A CASE PRESENTATION AND DISCUSSION ON PENETRATING CHEST INJURY

BY:
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General Data:

J.H. 37 y/o, male
Chief Complaint:
Stab Wound
**HPI:**

NOI: Stab Wound  POI: Sta Ana Mla.

DOI: 9-12-04  TOI: 1:30am

1 Hour PTA  Stabbed at the back

OMMC
Physical Examination

General Survey:
Conscious, coherent
in mild respiratory distress

BP: 110/70  CR: 90  RR: 30
HEENT: Pink palpebral conjunctivae,
anicteric sclerae, moist lips
NECK: supple. No CLAD, (-) NVE
CHEST AND LUNGS:
• SCE, no retractions,
• (+) stab wound midscapular line left level of T6
• decreased breath sounds left lung field
HEART:
  adynamic precordium,
  NRRR, no murmur

ABDOMEN:
  Flat, normoactive bowel sounds
  soft, non tender

EXTREMITIES:
  full and equal pulses,
  no gross deformities, (-) edema
Salient Features

Primary survey
- 34 y/o male
- (+) stab wound midscapular line left level of T6
- In respiratory distress
- Decreased breath sounds left lung field
Algorithm

stab wound

penetrating  non penetrating
Algorithm

stab wound

penetrating
  dyspnea
decrease in breath sounds

non penetrating

non penetrating
Algorithm

penetrating

pulmonary

cardiac

- stable bp
- audible heart sounds
dyspnea
decrease in breath sounds
Algorithm

penetrating pulmonary

- Hemothorax
- Pneumothorax
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Diagnosis</td>
<td>Hemothorax left secondary to stab wound midscapular area level of T6</td>
<td>60%</td>
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<tr>
<td>Secondary Diagnosis</td>
<td>Pneumothorax left secondary to stab wound midscapular area level of T6</td>
<td>40%</td>
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Do I need a Paraclinical diagnostic Procedure?

NO
Goals of Treatment

- Re-expansion of the lung
- Correct ventilatory insufficiency
- Adequate drainage
## Treatment Options

<table>
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<th>Cost</th>
<th>Availability</th>
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<td>- Rapid evacuation of fluid/air - substantial pain</td>
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Preoperative Preparation

- Inform consent
- Secure materials
• Patient semi-sitting with the ipsilateral arm placed above the head
• to expose the lateral aspect of the chest
• chest prepared with antiseptic solution
• draped to create a sterile field
• large bore chest tube (36 Fr) chosen to facilitate adequate drainage
• 5th ICS midaxillary line identified anesthesized with 1% lidocaine
• transverse incision made over the 5th rib
• blunt dissection continued with Kelly clamp
• clamp passed adjacent to the superior surface of the rib to prevent injury to the intercostals neurovascular bundle
• entry into the pleural space confirmed with gush of blood-filled fluid
• finger inserted into the pleural space
• a Fr 36 chest tube inserted into the pleural space on a Kelly clamp and directed posteriorly
• tube secured with a silk 0 suture
• attached to a water sealed drainage system
• insertion site dressed with sterile gauze and covered with air-tight dressing
• initial drainage recorded
• FINDINGS:
  (+) 1200cc of blood evacuated with good fluctuation.
## Pretreatment Diagnosis

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<th>Primary Diagnosis</th>
<th>Hemothorax left secondary bleeding intercostal vessel</th>
<th>80%</th>
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<td>Secondary Diagnosis</td>
<td>Hemothorax left secondary lung parenchymal injury</td>
<td>20%</td>
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Goal of Treatment

- Control of bleeders
- Re expansion of lungs
# Treatment Options

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<td>Open Thoracotomy</td>
<td>-clear visualization of bleeders</td>
<td>**</td>
<td>available</td>
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<td></td>
<td>- Injury to adjacent structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VATS</td>
<td>-Limited field</td>
<td>*****</td>
<td>Not available</td>
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<tr>
<td></td>
<td>-Less pain post op</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Operator dependent</td>
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Treatment Plan

- Open Thoracotomy
• Informed consent was secured
• Provide psychosocial support
• Patient was then directed to OR for thoracotomy
operative technique

