

**MY GUT HURTS !!!**

**Penetrating Abdominal Trauma**

*2012 Virginia  
EMS Symposium*

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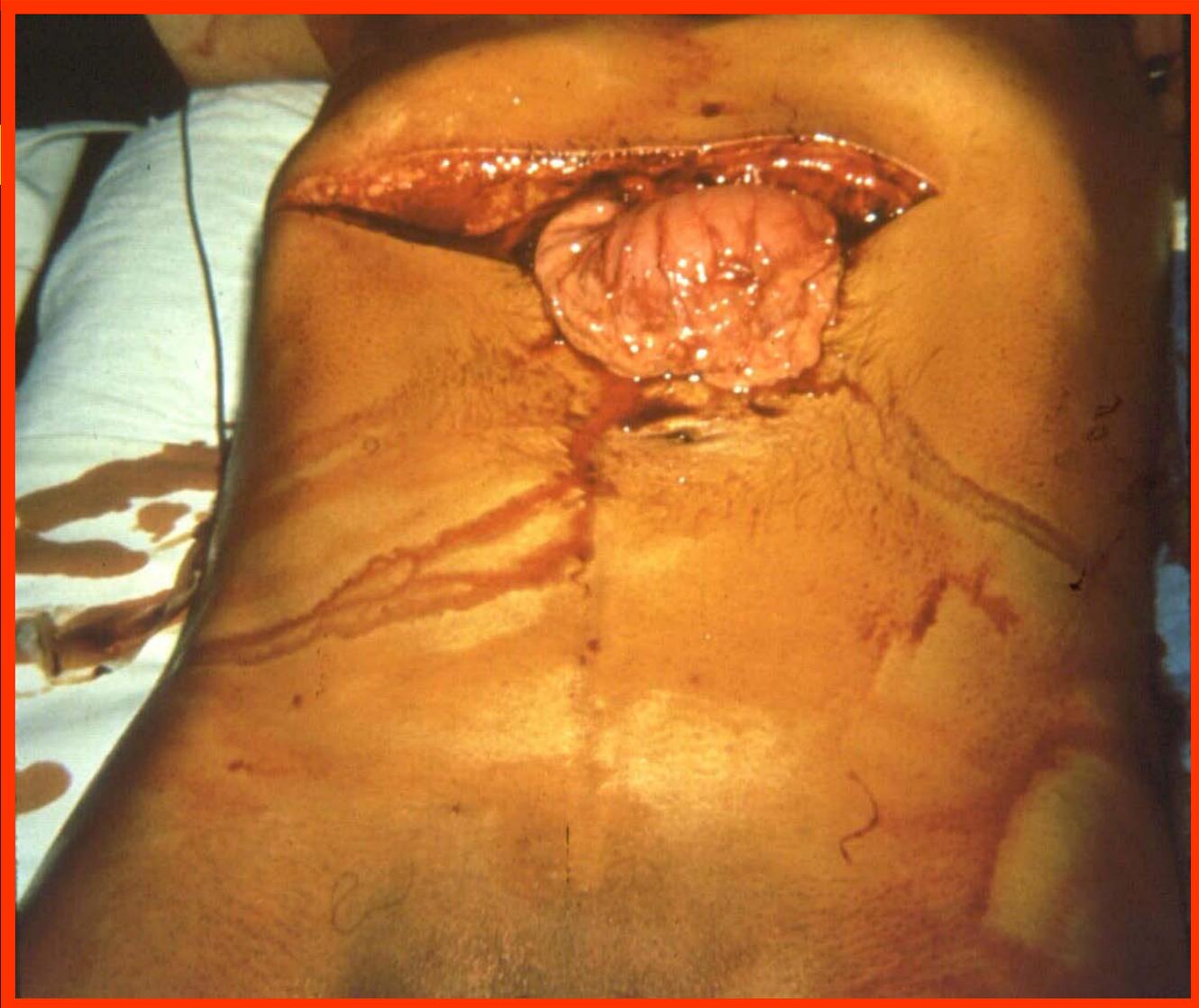
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**St. Anthony Hospitals  
PreHospital Services**  
 Centura Health

# Objectives

- **Upon completion of this session, the student should be able to:**
  - Describe the organs of the abdomen and their location.
  - Explain the importance of mechanism of injury on the abdominal exam.
  - Predict abdominal injuries based on penetrating mechanisms of injury.
  - Prioritize strategies for management.

*Wrong Place at the Wrong Time*



# Importance

- ✦ The signs of intra-abdominal injury frequently obscured by:
  - ✦ Associated extra-abdominal Injuries
  - ✦ Head injuries
  - ✦ Intoxicants
- ✦ Major reservoir for occult blood loss
- ✦ 20% of patients with acute hemo-peritoneum will have benign exams when first examined

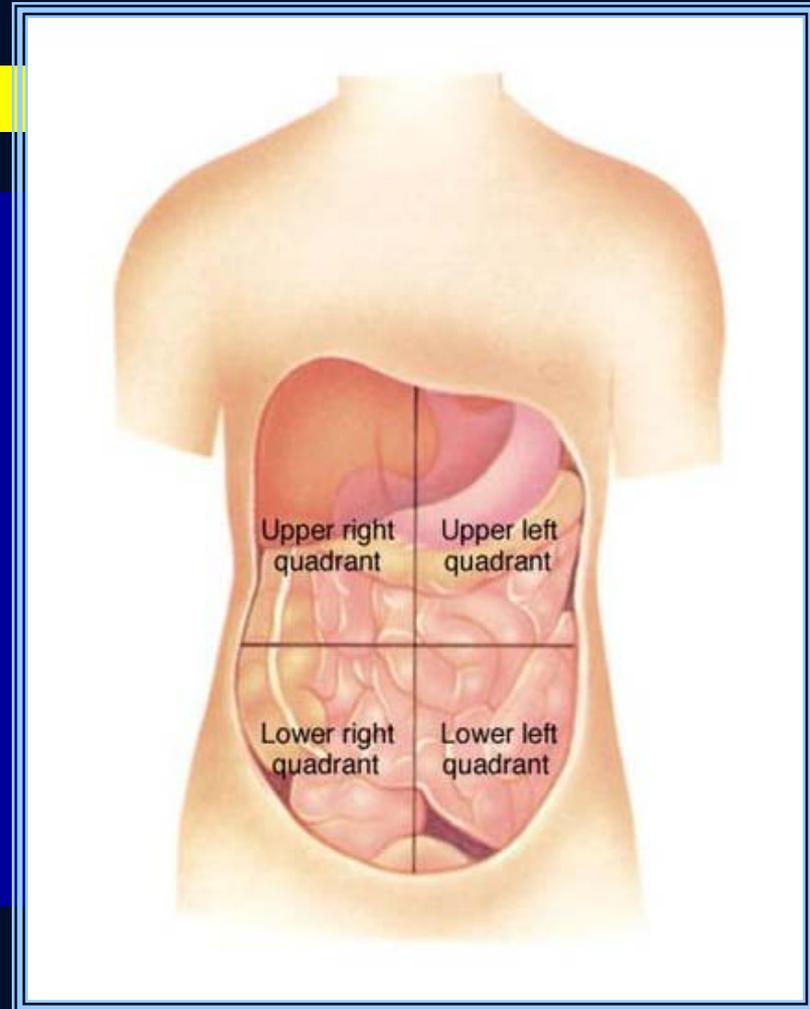


# Primary Goals

- ✦ **Primary goal in assessing and managing abdominal trauma**
  - ✦ **Not the accurate diagnosis of a specific injury**
  - ✦ **Managing severe hemorrhage**
  - ✦ **Prevent shock**
  - ✦ **Assess for other injuries**
  - ✦ **Rapid and appropriate transport**
    - ✦ **Determination that a surgical injury exists**
    - ✦ **Rapid operative intervention**

