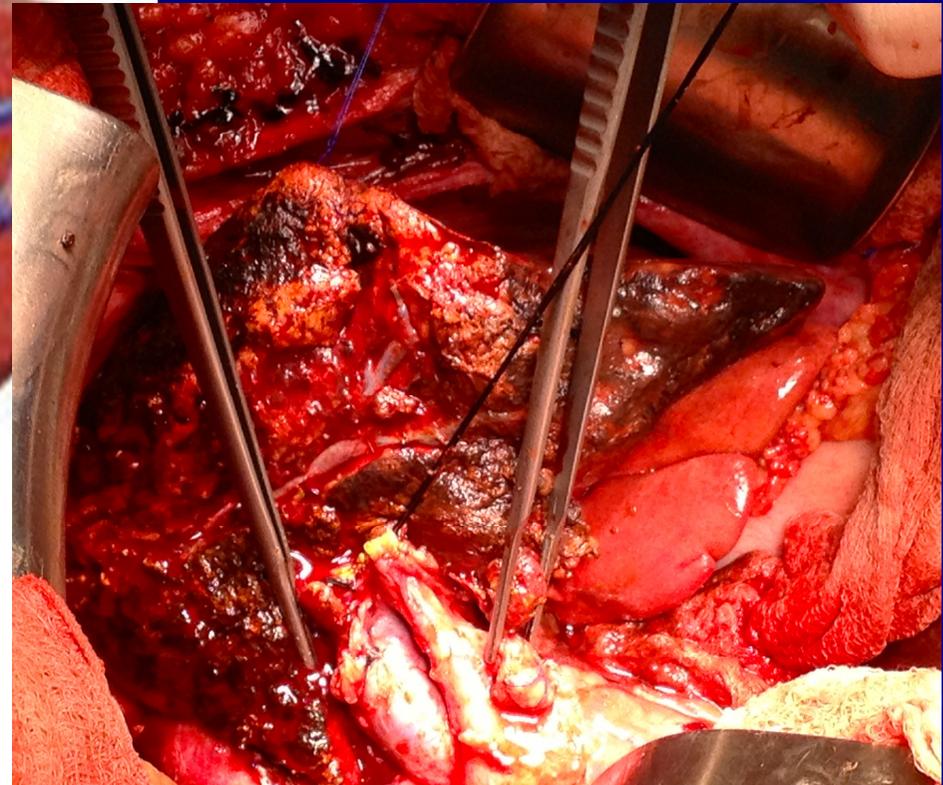
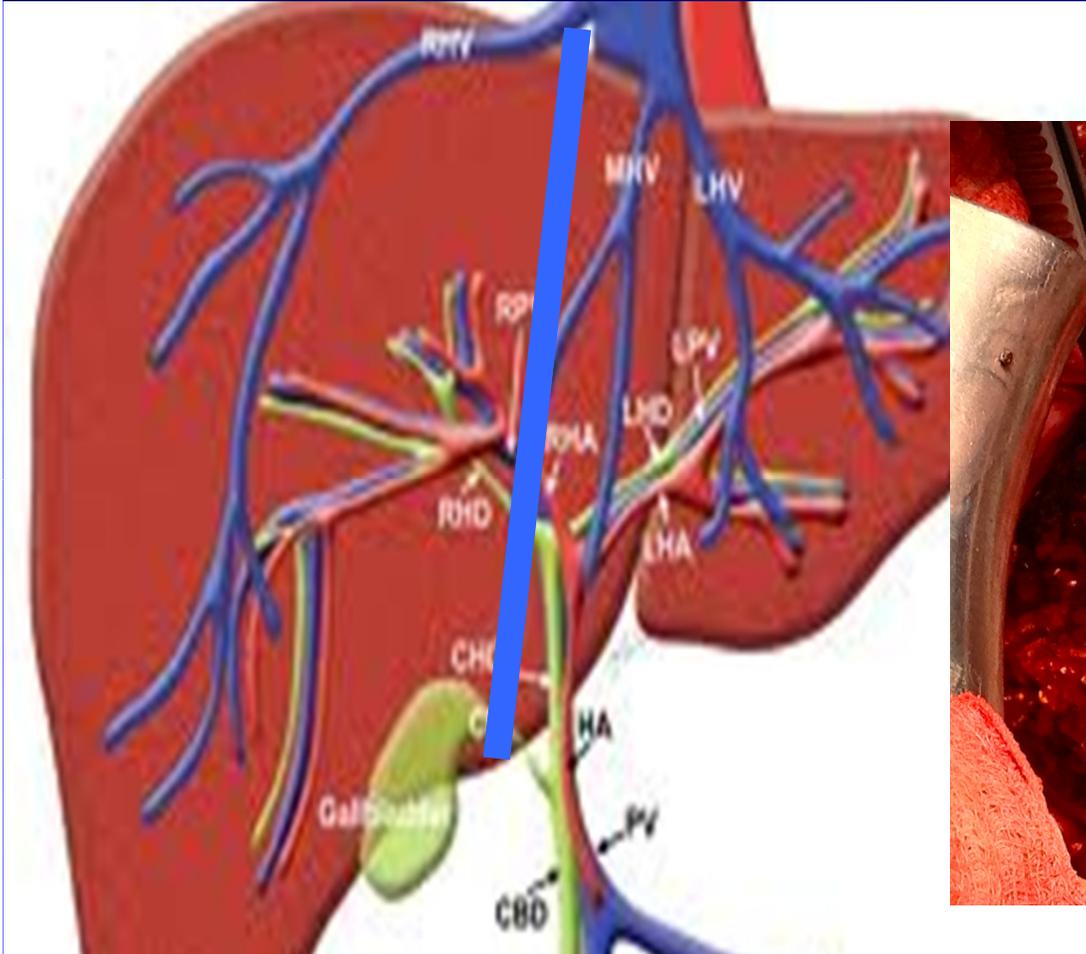


