

TRAUMA / ATLS (1)

Q1) A 42 year old lady is admitted to the ED after a road traffic accident where she was flung from a motorbike. She presents with severe lower limb bruising, bilateral road rash, and an open tib-fib fracture of the R lower limb.

GCS 14

Temperature 37.5°C

HR 110

BP 80/55

SpO₂: 96% on room air

What is your immediate management of this patient?

- A) IV antibiotics
- B) Pelvic binders
- C) Irrigate and dress her wounds with normal saline, and remove all gravel
- D) ORIF of her right leg
- E) IV fluids 0.9% saline**

Answer: secure ABCs first

Q2)

GENERAL ORTHO (3)

Q1) An 82 year-old lady complains of difficulties walking due to bilateral knee pain, which she mentions gets worse throughout the day and better overnight. Your registrar intelligently sends her for a knee X-ray, which returns showing moderate multiple osteophytes and definite narrowing of the joint space with mild sclerosis. What stage of OA is this according to the *Kellgren-Lawrence* classification?



- A) 0
- B) I
- C) II
- D) III
- E) IV

Answer:

- 0: no radiological findings of OA
- I: Doubtful narrowing of joint space, possible osteophyte lipping
- II: Definite osteophytes and possible narrowing of joint space
- III: Moderate multiple osteophytes, definite narrowing of joint space, small pseudocystic areas with sclerotic walls and possible deformity of bone contour
- IV: Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour

Q2) Mdm Bee Pho Nei falls from a standing height and sustains the fracture shown below. Having this injury would then greatly increase her risk of sustaining which of the following fractures in future?



- A) Sacral fracture
- B) Hip fracture**
- C) Distal radius fracture
- D) Avulsion fracture of the lateral malleolus
- E) Distal humeral fracture

Q3) Which of the following administered substances leads to net bone resorption?

- A) Zoledronic acid injection once per year
- B) Teriparatide injection once daily
- C) Alendronate PO once weekly
- D) Teriparatide continuous infusion for 2 weeks**
- E) Alendronate PO once daily

HAND (5)

Q1) A 50 year old woman presents with pain over her right thumb for several months, and examination yields a positive Finkelstein's, Eichoff's and WHAT test. You diagnose her with DeQuervain's tenosynovitis. What tendons are involved in this pathology?

- A) Abductor pollicis brevis, Extensor pollicis longus
- B) Abductor pollicis longus, Extensor pollicis brevis**
- C) Abductor pollicis brevis, Extensor pollicis brevis
- D) Abductor pollicis longus, Extensor pollicis longus

Q2) (stem - patient presents with high ulnar palsy, where is the likely location of compression of the involved nerve?

- A) Fascial arcade of Struthers**
- B) Guyon's canal
- C) Carpal tunnel
- D) Hook of hamate
- E) Spiral groove

Q3) A patient with a known history of trigger finger presents to your clinic complaining of locking of the middle finger. Upon examination, the patient is unable to actively extend her finger, but it is passively mobile and can be manually moved into full extension. What grade of trigger finger is this, following Green's classification?

- A) I
- B) II
- C) III**
- D) IV

Q4) A delivery driver is flung from his motorcycle during an accident and sustains a humeral shaft fracture. On examination, you note certain neurological and functional deficits of the ipsilateral hand. Which one of these actions would the patient still be able to perform?

- A) Wrist extension
- B) Thumb abduction**
- C) Thumb retropulsion
- D) Finger extension
- E) "Thumbs up" sign

Q5) A 50 year old woman presents with a swelling on the dorsal surface of her right hand. The lump is 2x2cm, non-tender, non-erythematous, with no punctum or slip sign. The lump is cystic,

mobile and painless, and not tethered to underlying skin. How would you best manage this condition?

- A) Radiotherapy
- B) Wide excision
- C) Incision and drainage
- D) Broad-spectrum antibiotics
- E) **Watch and wait**

ELBOW (2)

Q1) A 24-year-old woman fell from a horse and landed on her outstretched right arm. Radiographs reveal an elbow dislocation with a type II coronoid fracture and a nonreconstructable comminuted radial head fracture. What is the most appropriate management?