# Abdominal Anatomy

- The boundaries are:
  - The Diaphragm (**Superiorly**)
  - The Pelvis (**Inferiorly**)
  - The Vertebral column, the posterior and inferior ribs and the back muscles (**Posteriorly**)
  - The Muscles of the flank (**Laterally**)
  - The Abdominal muscles (**Anteriorly**)



## The RUQ

Gall bladder

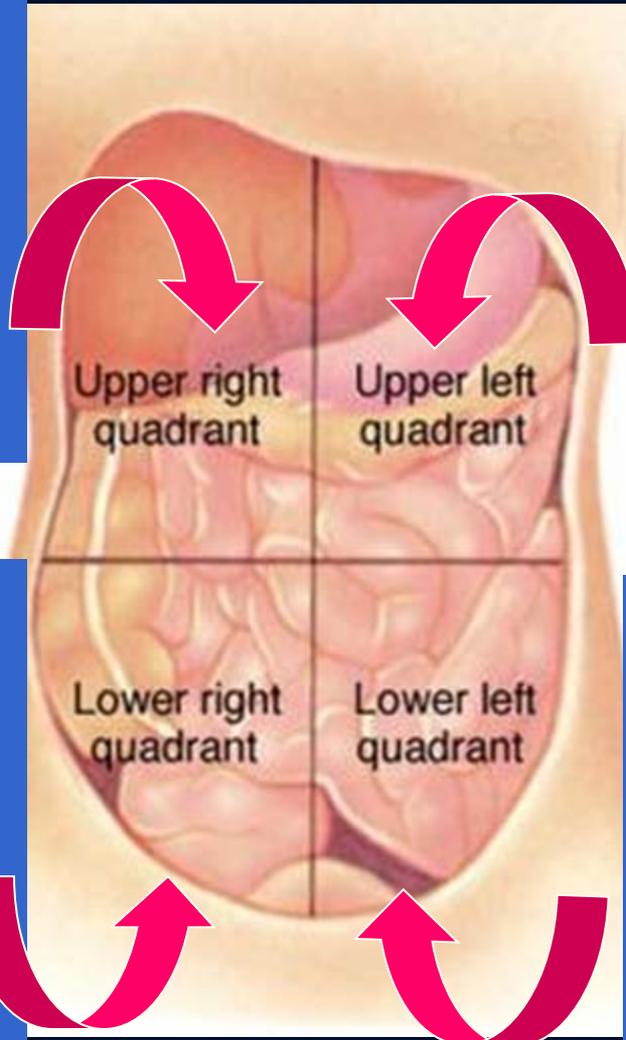
Right Kidney

Liver (most of it)

Small Bowel

Ascending and Transverse  
Colon

Pancreas



## The LUQ

Stomach

Spleen

Left Kidney

Pancreas (most of it)

Liver (portion)

Small Bowel

Transverse and Descending  
Colon

## The RLQ

Appendix

Urinary Bladder (some)

Small Bowel (some)

Ascending Colon (some)

Rectum (some)

Reproductive Organs

## The LLQ

Sigmoid Colon

Urinary Bladder (some)

Small Bowel (some)

Descending Colon

Rectum

Reproductive Organs

**Peritoneal Sac – transparent membrane filled with fluid  
which lubricates and bathes internal organs**

**Is it a chest injury or abdominal injury ?**



# Abdominal Anatomy

## ✦ Hollow Organs:

- ✦ Stomach
- ✦ Intestines
- ✦ Gall Bladder
- ✦ Urinary Bladder
- ✦ Ureters
- ✦ Uterus

- ✦ Dump Gastric Contents / Feces Into Abdominal Cavity

## ✦ Solid Organs:

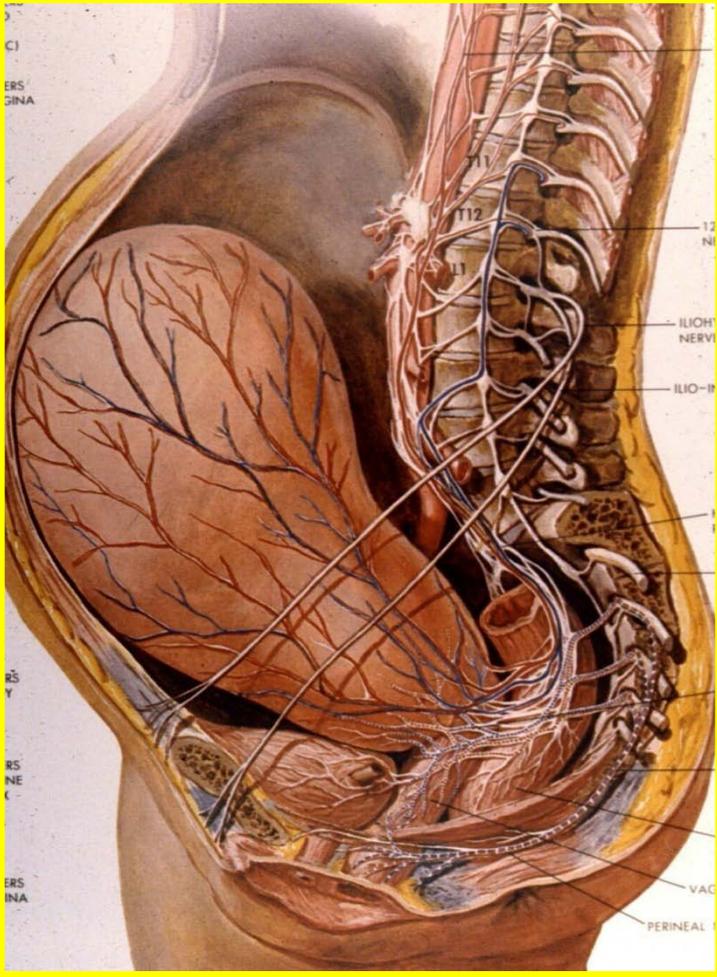
- ✦ Liver
- ✦ Spleen
- ✦ Kidneys
- ✦ Pancreas
- ✦ Ovaries
- ✦ Adrenal Glands

