

ORTHOPAEDICS & TRAUMA 2017

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GENERAL APPROACH TO ORTHOPAEDICS:

1. **Mechanism** (FOOSH=fall onto outstretched hand, Epilepsy, direct trauma, electrical shock)
2. **Age** Some fractures are more common in children and others are more common in adult
3. **Clinical presentation:** pain, swelling, deformity or open wound and loss of function
4. **Which Nerve is damaged**

5. Which Artery is damaged

6. Investigation: X-ray

7. Treatment:

- **Conservative:** Includes Plaster of paris(POP), sling, splint, elevation and analgesia.
- **Operation:** Open reduction and internal fixation (ORIF)
- **Dislocation:** Manipulation or reduction

A. UPPER LIMB INJURIES

1. Shoulder dislocation It refers to acute dislocation of glenohumeral joint. The shoulder joint is a ball and socket joint

Classification & Mechanism:

1. **Anterior shoulder dislocation.** More than 95% are anterior dislocation. often follows a fall or other mechanism where there is force rotation in abduction.
2. **Posterior shoulder dislocation:** Uncommon. Usually associated with electric shock or Epileptic seizure.

Signs & Symptoms:

Anterior dislocation:

- Pain & absence of active movement
- Abnormal shoulder contour
- Absence of sensation over the badge area indicates axillary nerve damage/compression.
- Absence of hand pulses suggest compression of the axillary artery and need for urgent reduction.

Investigations: Shoulders X-ray

Management: 1. Reduce immediately in ED under sedation

2. Immobilize in a collar & cuff

2. Clavicle fracture: Commonly it's a mid clavicular fracture and most often treated conservatively.

Mechanism:

- Fall on to outstretched hand (FOOSH)
- Fall directly onto the point of the clavicle or shoulder

Signs & Symptoms:

- Pain, deformity, occasional bruising
- Subclavian artery can be damaged by bone fragments resulting in an ischemic Stroke
- Neurological sign- Brachial plexus damage

Investigations: X-ray of clavicle

Management: 1. >95% are treated conservatively

2. A broad arm sling to support the arm.

If damage to vessels and nerves , it needs an operation.

3. Acromio - clavicular dislocation (ACJ joint)

Mechanism:

Often follows rolling onto the shoulders impact on to anterior shoulder

Signs & Symptoms:

1. Pain and deformity at lateral end of clavicle.
2. Outer end of affected side is more prominent than normal side.

Investigations: X-ray of ACJ

Management: Broad arm sling for 3 weeks.

at days

4. Sterno- clavicular dislocation(SCJ joint)

Mechanism: Fall or blow to the front shoulder; e.g: rugby players.

Occasionally may be spontaneous.

Signs and symptoms: Localized tenderness and asymmetry of the inner ends of the clavicle.

Investigations: X-ray of SCJ

Management:

1. Acute vascular problems/ airway obstruction require immediate intervention/Surgical management
2. A broad arm sling for 2- 3 weeks.

5. Proximal Humerus fracture: e.g neck of humerus fracture

Common in elderly/ osteoporotic patients.

Mechanism:

- Fall on to outstretched hand or fall directly onto shoulder
- Often occur in osteoporotic bone
- High energy impact in young

Signs & Symptoms:

1. Pain, deformity and swelling
2. Unable to move the shoulder
3. Axillary nerve and artery may be damaged

Investigations: X-Ray. Check for pathological lesions, can be caused either by osteoporosis or metastasis

Management: Depends on the type of fractures.

1. Non displaced/ minimal displaced fracture, treat with collar & cuff and mobilize
2. Displaced anatomical neck fracture, treat with collar & cuff
3. If severe displacement, then need ORIF
6. Fracture of Shaft of Humerus

Common in adults.

Fractures are considered and described as being of the proximal, middle or distal third.

Mechanism:

1. FOOSH
2. Direct blow to the arm

**Low energy injury may suggest pathological fracture like in osteoporosis and bone metastasis.

Signs & Symptoms:

1. Pain, deformity & swelling
2. Wrist drop & sensory loss over the 1st dorsal web space (Radial Nerve damage)
3. Brachial artery is also damaged

Complications: Non-union

Investigations: X-ray of the humerus

Management:

1. Displaced, comminuted/ angulated fractures require ORIF (open reduction & internal fixation) or if options include plates & screws & intramedullary mails.
2. If not displaced or minimally displaced then conservative Management.

* If images are absent :

- 1-Broad arm sling
- 2-Collar and Cuff

7. Supracondylar fracture

Transverse fractures of the distal third of the humerus.

Commonly seen in children, less frequently in adults.

Need to be assessed & addressed promptly to prevent serious complication.

Mechanism: FOOSH in a child is the typical presentation

Signs & Symptoms:

1. Pain & swelling
2. The child tends to hold the affected arm with the other.
3. Check for pulses & nerve!

Arteries: Presence & quality of radial, ulnar & brachial arteries.

Absence/ diminished findings suggest compression of the brachial artery may leads to ischemia. It is an emergency.

Sensation & Motor Function: Check all components of the median & radial nerve.

Investigations: X-ray of the elbow

Management: 1. Undisplaced: Backslab plaster

2. # > 50% displacement : Theatre - ORIF

8. ELBOW DISLOCATION Occurs in children and adults

Mechanism:

1. FOOSH

2. direct fall on to the elbow.
3. Subluxation (pulled elbow) half dislocation of the elbow .Common in young children who after being swung by parents or the child falls down while being held by the hand by a parent. Child is reluctant to use the arm.

Signs & Symptoms:

1. Pain & absence of movements
2. Abnormal elbow contour

Investigations: X-ray of the elbow

Management: Reduction or manipulation and then you place in a broad arm sling .

Lateral epicondylitis

Lateral epicondylitis typically follows unaccustomed activity such as house painting or playing tennis ('tennis elbow'). It is most common in people aged 45-55 years and typically affects the dominant arm.

Features

- pain and tenderness localised to the lateral epicondyle
- pain worse on wrist extension against resistance with the elbow extended or supination of the forearm with the elbow extended
- episodes typically last between 6 months and 2 years. Patients tend to have acute pain for 6-12 weeks.

-Medial epicondylitis is known as golf elbow.

bilateral - cooks

Management options

- advice on avoiding muscle overload
- simple analgesia
- steroid injection
- physiotherapy

9. Monteggia fracture-dislocation (GFD):

This is a fracture of the proximal ulnar with dislocation of the radial head.(MU)

Mechanism: FOOSH with forced pronation.

Signs & Symptoms:

1. Elbow pain and swelling
2. Elbow flexion and forearm rotation are limited and painful
3. Motor branch of radial nerve commonly damaged, sensory branch not commonly damaged but should also be checked

Investigations: X-ray of the entire forearm (elbow to wrist)

Management: ORIF

10. Galeazzi fracture-dislocation Solitary fractures of the distal one third of the radius with accompanying subluxation or dislocation of the distal radioulnar joint (DRUJ). Sometimes called reverse Monteggia fracture. (GRF)

Mechanism: Fall on to an extended, pronated wrist

Investigations: X-ray of the entire forearm (elbow to wrist)

Management:

1. Admit and place in a above elbow back slab plaster, elbow at 90 degrees and elevate the limb on pillows
 2. ORIF
11. Nightstick Fracture Isolated mid shaft ulnar fracture

Mechanism: usually caused by a direct blow to the ulnar bone, classically if someone receives a blow from an object whilst raising their arm in defence

Signs & Symptoms: point tenderness over the ulnar shaft, and forearm swelling

Investigations: X-ray the entire forearm (elbow to wrist)

Management:

- Non-displaced or minimally-displaced fractures ◊ Conservative (posterior splint)
- Marked displacement or angulation ◊ ORIF

12. Distal Radius Fracture (Colle's fracture)

◊ Occurs most commonly in osteoporotic bones. It refers to dorsal displacement, radial displacement and impaction occurring within 2.5cm of the wrist joint (hyperextension injury).

Mechanism:

1. FOOSH: forced dorsiflexion of the wrist may be bilateral
2. In the young it is usually caused by high energy injuries
3. Check for other upper & lower limb injuries

Signs & Symptoms:

1. Dinner fork deformity with pain on attempted wrist movement.
2. Check for median nerve compression (carpal tunnel syndrome)
3. Look for signs of new onset carpal tunnel syndrome

Investigations: X-ray of the wrists (shows dorsal displacement, dorsal angulation and radial shortening)

Management:

1. Uncomplicated fracture do Closed manipulation
2. Complicated fracture (means damage to the vessels and arteries), especially if there is nerve injury do ORIF

13. **Distal Radius Fracture (Smith's fracture)** Often described as reverse of colles' fracture.

Mechanism: Fall on to the back of the hand with wrist flexed (hyperflexion injury)

Investigations: X-ray of the wrist (shows volar/ palm displacement)

Management:

1. Uncomplicated fracture ◊ Close manipulation under LA
2. Complicated (nerves or vessel injury or fracture extends into the joint) fracture ◊ ORIF

14. **Barton's Fracture** Volar distal radial fracture which extends into radio carpal joint.

