

## JESUS IS LORD

### MULTIPLE CHOICE QUESTIONS IN ORTHOPAEDICS AND TRAUMA

1. Which is the strongest ligament?
  - A. **Ilio- femoral ligament → Ilio- femoral ligament blends with anterior part of hip joint capsule and is the strongest ligament at hip joint.**
  - B. Ischio-femoral ligament
  - C. Pubo-femoral ligament
  - D. Transverse acetabular ligament
  - E. Ligamentum teres.
  
2. Which part of quadriceps muscle is most frequently fibrosed in post- injection quadriceps contracture?
  - A. Rectus femoris
  - B. Vastus medialis
  - C. Vastus intermedius
  - D. **Vastus lateralis → Vastus lateralis is most frequently affected probably because injections are usually given in this area of thigh.**
  - E. All of above.
  
3. Radionuclide bone scanning is most useful in?
  - A. Avascular necrosis
  - B. **Malignancy → Radionuclide bone scanning is most useful in defining extent of primary tumor, locating unsuspected metastasis and primary malignant tumor. In all other conditions mentioned its use is more of academic interest**
  - C. Rheumatoid arthritis
  - D. Stress fractures
  - E. Acute osteomyelitis.
  
4. The commonest cause of failure of arthrography is?
  - A. **Extra-articular injection of contrast → Extra-articular injection of contrast medium is the commonest cause of failure of arthrography especially in smaller and deep situated joints. Allergic reaction to contrast medium is rare but when it happens examination will have to be discontinued. Other factors also make this procedure futile.**
  - B. Bubbling of air in the joint
  - C. False positive interpretation
  - D. False negative interpretation
  - E. Allergic reaction.
  
5. Myelography is necessary in the following conditions:
  - A. Suspicion of an intra- spinal tumor
  - B. Conflicting clinical findings and C.T. scan
  - C. Evaluation of previously operated spine
  - D. **All of above → Due to its complications and since it is an invasive technique, myelography has been replaced by CT scan. Nowadays primary indications of myelography are as mentioned in the question.**
  - E. Some of above.

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6. The arthroscope was invented and first used by:
  - A. **Takagi → First prototype of arthroscope was made and used by Takagi in 1918. Modern day arthroscope was made by Takagi and Watanabe. Dandy, Jackson and Patel are some of the leaders of arthroscopic surgery nowadays.**
  - B. Watanabe
  - C. Dandy
  - D. Jackson
  - E. Patel.
  
7. What is the guideline to the delto- pectoral groove?
  - A. Axillary vein
  - B. **Cephalic vein → Cephalic vein lies in deltopectoral groove and serves as landmark in identification of plane between deltoid and pectoralis major during anterior exposure of shoulder.**
  - C. Musculo-cutaneous nerve
  - D. Median nerve
  - E. None of above.
  
8. Most serious complication of arthroscopy is:
  - A. Hemorrhage in the joint
  - B. **Damage to articular cartilage → Apart from infection, damage to articular cartilage by arthroscope, instruments and irrigation needle is the most serious complication, instrument breakage is not the problem with newer modern day instruments. Other complications mentioned can occur but are uncommon**
  - C. Compartment syndrome
  - D. Synovial fistula
  - E. Breakage of instrument.
  
9. Which of the following is most serious complication of myelo- graphy?
  - A. **Allergic reaction**
  - B. **Headache → If performed in proper aseptic manner, fever is not the usual complication while all others are the dangers of myelography. These complications are fairly common with non- absorbable, oily contrast mediums rather than with newer water soluble contrast medium.**
  - C. Transient neurological deficit
  - D. Arachnoiditis
  - E. Neck stiffness.
  
10. What are contraindications of arthroscopy?
  - A. Partial or complete ankylosis of joint
  - B. Risk of introducing sepsis from a nearby skin lesion
  - C. Major collateral ligamentous and capsular disruptions
  - D. **All of above → Introduction of infection can create disaster. In an ankylosed joint instrument cannot be maneuvered. Major collateral ligamentous and capsular disruptions allow irrigating solution to extravasate and make examination difficult or impossible.**
  - E. Some of above.