- ✦ Hemorrhage

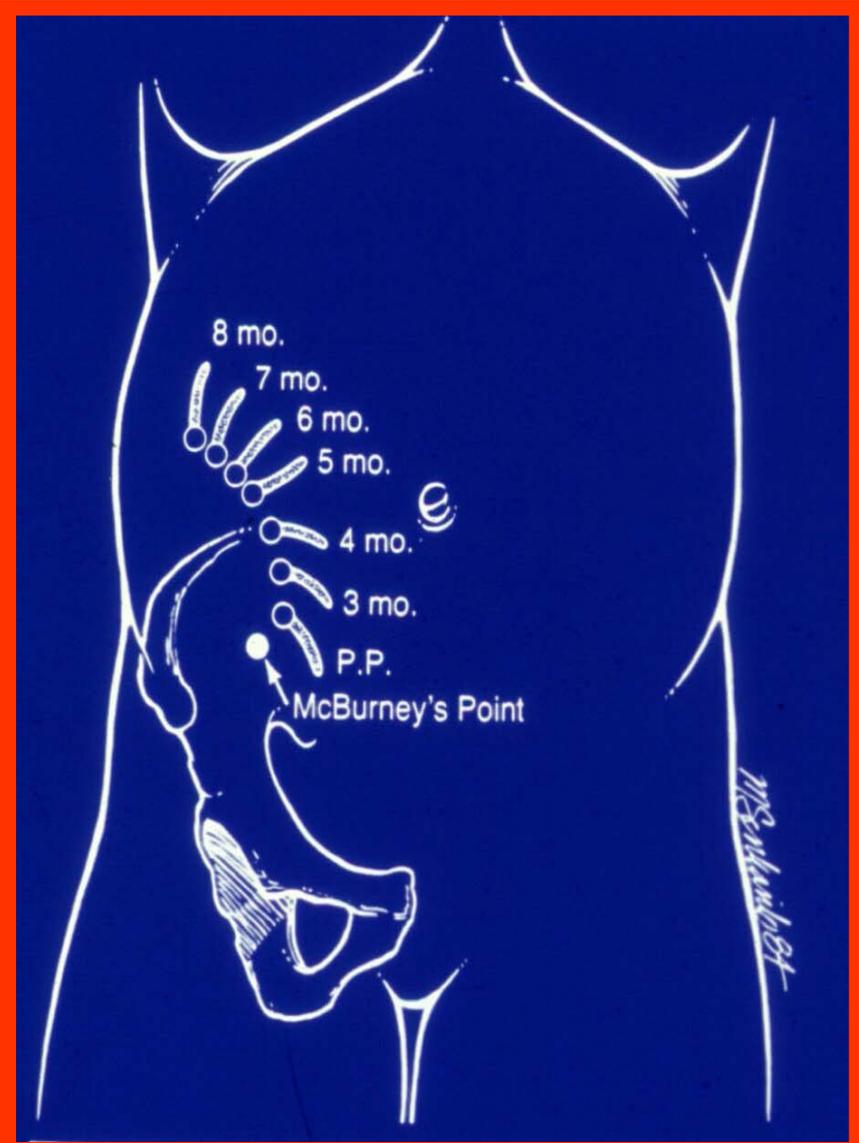
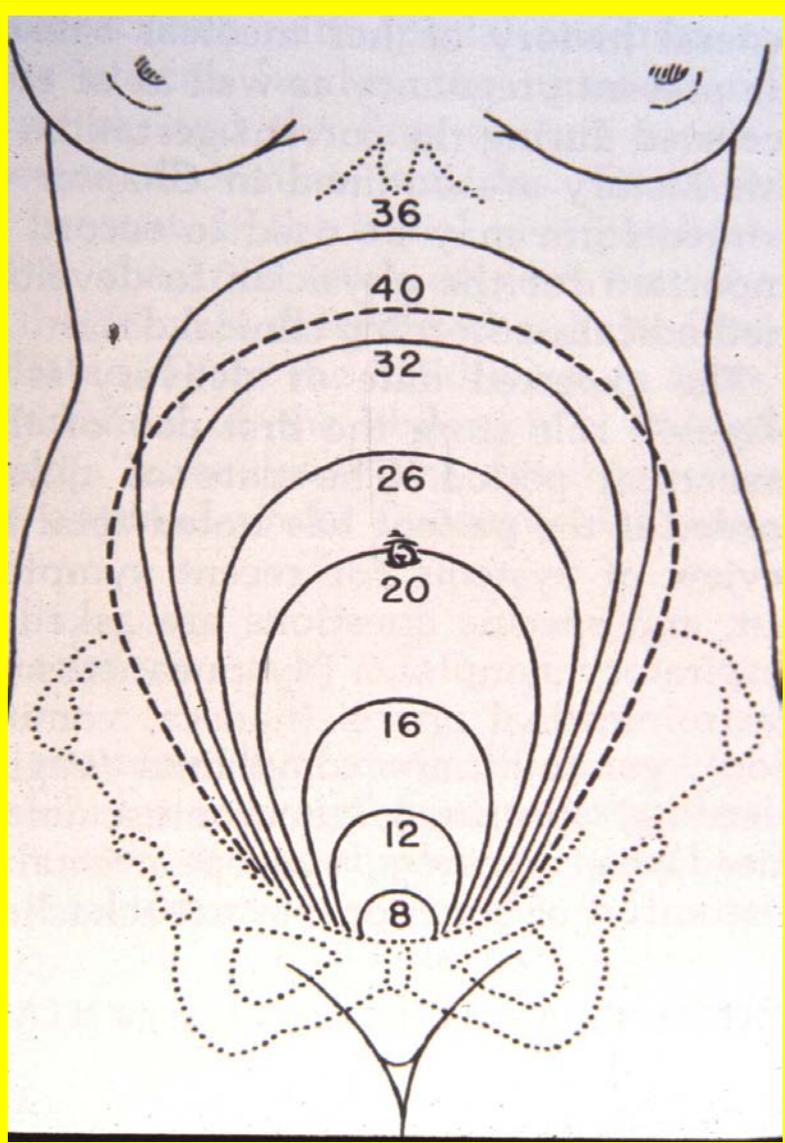
*Either cause inflammation of peritoneum*

*Peritonitis can cause septic shock and death within 1 hour*

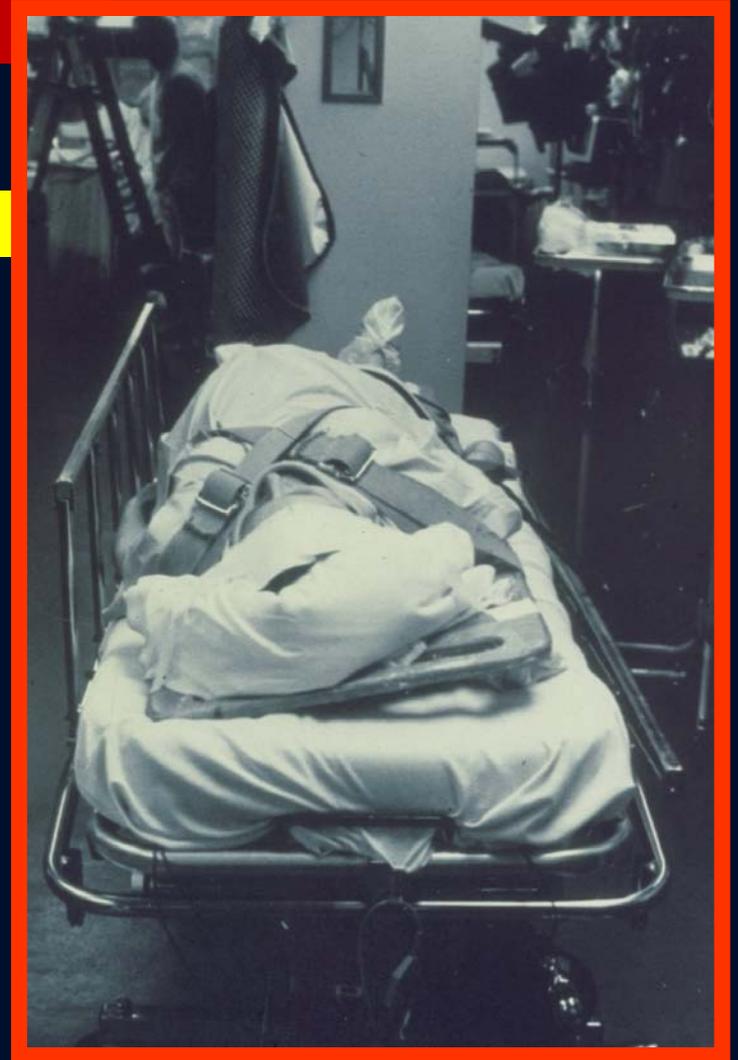
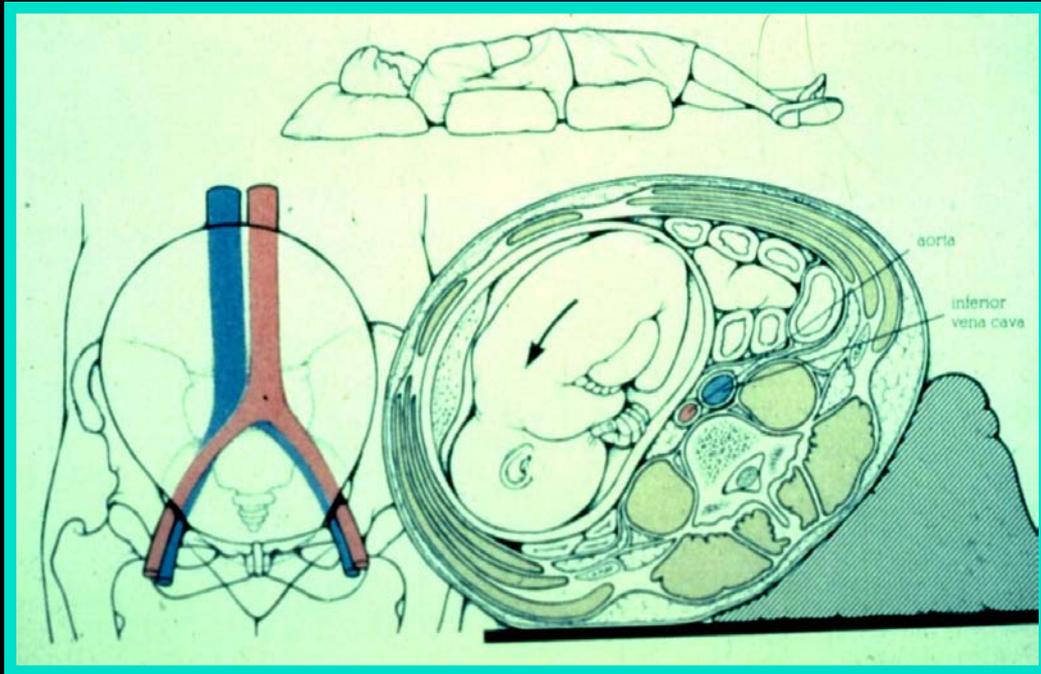
# Abdominal Anatomy Pregnant Female