Investigations: X-Ray

Management: ORIF

15. **Distal Radial fracture in children/ Greenstick Fracture**

Very common fracture of childhood. Greenstick fracture is an incomplete fracture.

1. Age
2. Reluctant to use the arm

Mechanism:

- Usually an indirect injury following FOOSH
- Occasionally caused by a direct trauma

Signs & Symptoms:

1. Pain & dinner fork deformity
2. Check for median nerve compression
3. Look for signs of carpal tunnel syndrome (phalen's sign/Tinel's sign)
4. Examine the elbow & fingers fully

Investigations: 1. X-ray wrist 2. Obtain full length and forearm & elbow if in doubt.

Management:

1. Non displaced/ non angulated fractures, put in plaster cast for 3-4 weeks (backslab for 1st 2-3 days)
2. If symptomatic or angulation do MUA (manipulation under anaesthesia.)

16. Scaphoid fracture: Metacarpal bone fracture often occurring in young adults.

Tender anatomical
smokey area

Mechanism: FOOSH

Signs & Symptoms:

1. Tender scaphoid tubercle
2. ~~Tender anatomical snuff box~~
3. Pain on movement of the thumb
4. Pain on deviation of wrist over the scaphoid region
5. Check pulses from distal to proximal for Radial artery damage

Investigations:

1. ~~Scaphoid X-ray (7% identified on 1st X-Ray, 20% are identified on X-Ray at 10-14 days,)~~
2. ~~Bone isotope scan/MRI if not seen on X-ray or CT scan.~~

Management:

1. ~~Severely displaced fracture - immediate reduction and ORIF~~
2. ~~Non displaced fracture - Scaphoid cast for 8-10 weeks~~
3. ~~Non visible fracture but significant clinical presentation
- put scaphoid cast & review in 7 - 10 days~~
1. Still not visible - MRI/CT scan

Complications:

1. ~~Non- union (5-10% undergo non union leading to Avascular necrosis)~~
2. ~~AVN (Avascular necrosis)~~
3. ~~Osteoarthritis~~
17. Peri-lunate dislocation Lunate is m/c dislocated carpal bone

Mechanism: FOOSH

Signs & Symptoms:

1. Pain at the wrist
2. Signs of acute median nerve compression caused by the bone protruding into carpal tunnel.

Investigations: X-ray wrist

Management: 1) MUA 2) K-wire reduction

18. Mallet Finger *-Dwork in a hotel*

This is rupture of the extensor digitorum profundus resulting into failure to extend the distal interphalangeal joint.

Common in hotel workers, sustained when tucking in bed sheets

Investigations: X-ray to r/o avulsion fracture

Management: Mallet splint

19. Bennett's fracture: Fracture of the base of the thumb or



1st metacarpal bone due to thumb hyperextension

Investigations: X-ray

Management: ORIF

20. Gamekeeper's thumb

Tear of the ulnar collateral ligament of the thumb at MCP joint due to forced abduction of the thumb

Management: Surgery

Gamekeeper's thumb splint



Carpal tunnel syndrome

Carpal tunnel syndrome is caused by compression of median nerve in the carpal tunnel.

pregnant

Causes

- idiopathic
- pregnancy
- oedema e.g. heart failure
- lunate fracture
- rheumatoid arthritis
- overuse syndrome

Symptoms

- Pain at night which usually resolves by moving or shaking the finger.
- Tingling and numbness in the fingers, i.e. thumb, index and middle finger

Treatment

- rest
- wrist splints at night
- surgical decompression (flexor retinaculum division)

↳ in pregnant

Stress fractures

Repetitive activity and loading of normal bone may result in small hairline fractures. Whilst these may be painful they are seldom displaced. They may present late following the injury, in which case callus formation may be identified on radiographs. Such cases may not require formal immobilisation, injuries associated with severe pain and presenting at an earlier stage may benefit from immobilisation tailored to the site of injury.

B. LOWER LIMB INJURIES

1. Dislocated Hip

a. Normal Hip

Causes: Requires high energy impact e.g. road traffic accident

b. Total Hip Replacement Dislocated hip

Causes:

1. Problem with prosthesis (loose components)
2. Problem with patient (poor compliance not following instruction)

Mechanism:

- Occurs in elderly after fall, twist or low energy injury
- Pain & inability to bear weight
- On/ examination the limb is typically shortened

Investigations: Pelvis X-ray

Management: Admit for reduction in theatre under general anaesthesia (MUA)

The nerve involved is Sciatic nerve.

2. Neck of Femur Fracture Patients with NOF commonly present with co-existing multiple co-morbidities

1. Majority due to osteoporosis in elderly patient
2. Metastatic deposits
3. In young due to high energy impacts e.g. road traffic accidents or falling from the height.

Mechanism: Follows a fall or RTA

Signs & Symptoms:

1. Pain over the hip & groin

2. Affected limb is often shortened & externally rotated
3. Inability to raise straightened leg
4. Check for sensation in the foot & adequate pulses
5. Circumferential artery and sciatica nerve are commonly damaged.
6. Full examination is mandatory

Investigations: X-ray pelvis & femur

Management: Operative fixation (ORIF) or hip replacement

3. Femur Shaft Fracture

Mechanism: Usually due to a fall or road traffic accident

Signs & Symptoms:

- Swelling deformity, pain
- Femoral artery and femoral nerve are commonly damaged.

Investigations: X-ray

Management: Thomas splint

In children commonly this is the only treatment.

In adults - Thomas splint followed by ORIF and

Intramedullary Nail

4. Patella Injury or Fracture

Mechanism:

1. Typically occurs after direct blow e.g - fall on to the knee
2. Avulsion fracture (from muscle contraction)

Signs & Symptoms:

- Pain over the patella
- Inability to raise straightened leg/ extend knee
- A palpable gap felt at the level of the fracture

Investigations:

1. X-ray of patella (knee joint)
2. Patella fracture can be: vertical; non displaced horizontal; comminuted

Management:

1. Hold in cylinder cast or cricket cast
2. Vertical & non displaced-horizontal fracture -> cylinder cast for 6 weeks
3. Displaced horizontal → ORIF
5. Dislocation of Patella

Mechanism:

- Typically in young females as a congenital anomaly
- Also direct trauma

Signs & Symptoms:

- The patella typically displaces laterally
- Patients may present with dislocated patella or after it has reduced

Management:

1. Reduce by pushing the patella medially while the leg is straight (extended knee) with Entonox analgesia
2. Cylinder plaster cast for 3 weeks followed by physiotherapy.

6. **Dislocation of the knee** ◊ Significant injuries. May occur from high/low energy mechanism *football player*

1. **Anterior dislocation:** Due to severe hyperextension
2. **Posterior dislocation:** Direct injury to the front of the tibia
Check for presence of distal foot pulses (difficult to feel popliteal artery pulse)

Management:

1. Knee should be reduced asap
2. Give Entonox for initial pain relief
3. Morphine IV
4. Always check neurovascular deficit (both before & after reduce)
5. Treat in a loose above knee back slab and admit

***Ligamental & Meniscal Injuries:**

- Common in sportsmen, also in older less active people
- Extremely painful, even in absence of fracture

7. Ligamental Injuries

Mechanism: Twisting, or foot got caught while running

Types of Ligament Injury:

i) Anterior Cruciate Ligament: Anterior drawer test positive

- Associated with medial collateral ligament or medial meniscus injury

ii) Posterior Cruciate ligament: Posterior drawer test positive

- Associated with medial/ lateral collateral ligament injury

iii) Lateral collateral ligament: Varus stress test positive

- Fracture of head of fibula

iv) Medial collateral ligament: Valgus stress test positive

- Associated with medial meniscal and ACL injuries
- ‘unhappy triad’ = ACL, MM, MCL

Signs & Symptoms:

- Popping sensation, cracking sound, immediate pain or no swelling
- May/may not able to bear weight
- Effusion - detectable, mild, undetectable
- Intense pain

Investigations: X-ray to exclude fracture.

Management: Analgesia & elevation

If minor (fully weight bearing) → mobilize

If major (non weight bearing) → use crutches & surgical repair.

If in sportsman or sportswoman → surgical repair

8. Meniscal injuries

Mechanism:

- Result of twisting injuries with flexed knee
- Common in **Footballers**, typically in men
- Often history of **leg giving away**

Signs & Symptoms:

- Pain and **difficulty in bearing weight**
- Presence of locked knee - not fully extended
- Effusion
- Joint line tenderness

Investigations: X-rays, MRI or Arthroscopy (especially if there is locked knee)

Management:

- Knee strapping ± crutches
- Locked knee → admission & analgesia + further investigations like **MRI or arthroscopy**

9. Tibia & Fibula Fracture

Mechanism: Twisting force or direct force to the leg, or any mechanism that presses lower ligament

Signs & Symptoms: Pain, swelling, deformity.

Management: ORIF

10. Ankle Dislocation

- This is an Orthopaedic Emergency
- Always associated with ankle fracture

Mechanism: Often follows serious traumatic injuries e.g heavy fall, direct blow

Joint is displaced in some degree

Signs & Symptoms:

- Foot is cold and pale
- Impalpable pulses
- Diagnosis is clinical

~~Management:~~ Reduction before X-ray (reduction can take place in A&E)

11. Achilles Tendon Rupture

- Lower limb tendon problem
- Common injury

Mechanism:

- Follows sudden muscular contraction e.g jumping, pushing off

- Patients reports feeling of clicking back of leg or heard a crack as tendon ruptures.