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11. Commonest cause of quadriceps contracture is:
  - A. Congenital
  - B. Ischaemic myositis
  - C. Following femoral shaft fracture
  - D. Following operations on thigh
  - E. **Post injection fibrosis → Post injection fibrosis usually occurs after repeated intramuscular injections or saline infusions in an infant. This is the commonest cause in India and other causes are less common.**
  
12. What is the earliest indication of Volkmann's ischemia?
  - A. **Pain → Earliest sign of vascular compromise is persistent pain which is exacerbated on passive extension of fingers. Action must be taken at this stage. Pallor, poor capillary filling, absent radial pulse and paresthesia in median nerve area are also early signs but may not be present in every case and one should not wait for these signs. Contracture and gangrene is a very late phenomenon**
  - B. Pallor and poor capillary filling
  - C. Paresthesia in median nerve area
  - D. Contracture of fingers
  - E. Gangrene of tips of fingers.
  
13. Which of the following is incorrect about dislocation of sterno- clavicular joint?
  - A. Anterior dislocation occurs due to indirect injury and is common type of dislocation
  - B. Posterior dislocation is rare and occurs due to direct injury over the medial end of clavicle
  - C. **Sterno- clavicular dislocation is common compared to acromio- clavicular dislocation → Dislocation of sterno- clavicular joint is much less frequent than acromio- clavicular joint dislocation. All other statements are true and briefly describe the salient features of sterno- clavicular joint dislocation.**
  - D. Trachea can be compressed in posterior dislocation
  - E. Manipulative reduction is often unstable and fixation with wire may be required.
  
14. Which of the following is the earliest laboratory finding in a case of fat embolism?
  - A. Increased serum cholesterol
  - B. Increased serum lipase
  - C. Increased serum fatty acids
  - D. **Lipuria → Presence of fat droplet in urine is the earliest laboratory finding in fat embolism. But it must be remembered that the diagnosis is mainly clinical and one should not wait for any investigations before instituting treatment.**
  - E. Increased alkaline phosphatase.
  
15. First treatment priority in patient with multiple injuries is:
  - A. **Airway maintenance → A.B.C. (Airway, bleeding and circulation) are the priorities in management of seriously injured patient in that order.**
  - B. Bleeding control
  - C. Circulatory volume restoration
  - D. Splinting of fractures
  - E. Reduction of dislocation.

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16. Which of the following fracture does not usually need open reduction and internal fixation?
- A. **Mid shaft fracture of femur → Out of the fractures mentioned, femoral shaft fracture is least likely to need operative treatment. In this fracture operation is done to get patient out of traction early. All other fractures mentioned will almost always need open reduction and internal fixation.**
  - B. Pathological fractures
  - C. Trochanteric fracture in elderly
  - D. Displaced intra-articular fractures
  - E. Displaced fracture of both bones of forearm in adults.
17. Commonest cause of failure of internal fixation is:
- A. **Infection → The most common and serious advantage of open reduction and internal fixation is infection which will ultimately lead to implant becoming loose and non-union. Immune deficient patient does not behave differently as regards fracture healing. Corrosion, metal reaction and stress fracture of implant are rare.**
  - B. Corrosion
  - C. Metal reaction
  - D. Immune deficient patient
  - E. Stress fracture of implant.
18. Death 3 days after pelvic fracture is most likely to be due to:
- A. Hemorrhage
  - B. Pulmonary embolism
  - C. **Fat embolism → within first few hours after severe injuries death may occur due to hypovolemia from hemorrhage and within 3 days from fat embolism. Pulmonary embolism usually occurs at about 3 weeks from injury. Respiratory distress is a part of fat embolism syndrome.**
  - D. Respiratory distress
  - E. Infection.
19. Internal fixation of fracture is contraindicated in which situation?
- A. **Active infection → Active infection is the only definite contraindication of internal fixation; and in this situation an external fixator or external immobilization is the treatment of choice. In pathological fractures and in presence of bone gap internal fixation is quite often mandatory. Compound fracture is a relative contraindication.**
  - B. When bone gap is present
  - C. In epiphyseal injuries
  - D. In compound fracture
  - E. In pathological fracture
20. Most often open reduction of fracture is required in:
- A. Closed fracture with nerve injury
  - B. Compound fracture
  - C. Fracture in children
  - D. **Unsatisfactory closed reduction → unsatisfactory closed reduction is the commonest reason for performing open reduction. Next commonest reason for this is non-union. Fractures in children rarely require open reduction. Compound fractures and fractures associated with nerve injury are also uncommon reasons**
  - E. Non-union.