- Two lives, not just one
- Understand the A & P changes
- Prevention of fetal hypoxia
- Careful history to obtain gestational age
- Diagnostic tools
- OB/surgical consults
- **PROPER POSITION**



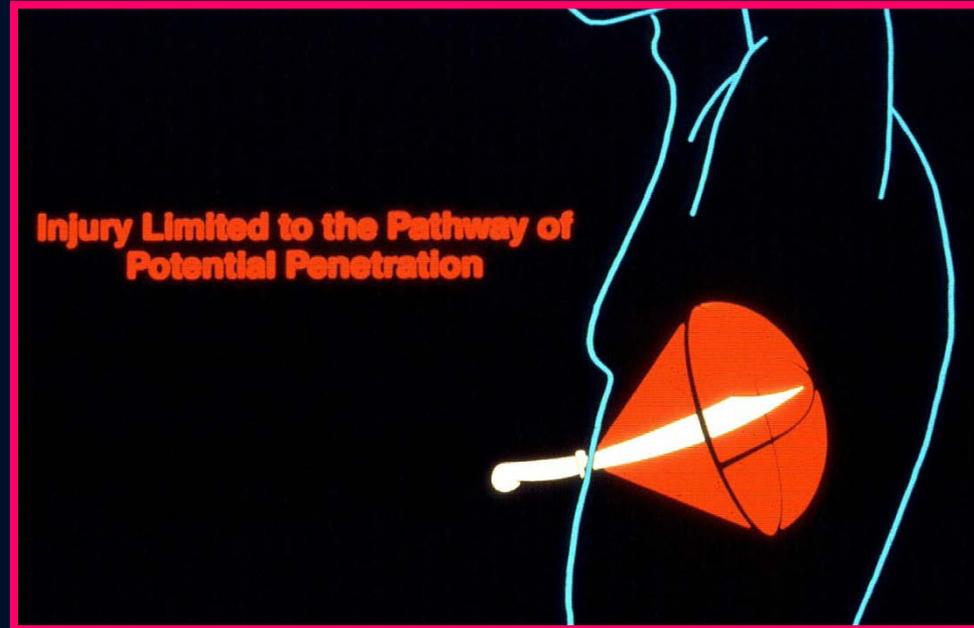
# Proper Position



# Abdominal Trauma

## Types

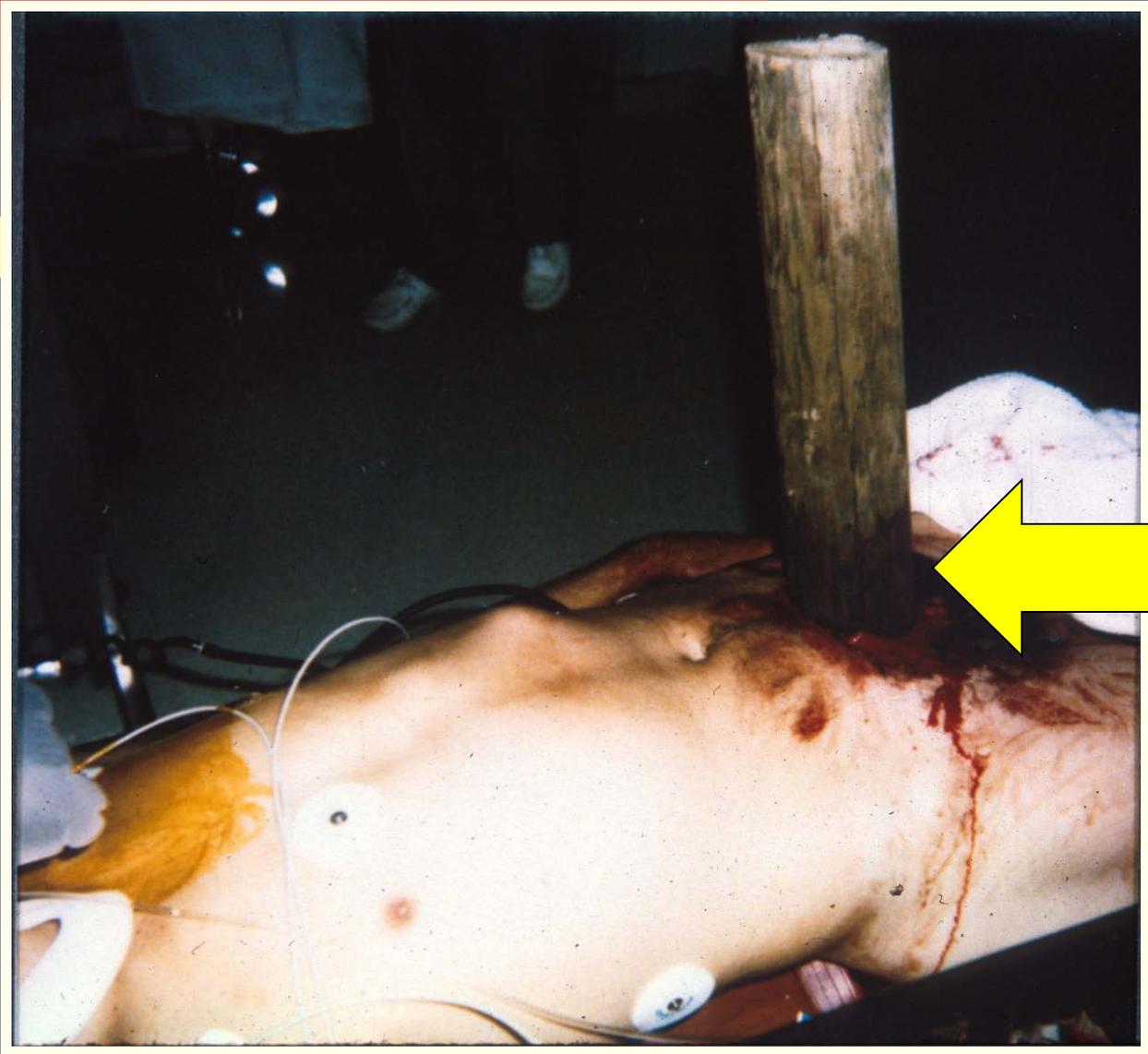
- ✦ **Open - Penetrating**
  - ✦ **Stab wounds traverse adjacent structures underlying knife wound**