Signs & Symptoms:

- Pain and swelling
- Poor walking with inability to stand on toes
- Visible gap palpable at tendon.
- Simmond's Test Positive - patients lies prone on table with feet hanging off edge. Positive if no movement of foot on squeezing corresponding calf.

Investigations:

- Plain X-ray ankle to rule out an avulsion fracture
- USG shows extent of injury

Management:

- **Conservative** - Cast in plantar flexion
- **Invasive** - Surgical repair , if conservative treatment has failed before you need to do surgical repair.

12. Quadriceps Tendon Rupture

- Rupture of quadriceps tendon
- Usually 60 - 70 yrs
- Associated with hyperparathyroidism, diabetes, renal fx, arthritis, gout
- Also common in patients on steroids or those who abuse steroid especially sportsmen.

Mechanism: Strong contraction of quadriceps muscle

Signs & Symptoms:

- Associated with intense pain ± haemarthrosis
- Loss of extension of knee
- Walking impossible
- Gap superior to patella is palpable

Investigations: Plain knee X-ray

Management: Admit for early open repair

 (coxa)
C. THE LIMPING CHILD

1. Perth's Disease (hip problem)

A condition in which children characterised by a temporary loss of blood supply to the hip

Osteochondritis of the femoral head

- Form of aseptic necrosis of femoral head
- Often due to disruption of blood supply to femoral epiphysis
- Common 3-8 years
- M:F 5:1
- Mostly unilateral, bilateral in 10%,

Signs & Symptoms:

1. Limp and painful gait

2. Pain referred to knee, thigh (middle side) on exam
3. Hip abducted & internal rotation are limited (externally rotated and abducted + shortening of the hip)
4. One leg may be shorter than the other
5. Muscle wasting

Investigations:

- X-ray hip
 - o Femoral epiphysis appears smaller on affected side
 - o Widening of joint space
 - o Femoral head sclerosis
- X-ray is not always enough, can do CT

Management: Refer to Orthopaedics

Initial Management: Bed Rest & Analgesia (Conservative)

2. Slipped upper femoral epiphysis (SUFE):

- Commonest hip disorder in adolescents
- Boys: 10-13 years old ; Girls: 11-14 years
- M:F 3:1;
- More common in obese boys aged 10-14

Cause: Unknown

- Seen during rapid growth (during this time plates are rapidly growing so prone to injuries as it is soft)
- Hx of trauma in 50%

- 60% bilateral

Signs & Symptoms:

- Pain and limping
- Not localised to the hip
- Shortening of limb & external rotation.
- Pain & limited internal rotation on examination

Investigations: X-raysshow

- Widening of epiphysis
- Displacement of femoral head
- Epiphysis appears smaller due to post slippage.

Management: Prevent further slippage with conservative treatment and maintain function

Definitive management is surgical pinning

3. Septic Arthritis

- Common in children less than 2 years
- Acute pain in the joint, fever and limping
- Joint is hot swollen
- Reduced joint movement and unable to weight bear

Investigations:

- X-ray
- Joint aspiration for microscopy, culture & sensitivity

- Blood culture if fever.

Treatment:

IV flucloxacillin (antibiotics)

Talipes Equinovarus

Congenital talipes equinovarus.

Features:

- Equinus of the hindfoot.
- Adduction and varus of the midfoot.
- High arch.

Most cases in developing countries. It is more common in males and is bilateral in 50% cases. There is a strong familial link(1). It may also be associated with other developmental disorders such as Down's syndrome.

Key anatomical deformities (2):

- Adducted and inverted calcaneus
- Wedge shaped distal calcaneal articular surface
- Severe Tibio-talar plantar flexion.
- Medial Talar neck inclination
- Displacement of the navicular bone (medially)
- Wedge shaped head of talus
- Displacement of the cuboid (medially)

Management

Conservative first, the Ponseti method is best described and gives comparable results to surgery. It consists of serial casting to mold the foot into correct shape.

Surgical correction is reserved for those cases that fail to respond to conservative measures.

Diseases affecting the vertebral column

Ankylosing spondylitis

- Chronic inflammatory disorder affecting the axial skeleton
- Sacro-ilitis is usually visible in plain films
- Up to 20% of those who are HLA B27 positive will develop the condition.
- Affected articulations develop bony or fibrous changes

- Typical spinal features include loss of the lumbar lordosis and progressive kyphosis of the cervico-thoracic spine (bamboo spine).

Spina bifida

- Non fusion of the vertebral arches during embryonic development
- Three categories; myelomeningocele, spina bifida occulta and meningocele
- Myelomeningocele is the most severe type with associated neurological defects that may persist in spite of anatomical closure of the defect
- Up to 10% of the population may have spina bifida occulta, in this condition the skin and tissues (but not bones) may develop over the distal cord. The site may be identifiable by a birth mark or hair patch
- The incidence of the condition is reduced by use of folic acid supplements during pregnancy.

Management of Sprains and Soft Tissue Injuries

1. **Hand sprains** - immobilize in high arm sling for 2-3 days to reduce the swelling plus analgesia (ibuprofen + NSAIDs)
2. For **ankle sprain** - give crutches due to pain and advise to elevate the leg plus analgesia
3. For **whiplash injury** - physiotherapy. Nowadays they do not use neck collar and analgesia NSAIDs, Ibuprofen

Use **PRICE** for management of sprain

- | | |
|---|---------------|
| P | - Painkillers |
| R | - Rest |
| I | - Ice |
| C | - Compression |
| E | - Elevation |

OVERVIEW OF TOPICS IN TRAUMA:

- A. Chest Trauma
- B. Abdominal Trauma
- C. Urological Trauma
- D. Head Injury
- E. Wound Management
- F. Burn Management

CHEST TRAUMA

1. Traumatic Diaphragmatic Rupture

Mechanism: May occur after blunt or penetrating trauma, or RTA

Presentation:

1. Audible bowel sounds in the chest.
2. Abdominal content usually moves into the thoracic cavity. This may be apparent on insertion of NG tube, which is usually coiled in the chest.
3. CXR shows visible bowel loops

Investigations: Chest x-ray - will show elevated diaphragm, CT is more definitive.

Management: NG tube to decompress stomach followed by surgical repair.

2. Oesophageal rupture

Causes:

- Post endoscopy (usually in difficult endoscopy) - Localized neck pain/retrosternal chest pain
- Trauma / RTA

Presentation:

- Boerhaave's syndrome - Mackler's triad: vomiting and retching, followed by severe chest pain (usually retrosternal) and surgical emphysema
- Low grade pyrexia - mediastinitis
- Pale clammy tachycardia
- Hypotension

- Pleural effusion
- Subcutaneous (surgical) emphysema in the neck or chest

Investigations:

1. Chest x-ray - shows free gas in the mediastinum
2. CT Scan with oral contrast

Management:

1. Take care of ABC's
2. Keep NBM,
3. Give antibiotics (cefotaxime + metronidazole)

- Definitive management can be conservative or surgical

3. Massive Haemothorax

Haemothorax and pneumothorax often coexist together (haemopneumothorax)

Massive haemothorax will cause trachea shift, hypoxia, shock, shortness of breath and chest pain

Presentation:

- Trachea shift, hypoxia, shock, shortness of breath, and chest pain
- Tachycardia, tachypnoea, reduced chest expansion, dullness to percussion, decreased breath sounds, shock

Investigations: Chest x-ray initially, which shows opacification of the haemothorax, CT scan is the investigation of choice.

Management: Take care of ABCs and insert chest drain. If there is massive ongoing bleeding after insertion of chest drain

4. Simple Pneumothorax

Air in pleural space without aggressive increase in intrathoracic pressure

Presentation:

- Chest pain
- Shortness of breath, tachycardia
- Affected side has reduced chest expansion, hyperresonance, reduced to absent breath sounds
- Trachea is central

Investigations: Chest x-ray

Management: Traumatic simple pneumothorax regardless of size requires chest drain insertion.

Needle Thoracocentesis- for non traumatic pneumothorax if no resolution then chest drain

5. Open pneumothorax

Open thoracic wound with breach of parietal pleura, leads to air in pleural space

Presentation:

- Ipsilateral chest pain
- Open chest wound
- Same as simple pneumothorax

Investigations: Chest x-ray

Management:

Initial treatment: application of sterile occlusive dressing to cover whole wound. Tape is secured on three sides to make a one way valve.

Then insert chest drain.

6. Tension pneumothorax

Presentation:

- Chest pain
- Distressed patient, tachypnoea with cyanosis, profuse sweating, tachycardia and hypotension
- Affected side has reduced chest expansion, hyper-resonant on percussion, reduced to absent breath sounds
- Trachea is deviated to the contralateral side
- Distended neck veins

Management: Do IMMEDIATE needle thoracocentesis, followed by chest drain insertion as soon as possible

NB. This is a clinical diagnosis, no need for investigations to confirm before management.