- A) Radial head resection, ORIF of the coronoid, and MCL repair
- B) Radial head resection and LCL repair
- C) Radial head arthroplasty alone
- D) Radial head arthroplasty and LCL repair
- E) Radial head arthroplasty, ORIF of the coronoid and LCL repair**

Answer: terrible triad injury of the elbow (dislocation + # of the radial head) requiring treatment of each injury

- **Implant arthroplasty for the comminuted radial head**
- **ORIF of coronoid**
- **LCL repair - usually avulsed from the lateral epicondyle**

Q2) A 45 year old gentleman complains of elbow pain on movement that's been progressively worsening over the past few months. On examination, you notice tenderness over palpation of the elbow, yet a full active and passive range of motion of said joint. The patient has reproducible pain with his arm pronated and his middle finger extended against resistance. What pathology does this patient likely have?

- A) Osteochondritis dissecans
- B) Cubitus valgus
- C) Radial head fracture
- D) Tennis elbow**
- E) Golfer's elbow

SHOULDER (5)

Q1) An active 60-year-old woman falls from her attic and presents with the injury in Figure 1. She undergoes successful closed reduction and sling immobilization. At follow up, she is unable to move her shoulder. New radiographs are depicted in Figures 2 and 3. What is the next best step?



- A) Continued sling immobilisation
- B) Closed reduction percutaneous pinning
- C) **ORIF**
- D) Hemiarthroplasty
- E) RSA

Answer: This active patient presents with a greater tuberosity fracture dislocation. Open reduction internal fixation (ORIF) is indicated, particularly when the greater tuberosity fragment is displaced greater than 5mm.

Many proximal humerus fractures are minimally displaced and respond acceptably to nonoperative management. Isolated greater tuberosity fractures or rotator cuff injuries are associated with shoulder dislocations in the elderly population. The greater tuberosity fragment undergoes deforming forces by the supraspinatus and infraspinatus muscles. In active patients, it is well-accepted that greater tuberosity fracture displacement greater than 5mm is an indication for ORIF to restore their ability to perform overhead activities and prevent impingement.

Q2) A patient presents to your clinic complaining of pain over the anterior shoulder. Performing a thorough shoulder exam, you find that the patient has reproducible pain with the arm supinated, the elbow fully extended, and with manual resistance applied in a downward direction. What test is this?

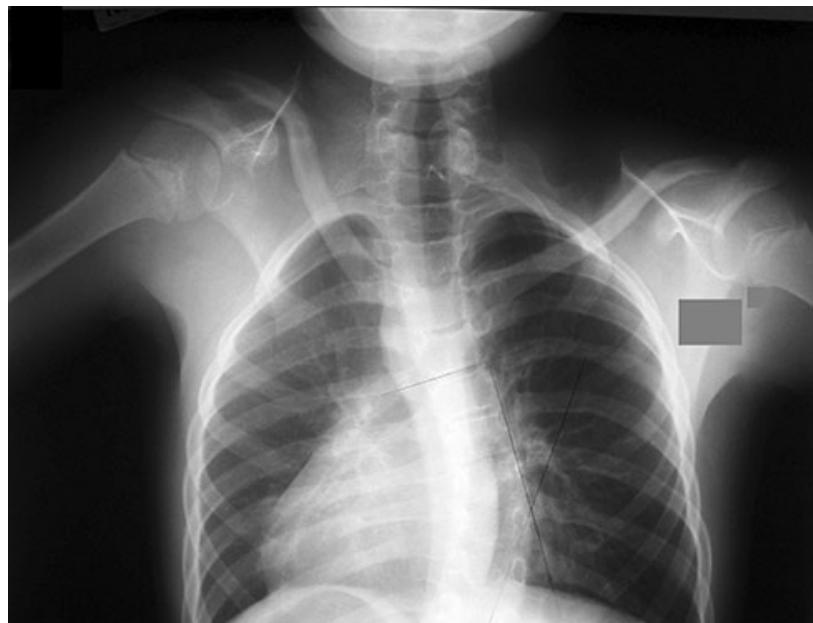
- A) Yergason's
- B) Hawkin's
- C) Neer's
- D) Jobe's empty can

E) **Speed's**

Q3) Mr Chua, a 50 year old Chinese male, presents with reduced active and passive range of motion of his right shoulder, and is diagnosed with adhesive capsulitis. Which of the following is a known risk factor for the development of adhesive capsulitis?