Damage control operation
intra- and perihepatic
packing was not
stopping the bleeding

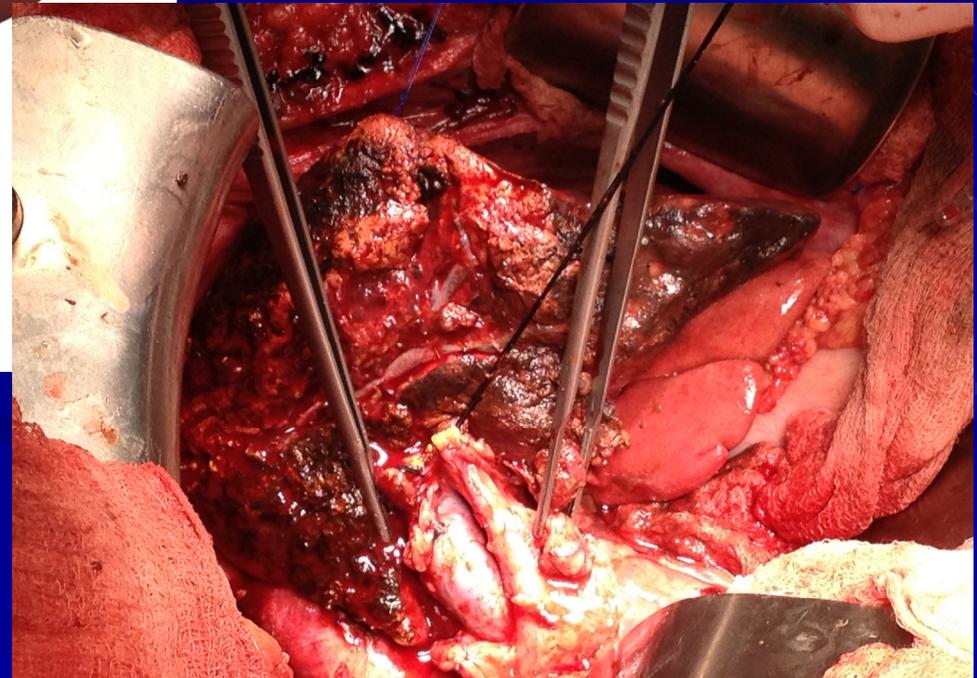
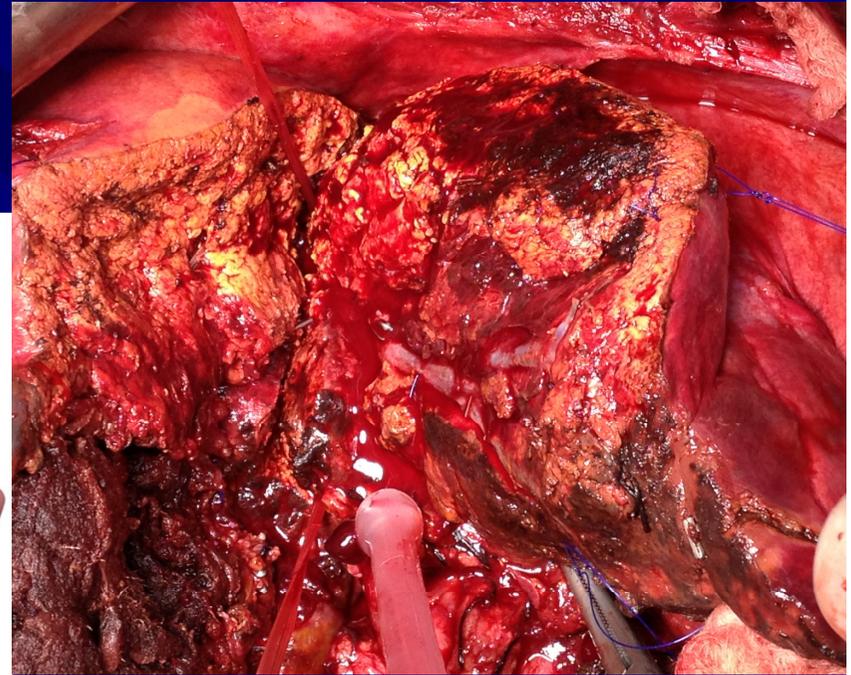
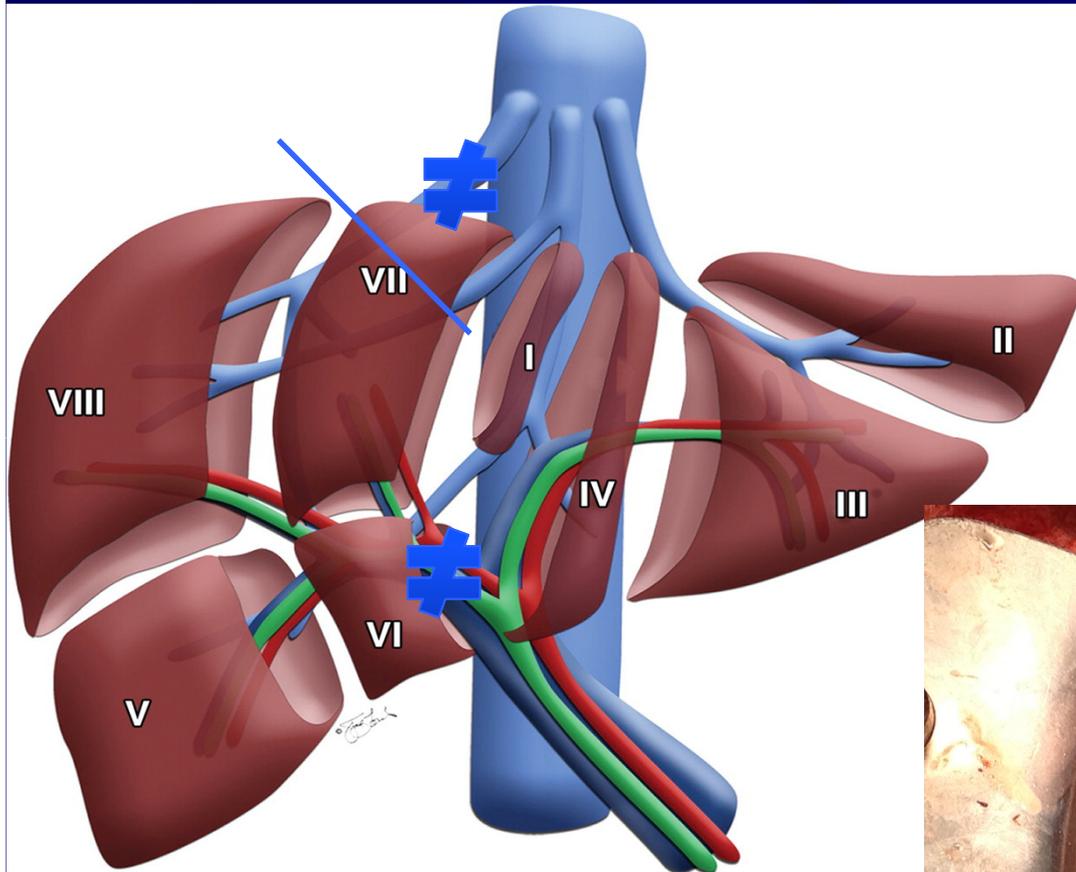