7. Rib Fractures

A. Single rib fracture

Isolated fracture of a single rib after trauma is uncommon, suspect multiple fractures and exclude injuries to the underlying structures

A. Multiple Rib Fractures

- Fracture to the lower ribs (10-12) should raise suspicion of injuries to the spleen or liver
- Fracture to the middle ribs (4-9) are commonly fractured in blunt chest trauma and usually associated with pneumothorax, haemothorax and pulmonary contusion

NB: The presence of subcutaneous emphysema suggests pneumothorax

Clinical Features: Visible deformity, tenderness, bruises

Investigation: Chest x-ray to rule out pneumothorax.

Management:

- If uncomplicated rib fractures, only conservative management is needed, just prescribe oral analgesia. Patient may find it difficult to breathe due to the pain.

8. Flail chest

Occurs when two or more ribs are fractured in two or more places.

The flail segment is paradoxically drawn in during inspiration and drawn out during expiration. This causes inadequate ventilation.

Presentation:

- Severe chest pain
- Paradoxical chest movement of the flail segment
- Hypoxia

Investigations:

1. Chest x-ray
2. CT of chest

Management: Refer to cardiothoracic surgery for operative fixation.

Ensure adequate oxygenation - patient may require CPAP or require mechanical ventilation.

9. Cardiac tamponade

Mechanism: Caused by either penetrating or blunt chest trauma

Presentation:

- **Beck's triad:** Faint muffled heart sounds, distended neck veins, hypotension
- Tachycardia
- Shock

Investigations:

1. Echocardiogram
2. Chest X-Ray → globular heart

Management: Pericardiocentesis

10. Thoracic Aortic Dissection

Presentation:

- Sudden onset of severe tearing chest pain radiating to interscapular area
- Stroke or syncope may occur
- Abdominal pain due to mesenteric ischaemia
- Paraplegia due to spinal ischaemia
- Collapse
- On examination: shock, hypotension, tachycardia
- Different blood pressure and pulses in each arm

NB: **Abdominal pain radiating to back is always abdominal aortic dissection until proven otherwise.**

Investigations: Chest x-ray shows widened mediastinum. Contrast enhanced CT chest is investigation of choice.

Management: Refer to cardiothoracic surgeon immediately. Transfer to ITU. Definitive treatment is open repair of aneurysm.

B. ABDOMINAL TRAUMA

Causes:

1. Penetrating knife/ gunshot wound
2. Blunt blows/ RTA due to deceleration

Organs affected:

Solid Viscera:

1. Liver
2. Spleen

3. Mesentery artery
4. Duodenum/Small Bowels
5. Pancreas

1. Liver

- Occurs in penetrating or blunt injuries
- Common in major rib fracture especially lower ribs on the right side.

Presentation:

- Unresponsive hypotension
- Abdominal distention
- Pain & peritonitis in conscious patient

Investigations: CT is investigation of choice. USS if not CT scan in the options.

Management: Emergency laparotomy

Definitive: Transplant or Surgical Repair

2. Splenic Rupture

In penetrating or blunt injury. It is also associated with fractures of the left lower ribs.

Presentation:

- Unresponsive hypotension, abdominal distention

- Pain & Peritonitis
- **Left flank bruising** (most important)

Investigations:

- CT scan, Ultrasound of the abdomen
- Definitive: Splenectomy or repair of the damage.

3. Major Vessel Laceration:

Mechanism: Commonest in deceleration injuries. Mesentery arteries are commonly damaged by the belt.

Presentation:

- Unresponsive Hypotension
- Abdominal distention
- Back & Flank pain
- Flank Bruising

Investigations: CT scan is diagnostic

Management: Emergency laparotomy

4. Duodenal Rupture: mesenteric vascular injury

Mechanism: Compression seat belt injury

Presentation:

- Positive DPL = diagnostic peritoneal lavage (bile stained)
- Features of Peritonitis (rebound or percussion tenderness)

- Associated with pancreatic or lumbar injury

Investigations: CT scan diagnostic

Management: If part of multiple injuries then put surgical staples

Definitive Management is Primary repair

5. Small Bowel Laceration:

Mechanism: Caused by sharp penetrating trauma

Presentation:

- Features of peritonitis
- Features of sepsis

Management: Same as duodenal rupture

6. Pancreatic Disruption:

Mechanism: Deceleration injury

Presentation: Back pain, flank bruising,

Investigations: CT scan

Management:

- Analgesia & drainage of pancreatic collection
- - Repair of the damaged part of the pancreas

7. Abdominal Aortic Dissection

Presentation:

- Sudden onset of severe abdominal pain radiating to back
- Stroke or syncope may occur
- Abdominal pain due to mesenteric ischaemia
- Paraplegia due to spinal ischaemia
- Collapse
- On examination: shock, hypotension, tachycardia
- **Radiofemoral delay**
- Weak or unpalpable femoral pulses

NB: Abdominal pain radiating to back is always abdominal aortic dissection until proven otherwise.

Investigations: CT scan of the abdomen

Management: Intravenous fluids = maintain blood pressure
90-100mmHg

INDICATIONS FOR EMERGENCY LAPARATOMY:

1. Unexplained shock (exploratory laparotomy)
2. Clinical peritonitis
3. Positive DPL
4. Evisceration (internal organs coming out)
5. Gun shot wounds
6. Bleeding PR, penetrating trauma, stomach.

INDICATION FOR CT ABDOMEN.

1. Abdominal pain and vomiting with hypotension.

2. Signs of peritonism

3. Severe abdominal pain after road traffic accidents

**For abdominal trauma it's to do mandatory chest X-ray & Pelvic X-ray.

If abdominal injury + shock, do laparotomy . If the patient is unstable, first stabilize and then do a CT scan.

C. UROLOGICAL TRAUMA:

Causes: Penetrating or blunt injury

Most Common Causes:

1. Restrained passengers in RTA high speed (Compression of kidneys)
2. Crush injuries
3. Vehicle vs pedestrian injuries
4. Abdominal stab wounds
5. Blunt assault ◊ Renal contusion

Investigations:

Mandatory

- Chest & pelvic X-ray
- Urinalysis for blood (looking for hematuria)
- PR Exam for prostate

Optional

- CT, Abdomen & Pelvis is diagnostic method of choice.
Therefore, CT scan for diagnosis
- ~~Intravenous Urography (IVU)~~ can be used for kidney injury

CT - KUB

1. Renal Injuries

- 5-10% of all abdominal injuries affect kidney
- Most common causes in the urinary tract are RTA, sports injuries, falls, assaults

Presentation:

- Microscopic haematuria on urine dipstick
- Loin & back pain
- Hypotension

Delayed Presentation: Flank Pain, fever due to infected hematoma

Investigations: CT scan is diagnostic Contrast extravasation on CT or IVU

Management:

May be conservative or surgical depending on severity of the injuries

Laparotomy indicated if:

1. There are penetrating injuries with signs of shock or peritonitis
2. Blunt injuries with haemodynamic compromise despite fluid resuscitation

2. Urethral Injuries

Mechanism: Major pelvic fracture from RTA

Presentation:

- Supra pubic pain
- Blood at urethral meatus
- Inability to void urine
- Perineal swelling/bruising
- High riding prostate on Per Rectal examination

Investigations:

1. Retrograde urethrogram - shows extravasation of contrast

Management:

****In emergency do NOT attempt Urethral Catheterisation****

Do supra pubic catheterisation

Definitive Management:

- Incomplete laceration - conservative Management with urethral catheters
- Complete transection - Primary repair with catheter

D. HEAD INJURY

Common causes:

1. Non accidental injury in the form of Shake baby syndrome especially in premature babies
2. Epilepsy in a child
3. Falls
4. RTA
5. Sports - rugby

NB. All can cause intracranial bleed which can cause dilated pupils due to 3rd nerve palsy

1. Skull Fracture

Base skull fracture - Rhinorrhea, otorrhea, hemotympanum, battle sign (mastoid bruising), raccoon eyes/panda eyes (bruising around eyes). Need to do a CT scan.

Depressed skull fracture - Indication for CT

Vault skull fracture - Crack, needs a CT scan

2. Cerebral Contusion

Focal intraparenchymal oedema

Located at the site of impact

3. Extradural Hematoma

Head injury & immediate LOC = Extradural hematoma

- Hx of trauma
- Commonest injury that causes immediate LOC

- Due to disruption of middle meningeal artery
- Lucid interval is minutes to hours
- Bruise in the temple area
- Rapid deterioration in consciousness
- Lucid interval is usually minutes to hours., and not days or weeks.

If weeks or days then subdural haematoma is the diagnosis.