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21. In few days old fracture which of the following does not occur:
- A. Capillary proliferation
  - B. Proliferation of osteogenic cells over endosteum and bone ends
  - C. Local pH is acid
  - D. **Local pH is alkaline → Upto a week after fracture local pH remains acidic and only after this period pH becomes alkaline and level of alkaline phosphatase markedly rises. All other statements are true.**
  - E. There is very little rise in level of alkaline phosphatase at fracture site.
22. Fracture disease can be prevented by:
- A. Plaster immobilization of fracture
  - B. Cast brace treatment of fracture
  - C. Internal fixation of fracture
  - D. External fixation of fracture
  - E. **Physiotherapy → Fracture disease in some measure always occurs and none of the methods of treatment of fracture can prevent it. It can only be minimized by regular physiotherapy to reduce edema, improve muscle tone and maintain functional movements in joints which have not been immobilized.**
23. Which of the following is commonest material used to make orthopedic implant:
- A. Titanium
  - B. **Stainless steel → most implants are made of stainless steel as it is comparatively cheap and can be easily cast into desired shape. Titanium is expensive and difficult to fashion into desired shape. Carbon and polyethylene implants are used only for some specific uses and methyl- methacrylate is not made up into an implant as such.**
  - C. Polyethylene (UHMWPE)
  - D. Methyl-methacrylate
  - E. Carbon.
24. Bone graft works by providing following mechanisms. Which of these is most important?
- A. Bone induction factor
  - B. Osteogenic cells
  - C. Living osteoblasts
  - D. **Mineral scaffold for vascular proliferation → Provision of mineral scaffold into which newly forming vascular channels can grow is the most useful function of bone graft and that is why bank bone, heterogeneous bone and homo- grafts succeed. Bone inducing factor, osteogenic cells and living osteoblasts are supplied only by fresh autogenous grafts.**
  - E. Bridging the bone gap.
25. Commonest complication while using external fixator is:
- A. **Pin tract infection → Pin tract infection is by far the commonest problem. In addition to complications mentioned, neurovascular damage can occur while inserting the pins and refracture can occur after removal of fixator.**
  - B. Compartment syndrome
  - C. Loosening of pins
  - D. Fixation of muscles
  - E. Joint stiffness.

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26. A patient who has sustained open wound on leg is bleeding profusely. Before patient arrives in hospital the safest method to stop bleeding is:
- A. Elevation of leg
  - B. Local pressure on wound and elevation of leg → Local pressure on wound and elevation of leg is the safest and most effective method to stop bleeding. Tourniquet can be dangerous if not properly used. Elevation alone and local pressure on femoral artery is ineffective.**
  - C. Ligation of bleeding vessel
  - D. Use of tourniquet
  - E. Pressure over femoral artery in groin.
27. Which of the following is an absolute contraindication of open reduction?
- A. Active infection → Active infection is a contraindication for open reduction as this may lead to further complications and even more difficulty in salvage. In other conditions mentioned open reduction can produce problem and should not be lightly undertaken.**
  - B. Small sized fragment
  - C. Very soft bone
  - D. General medical complications
  - E. Severe scarring of adjacent soft tissues.
28. Which of the following is the best way to preserve amputated part for replantation:
- A. Immersion in cold saline
  - B. Immersion in cold ringer lactate
  - C. Immersion in cold antibiotic solution
  - D. Dry cooling with ice → dry cooling with ice is the best way to preserve amputated part as this causes least alteration of tissue structures.**
  - E. Deep freezing.
29. Which of the following fracture is slowest to heal and often develops non-union:
- A. Intra- capsular femoral neck fracture → Intra- capsular femoral neck fractures are slowest to heal and develop non-union in higher percentage of cases compared to scaphoid and distal tibial fractures, both of which also tend to heal slowly due to deficient blood supply of one fragment. Proximal humerus and distal femoral fractures do not usually go to delayed union.**
  - B. Scaphoid
  - C. Lower third of tibia
  - D. Proximal humerus
  - E. Distal femur.
30. Commonest cause of failure of internal fixation of fracture is:
- A. Infection → Infection following an open operation is the commonest cause of failure following internal fixation. All other factors can also lead to complications but statistically they are not as important**
  - B. Fatigue fracture of implant
  - C. Corrosion in implant
  - D. Loosening of implant
  - E. Metal reaction.