# Basic Ballistics

- ✦ **Missile wounds have a circuitous trajectory**
  - ✦ **Multiple noncontiguous organs injured**
    - ✦ **Bullets**
    - ✦ **Pellets**
    - ✦ **Shrapnel**
  - ✦ **Ballistics**
    - ✦ **Type of weapon – hand gun vs. long gun**
    - ✦ **Rifle vs. shot gun**
    - ✦ **Explosive**

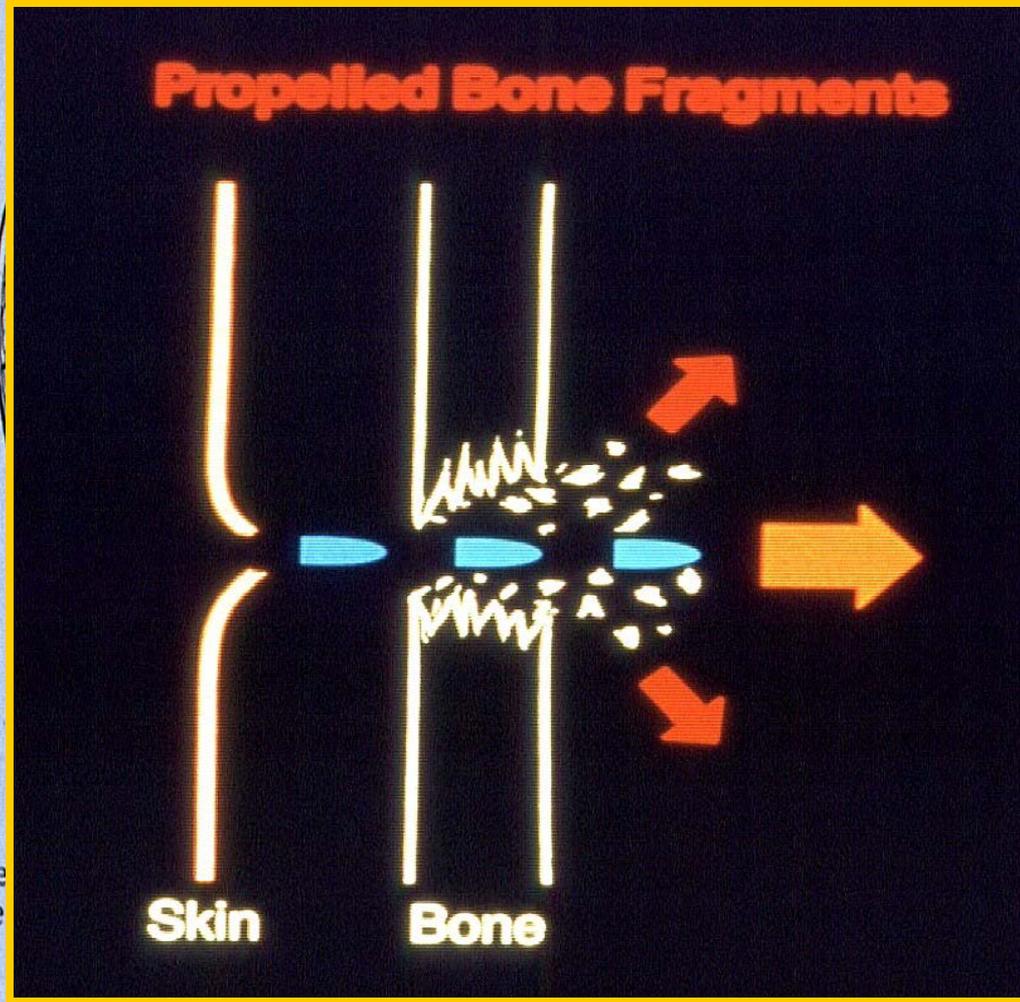
Debris drawn into cavity

Vertebral body

Entrance wound

Fragment

## Propelled Bone Fragments

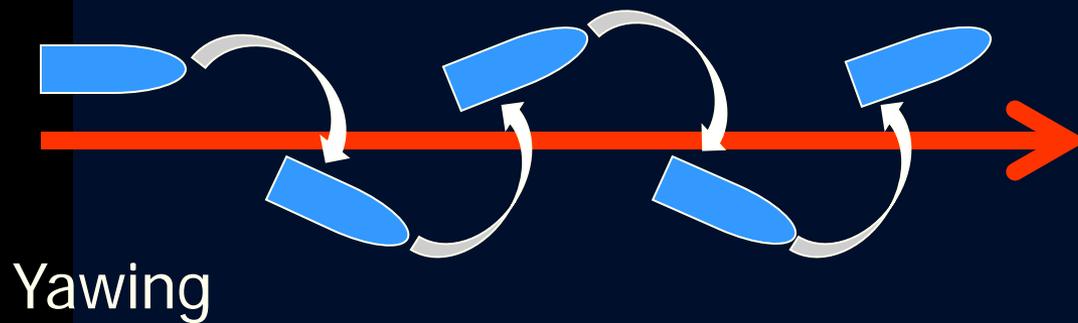
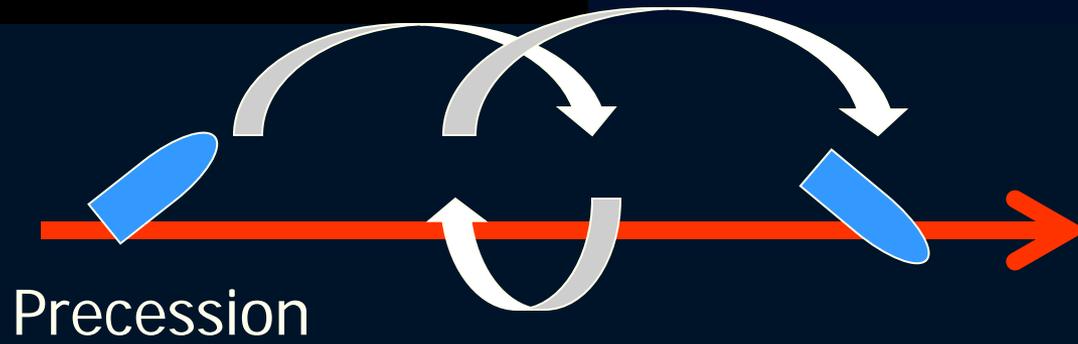