Investigations: CT scan

Management: Burr hole ~ Emergency evacuation of hematoma to relieve increased intracranial pressure

4. Subdural hematoma

- Common in alcoholics, recurrent falls
- May be no history of trauma because trauma may have happened weeks ago and patient has forgotten about it
- Fluctuating LOC
- ± cognitive impairment
- Progressive confusion
- Subdural Hematoma - acute < 24 hours
- Chronic > 24 hours

Management: Evacuation of hematoma

INDICATIONS FOR CT SCAN HEAD IN HEAD INJURY

1. GCS < 13 at initial assessment
2. GCS 14 if 2 hours after injury
3. Any neurological deficit
4. Depressed skull fracture
5. Base skull fracture
6. Post traumatic seizures
7. Vomiting post trauma ≥ 3 times in children. In adults, vomiting once is an indication.
8. Amnesia

CLASSIFICATION OF HEAD INJURY:

GCS 13 - 15 = Mild (observe 24 hours)

9 - 12 = Moderate (CT scan)

≤ 8 = Severe = call anaesthetist and intubate

NB:

1. Alcoholism (if someone is drunk) with head injury, even if GCS 15/15 observe for 24 hours
2. If no supervision at home, admit

E. WOUND MANAGEMENT

Full course of Tetanus Vaccination:

3 Vaccines in infancy, + 2 boosters

Scenarios of Wound Management:

1a) Fully immunized & wound is clean: No tetanus vaccine or immunoglobulin. Patient needs a booster every 10 days.

years

b) Fully immunized & wound is tetanus prone (meaning dirty).

Involves manure ((garden) or extensive necrosis

- Give only Tetanus-specific Ig (TIG)

2) Not immunized or immunization status unknown/ uncertain &

a) Wound is dirty:

- Give Tetanus Vaccine and Ig
- Arrange for full Vaccination in different arms via GP

b) Wound is clean: Arrange vaccination only

3) Primary immunisation incomplete or booster not up to date

a) Wound is dirty

- Give Immunoglobulin and vaccination

b) Wound is clean

- Give vaccine only

Antibiotics NOT required

Unless in human or animal bite or hand wound or Late presentation, i.e. >6 hours after the injury was sustained, in which case give Co-Amoxiclav.

F. BURNS

Causes:

1. Fire
2. Hot water
3. Chemicals
4. Electrical
5. Irradiation

Calculating total body surface area (TBSA) of burn:

Use rule of 9

Leg: 18% each

Arm: 9% each

Trunk back: 18%

Trunk front: 18%

Head: 9%

Perineum: 1%

Just erythema is not counted as an area of burn.

Classification of burn:

1. Partial thickness
2. Full thickness burns

Management:

1. If it's just erythema in some part of body, no treatment is required just reassure
2. For all other serious burns
 - FIRST : Take care of ABC.
 - a. Check the airway, if signs of inhalation injury, e.g soot singed nasal hair, burns to the oropharynx, hoarseness of voice, black sputum
 - Management: anaesthetize and intubate.**
 - a. Give analgesia
 - b. Give IV fluids
 - c. Transfer to special burns units if indicated

CRITERIA FOR TRANSFER TO BURNS UNIT:

1. Partial thickness burn: > 10% TBSA in adults, > 5% TBSA in children / elderly
2. Full thickness burns: >5% any age group
3. Burns on face, hands, feet, perineum, genelatia, major joints, chest
4. Any size of electrical burns
5. Any size of chemical burns
6. Any burn with inhalation injury

INTRAVENOUS FLUIDS:

1. 10% in children and 15% in adult of partial thickness burns

2. 5% or more in anyone of full thickness burns

*Use Hartmans solution/Ringer's Lactate or Normal Saline

Spinal Cord Compression:

1. Constipation
2. Lower limb weakness & Sensory loss
3. Urinary retention/ incontinence
 - Peri-anal anaesthesia & reduced anal tone on PR examination
 -

Investigation : MRI

Treatment: 1) Dexamethasone oral as an emergency
2) Surgical decompression is definitive

Disc Prolapse:

- Back pain radiating posterior aspect of the thigh down to the knee. All the way up to below knee
- After heavy lifting = sciatic pain
- If Sensory loss is on L5 dermatome then disc prolapse is at L4/ S1
- If sensory loss is on L4 dermatome then disc prolapse is at L3/L4
- If sensory loss is on the S1 dermatome then disc prolapse is at L5/ S1

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**ORTHOPAEDICS & TRAUMA SINGLE BEST ANSWER
QUESTIONS 2016**

1. A 35-year old man presents with sudden pain in the lower back while lifting a heavy load! The pain radiates down his right leg. What is the most likely diagnosis?

- A) Torticollis
- B) Whiplash injury
- C) Multiple myeloma
- D) Osteoarthritis
- E) Prolapsed intervertebral disc

2. A young man presents with a one-day history of pain and stiffness in the neck. The previous day he had been a passenger in a car that was involved in a minor accident. What is the most likely diagnosis?

- A) Ankylosing spondylitis
- B) Whiplash injury
- C) Multiple myeloma

D) Osteoarthritis

E) Intervertebral disc prolapse

3. A seven-day old baby, born after a difficult home delivery is not moving his left arm. He cries each time he is picked up. What is the most likely diagnosis?

A) Fracture of clavicle

B) Fracture of mid radius and ulna

C) Fracture of neck of humerus

D) Green stick fracture of distal radius

E) Fracture of shaft of distal humerus

4. A three-year old girl tripped while holding her mother's hand, she has not used her right arm since. What is the most likely diagnosis?

A) Non-accidental injury

B) Scaphoid fracture

C) Subluxation of radial head (pulled elbow)

D) Supracondylar fracture of humerus

E) Fracture of clavicle

5. An eight-year old boy fell from a tree and he is in severe pain. The radial pulse is not palpable on the injured arm. What is the most likely diagnosis?

A) Fracture of clavicle

B) Fracture of mid radius and ulna

C) Fracture of neck of humerus

D) Green stick fracture of distal

E) Supracondylar fracture of humerus

6. A 16-year old boy fell on his outstretched hand. His forearm was put in a plaster a week ago at another hospital but he has got it wet. He has come to the Accident and Emergency department to have it repaired. He says his initial x-rays were normal. On a repeat x-ray an abnormality is found. What is the most likely diagnosis?

A) Non-accidental injury

B) Scaphoid fracture

C) Subluxation of radial head (pulled elbow)

D) Supracondylar fracture of humerus

E) Fracture of clavicle

7. A four-year old boy fell in the playground. He has been using his forearm normally but complains of pain. There is no deformity or swelling and there is minimum tenderness on examination. What is the most likely diagnosis?

A) Fracture of clavicle

B) Fracture of mid radius and ulna

C) Fracture of neck of humerus

D) Green stick fracture of distal radius

E) Fracture of shaft of distal

8. A three-month old baby, whose mother says he has been crying since he rolled off the bed two days ago, is found to have bruises on his legs. What is the most likely diagnosis?

A) Non-accidental injury

B) Scaphoid fracture

C) Subluxation of radial head (pulled elbow)

D) Supracondylar fracture of humerus

E) Fracture of clavicle

9. A patient presents with a history of progressive inability to extend his ring and little fingers, which are held in fixed flexion. What is the most likely diagnosis?

A) Radial nerve palsy

B) Dupuytren's contracture

C) Syringomyelia

D) Ulnar nerve palsy

E) Median nerve palsy

10. A man complains of paraesthesiae, impaired sensation to light touch and vibration affecting all the digits of both hands. What is the most likely diagnosis?

A) Peripheral neuropathy

B) Dupuytren's contracture

C) Brachial plexus injury

D) Ulnar nerve palsy

E) Median nerve palsy

11. A three-year old boy is brought to the Accident and Emergency department with a painful elbow sustained while his father was swinging him by the hands as a game. What is the most appropriate management?

A) Acupuncture

B) Manipulation

C) Bed rest

D) Exercise regime

E) Immobilization (collar)

12. An eight-year old girl is brought to the Accident and Emergency department with an acute torticollis. There is no history of trauma. What is the most appropriate management?

A) Immobilization (plaster)

B) Immobilization (sling)

C) Local steroid injection

D) Manipulation

E) Physiotherapy

13. A 10-year old boy has been limping for three days after playing football. He complains of pain on rotation of the right hip. What is the most appropriate management?

A) Reassurance

B) Admission for investigation

suffi

C) Bed rest

D) Exercise regime

E) Immobilization (collar)

14. A 19-year old rugby player fell over during a game five days ago. He complains of pain in the right wrist near the base of the thumb. Initial x-ray appears normal. What is the most appropriate management?

A) Immobilization (plaster)

scafold

B) Immobilization (sling)

C) Local steroid injection

D) Manipulation

E) Physiotherapy

15. A 20-year old woman attended the Accident and Emergency department five days ago with neck pain following a rear end collision of her car. She has been wearing a soft collar but the pain and stiffness have been worsening. What is the most appropriate management?

A) Acupuncture

B) Admission for investigation

C) Physiotherapy

D) Exercise regime

E) Immobilization (collar)

16. An obese 56-year old man is involved in a road traffic incident and sustains multiple bruises. He now complains of severe excruciating pain in his right big toe. He had complained of a similar pain last year. What is the most appropriate management?

A) Naproxen

B) Secure airway and stabilize cervical spine

C) IV dexamethasone

D) 2mg glucagon (IV)

E) Discharge patient after a period of counselling

17. You arrive at the scene of a major accident and find a 32-year old man unconscious following a road traffic accident. Initial resuscitation has been done by the paramedics. What is the most appropriate management?