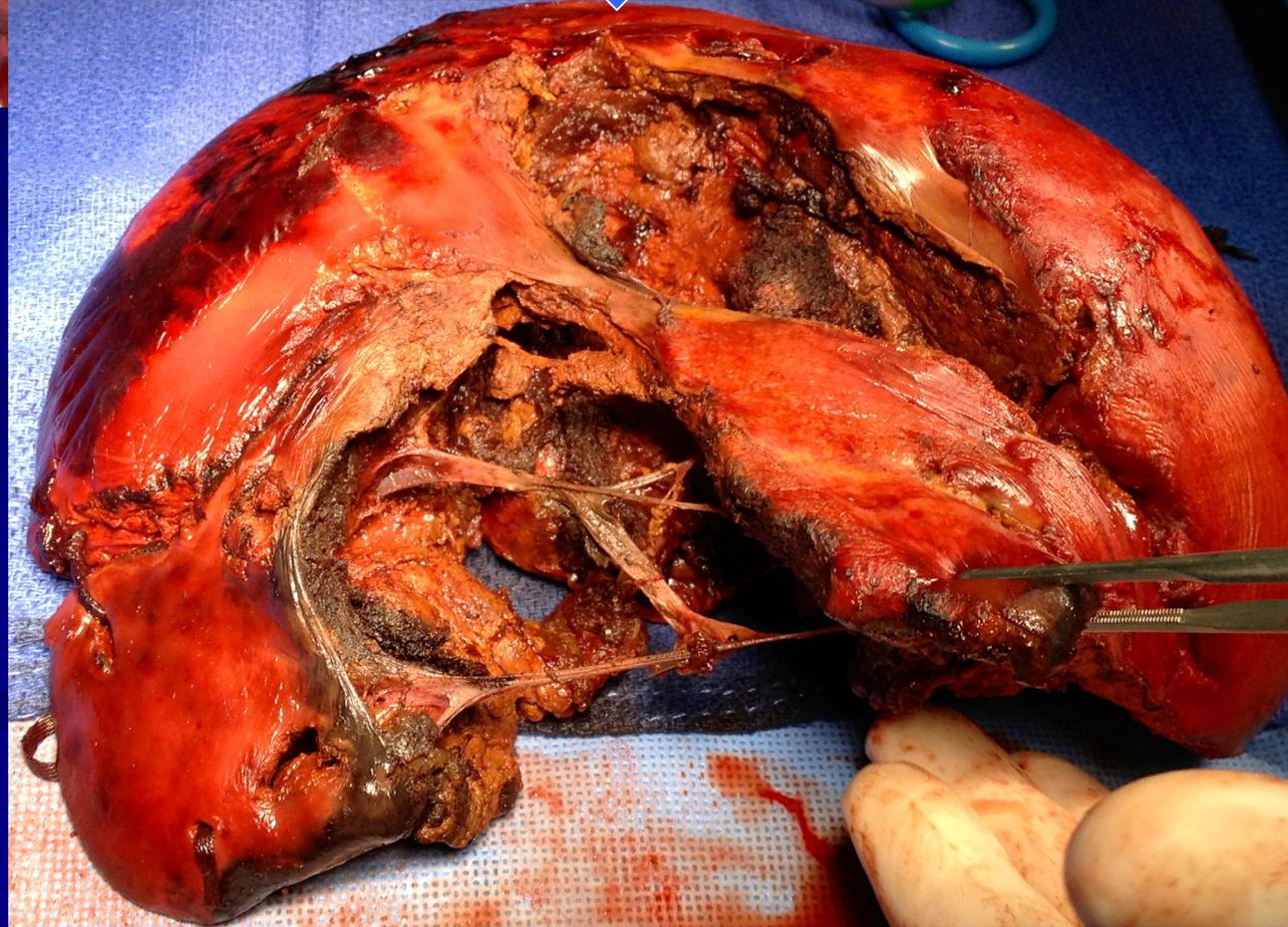
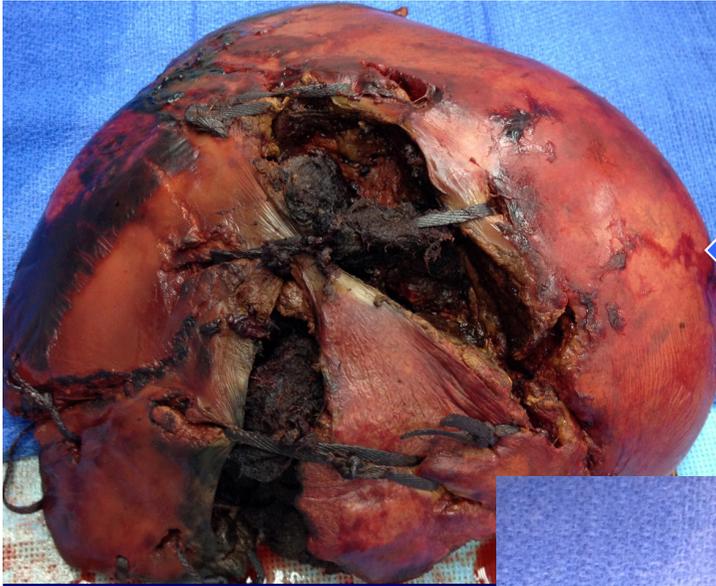
36 hours later, we performed a right formal
hepatectomy.