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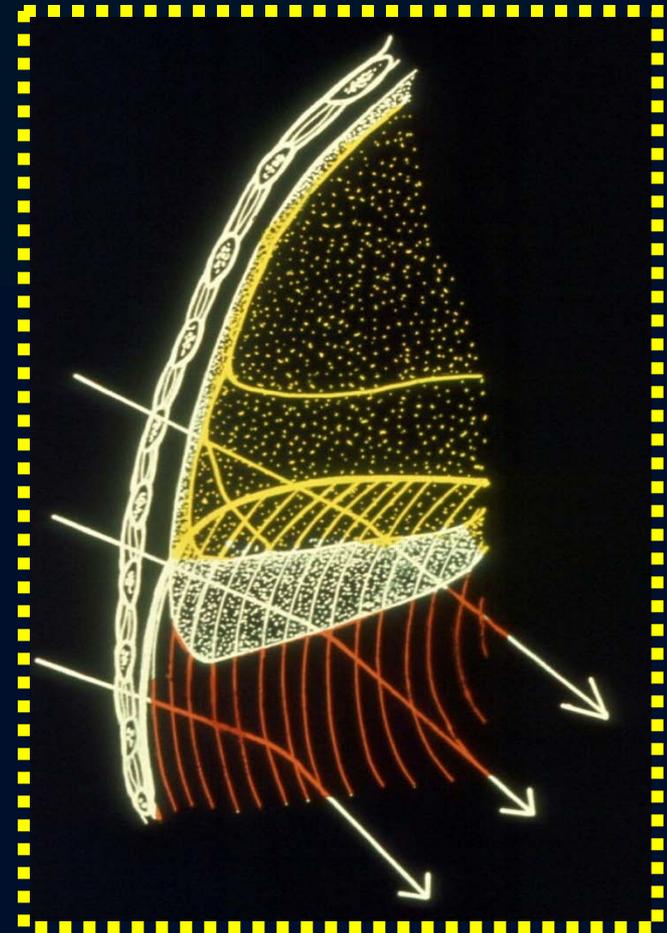
Bulle  
bone

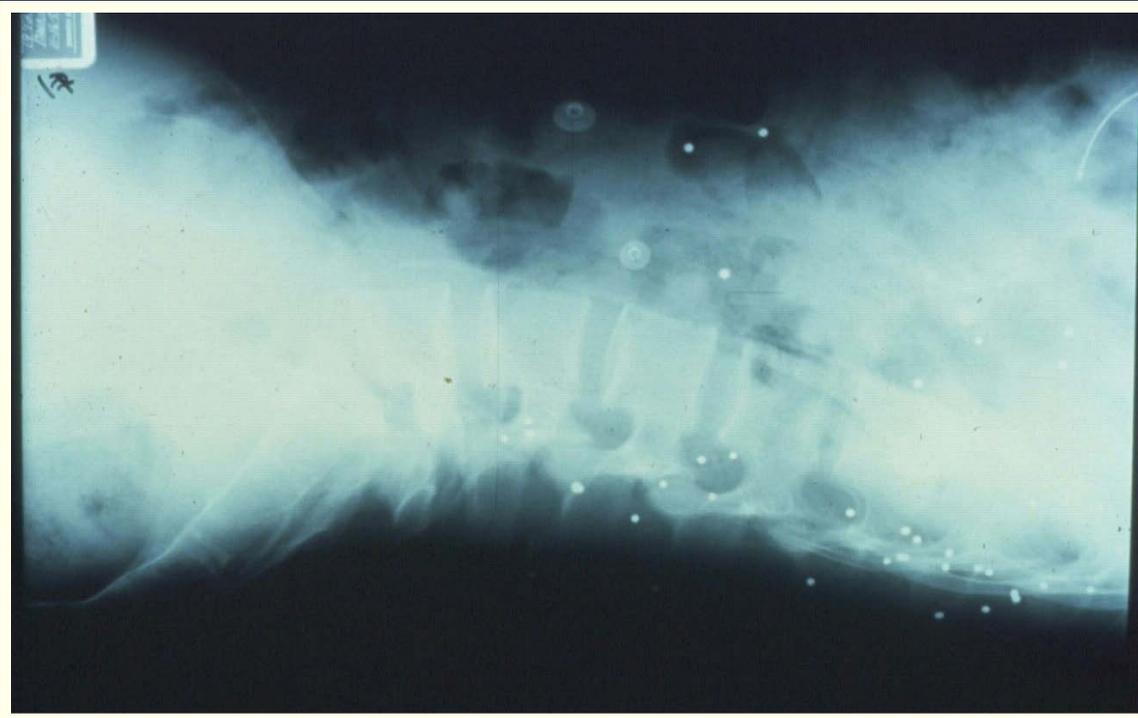
Skin

Bone



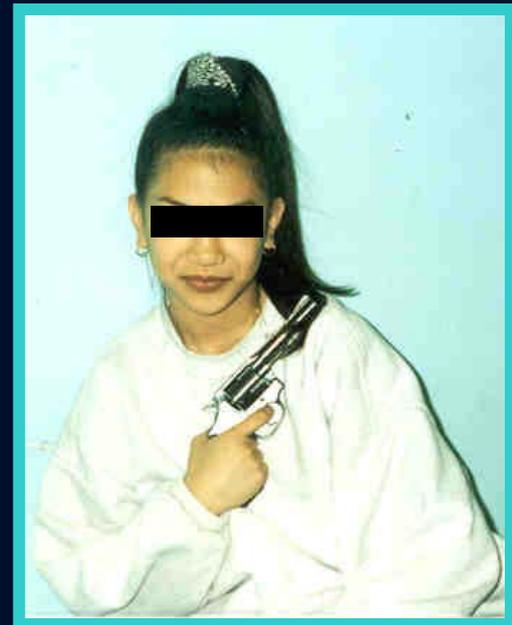
## Hollow vs. Solid Organs





# Abdominal Trauma History

- ✦ Time of injury
- ✦ Type of weapon
  - a Size of knife
  - a Caliber of gun
- ✦ Distance from assailant
- ✦ Number of wounds
- ✦ Concomitant injuries
- ✦ Amount of blood at scene



# **Abdominal Trauma**

## **Preservation of Evidence**

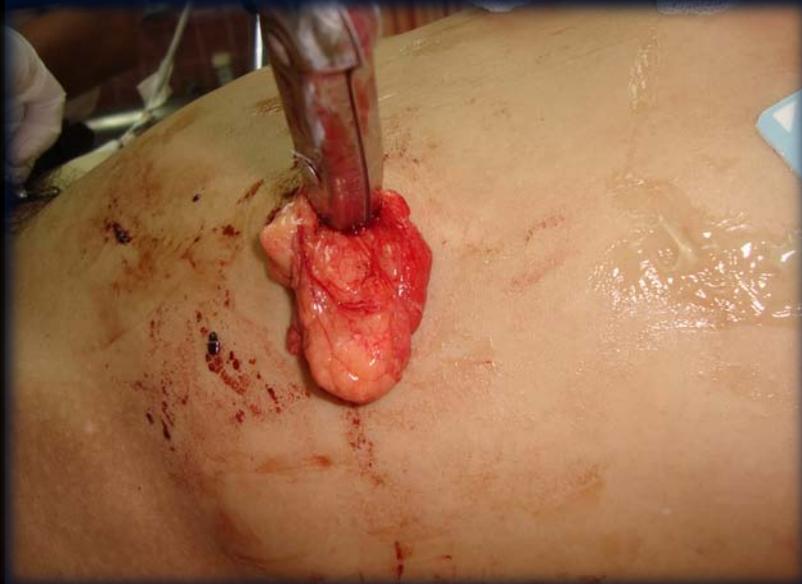
- **Do not cut through holes**
- **Do not cleanse the wound**
- **Use caution with weapons, avoid touching weapons**
- **Use only paper bags**
- **Place bags on hands**
- **Maintain chain of evidence**
- **Act as Patient and Police advocate**