A) 0.9% saline (IV)

B) Secure airway and stabilize cervical spine

C) Assess airway

D) Aspirin

E) Morphine

18. As part of the ambulance team, you arrive at the scene of a major accident. You find a 19-year old man unconsciousness and smelling of alcohol. His airway and cervical spine are secured by your team. What is the most appropriate management?

A) Naproxen

B) 50 ml of 50% dextrose (IV)

C) Finger prick glucose measurement

D) Cut down should be performed

E) 0.9% saline IV

19. After a heavy bout of drinking, a 17 year old is carried away to the Accident and Emergency unconsciousness. The airway and cervical spine are secured. Several attempts of getting intravenous (IV) access have failed. What is the most appropriate management?

A) 10 units of soluble insulin (IV)

B) Secure airway and stabilize cervical spine

C) IV dexamethasone

D) Cut down should be performed

E) Discharge patient after a period of counselling

20. A child with a stab wound of abdomen and signs of peritonism and shock. What is the most appropriate management?

- A) CT scan
- B) Barium swallow
- C) MRI
- D) X-ray abdomen
- E) Peritoneal analysis

stab W
liver laceration

21. A child involved in RTA was seated in the back seat with seat belt on presents with pain in Left hypochondrium, pallor, low BP, tachycardia. What is the most appropriate management?

- A) CT scan
- B) Barium swallow
- C) MRI
- D) X-ray abdomen
- E) Peritoneal analysis

splenic
rupture

22. There is history of a kick in the back. No bruises but the patient presents to the A&E with haematuria. What is the most appropriate management?

- A) IVU
- B) Nephrectomy
- C) USG
- D) Splenectomy
- E) Laparotomy

CT-kUB

23. There is a history of multiple rib fractures on left lower chest. The patient presents with left sided abdominal pain. What is the most appropriate management?

- A) Urethrogram
- B) Suprapubic catheterization
- C) Foley's catheterization

D) USG

- E) IVU

24. A man with a history of perineal injury and now presents with urinary retention for 2 hours. No abnormality was found on PR. What is the most appropriate management?

- A) IVU
 - B) Nephrectomy
 - C) USG
 - D) Foley's catheterization
- E) Suprapubic catheter

25. A 23 year old man sprained his right ankle six weeks ago playing football. He was treated with a below knee walking cast. On removing the cast, the patient is noted to have a right foot drop. He has weakness of the extensors of the ankle and toes, and diminished pin-prick sensation over the dorsum of the foot. The ankle jerk is present and the plantar reflex is flexor. What is the most likely diagnosis?

- A) Compression of the common peroneal nerve
- B) Compression of the SI nerve root
- C) Deep venous thrombosis (DVT)

D) Rupture of the Achilles tendon

E) Tear of the medial collateral ligament of the ankle

26. A female 68 years old, has had a low-level right forearm fracture, what is the most appropriate management to prevent fractures in future?

A. Calcitonin

B. Calcium supplements

C. Bisphosphonates

D. Steroid

E. Vitamin D and calcium

27. A 7-year old boy presents with a history of acute onset of pain in the knee. On examination, the left lower limb is flexed, abducted and externally rotated. What is the most likely diagnosis?

A. Fracture neck of femur

B. Perthe's disease

C. Slipped femoral epiphysis

D. Osteoarthritis

E. Septic arthritis

28. A 67-year old woman complains of right hip pain, on examination the right hip is abducted, externally rotated and flexed. What is the most likely diagnosis?

A. Fractured neck of femur

B. Perthe's disease

C. Slipped femoral epiphysis

D. Osteoarthritis

E. Septic arthritis

29. A 10-year old girl is febrile. On examination it is difficult to abduct the thighs. What is the most likely diagnosis?

- A. Fracture neck of femur
- B. Perthe's disease
- C. Slipped femoral epiphysis
- D. Osteoarthritis
- E. Septic arthritis

30. A child presents with right hip pain. On examination the hip is flexed, abducted and externally rotated. What is the most appropriate diagnosis?

- A. Fracture neck of femur
- B. Perthe's disease
- C. Slipped femoral epiphysis
- D. Osteoarthritis
- E. Septic arthritis

31. A 60-year old man has just been rescued from a house fire. He has facial burns and is asking about his family. There is soot in the pharynx and he has singed nasal hair. What is the most appropriate immediate management?

- A. Anesthetic and intubation
- B. Burns dressing
- C. Debridement
- D. Escharotomy
- E. Ice packs

32. A 19-year old man fell asleep while sunbathing two days ago. He has diffuse skin redness with sparing of areas protected by clothing. He is otherwise well. What is the most appropriate immediate management?

- A. Anesthetic and intubation
- B. Burns dressing
- C. Debridement
- D. Escharotomy
- E. Reassure and discharge with advice

33. A two year old boy pulls a recently prepared cup of tea over of his shoulder and the front of his chest covering an area of less than 3% of the total surface area. He is crying and uncooperative. What is the most appropriate immediate management?

- A. Anaesthetic and intubation
- B. Burns dressing
- C. Debridement
- D. Escharotomy
- E. Pain relief with opiate

34. A 28-year old industrial worker sustains 40% scald with hot water to his trunk and legs. He has been given analgesics on site. What is the most appropriate immediate management?

- A. Anaesthetic and intubation
- B. Burns dressing
- C. Debridement
- D. Escharotomy

E. Intravenous fluid resuscitation

35. A 45-year old electrician sustains a contact electrical injury to the fingers of his dominant hand. There are full thickness burns to the pulps of his fingers and movement is painful. He has been given appropriate analgesics. What is the most appropriate immediate management?

- A. Anesthetic and intubation
- B. Burns dressing
- C. Specialist referral to burns unit
- D. Escharotomy
- E. Ice packs

36. A patient has a history of fracture of the shoulder now has decreased sensation on the lateral aspect of the deltoid muscle. What is the most likely nerve damage?

- A. Axillary nerve
- B. Musculocutaneous nerve
- C. Radial nerve
- D. Ulnar nerve
- E. Common peroneal nerve

37. A patient had a fracture of the fibula at the level of the ankle and now lost his dorsiflexion and sensation on the lateral side of his low leg. What is the most likely nerve damage?

- A. Axillary nerve
- B. Musculocutaneous nerve
- C. Radial nerve

D. Ulnar nerve

E. Common peroneal nerve

38. A patient had fracture of medial epicondyle and now comes with decreased sensation of 5th and 4th fingers. What is the most likely nerve damage?

A. Axillary nerve

B. Musculocutaneous nerve

C. Radial nerve

D. Ulnar nerve

E. Common peroneal nerve

39. A patient has some fracture of humerus and comes with signs and symptoms of wrist drop. What is the most likely nerve damage?

A. Axillary nerve

B. Musculocutaneous

C. Radial nerve

D. Ulnar nerve

E. Common peroneal nerve

40. An old man had a fall and fracture and/or dislocation of the hip now has weakness in his hamstring. What is the most likely nerve damage?

A. Axillary nerve

B. Musculocutaneous nerve

C. Radial nerve

D. Ulnar nerve

E. Sciatic nerve

41. A 43-year old man is brought to the A & E Department delirious, following head injury at a rugby match. His Glasgow coma scale (GCS) at the scene of injury is 13. On examination, his right pupil is fixed and dilated and GCS is now 7. Initial resuscitation has been done. The neuro-surgeon is 30 minutes away. What is the most appropriate immediate management?

- A. Plain abdominal X-ray
- B. Assess airway and stabilize spine
- C. Burr hole(s) should be drilled
- D. Transfer to operating theatre
- E. Call ambulance only after full recovery

42. A 22-year old motorist arrives in the A & E Department after an accident. His airway is patent, he is noted to have a splinted right leg. What is the most appropriate immediate management?

- A. Plain abdominal X-ray
- B. Assess airway and stabilize spine
- C. CT scan of the abdomen
- D. Transfer to operating theatre
- E. Normal saline infusion

43. A 30-year old man is involved in a fight. He has a bruise on the cheek. He complains of an acute abdominal pain and is vomiting. He had a herniorrhaphy two weeks ago. He is conscious and fundoscopy hasn't been done. What is the most appropriate immediate management?

- A. Plain abdominal X-ray

B. Assess airway and stabilize spine

C. CT scan of the abdomen

D. Transfer to operating theatre

E. Call ambulance only after full recovery

44. A 29-year old motorist in the A & E department resuscitation room, appears to be stable after an accident. While standing up, he becomes progressively dyspnoeic. There is reduced air entry on the left side of the chest. What is the single most appropriate immediate management?

A. Plain abdominal X-ray

B. Assess airway and stabilize spine

C. CT scan of the abdomen

D. Transfer to operating theatre

E. Chest drain after needle thoracocentesis

45. An 18-year old girl is being resuscitated after an accident. Her airway is secure but complains of neck pain. Her pulse rate is 100 beats/minute and blood pressure is 110/70 mmHg. Glasgow coma scale is 13. She has a deformed left thigh. What is the most appropriate immediate management?

A. Cervical spine immobilization

B. Assess airway and stabilize spine

C. CT scan of the abdomen

D. Transfer to operating theatre

E. Call ambulance only after full recovery

46. A 22-year old motorist is being resuscitated after an accident. He is noted to have external injuries on the right side and a

deformed right thigh. What is the most appropriate immediate management?