36 hours later



Final Specimen



In other words

- Abdominal compartment syndrome
- When you have extensive damage
- Hypotension and intestinal swelling
(commonly seen with prolonged and major resuscitation)
- Triangle of Death: Hypothermia, Acidosis, and Coagulopathy

Now you rely on:

Damage control:

When you fix it but
have to come back
again

What makes me leave abdomen open?

- Hypothermia (<95° F), acidosis, coagulopathy
- Inability to perform definitive repair
- Need for embolization
- Need for time consuming procedure(s)
- Indeterminate serious injury (pancreatic head/duct)
- Need to reevaluate abdominal contents (intestinal ischemia)

Hypothermia

Coagulopathy

Acidosis

Dead!

What not to do:

Operation was
a success, but
the patient died

“Non trauma surgeons”

This means that...

- Lungs are in shock
- Kidneys are in shock
- Heart is in shock
- Brain is in shock
- Liver is in shock
- Bowels are in shock

Patient
Is
Dying



..and you Need to Stop

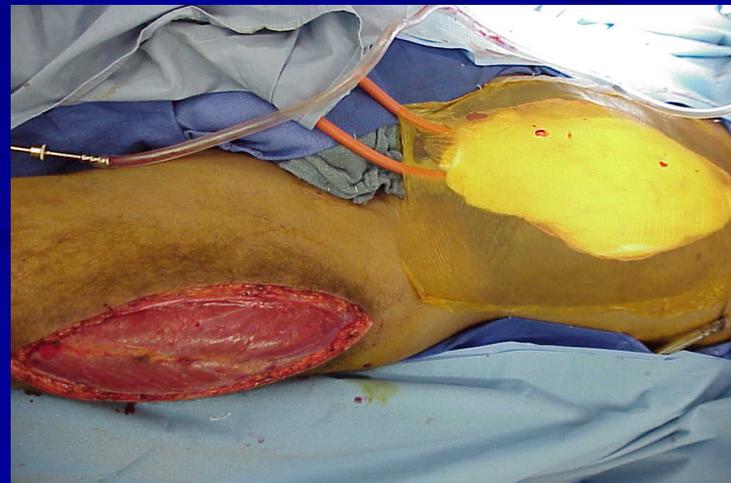


Summary: When do I Leave the Abdomen Open?