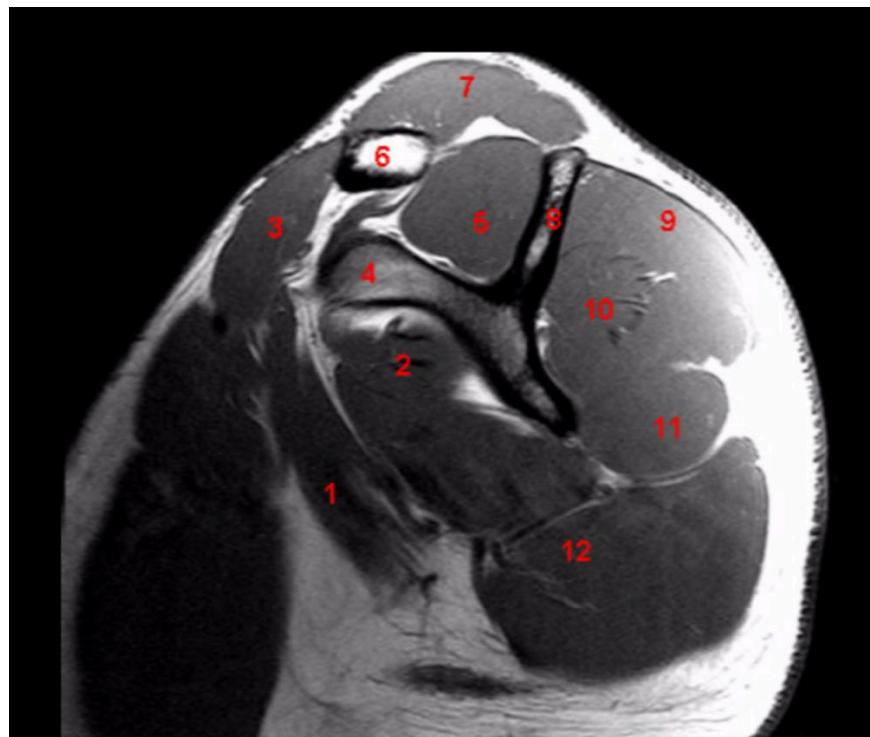
- A) Menopause
- B) Steroid use
- C) Diabetes mellitus**
- D) Renal disease
- E) All of the above

Q4) The figures below is the anteroposterior radiograph of the spine and neck of a 6-year-old girl. The child's parents reported that she cannot keep up with her peers. She has difficulty with monkey bars and any activities that require her to raise her arms above her shoulder. Her neck is short, broad, and tilted. What is the diagnosis?



- A) FSH dystrophy
- B) Winged scapula
- C) Osler-Weber-Rendau syndrome
- D) Sprengel's deformity**
- E) Osteogenesis imperfecta

Q5) A 68-year-old man presents to the clinic complaining of right shoulder pain and weakness since a fall 1 month ago. An MRI is obtained and shown in Figure A. What specific examination finding would be expected with a complete tear to the structure labeled number "10"?



- A) With 90 degrees of elbow flexion and internal rotation of shoulder, inability to push elbow forward
- B) With 90 degrees of elbow flexion and arm abducted, inability to hold external rotation
- C) **With 90 degrees of elbow flexion, inability to actively maintain passive external rotation of shoulder**
- D) With arm abducted, positioned forward 30 degrees with thumb pointing down, inability to resist downward pressure
- E) With 90 degrees of elbow flexion and forearm pronation, pain with active supination against resistance

Answer: 10 is the infraspinatus, for which a tear will manifest on exam with the ERLS (external rotation lag sign); where the examiner passively places the arm in an externally rotated position at the shoulder, and the patient is unable to actively maintain the position after release.