- A. Plain abdominal X-ray
- B. Assess airway and stabilize spine
- C. CT scan of the abdomen
- D. Transfer to operating theatre
- E. Splint limb

47. A 4-year old boy is hit by a car. His neck has been immobilized. He is agitated and does not like the oxygen mask. His trachea is deviated to the left with a hyper-resonant right hemithorax. What is the most appropriate next management step?

- A. Cardiopulmonary resuscitation CPR
- B. Control external bleeding with direct pressure
- C. Gain vascular access and infuse normal saline
- D. Needle thoracentesis
- E. Hyperventilate

48. A 10-year old boy fell onto a glass. He is bleeding actively from his left wrist. The nurses have given him oxygen and are setting up a drip. What is the most appropriate next management step?

- A. Cardiopulmonary resuscitation CPR
- B. Control external bleeding with direct pressure
- C. Gain vascular access and infuse normal saline
- D. Gain vascular access and transfuse blood
- E. Hyperventilate

49. A 12-year old girl has been hit by a car and has sustained neck

and facial injuries. Her neck immobilized. She is receiving 100% oxygen. Her breathing is noisy. Her Glasgow coma scale GCS score is 13. Her respiratory rate is 30 breaths/minute. What is the most appropriate next management step?

- A. Cardiopulmonary resuscitation CPR
- B. Control external bleeding with direct pressure
- C. Gain vascular access and infuse normal saline
- D. Gain vascular access and transfuse blood
- E. Maintain open airway

50. A 14-year old girl fell from her horse; the neck has been immobilized and has been given oxygen. She is complaining of pain in her right thigh which is swollen and deformed. She has good air entry on both sides of the chest; pulse rate is 100 breaths/minute. She has cool peripheries and unrecordable oxygen saturation. What is the most appropriate next management step?

- A. Cardiopulmonary resuscitation CPR
- B. Control external bleeding with direct pressure
- C. Gain vascular access and infuse normal saline
- D. Splint fractures
- E. Hyperventilate

51. An eight-year old boy was a passenger in a car involved in an accident in which another person was killed. He is talking with an oxygen mask on 100%. He is pale and tachycardic. What is the most appropriate next management step?

- A. Cardiopulmonary resuscitation CPR

B. Control external bleeding with direct pressure

C. Gain vascular access and infuse normal saline

D. Gain vascular access and transfuse blood

E. Hyperventilate

52. A 15-year old girl has cut her wrists and bled profusely. She is pale and tachycardic. She says that she does not want to live. What is the most appropriate next management step?

A. Cardiopulmonary resuscitation CPR

B. Control external bleeding with direct pressure

C. Gain vascular access and infuse normal saline

D. Gain vascular access and transfuse blood

E. Hyperventilate

53. A 70-year old man was wearing a seat belt when he drove into the back of a van. He walks into the A & E Department and is found to have a transverse fracture of the sternum. What is the single most appropriate management?

↳ nothing

A. Aortogram

B. Chest drain

C. Computed tomography CT scan of the chest

D. Oral analgesia

E. Lung function tests

54. A 75-year old woman has a fall, now presents with back pain and is found to have a compression fracture of a thoracic vertebra. What is the most appropriate management?

A. Magnetic resonance imaging MRI scan of the thoracic spine

- B. Chest drain
- C. Computed tomography CT scan of the chest
- D. Intubate and ventilate
- E. Lung function tests

55. A 16-year old youth involved in a street fight gets a kick in the chest. He has a rib fracture but x-ray shows no pneumothorax when he is seen in the A & E Department the following day. What is the most appropriate management?

- A. Aortogram
- B. Oral analgesia
- C. Computed tomography CT scan of the chest
- D. Intubate and ventilate
- E. Lung function tests

56. A passenger involved in a high-speed car accident has multiple rib fractures and bilateral haemothoraces. Chest drains are inserted on both sides. His oxygen saturation falls to 85% and a PaCO₂ begins to rise. What is the most appropriate management?

- A. Aortogram
- B. Chest drain
- C. Computed tomography CT scan of the chest
- D. Intubate and ventilate
- E. Lung function tests

57. A 30-year old man needs operative fixation of a fractured femur. He has also sustained a blunt chest injury and has a small apical

pneumothorax. What is the most appropriate management?

- A. Aortogram
- B. Chest drain
- C. Computed tomography CT scan of the chest
- D. Intubate and ventilate
- E. Lung function tests

58. A 4-year old girl is brought to the A & E Department with 10% scald on the chest. What is the most appropriate management?

- A. Central venous access
- B. Dobutamine infusion
- C. Endotracheal intubation
- D. Fluid bolus (20 mL/kg)
- E. Intramuscular IM codeine phosphate

59. A 6-year old has been intubated and ventilated for a suspected head injury after a road traffic accident. His blood pressure is 70 mmHg systolic and his pulse rate is 140 beats/minute. What is the most appropriate management?

- A. Central venous access
- B. Dobutamine infusion
- C. Endotracheal intubation
- D. Fluid bolus (20 mL/kg)
- E. Intramuscular IM codeine phosphate

60. A 2-year old girl is in hypovolaemic shock. Attempts at gaining peripheral intravenous IV access have failed twice. What is the most appropriate management?

- A. Central venous access
- B. Dobutamine infusion
- C. Endotracheal intubation
- D. Fluid bolus (20 mL/kg)
- E. Intraosseous needle infusion

61. A 5 year old boy involved in a house fire has soot in the mouth and nose and 7% burns on his arms and face. What is the most appropriate management?

- A. Central venous access
- B. Dobutamine infusion
- C. Endotracheal intubation
- D. Fluid bolus (20 mL/kg)
- E. Intramuscular IM codeine phosphate

62. A 13 year old boy is in hypovolaemic shock. Attempts at gaining peripheral IV access have failed twice. What is the most appropriate management?

- A. Central venous access
- B. Dobutamine infusion
- C. Endotracheal intubation
- D. Fluid bolus (20 mL/kg)
- E. Intramuscular IM codeine phosphate

63. A young man involved in a motorcycle accident is stable in the A & E department. His neck is cleared but when he sits up he develops sudden shortness of breath. His breath sounds are diminished on the right side. What is the next management step?

- A. Diagnostic needle thoracocentesis
- B. Computerized tomography scan
- C. X-Ray of femur
- D. Splinting of femur
- E. Auscultation
64. A young man involved in a motorcycle accident has a secure airway and a Glasgow coma scale of 15. He is noted to have a swollen right thigh. What is the next management step?
- A. Diagnostic needle thoracocentesis
- B. Computerized tomography scan
- C. X-Ray of femur
- D. Splinting of femur
- E. Auscultation
65. A young man involved in a motorcycle accident has a secure airway. He is ventilated, immobilized and anaesthetized after admission. His Glasgow coma scale is 9 and he is noted to have a swollen right thigh. What is the next management plan?
- A. Diagnostic needle thoracocentesis
- B. Computerized tomography scan
- C. X-Ray of femur
- D. Splinting of femur
- E. Auscultation
66. An 18-year old man fell off a ladder. He complains of pain in his right wrist. There is tenderness just distal to the radius but little swelling. What is the most likely diagnosis?

- A. Bennett's fracture
- B. Fractured scaphoid
- C. Fractured 5th Metacarpal
- D. Fractured clavicle
- E. Fractured humeral neck

67. A 78-year old woman tripped over uneven stone pavement and fell while carrying her shopping. She complains of pain in the shoulder but there is no deformity and her range of movement is only slightly reduced. What is the most likely diagnosis?

- A. Bennett's fracture
- B. Colle's fracture
- C. Fractured 5th Metacarpal
- D. Fractured clavicle
- E. Fractured humeral neck

68. A 6 year old girl fell from a swing onto her outstretched hand. She is tender from the shoulder to the lower forearm and is reluctant to move her arm. What is the most likely diagnosis?

- A. Bennett's fracture
- B. Colle's fracture
- C. Fractured 5th Metacarpal
- D. Supracondylar fracture of the humerus
- E. Fractured humeral neck

69. A 45-year old man had fallen down the stairs the previous day while he was drunk. He complains of pain near the shoulder and has difficulty lifting his wrist off the table. What is the most likely

diagnosis?

- A. Spiral fracture of the humerus
- B. Colle's fracture
- C. Fractured 5th Metacarpal
- D. Fractured clavicle
- E. Fractured humeral neck

70. A 25-year old man was attacked with baseball bat. He complains of pain in his right forearm which he had raised to protect himself. What is the most likely diagnosis?

- A. Bennett's fracture
- B. Transverse fracture of the ulna
- C. Fractured 5th Metacarpal
- D. Fractured clavicle
- E. Fractured humeral neck

71. A 2-year old child attends the A & E department having run into a door. He cried for a while but has played happily since then. He has a bruise on his forehead. What is the most appropriate management?

- A. Admit to local hospital
- B. Computed tomography CT scan of the brain
- C. Consult with neurosurgeons
- D. Discharge with advice
- E. Discharge with advice after normal skull x-ray

72. A 7-year old boy fell off his bike, striking his head. He was not wearing a helmet. He is distressed but responds appropriately to

~~such~~
questions and climbs on to the examination couch. He was not knocked out but cannot recall the details of the accident. What is the most appropriate management?