- Patient supine under GA
- Asepsis/Antisepsis
- Sterile drapes placed
- Anterolateral thoracotomy incision done on the 4th ICS from the parasternal border to the MAL from skin down to the subcutaneous, muscular and pleural layers
- Rib retractors applied
- Findings noted
• **OR FINDINGS**— 1L blood evacuated with clots, thru and thru lung injury with bleeding intercostal vessels
• Lung injury repaired with vertical mattress sutures using chromic 2-0
• Lavage done
• Anterior and posterior chest tube placed
• Hemostasis
• Correct instrument and sponge count
• Fascia closed with Vicryl O
• Skin closed with silk 3-0
• DSD
Final Diagnosis

Hemothorax, L secondary to transected intercostal vessels secondary to stab wound midscapular area L, at the level of T6
Post operative management

1st PO Day

- NPO
- Maintain O2 inhalation at 3-4 LPM via nasal
- 1 “U” of PRBC transfusion obtained
- Adequate antibiotics
- Adequate analgesia
Post operative management

2nd PO day

• NPO
• IV meds continued
• Blow Bottle exercise
• Chest Physiotherapy
• Change Thora bottle
• Foley catheter removed
Post operative management

5th PO day

• Chest xray
• Anterior CTT removed
• GL
• IV meds continued
Post operative management

8th PO day

• DAT
• Chest xray
• Posterior CTT removed
• Shifted to Oral Meds
  Co- Amoxiclav 625mg Q8
Post operative management

9th PO day
- DAT
- Chest xray
- discharged
Discussion

Hemothorax

Defined as the collection of blood in the pleural space. Most commonly caused by blunt or penetrating trauma and is often seen in patients with multiple injuries.

Overall most cases of hemothorax are satisfactorily treated by adequate drainage usually by chest tube thoracostomy and only 10-15% of patients require thoracic surgical intervention.
Discussion

DIAGNOSIS OF ACUTE HEMOTHORAX

- History of the mechanism of injury
- Physical examination
- Diminished breath sounds
- Dullness on percussion on the affected side
- Chest radiography
- Up to 300 ml of fluid may collect before hemothorax can be detected
Discussion

In the setting of blunt trauma
Associated chest injuries
  Rib fractures
  Flail chest
  Pulmonary parenchyma contusion
Massive Hemothorax
  Shock
  Severe ventilatory insufficiency
Mediastinal shift
  With contralateral tracheal deviation
Algorithm for Treatment of Hemothorax

HEMOTHORAX

Small <500ml

THORACENTESIS

>500 ml

Trauma pneumothorax

TUBE THORACOSTOMY
Algorithm for Treatment of Hemothorax

HEMOTHORAX

Massive collection

>1500ml
>200ml/hr for 4 hrs
>2000ml/24hrs

OPEN THORACOTOMY
TUBE THORACOSTOMY

Complete evacuation
No ongoing bleeding
<1/3 lung volume

MAINTAIN CTT AND OBSERVE

Retained Collection
>1/3 lung volume

SUCTIONING
MCQ Questions

1. In a patient with hemothorax, L s/p CTT left on chest x-ray retained hemothorax 1/3 of lung volume, what is the appropriate measure
   
   a. Maintain CTT and observe
   
   b. Direct patient to OR for suctioning under sedation
   
   c. Open thoracotomy
   
   d. Insert another CTT
MCQ Questions

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MCQ Questions

2 What amount of blood in the pleura would be considered as massive hemothorax

a. 500ml
b. 700ml
c. 800ml
d. 1500ml
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MCQ Questions

3. What amount of blood in the pleura would cause blunting of the costophrenic angle in an adult patient?
   a. 100ml
   b. 200ml
   c. 300ml
   d. 500ml
3 What amount of blood in the pleura would cause blunting of the costophrenic angle in an adult patient?

a. 100ml
b. 200ml
c. 300ml
d. 500ml
MCR Questions

4 Patient with stab wound at the anterior chest, has dyspnea, hypotension, with muffled heart sounds with minimal blood loss, what would be the appropriate measure

a. CTT
b. pericardiocentesis
c. Fluid resuscitation
d. Subxiphoid window
MCR Questions

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MCR Questions

5 Massive hemothorax can cause the following:

a. Ventilatory insufficiency
b. Mediastinal shift
c. Shock
d. Contralateral tracheal deviation
MCR Questions

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REFERENCES

4. MD consult- Journal