

Case conference

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Patient Profile

- Age/Sex: 53 y/o Male
- Date : Day1 03:32
- TPR: 37.2/88/16, BP: 124/88mmHg
- E4M6V5, SpO2: 95%
- Triage II

Chief Complaint

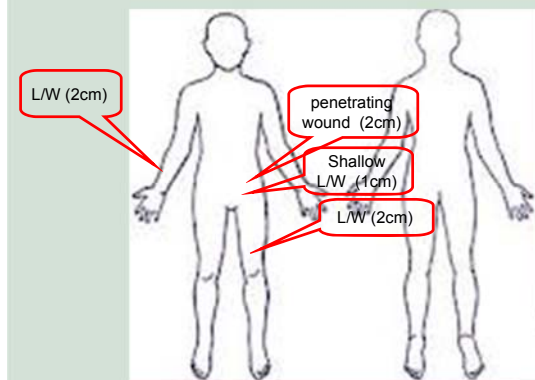
- 喝酒和人打架
- Stabbed over the abdomen by a scissors

Past History

- Denied underlying disease
- No HTN, No DM , No CAD history
- Allergy : denied
- Abdominal operation history : denied

Physical examination

- Conscious: E4V5M6, clear
- Head & Neck: supple, no tenderness, no scalp hematoma
- Chest: clear breathing sound
- Heart: regular heart beat
- Abdomen: soft, no tenderness, no muscle guarding
- two laceration wound (2cm, 1cm)(LMQ)
- Extremities: warm, freely movable,
- full ROM, full muscle power
- a L/W at right forearm (2cm)
- a L/W at left thigh (2cm)



Tentative Diagnosis

- Multiple laceration wound
- → r/o penetrating wound
- r/o internal bleeding



- Question ?



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Order

- T.T. 0.5cc IM
- Wound CD with Bacitracin
- Hb 、 WBC/DC/PLT 、 PT/aPTT
- Panel I
- Whole body CT without contrast
- CXR/KUB
- IV: N/S run 100 ml/hr



- FAST : No obvious ascites in abdomen
- EKG: sinus rhythm, LVH



- EKG



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- CXR (first one)



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■ KUB

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Lab

檢驗項目名稱	檢驗值
Hb	15.5
WBC	8.4
Differential count	*****
Segmented Neutro.	36.4
Lymphocyte	51.7
Monocyte	5.2
Eosinophil	6.2
Basophil	0.5
Platelet	196

檢驗項目名稱	檢驗值
PT	9.7
Normal control	10.5
INR	0.92
APTT	27.6
Normal control	32.8

檢驗項目名稱	檢驗值
Glucose	121
GOT(AST)	27
BUN	14
Creatinine	1.2
Na	142
K	3.5

Abdominal CT

ER course

- 03:32 ER TPR: 37.2/88/16, BP: 124/88
 - ☞ 04:18 Initial Abdominal CT:
 - Penetrating injury at LMQ with hematoma
 - No obvious intraperitoneal fluid collection
 - No apparent pneumoperitoneum
 - R/O penetrating into abdominal cavity
 - ☞ Prophylactic Antibiotics, NPO
 - ☞ Consult GS: Abdominal penetrating wound, 3.5cm, with muscle injury, hematoma
 - ☞ consult PS: wound evaluation :棉枝探入過sheath, 5cm deep
 - ☞ wound closure, 但p't 不願配合, OBS
- 05:25 BP: 116/64, HR: 77, E4V5M5-6, SpO2: 92%

- 所以下一步?
- 縫還不縫?
- 要住院嗎?

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ER course

- 06:38 HR: 54, RR: 26, E3V3M5, SpO2:91%, BP:90/52
 - ☞ SOB, , 躁動, 想吐
 - ☞ ABG: Metabolic acidosis
 - ☞ F/S:165
 - ☞ Combivent, O2 mask 10L/min

☞What happen ?

☞And next ?