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31. Chemically Plaster of Paris is:
- A. Calcium carbonate
  - B. Calcium phosphate
  - C. Calcium sulphate
  - D. Anhydrous calcium sulphate
  - E. **Hemi- hydrated calcium sulphate → Powder of plaster of Paris chemically is hemi-hydrated calcium sulphate.**
32. Which of the following is not seen in a case of fat embolism:
- A. Fat globules in urine
  - B. **Left heart strain on ECG → ECG will show right heart strain and not the left heart strain.**
  - C. Snow storm appearance on chest X-Ray
  - D. Normal carbon dioxide tension in arterial blood
  - E. Low oxygen tension in arterial blood.
33. Closed reduction with percutaneous K-wire fixation is best suitable for:
- A. Bennett fracture
  - B. Lateral malleolus fracture
  - C. Medial malleolus fracture
  - D. **Lateral tibial condyle fracture → Mal- united fractures are the commonest cause of deformity in long bones since the incidence of fracture is much higher than congenital, developmental, metabolic, infective and neoplastic conditions.**
  - E. Clavicle fracture.
34. In a healing fracture the amount of cartilage formation is increased by:
- A. Rigid immobilization
  - B. **Movement at fracture site → more the movement at fracture site, more will be cartilage formation and non union can occur. Compression plating helps in conversion of cartilage into bone and thereby fracture healing can occur in a delayed or non-union. Infection retards all the stages of fracture repair.**
  - C. Necrosis of bone ends
  - D. Compression plating
  - E. Infection.
35. The most successful method of treatment for non-union is:
- A. Compression plating
  - B. Compression by external fixator
  - C. Addition of B.M.P.
  - D. **Bone grafting → Bone grafting is most successful and useful method of treating non-union. B.M.P. (Bone morphogenetic protein) has not been isolated as yet. The other three methods are suitable in certain specific situations only.**
  - E. Electrical stimulation
36. Which of the following muscle does not form rotator cuff of shoulder:
- A. Subscapularis
  - B. Supraspinatus
  - C. Infraspinatus
  - D. Teres minor
  - E. **Teres major → except teres major all the other muscles mentioned are closely applied to the capsule of shoulder joint and form rotator cuff.**

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37. What is the commonest complication of fracture of mid- shaft of humerus:
- A. **Mal- union → Most of humeral shaft fractures are treated conservatively and**
  - B. **Mal- union (usually neither cosmetically disfiguring nor functionally impairing) is the commonest complication. If fracture has been treated by internal fixation this will become rare complication. Next commonest complication is radial nerve injury in spiral groove where nerve is in direct contact with bone. Non- union is uncommon and brachial artery injury is rare.**
  - C. Non union
  - D. Radial nerve paralysis
  - E. Brachial artery injury
  - F. Ulnar nerve injury.
38. The commonest cause of cubitus varus deformity following mal- united supra- condylar fracture of humerus is:
- A. **Rotational mal- alignment → internal rotation deformity of distal fragment mainly contributes to cubitus varus. Second factor is medial displacement of distal fragment. Proximal and posterior displacement do not cause cubitus varus. The fracture occurs well above the epiphyses of distal humerus and epiphyseal injury does not occur.**
  - B. Medial displacement
  - C. Proximal displacement
  - D. Posterior displacement
  - E. Epiphyseal damage.
39. Most commonly fractured bone is:
- A. Hamate
  - B. Triquetrum
  - C. Lunate
  - D. Capitate
  - E. **Scaphoid → Scaphoid is most commonly injured carpal bone. Lunate is second most commonly injured carpal bone although it does not fracture but is involved in dislocation of lunate and perilunar dislocation of carpus.**
40. What is the most serious complication of internal fixation of fracture of both bones of forearm:
- A. **Infection → Development of infection following open reduction of fracture is the most serious complication. All other complications mentioned can also occur following open reduction and internal fixation.**
  - B. Cross union
  - C. Limitation of forearm rotation
  - D. Refracture
  - E. Non- union.
41. Which of the following bursa produces symptoms in shoulder impingement syndrome:
- A. **Sub- acromial bursa → Symptoms of impingement syndrome are produced when sub- acromial bursa is pressed between humeral head and undersurface of coraco-acromial arch.**
  - B. Sub -deltoid bursa
  - C. Bursa in relation of subscapularis tendon
  - D. Bursa in relation to latissimus dorsi
  - E. Bursa between coracoid process and capsule.