1. I have controlled the audible bleeding (repair, shunt, ligation..)
2. I have controlled the fecal spillage (stappler if I have)
3. I need to pack

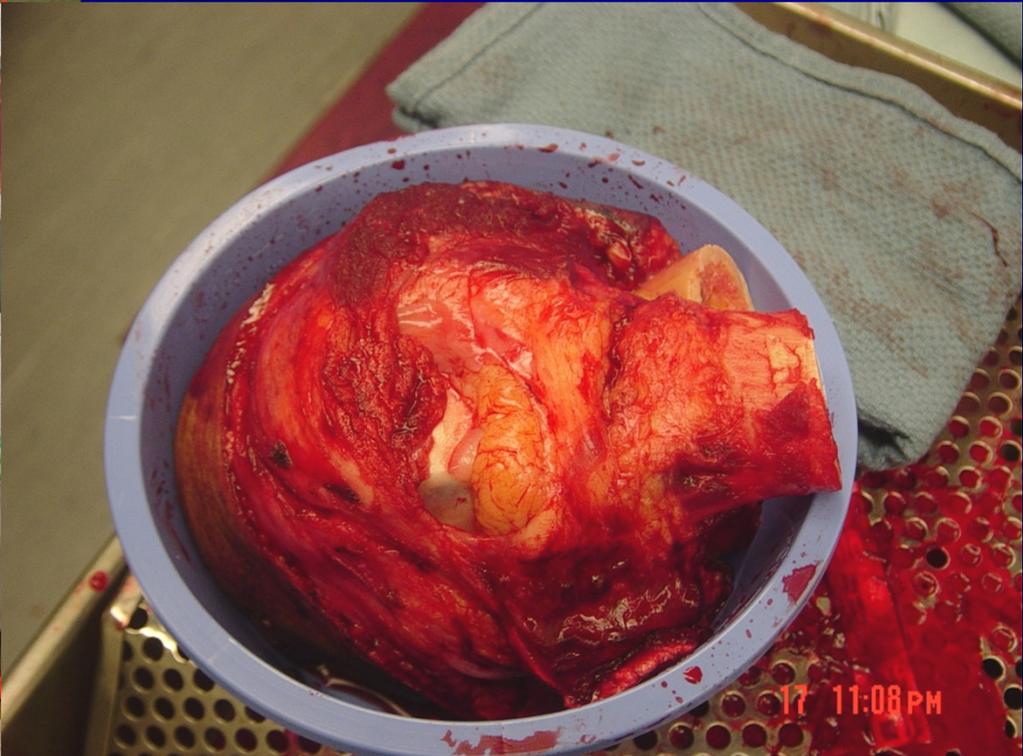
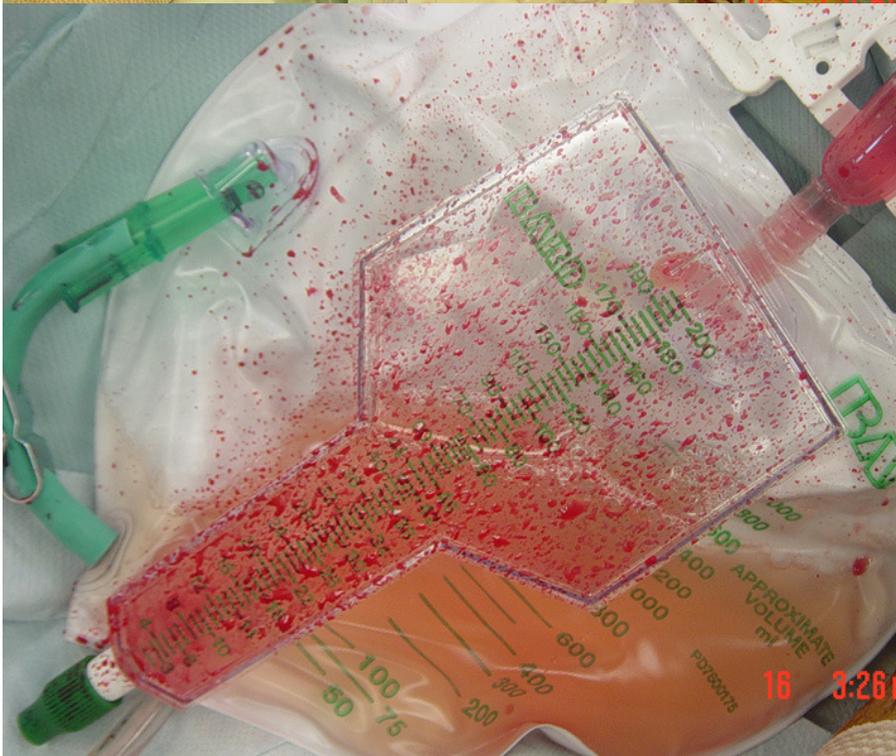
How do I close temporarily?