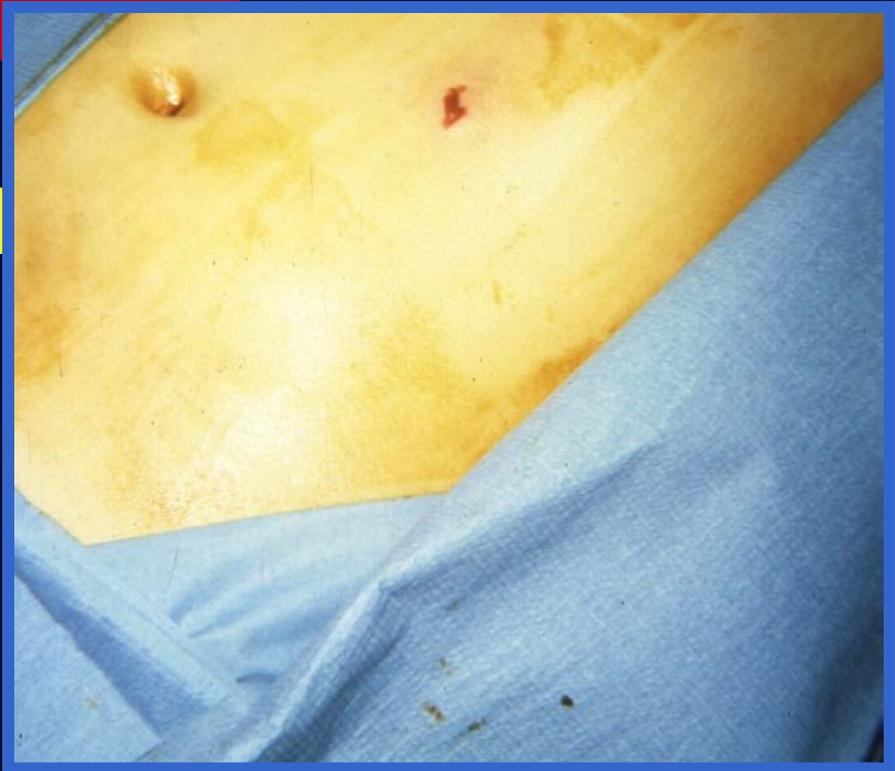
# Abdominal Trauma

## Signs and Symptoms

- ✦ **Inspection**
  - ✦ Distention
  - ✦ Abrasions
  - ✦ Contusions
  - ✦ Lacerations
  - ✦ Evisceration
- ✦ **Back and perineum frequently overlooked**

**Undress  
the  
patient**





# Abdominal Trauma

## Signs and Symptoms

### ✦ Auscultation

- ✦ Decreased or absent bowel sounds

### ✦ Palpation

- ✦ Local / generalized tenderness
- ✦ Guarding and rebound tenderness
- ✦ Rigid abdomen
- ✦ Referred pain

### ✦ General

- ✦ Tachycardia
- ✦ Shock
- ✦ Hematuria
- ✦ Vomiting
- ✦ Hematemesis

# Abdominal Trauma

## Field Treatment

- ✦ ABC's
- ✦ High flow oxygen
- ✦ Treat Shock
  - ✦ Fluid resuscitation
  - ✦ Response to treatment
- ✦ Monitor vital signs
- ✦ Repeat assessment



# Abdominal Trauma

## Field Treatment

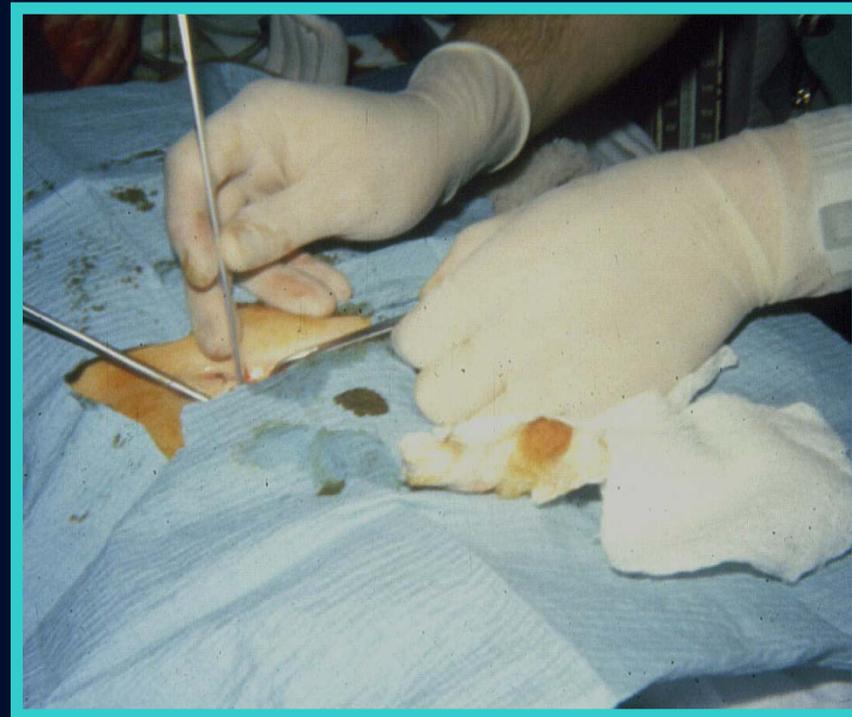
- ✦ NPO
- ✦ Cover exposed organs with saline dressings
- ✦ Stabilize impaled objects
- ✦ Consider pelvic fracture
- ✦ Emergent transport to a trauma center