C-SPINE (3)

Q1) Mr Klam See Hen, a 65 year old Chinese male, presents to the orthopaedic clinic with a three month history of difficulties in writing, using chopsticks, buttoning his shirt and using the computer. You are able to further elicit that he has an 'electric-like' sensation shooting down both arms, as well as some difficulties walking, requiring his wife or helper to be with him at all times. Brimming with clinical acumen, you order a neck X-ray, as well as a CT (and MRI, which is still pending) neck for further assessment



What pathology does this patient have?

- A) Cervical spondylolisthesis
- B) Ossification of the posterior longitudinal ligament**
- C) Cervical spondylosis
- D) Prolapsed intervertebral disc
- E) Carotid artery dissection

Q2) Mdm Ang, a 78 year old Chinese female presents with a shooting pain down her right arm, with severely impaired mobility of said arm. On examination, you note diminished sensation over the regimental patch region, and the dorsal aspect of the thumb and middle finger; reduced biceps/triceps reflexes, and an inverted supinator reflex. A C-spine MRI yields the following findings.



What is the gold standard management for this pathology, assuming conservative treatment has failed?

- A) High dose corticosteroids to reduce inflammation
- B) Anterior cervical foraminotomy
- C) Posterior foraminotomy
- D) Anterior cervical discectomy and fusion**
- E) Selective nerve root corticosteroid injections

Q3) A 63 year old Venezuelan male undergoes a C4-7 posterior fusion and laminectomy secondary to spinal cord stenosis. Pre-operative examination reveals neck pain and finger clumsiness. On post-op day 1, the gentleman complains of significant weakness raising his left arm overhead, and on examination you note a clear sensation deficit over the lateral shoulder. What structure is *most commonly* affected in this procedure?

- A) C4 nerve root
- B) Suprascapular nerve
- C) Axillary nerve
- D) C5 nerve root**
- E) C6 nerve root

L-SPINE (2)

Q1) A 69 year old gentleman presents to your clinic complaining of a six month history of back pain, as well as buttock/leg pain worse on ambulation but relieved upon sitting and resting. A lateral spine XR yields the following. What pathology does this gentleman have?



- A) Prolapsed intervertebral disc
- B) Lumbar spondylosis
- C) Lumbar spondylolisthesis**
- D) Chance fracture of the lumbar spine
- E) Flexion-distraction fracture of the lumbar spine

Q2) In a patient with a stable thoracolumbar burst fracture and no neurologic deficits, operative treatment has what long-term outcome when compared to non-operative management?

- A) Improved sagittal balance
- B) Decreased pain scores
- C) Improved return-to-work status
- D) Improved function
- E) Increased disability and complications**

Answer: Evidence supports that in patients with stable thoracolumbar burst fractures without neurologic deficits, there are no advantages to surgical treatment (Wood et al, Gnanenthiran et al, Agus et al)

HIP (4)

Q1) A 68 year old woman presents to the clinic with severe left hip/groin pain and the inability to weight bear on her left leg. You take a detailed history to elicit her risk factors and send for a hip X-ray, which yields the following findings. What is the most significant risk factor for this pathology?

- A) Previous hip trauma
- B) 20 years of weekly alcohol consumption
- C) Previous hip radiation
- D) 30 years of traditional chinese medicine (TCM) use**
- E) Primary osteoarthritis

Q2) An 82 year old woman is admitted with a Ficat IV AVN (avascular necrosis) of her right hip, with impaired ambulation, pain, and a general inability to weight-bear on the affected side. What is the best management for this patient?

- A) Total hip arthroplasty**
- B) Offload affected hip with crutches and physiotherapy
- C) Bisphosphonates and NSAIDs
- D) Core decompression
- E) Rotational osteotomy

Q3) A 34 year old passenger is admitted to the ED after a multiple car collision. After securing his airway, breathing and circulation, you note that the patient complains of leg pain, and note that his right leg is shortened, lying in adduction, internal rotation and slight flexion. What pathology does this patient likely have?