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42. What is the commonest complication of supracondylar fracture of humerus:
- A. **Mal- union → Mal union, especially rotational mal- alignment; is the commonest complication and results in the deformity of cubitus varus. Non- union is very rare and all other complications are not common, most serious complication is Volkmann's ischemia.**
  - B. Myositis ossificans
  - C. Stiffness of elbow
  - D. Volkmann's contracture
  - E. Non- union.
43. What is the earliest indication of Volkmann's ischaemia:
- A. **Pain → Earliest sign of vascular compromise is persistent pain which is exacerbated on passive extension of fingers. Action must be taken at this stage. Pallor, poor capillary filling, absent radial pulse and paresthesia in median nerve area are also early signs but may not be present in every case and one should not wait for these signs. Contracture and gangrene is a very late phenomenon.**
  - B. Pallor and poor capillary filling
  - C. Paresthesia in median nerve area
  - D. Contracture of fingers
  - E. Gangrene of tips of fingers.
44. Which of the following is true about Monteggia fracture:
- A. It is usually associated with posterior inter- osseous nerve paralysis
  - B. It can be usually treated conservatively in adults
  - C. It is not an injury of children
  - D. It is a combination of fracture of radius with distal radio-ulnar joint dislocation
  - E. **It is a combination of fractures of proximal ulna with dislocation → Monteggia fracture comprises of fracture of proximal ulna with dislocation of radial head. It can occur in children. In adults most of cases will need internal fixation of ulna whereas in children most can be treated conservatively. It is also not normally associated with posterior inter- osseous nerve paralysis.**
45. A collar and cuff bandage will be most suitable treatment for which of the following injury:
- A. Mid- shaft fracture of humerus
  - B. **Un- displaced fracture of neck of humerus → B All un- displaced humeral neck fractures at all ages and most displaced fractures in elderly can be safely treated in collar and cuff sling. All other injuries mentioned need more elaborate treatment. After reduction of elbow dislocation elbow can sometimes be immobilized in flexion in collar and cuff bandage but this is not a safe method of treatment.**
  - C. Monteggia fracture
  - D. Dislocation of elbow
  - E. Fracture of radial head.