- 06:41 HR: 52, E3V3M5, SpO2: 98%, BP: 70/52,
 ☞ Trauma red, On ETT, NG, Foley, PRBC 4U, N/S 1000cc
- 07:00 BP:166/107/, HR 84, RR: 22, SpO2: 100%. Lactate: 49.1 mg/dL
- Repeat abd CT



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Repeat Abdominal CT



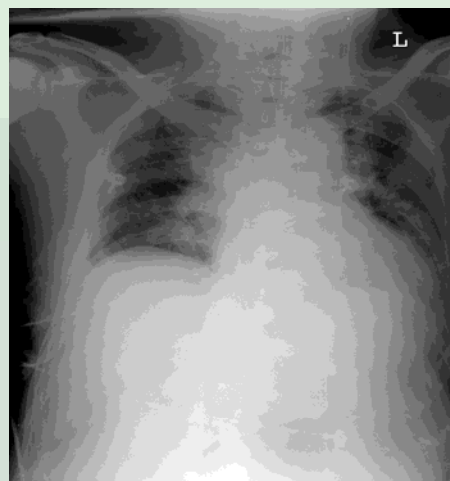
CT report:

- 1. small bowel perforation(free air in abdomen)
- 2. Penetrating wound at LMQ with active bleeding and gradually hematoma enlargement.
- 3. DDx: small laceration injury within spleen or normal left.



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CXR



Emergent surgery

- 08:20 Emergent exploratory laparotomy
 - ☞ Moderate turbid and bloody ascites
 - ☞ 2 perforated holes(0.5x0.8cm) on small bowel at 100-150cm level distal from Treitz ligament
 - ☞ Mesentery hematoma at 100-120cm level distal from Treitz ligament
- OP: Segmental resection of involved small bowel and primary anastomosis



Final diagnosis

- 1. small bowel perforation with pneumoperitoneum and mesentery hematoma s/p segmental resection of involved small bowel and primary anastomosis
- 2. penetrating cutting wound X2 with hemoperitoneum s/p closure of peritoneum and wet dressing via outer wound
- 3. laceration wound at right forearm and left lower leg
- 4. interval shock status post resuscitation
- 入SICU→ Day4 ward→ Day16 MBD



Discussion

Abdominal penetrating trauma -- stab wounds

Abdominal penetrating trauma

- Stab wound and low-velocity gunshot wounds
 - ☞ cause tissue damage by lacerating and cutting
- High-velocity gunshot wounds
 - ☞ Cause additional intraabdominal injuries
 - Length of the missile's path through the body
 - The greater kinetic energy
 - Fragmentation creating secondary missiles



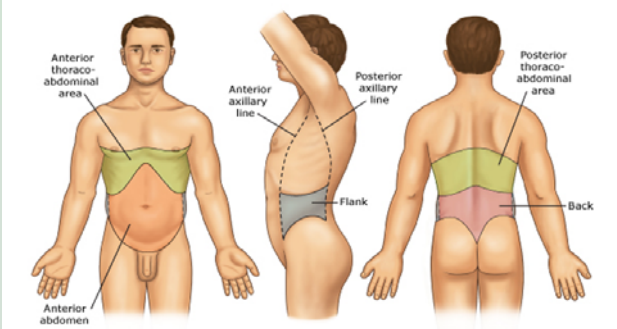
EPIDEMIOLOGY

- Stab wound
 - ☞ three times more prevalent than gunshot wounds
 - liver (40%),
 - small bowel(30%), diaphragm(20%), colon (15%)
- gunshot wounds
 - ☞ small bowel (50%),
 - ☞ colon(40%), liver(30%) and abdominal vascular structures(25%)



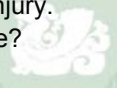
ANATOMIC ZONES

Anatomic zones of the abdominal cavity



Stab wound

- The area most often injured → upper abdomen
 - ☞ left upper quadrant greater than right.
- Multiple SWs : 20 %
- involve the chest: 10% of SWs
- If the wound is close to the lower chest,
 - ☞ evaluate diaphragmatic and intrathoracic injuries in addition to intraabdominal injury.
 - ☞ pneumothorax? pericardial tamponade?



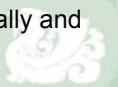
History-penetrating trauma

- The **time** of injury
- **Type** of weapon (knife, scissor, arrow, pen , handgun)
- How **long** and how **wide** was the instrument?
- How was the **patient positioned** during the stabbing? **path** ?
- **Distance** from the assailant
- **Number** of stab or gunshot wounds
- Amount of the external **bleeding** noted at the scene
- **Magnitude and location** of the abdominal pain/ refer to the shoulder



Physical examination-1

- **Inspection**
 - ↳ **completely undress** any patient
 - often be obscured by body habitus, clothing, or bleeding, or be "hidden" in the axilla, scalp, or groin
- **Auscultation**
 - ↳ Free intraperitoneal blood or GI content may produce an ileus → ↓bowel sound, but nonspecific
 - ↳ Most useful when they are normal initially and then **change over time**



Physical examination-2

- **Percussion and palpation**
 - ↳ Percussion – if peritoneal irritation(+)
 - ↳ no additional evidence of rebound tenderness need, due to unnecessary further pain
 - ↳ involuntary m. guarding- peritoneal irritation?