- A) Femoral head fracture
- B) Shattered pubic symphysis
- C) Posterior hip dislocation**
- D) Anterior hip dislocation
- E) Femoral shaft fracture

Q4) The pelvic spur sign on plain radiography is indicative of which following injury?

- A) Transtectal transverse acetabular fracture
- B) Vertical shear pelvic ring fracture
- C) Displaced H-type sacral fracture
- D) Associated both-column acetabular fracture**
- E) Anterior-posterior type III pelvic ring injury

KNEE (3)

Q1) A 55 year old Indian woman presents to your clinic with difficulty walking. On examination of the knees, you note that the left knee is in valgus, while the right knee is in varus (as pictured below on the X-ray). What is the most likely cause of this deformity?



Fig. 2a



Fig. 2b

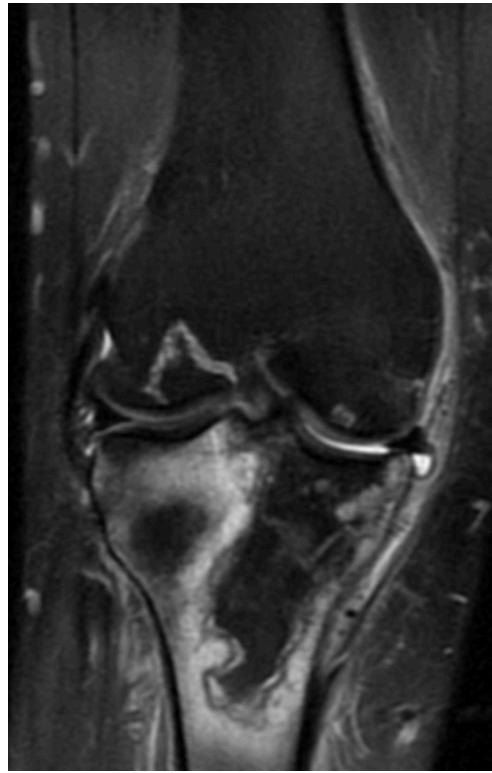
- A) Primary osteoarthritis
- B) Hypocalcemia from a parathyroidectomy
- C) Rheumatoid arthritis**
- D) Malunion of childhood fracture
- E) Ankylosing spondylosis

Q2) A 72 year old Malay gentleman comes in complaining of knee pain and difficulty ambulating throughout the day, with his knee X-ray showing the following picture. What would be the most appropriate definitive treatment for this patient?



- A) Total knee replacement
- B) Intraarticular H&L injection
- C) Bisphosphonates
- D) Refer PT/OT
- E) Unicompartmental knee replacement**

Q3) A 52 year old male with history of hypertension and well-controlled diabetes presents to your clinic with sudden atraumatic onset of knee pain. Pain is worse at night and also occurs with weight-bearing activity. He has tried NSAIDs but this has only mildly helped with the pain. MRI studies are shown in Figure A and B. What is the most likely diagnosis?



- A) Complex regional pain syndrome
- B) OA
- C) Osteosarcoma
- D) Osteonecrosis**
- E) Inflammatory arthritis

Answer: SONK (Spontaneous osteonecrosis of the knee)

FOOT / ANKLE (1)

Q1) When compared with primary arthrodesis for the treatment of ligamentous Lisfranc injuries, ORIF has which of the following?

- A) Higher overall cost of treatment
- B) Higher rate of deep infection
- C) Improved patient reported outcomes
- D) Lower implant removal rates
- E) Lower revision surgery rate

Answer:

Lisfranc injury is a TMT #-dislocation with traumatic disruption between the articulation of the medial cuneiform and base of the 2nd metatarsal.

**ORIF is indicated if (1) evidence of instability (>2mm shift); and (2) bony #-dislocations.
PA is indicated for (1) purely ligamentous injury, (2) delayed treatment or (3) chronic deformity.**

Q2)