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46. Which of the following is not applicable to radial neck fracture:
- A. It is a common injury in children than adults
  - B. Angulation can usually be reduced by manipulation
  - C. Open reduction is sometimes required
  - D. Mechanism of injury is fall on outstretched hand
  - E. **It is an epiphyseal injury of salter type-V → Radial neck fracture is an epiphyseal injury of Salter type 2. In children radial head should never be excised as this will lead to reduction in length of radius, dislocation of inferior radio-ulnar joint and limitation of forearm rotation. Usually manipulation succeeds in reducing the tilt and rarely open reduction is required**
47. Which of the following statement is true about supracondylar fracture of humerus:
- A. Anterior displacement of distal fragment is common than posterior displacement
  - B. Cubitus valgus is common than cubitus varus following mal-union
  - C. **Neurological complications are usually transitory → Injury to any of three major nerves can occur but it is more likely to be neurapraxia or axonotmesis. Complete division of nerve is rare. Posterior displacement of distal fragment is common and so is development of varus deformity following malunion. Weakness of elbow flexion and bony ankylosis do not occur**
  - D. Weakness of elbow flexion is a common complication of this injury
  - E. Quite often elbow joint develops bony ankylosis following this injury.
48. Which of the following scaphoid fracture is most prone to develop avascular necrosis:
- A. **Fracture of waist of scaphoid → Almost 90% scaphoid fractures occur through its waist. Blood supply to scaphoid enters at tubercle and in a narrow ridge at waist. Due to this peculiar arrangement of blood supply proximal half often becomes avascular after fracture at waist.**
  - B. Fracture of tubercle
  - C. Fracture of distal pole
  - D. All of above
  - E. None of above.
49. Pull of which of the following muscle makes it difficult to maintain reduction of Bennett's fracture:
- A. Flexor pollicis longus
  - B. Flexor pollicis brevis
  - C. Extensor pollicis longus
  - D. Opponens pollicis
  - E. **Abductor pollicis longus → Following Bennett's fracture, shaft of metacarpal is displaced by the unopposed pull of abductor pollicis longus muscle.**
50. Putti-Platt operation is used for:
- A. Non-union of humerus
  - B. Dislocation of patella
  - C. Dislocation of radial head
  - D. **Recurrent dislocation of shoulder → D Putti-Platt operation consists of reefing of anterior capsule of shoulder joint and subscapularis muscle and is used for treatment of recurrent dislocation of shoulder. Aim of operation is to limit external rotation which causes humeral head to dislocate.**
  - E. Recurrent dislocation of peroneal tendons.

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51. Best treatment for humeral neck fracture in a 60 year old patient will be:
- A. **Collar and cuff bandage followed by physiotherapy → Shoulder stiffness is most serious problem than the worry about alignment (malalignment can be taken care by wide range of shoulder motion) and union (union always occurs as this is mainly cancellous bone with good vascularity). Plaster spica is contraindicated as this will make shoulder stiff and painful. Hanging cast is the treatment for humeral shaft fracture. Internal fixation of humeral neck fracture may be required rarely in displaced fractures in young age.**
  - B. Open reduction and plaster spica
  - C. Open reduction and internal fixation
  - D. Closed manipulation and plaster spica
  - E. Hanging cast
52. Inability to extend inter-phalangeal joint of thumb few weeks after Colles' fracture indicates development of:
- A. Compartment syndrome
  - B. Posterior interosseous nerve palsy
  - C. Avulsion of insertion of extensor pollicis longus
  - D. **Attrition rupture of extensor pollicis longus tendon at the site of fracture → this attrition rupture is more common after undisplaced and minimally displaced Colles' fracture. Since it is attrition rupture, tendon ends are frayed and direct repair is not possible. Treatment therefore consists of transfer of extensor indicis tendon to the distal stump of extensor pollicis longus tendon. Compartment syndrome is an early complication.**
  - E. Tear of extensor pollicis longus muscle belly.
53. What is the usual treatment for symptomatic old acromio-clavicular dislocation?
- A. Arthrodesis of acromio-clavicular joint
  - B. K-wire fixation of joint
  - C. Lag screw fixation of joint
  - D. **Resection of outer end of clavicle → Resection of outer 1" of clavicle and capsulorrhaphy produces satisfactory amelioration of symptoms. Transfer of tip of coracoid with its attached muscles is next best method of treatment. K-wire and lag screw fixation are the treatment of acute dislocation. Arthrodesis of acromio-clavicular joint is almost impossible to achieve and if achieved will greatly impair the mobility of shoulder girdle. Acromionplasty is used for intractable cases of impingement syndrome**
  - E. Acromionplasty.
54. Regarding fracture of clavicle which of the following statement is incorrect:
- A. **Fracture is commonest in medial third → Clavicle fractures usually by fall on outstretched hand and the force transmitted breaks the bone at place where two curves meet and therefore fractures are most common in the middle third of bone. All other statements about union and treatment of clavicle fracture are correct.**
  - B. Non-union is rare
  - C. Most cases can be treated conservatively
  - D. Fracture usually occurs due to indirect injury
  - E. Fracture is common in middle third.