Local wound exploration(LWE) -1

- evaluate their **depth** and **tract**
- quickly and safely at the bedside
- **not** used in
 - ↳ the **chest wall** due to underlying viscera (lungs) and **intercostal vessels**
 - ↳ **Peritonitis** or **hypotension**



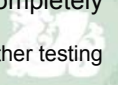
Local wound exploration(LWE)-2

- better undertaken by two individuals
- requires **local anesthesia** and **both sharp and blunt dissection**
 - ↳ until the bottom of the wound is clearly visualized.
- **Blunt probing with fingers** or **cotton swabs**
 - ↳ inaccurate and potentially dangerous
 - ↳ may lead to a false conclusion



Local wound exploration(LWE)-3

- anterior SWs, if the rectus fascia is completely visualized and not violated
 - ↳ (ie, the bottom of the wound is completely visualized and is anterior to the posterior rectus fascia)
 - ↳ **may be discharged** after appropriate wound care, if no additional or extraabdominal injuries
- Heavy muscle, obesity, multiple wounds or other injuries → ↓successful LWE.
- If the posterior fascia is not clearly and completely seen
 - ↳ peritoneal injury cannot be ruled out and further testing must ensue.



Plain radiographs

- Hemodynamic abnormality → X
- **No** hemodynamic abnormality
 - ☞ If suspect thoracoabdominal injury
 - CXR
 - pneumothorax/hemothorax/intraperitoneal air?
 - ☞ With marker rings or clips, at entrance and exit wound sites
 - KUB
 - missile's track /retroperitoneal air?
- lack sensitivity and specificity



FAST/DPL

- Hemodynamic abnormality
 - ☞ **FAST** or **DPL**
 - Performed rapidly, early diagnosis
- **FAST**
 - ☞ hemopericardium, hemoperitoneum, pneumothorax ?
 - ☞ If (-)
 - injury cannot be excluded
 - other diagnostic modalities must be employed



FAST/DPL

- **DPL**
 - ☞ invasive, but 98% sensitive for intraperitoneal bleeding
 - ☞ Absolute contraindication:
 - **existing indication for laparotomy**
 - ☞ (+): >100,000 RBCs/HPF, >500 WBCs/HPF, bile, or amylase
 - ☞ Free aspiration of blood, GI contents, vegetable fibers, bile with hemodynamic abnormality → **laparotomy**



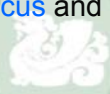
Computed tomography(CT)

- No hemodynamic abnormality +no apparent indication for an emergency laparotomy
 - ☞ **Contrast-enhanced CT**
 - Misses **diaphragm**, **GI**, and some **pancreatic** injury
 - If no hepatic or splenic injury
 - ☞ free fluid → from **GI/mesentery**
 - Organ involved/magnitude of injury → op?



Diagnostic laparoscopy (DL)

- most useful for inspecting the **diaphragm**
- equivocal peritoneal penetration
 - ☞ evaluating the **depth of wound tracts** and identifying **visceral injury**
- injuries may be repaired using DL
 - ☞ avoiding the need for exploratory laparotomy
- inadequate for identifying **hollow viscus** and **retroperitoneal injury**.

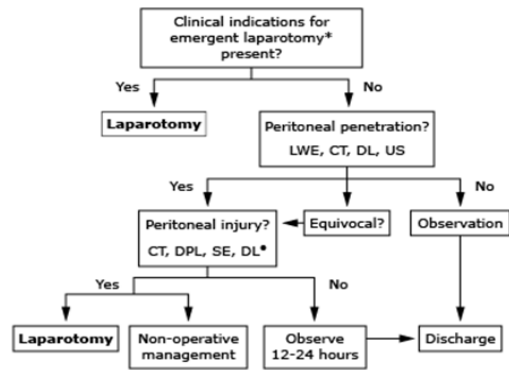


MANAGEMENT

- indications for emergent laparotomy :
 - - **Hemodynamic instability** (hemothorax/ pneumothorax/ hemopericardium may be alternative or contributory cause)
 - - **Peritoneal signs** (can be insensitive, especially early after injury)
 - - **gunshot wound** (90% intraperitoneal injury)
 - - **fascial penetration sign**
 - - **Evisceration**
 - - **Implement-in-situ**



Management of abdominal stab wounds



- Early consultation with a surgeon is necessary whenever a p't with possible intraabdominal injury

Reference

- Advanced Trauma Life Support (ATLS)
- Uptodate
- Rosen's Emergency Medicine
- Tintinalli's Emergency

Thanks for your attention!