1. Approximate the skin
2. Poor man VAC



Metabolic Resuscitation

1. Restore physiology
2. Restore volume
3. Correct coagulopathy
4. End organ support



Challenges

Perioperative:

When do you return to OR?

- Hemodynamically stable or better
- Severe Acidosis resolving or improving
- Simply things are not going well and patient is not making expected progress

BED1
02:43 26-Apr-2013
Case: 00:00:04

NBP Open Line

Offline
OR Monitor
Layout: Automatic



HR **128** 150
45

ARR
STIII ***
STaVL ***
STV ***

ART **105 / 54**
(71)

SpO2 **100** 100
90

PLS **130**

etCO2* **36**

RRc* **22** iCO2* 0

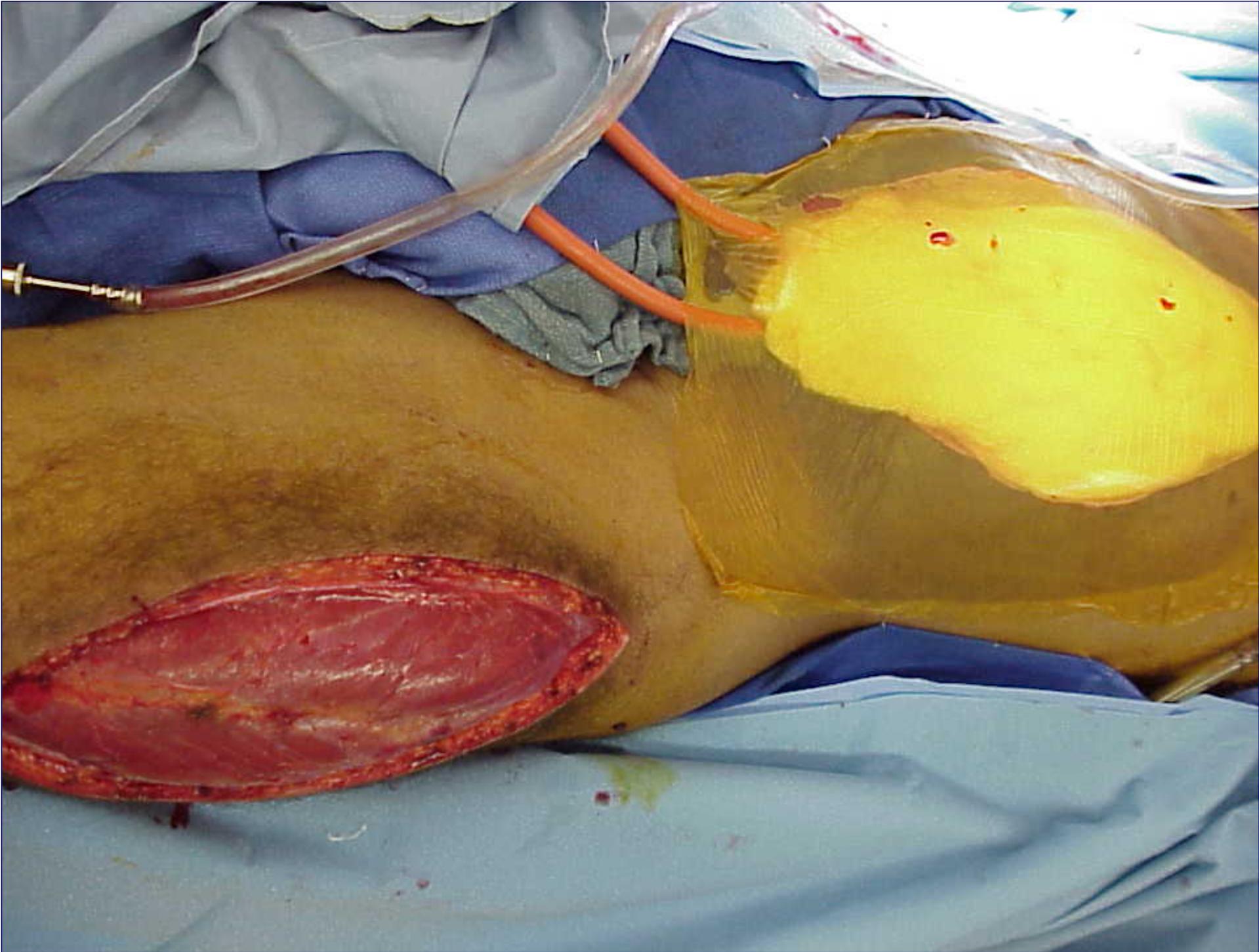
O2 **43** SEV 0.7 N2O 0

et **38** 0.7 0

Paw PIP **23**

- Audio Pause
- NBP Start / Stop
- Alarms OFF
- Record
- Mark Event
- Print Screen
- Discharge
- Case Timer
- Patient Data
- Procedures
- Reports







POST OPERATIVE DAY # 1 –RETURN TO OR

When should we repack?

Still oozing