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55. Which of the following is incorrect about dislocation of lunate:
- A. Dislocated lunate appears triangular instead of rectangular on A.P. x-ray
  - B. Dislocation is most easily recognized on lateral view x-ray
  - C. Avascular necrosis is common following dislocation
  - D. **Lunate dislocates posteriorly → in total dislocation of lunate the bone dislocates anteriorly and that is why median nerve can be compressed. If closed reduction fails open reduction is performed from anterior → Furthermore anterior approach permits opening of ST retinaculum to decompress carpal tunnel and median nerve. All other statements are correct.**
  - E. Median nerve compression can occur.
56. Which of the following is not applicable to scaphoid fracture:
- A. Mechanism of injury is fall on outstretched hand.
  - B. It is common in adults than elderly persons
  - C. Often nonunion develops
  - D. Fracture at waist is commonest
  - E. **Avascular necrosis is rare → Avascular necrosis of proximal fragment is fairly common since the blood supply to this part comes in a retrograde direction and whole of proximal pole is covered by articular cartilage and does not have any place for vascular channels to enter in this part of bone.**
57. Which of the following statement is true about dislocation of interphalangeal joint of finger:
- A. It is a flexion injury
  - B. **It is an extension injury → Dislocation of inter-phalangeal joints is an extension injury as the distal phalanx is displaced dorsally in relation to proximal phalanx. Most often reduction is stable and its stability must be checked immediately after manipulation. Unstable reduction is usually due to associated fracture which can be recognized on x-ray and needs internal fixation.**
  - C. Reduction is often unstable
  - D. Distal phalanx is displaced anteriorly in relation to the proximal phalanx
  - E. There is no need to test for stability after reduction of dislocation.
58. What is usual treatment for symptomatic nonunion of scaphoid in a young patient:
- A. Drilling of fragments of scaphoid
  - B. Drilling of fragments of scaphoid and bone grafting
  - C. Bone grafting and excision of radial styloid
  - D. **Arthrodesis of wrist → Bone grafting and excision of radial styloid is the usual treatment for symptomatic non-union of scaphoid. Drilling alone is of no value. Excision of scaphoid leaves behind a weak and unstable wrist. When bone grafting has failed excision of radial styloid will relieve symptoms to a great extent. Non-union of scaphoid can in long term produce radio carpal degenerative arthritis requiring arthrodesis of wrist. When non-union of scaphoid is an incidental finding without symptoms it can be left without any treatment**
  - E. Excision of scaphoid.

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59. Which of the following injury is "Gamekeeper's thumb":
- A. Rupture of ulnar collateral ligament of wrist
  - B. Rupture of ulnar collateral ligament of MCP joint of thumb → Injury occurs due to forcible abduction at MCP joint of thumb, and was classically described in persons wringing neck of small animals caught during hunting. Diagnosis can be confirmed by taking stress view x-rays. Partial rupture can be treated by scaphoid type plaster but for complete rupture operative repair is advisable.**
  - C. Rupture of ulnar collateral ligament of IP joint of thumb
  - D. Fracture of base of thumb metacarpal
  - E. Fracture of neck of thumb metacarpal.
60. Which of the following is not true about posterior dislocation of shoulder:
- A. Recurrent dislocation can develop
  - B. Reduction can be unstable
  - C. Patients with unreduced dislocation can have good function
  - D. Clinical diagnosis is easy → Diagnosis of posterior shoulder dislocation can be often missed and is not easy both clinically and radiologically. Reduction is quite often unstable and shoulder spica is required with shoulder in abduction and external rotation. Recurrent dislocation can develop and axillary nerve injury is uncommon since posterior dislocation does not stretch the nerve which courses from posterior to anterior.**
  - E. Axillary nerve injury is uncommon.
61. Commonest cause of deformity in a long bone is:
- A. Osteoporosis
  - B. Rickets → Local pressure on wound and elevation of leg is the safest and most effective method to stop bleeding. Tourniquet can be dangerous if not properly used. Elevation alone and local pressure on femoral artery is ineffective.**
  - C. Paget's disease
  - D. Mal- united fracture
  - E. Fibrous dysplasia.
62. What is the second most important aspect in the treatment of fractures of long bones:
- A. Adequate nutrition of patient
  - B. Accurate anatomical reduction
  - C. Immobilization → First and foremost requisite to ensure healing of long bone fractures to restore function is the reduction of bone fragments into good alignment so that mal- union does not occur. Accurate anatomical reduction is not necessary. Second important aspect is immobilization of the fracture.**
  - D. Restoration of bone alignment
  - E. Antibiotics.

