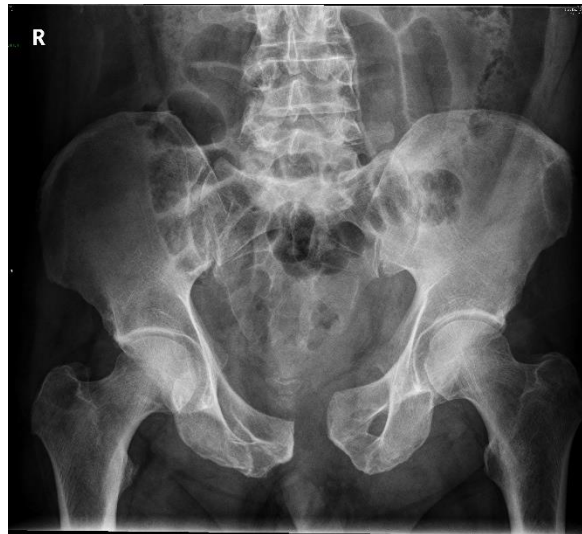


Pelvic trauma, burns, electrical injuries, limb injuries - ANSWERS

SAQ 1

A 68 year old male is leaving the pub when he is struck by a passing car travelling at low speed. An ambulance is called. He mobilises into the ambulance and walks into your tertiary ED, where he is placed on a bed. An Xray is ordered by the triage nurse (shown).



- a. List three features of this x ray. (3 marks)

Open book pelvic fracture (LC 3 classification)

No femoral fracture evident

No pubic rami fracture

- b. List your next three management steps. (3 marks)

Move patient to resuscitation room

Apply pelvic binder

Urgent bloods/group and cross match

- c. What is the most common source of bleeding in pelvic trauma? (1 mark)

Venous bleeding – sacral plexus, iliac vessels etc

- d. After the actions taken in (b), the patient has a BP of 85/60, HR 119. He is still complaining of pain. A FAST scan is performed and is negative. There is no evidence of external haemorrhage. What is your next step in management? (1 mark)

Angiography and embolization – if available in under 30 mins

- e. After taking the action above (d), your patient remains haemodynamically unstable. What is your next step in his management? (1 mark)

OT for extraperitoneal packing/laparotomy

Ref: trauma.org, management of pelvic fractures – algorithm.

SAQ 2

A 38 year old male is retrieved by Medstar after being found unconscious in a house fire 4 hours ago. He is now conscious with spontaneous respirations. He has a black, sooty face with blistering and his hair and nasal hair are both singed. There is circumferential blistering of his entire left leg below the groin.

- a. List four indications for intubation in burns patients. (4 marks)

ARDS
Progressive air hunger
Supraglottic oedema
Decreased GCS/respiratory depression
Facial burns – full thickness
Circumferential neck burns

- b. Calculate his fluid resuscitation requirements based on his burns, assuming he weighs 70kg. Show calculations where appropriate. (4 marks)

**Face (4.5%), leg (9+9%) = 22.5%*
Assume 70kg male
*Fluids: $4\text{ml/tbsa/wt} = 6300\text{ml}$ of *Hartmanns*
**Give half over 4 hours (four hours has already elapsed), remainder over 16 hours.*

- c. State three methods of assessing his response to fluid resuscitation. (3 marks)

Urine output – aim $>1\text{ml/kg/hr}$
BP – invasive art line would be good
CVP
Lactate clearance
No points for cap refill, given burns would be difficult.

- d. List three expected complications of his burns, and your solution for each. (3 marks)

Compartment syndrome leg – escharotomy if needed
Sepsis – ADT, antibiotics to cover pseudomonas
Rhabdomyolysis – IVT+++ etc
Electrolyte disturbance
Airway issues.....any reasonable ones...ARDS

- e. List four indications for hyperbaric oxygen in burns patients. (4 marks)

Altered mental state
ECG changes
Pregnant female with symptoms of CO poisoning
CoHb $>25\%$
Compartment syndrome

SAQ 3

A 30 year old male presents with an amputated right hand at the level of his wrist after a farming accident. His workmate has brought in the amputated hand.