Patient not stable
Still acidotic

How long do I continue with TAC?



As long as I takes!

In the Subsequent Operation(s)

- Think long term
- Place a feeding tube
- Evaluate previous work
- Try to do it your self

Challenges: First week or two...

- Restoring physiology: both mechanical and metabolic
- Preventing and fighting infection
- Feeding and hygiene
- Mobilizing
- Constant return to Operating Room... and than...

- Covering the open abdomen with mesh, skin graft...
- Open wound just does not granulate enough ...

SUBSEQUENT CATASTROPHE

■ “utter failure...” (of our treatment)



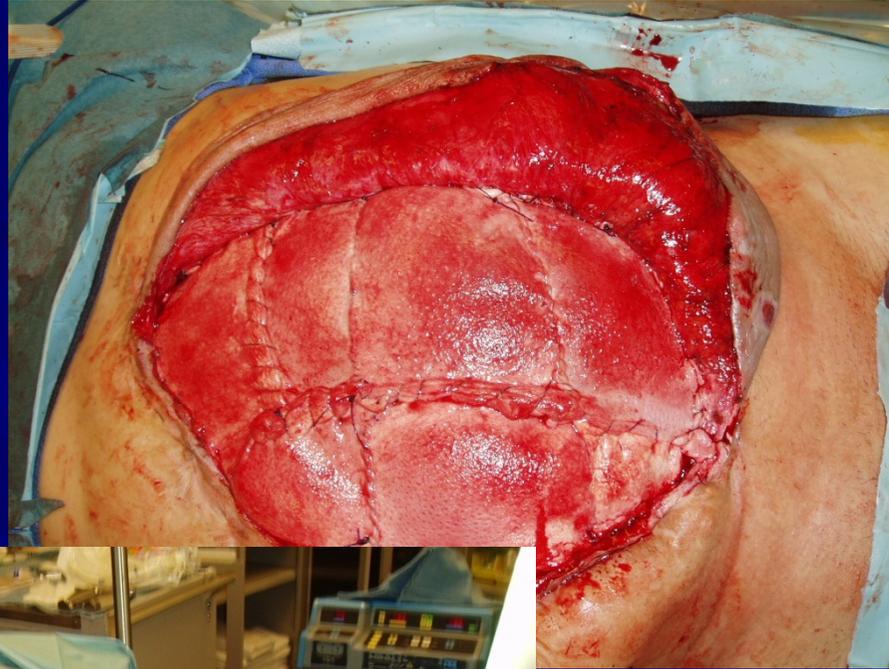
Obtain a gut access....
what ever works for you







Six months later/colostomy take down





Summary

- Open abdomen is life saving but has a huge cost: metabolic, financial and functional
- We need to know when to use, but not abuse it
- We should try to close ASAP even if we have to try daily