- A. Admit to local hospital
- B. Computed tomography CT scan of the brain
- C. Consult with neurosurgeons
- D. Discharge with advice
- E. Discharge with advice after normal skull x-ray

73. A 17-year old boy attends the A & E Department on Saturday night. He has slurred speech but knows where he is. He smells of alcohol and has a contused wound on his scalp. He does not know how he was injured. What is the most appropriate management?

- A. Admit to local hospital
- B. Computed tomography CT scan of the brain
- C. Consult with neurosurgeons
- D. Discharge with advice
- E. Discharge with advice after normal skull x-ray

74. A 12-year old boy who has been playing on the roof of a ~~derelict~~ factory falls at least six meters. His airway is secure and he is haemodynamically stable. His Glasgow coma scale (GCS) score is 10. He has no focal neurological signs. What is the most appropriate management?

- A. Admit to local hospital
- B. Computed tomography CT scan of the brain
- C. Consult with neurosurgeons
- D. Discharge with advice

E. Discharge with advice after normal skull x-ray

75. A 14-year old boy had tibia and fibular shaft fracture. After analgesia, a plaster is applied. After sometime he complains of pain. What is the most appropriate management?

A. Remove plaster

B. Check pulses

C. NSAIDS

D. Increase opiates

E. Needle aspiration

76. The same boy after 8 hours develops foot drop. What is the most appropriate management?

A. Remove plaster

B. Check pulses

C. NSAIDS

D. Increase opiates

E. Needle aspiration

77. A 10-year old boy fell from the swing in school. He has tender left leg and is excessively crying. What is the most appropriate management?

A. Remove plaster

B. Check pulses

C. NSAIDS

D. Give opiates

E. Needle aspiration

78. A 16-year old boy got an injury to his knee in a football match. There is diffuse swelling on his knee. What is the most appropriate management?

- A. Remove plaster
- B. Check pulses
- C. NSAIDS
- D. Increase opiates
- E. X-rays

79. A 20-year old man comes to the A & E with ankle fracture and is found to have no foot pulses. What is the most appropriate management?

- A. Remove plaster
- B. Immediate reduction
- C. NSAIDS
- D. Increase opiates
- E. Needle aspiration

80. A boy has come with injury by fall on the handle of cycle and has pain and tenderness in left upper side of abdomen. U/S of spleen shows a small sized haematoma in the splenic capsule. What is the most appropriate management action?

- A. Laparotomy
- B. Refer to surgeon
- C. Admit and observe
- D. Give IV fluids 1 litre in 30 minutes
- E. IV fluids 2 litres in 30 minutes

81. A patient with being hit by a ball comes with severe pain in epigastrium. What is the most appropriate management?

- A. Laparotomy
- B. Refer to surgeon
- C. Admit & observe
- D. Give IV fluids 1 litre in 30 minutes
- E. IV fluids 2 litres in 30 minutes

82. A patient was stabbed in a fight and now comes with his omentum hanging outside in the umbilical area. His BP is 110/70 & heart rate is 80. What is the single most appropriate management?

- A. Laparotomy
- B. Refer to surgeon
- C. Admit & observe
- D. Give IV fluids 1 litre in 30 minutes
- E. IV fluids 2 litres in 30 minutes

83. A patient h/o fall has come with tenderness in the left side of the abdomen and fracture of 2 right-sided ribs. Patient is in shock. What is the most appropriate management?

- A. Laparotomy
- B. Refer to surgeon
- C. Admit & observe
- D. Give IV fluids 1 litre in 30 minutes
- E. IV fluids 2 litres in 30 minutes

84. A patient had some sort of injury, after 2-L IV fluids his BP is low and HR higher. What is the single most likely management action?

- ✓ A. Laparotomy
B. Refer to surgeon
C. Admit & observe
D. Give IV fluids 1 litre in 30 minutes
E. IV fluids 2 litres in 30 minutes
85. A motor cyclist with accident is brought to the A & E with head injury (GCS is 3) and his (BP 180/100) and pulse is 56. What is the most likely diagnosis?
- A. Brain stem injury
✓ B. Extradural haematoma
C. Subdural haematoma SDH
D. Acute SDH
E. Chronic SDH
86. Young male 27 years old after a heavy bout of alcohol fell down on the road and then got up and walked home. His wife found him on the floor and cannot be aroused and has fluctuating consciousness. What is the most likely diagnosis?
- A. Brain stem injury
B. Extradural haematoma
C. Subdural haematoma SDH
D. Acute SDH
E. Chronic SDH
87. A 67-year old man had recent falls, became agitated and confused. What is the most likely diagnosis?
- A. Brain stem injury

B. Extradural hematoma

C. Subdural haematoma SDH

D. Acute SDH

E. Chronic SDH

88. An old lady has dizziness and vertigo and walking veering to one side. What is the single most likely diagnosis?

A. Brain stem injury

B. Extradural haematoma

C. Subdural haematoma SDH

D. Acute SDH

E. Vertebrobasilar stroke

89. A 40-year old female presents at the A & E with vomiting and severe pain in the back of the head. What is the most likely diagnosis?

A. Subarachnoid Hemorrhage

B. Extradural haematoma

C. Subdural haematoma SDH

D. Acute SDH

E. Chronic SDH

90. A patient was hit on the head with a hammer now comes with vomiting. What is the most likely diagnosis?

A. Brain stem injury

B. Depressed fracture of skull

- C. Subdural haematoma SDH
- D. Acute SDH
- E. Chronic SDH

91. A young man fell over and there is injury on his temple scalp but he is alert. What is the most likely diagnosis?

- A. Brain stem injury
- B. Extradural haematoma
- C. Subdural haematoma SDH
- D. Acute SDH
- E. Chronic SDH

92. A child was admitted following a RTA with initial GCS=15. Then during the night it was noticed GCS reduced to 13. What is the most appropriate management?

- A. Refer to neurosurgeon
- B. IV fluids
- C. Oxygen
- D. CT brain
- E. Skull X--ray

93. A young man who was held by the police was punched while in custody. He is now cyanosed and unresponsive. What is the 1st thing you would do?

- A. IV fluids
- B. Clear airway
- C. Turn patient and put in recovery position
- D. Give 100% oxygen

E. Intubate and ventilate

94. A patient was admitted to the Emergency department with a head injury. When examined on arrival his GCS=15 and then at night his GCS deteriorated to 12. What is the most appropriate investigation?

- A. CT head
- B. XR skull
- C. IV mannitol
- D. Drill a burr hole
- E. Shift to Operation room

95. A 34-year old man was involved in a RTA and while in the ambulance his Glasgow coma scale deteriorated and RR increased from 30 to 48. What is the most appropriate management?

- A. IV fluid
- B. Needle thoracocentesis
- C. 100% oxygen
- D. Portable XR
- E. FAST Ultra sound scan

96. A 22-year came to the hospital after an injury in his hand while playing basketball. Exam: avulsion of extensor tendon from the distal phalanx. What is the most likely deformity?

- A. Dinner fork deformity
- B. Game keeper thumb
- C. Mallet finger
- D. Gun-stock deformity

E. Garden spade deformity

97. A 63-year old female with a history of osteoporosis suddenly falls on her outstretched hand while shopping. X-Ray shows fracture at the distal radius with backward shift of the distal fragment. What is the most likely deformity?

- A. Dinner fork deformity
- B. Coxa vara
- C. Mallet finger
- D. Cubitus valgus
- E. Garden spade deformity

98. A 67-year old man presents to the Emergency department with pain in his left groin. He suddenly collapses and is not able to move or lift his leg. He is on alendronate. What is the most likely diagnosis?

- A. Fracture of neck of femur
- B. Post hip dislocation
- C. Fracture of shaft of femur
- D. Pelvic base fracture
- E. Peripheral vascular disease

99. A young man was knocked down during a fight in the waiting room of the Emergency department. He is now unconscious and unresponsive. What is the 1st thing you would do?

- A. Turn patient and put in recovery position
- B. Clear airway
- C. Endotracheal intubation
- D. Assess Glasgow coma scale
- E. Start CPR

100. A woman came with a complaint of pain in her right arm when she abducts it. She has recently moved to a new house. There is no history of trauma. What is the likely cause of her pain?

- A. Rupture of the long head of biceps
- B. Sprain of the acromio-clavicular ligament
- C. Tendinitis of the abductor sheath
- D. Shoulder dislocation
- E. Supraspinatus tendinitis

100. A young woman fell and hit her knee. Exam: valgus test +ve. What ligament was most probably injured?

- A. Anterior cruciate
- B. Medial collateral
- C. Lateral collateral
- D. Posterior cruciate
- E. Medial meniscus

101. A 34-year old labourer developed severe pain in his lower back after lifting a sack of sand. He also complains of shooting pain down his leg. The GP has prescribed him complete bed rest, with painkillers and also scheduled an MRI for him. What is the most likely diagnosis?

- A. Peripheral vascular disease
- B. Intervertebral disc prolapse
- C. Hairline fracture of the spine
- D. Sprain of the back muscles
- E. Muscle injury

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