- a. List four immediate steps in your management of this patient. (4 marks)

Direct pressure on limb
Place amputant part in plastic bag, then in ice slurry

Analgesia, antibiotics, IVT, NBM
Xray both forearm and amputant part

- b. List four indicators of a favourable outcome in limb amputation. (4 marks)

Early presentation after accident (<6 hours)
No comorbidities (esp DM, PVD)
No mangling injury to hand
Early access to good surgery
Patient willingness to comply with hand therapy

- c. List four contraindications to re-implantation surgery. (4 marks)

Severe crush injury
Prolonged warm ischaemia, particularly of muscle (>6 hrs)
Severe contamination
Medical co-morbidities that can affect anaesthetic, healing, etc
Life threatening injuries
Refusal to accept blood transfusion/product in cases of major amputation

SAQ 4

An electricity worker sustains a high voltage injury working on a power line. He had 60 seconds loss of consciousness and injuries to his left hand and both feet with loss of tissue. He is BIBA to your rural hospital. His BP is 110/80, HR 70, Sats 96% RA, GCS 13/15.

- a. What is the main cause of cardiac arrest in the following electrical injuries? (2 marks)

High-voltage injury	<i>VF arrest</i>
Lightning strike	<i>Asystole</i>

- b. List four possible complications of this injury IN THIS PATIENT. (4 marks)

Compartment syndrome
Arrhythmias
Rhabdomyolysis
Burns
Possible C spine injury

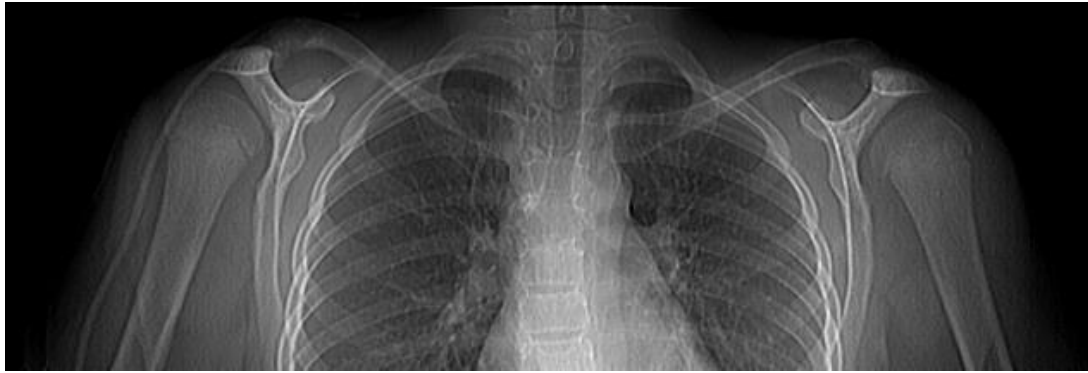
- c. Outline your management of this patient and state his disposition. (5 marks)

Early intubation – risk of oedema, GCS low
Aggressive fluids
Monitor – high voltage with LOC mandates monitoring for arrhythmia
C spine precautions if unable to clear radiologically

Disposition: burns unit (electrical burn with likely significant internal injuries).

- d. Before “disposing” of the patient, you obtain a CXR to exclude pulmonary injury. What is the abnormality on this X ray?

Bilateral posterior shoulder dislocations



SAQ 5

An 18 year old soccer player is struck by lightning during a match. He received brief CPR on the scene with ROSC before being transported to hospital by ambulance.

- a. List two complications of lightning strike in any patient. (2 marks)

Cardiac arrest

Respiratory arrest – hypoxic arrest may occur post-strike in pts who survive original rhythm

Autonomic dysfunction

Keraunoparalysis

- b. The soccer player is unable to move his left leg and his right pupil is dilated compared to his left. An image of his back is shown (image). Briefly explain these findings and your management of each. (6 marks)



Keraunoparalysis – transient stunning with paralysis, resolves spontaneously

Anisocoria = autonomic dysfunction, resolves by itself. No prognostic value

Lichtenberg figures – ferning from electron showers.

SAQ 6

For each of the following X-rays, state the diagnosis and list three early and three late complications. (7 marks each)



Lisfranc fracture.

Early: pain, compartment syndrome, DP injury.

Late: CRPS, arthritis, malunion



Calcaneal fracture (Bohlers angle!).

Early: pain, compartment syndrome, peroneal nerve injury, other injury

Late: osteomyelitis, arthritis, malunion



Perilunate dislocation.

Early: pain, compartment syndrome, median nerve injury

Late: CRPS, arthritis, malunion, instability



Orbital floor blowout fracture.

Early: inferior alveolar nerve injury, EOM entrapment, orbital compartment syndrome

Late: deformity, osteomyelitis, visual loss, diplopia, etc