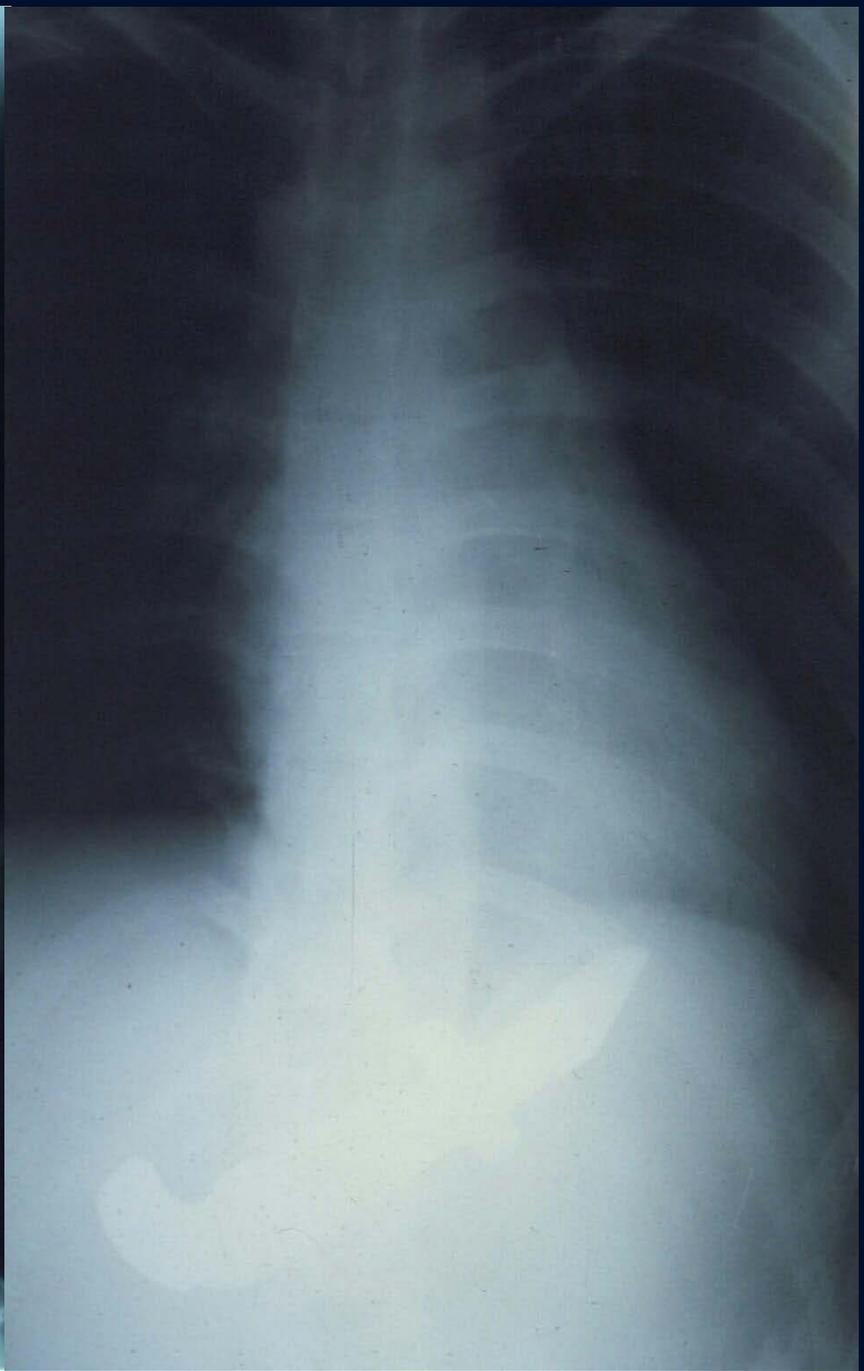


# Abdominal Trauma

## ED Management

- ✦ Continued stabilization and resuscitation
- ✦ Blood products
- ✦ Diagnostic studies
  - ✦ Ultrasound
  - ✦ CT scan
  - ✦ Peritoneal lavage
  - ✦ Radiographic studies







# Abdominal Trauma Surgical Interventions

- ✦ Removal
- ✦ Repair
- ✦ Resection
- ✦ Reconstruction

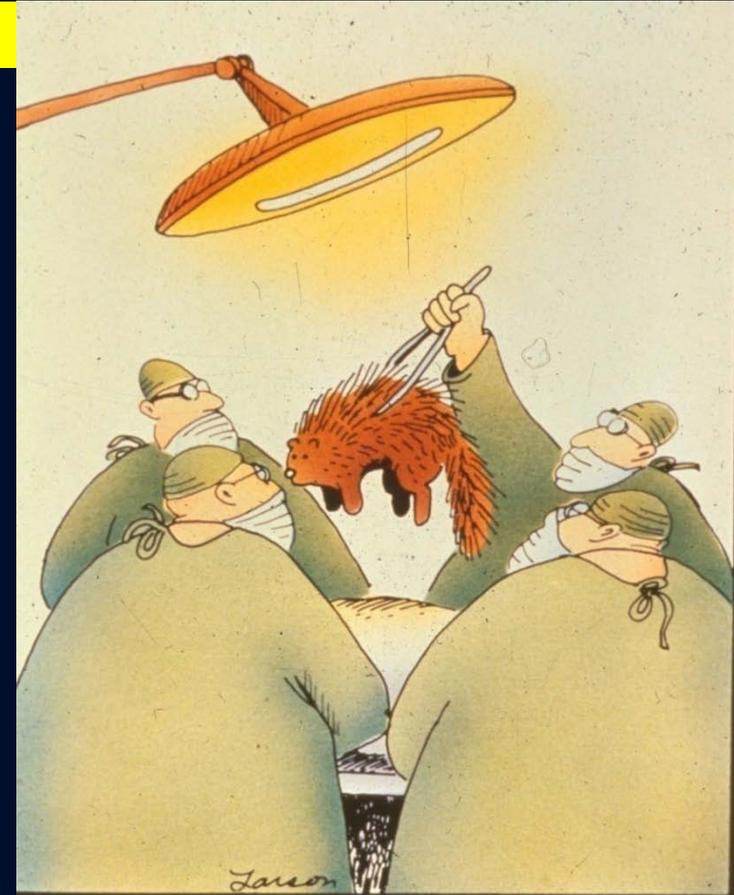


# Abdominal Trauma

## Surgical Interventions



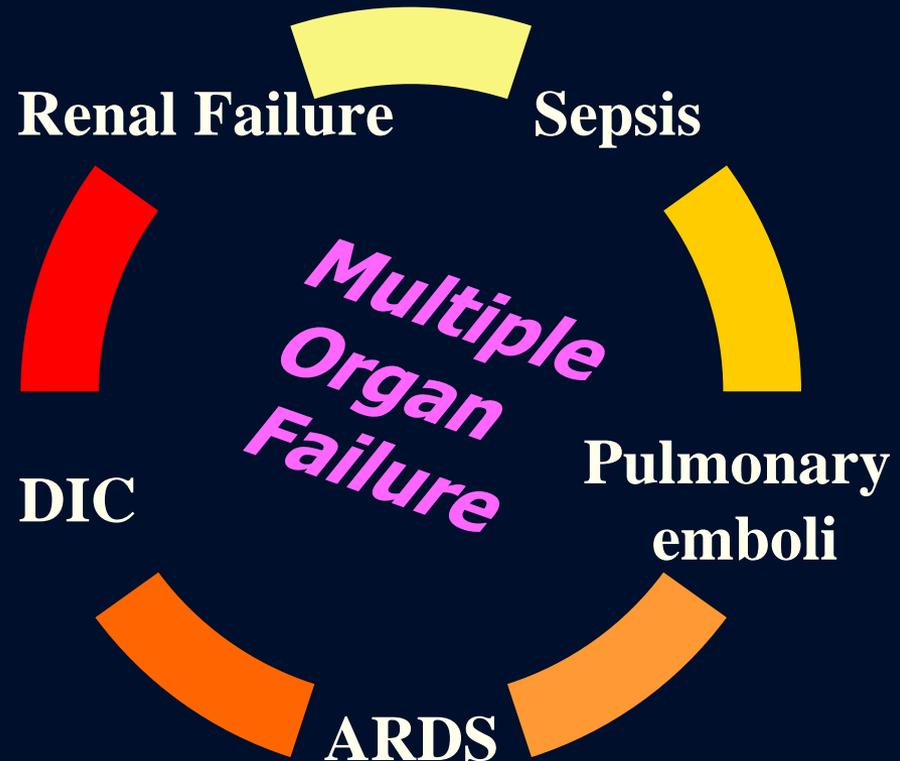
*It's got to come out, of course, but that doesn't address the deeper problems!"*



"Well, I guess that explains the abdominal pains."

# Abdominal Trauma Intensive Therapy

## ★ Complications of Trauma



# Abdominal Trauma

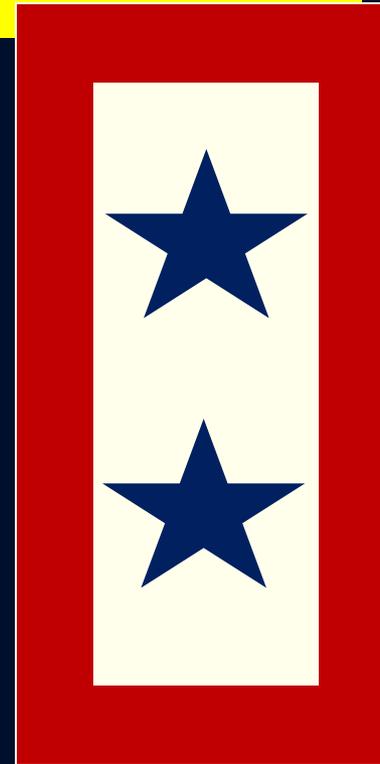
- **Conclusion**

- **Rapid response**
- **Rapid stabilization**
  - **Managing severe hemorrhage**
  - **Prevent shock**
- **Complete assessment**
  - **Look for other injuries**
- **Early concern for severity**
- **Rapid and appropriate transport**
  - **Determination that a surgical injury exists**
  - **Rapid operative intervention**

# Questions ?

Thank you  
for  
your time

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God Bless our service men  
and women