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63. Which deformity in mal- united fracture is most likely to correct with remodeling:
- A. Angular deformity in the middle of diaphysis in the plane of motion of nearby joint
  - B. Angular deformity in plane of motion of nearby joint when deformity is in metaphyseal area → Angular deformity in the plane of motion of nearby joint has maximum potential for remodeling. Remodeling is still better if deformity is near the end of bone. The process is rapid in growing of children and slows down as the adulthood is reached. Rotations malalignment never corrects. Shortening of bone length, will the some extent correct in a growing child since the fracture induct little overgrowth in a long bone.**
  - C. Rotational mal- alignment
  - D. Angular deformity near end of bone when angulation is in a plane 90° to the plane of motion of nearby joint.
  - E. Shortening of bone length.
64. What is most important aspect of the treatment of crush syndrome involving an extremity:
- A. Amputation → Amputation proximal to the level of injury is the most important aspect of treatment. At the same time maintenance of fluid balance is also important. Dialysis may be required. Antibiotics really are of prophylactic value. Hyperbaric oxygen has no role.**
  - B. Fluid and electrolyte balance
  - C. Dialysis
  - D. Antibiotics
  - E. Hyper- baric oxygen.
65. In inter- fragmentary fixation screw works by producing:
- A. Compression → Screw works by converting torsional stress (used during its insertion) into compressive force and this keeps fracture surfaces in close apposition. This is the basic mechanism on which screw works.**
  - B. Distraction
  - C. Anti- glide mechanism
  - D. Increased shear
  - E. None of above.
66. Basic treatment of most non-unions is:
- A. Compression plating
  - B. Continuation of external splintage
  - C. Electrical stimulation
  - D. Bone grafting → in an established non-union freshening of bone ends and bone grafting is the usual treatment. Electrical stimulation and compression plating is indicated in certain limited cases only. Phemister grafting is one method of bone grafting in cases where bone fragments are in good alignment**
  - E. Phemister grafting.
67. External fixator is not indicated in:
- A. Comminuted fracture
  - B. Fracture associated with severe soft tissue damage
  - C. Infected fractures
  - D. Simple closed fracture of humeral shaft → Use of external fixator is contraindicated in an uncomplicated fracture. It is an indispensable method of treatment of fracture in association with infection, burn and severe soft tissue damage requiring repeated dressing and skin grafting. External fixator is also used extensively for purpose of limb lengthening.**
  - E. Fracture associated with burns.

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68. Commonest cause of re- fracture after removal of external fixator is:
- A. **Pin tract infection → Pin tract infection is by far the commonest problem. In addition to complications mentioned, neurovascular damage can occur while inserting the pins and refracture can occur after removal of fixator.**
  - B. Fracture through pin tract
  - C. Absence of periosteal callus
  - D. De- stressing producing cancellation of cortex
  - E. Avascular necrosis of bone fragments.
69. Following femoral shaft fracture, knee stiffness occurs due to:
- A. Fibrosis of vastus intermedius
  - B. Shortening of rectus femoris
  - C. Fibrosis of patellar retinacula
  - D. Adhesion of patella to femoral condyles
  - E. **All of above → All the factors mentioned prevent distal excursion of patella and thereby limit knee flexion. This is why early quadriceps exercises and patellar mobilization after femoral fracture are important.**
70. What is the most serious disadvantage of external fixator:
- A. **Pin tract infection → Pin tract infection is the most frequent and serious complication of use of external fixator. If a very rigid fixator assembly has been used, its removal should be in stages to overcome stress protection osteoporosis. In most good fixators it is possible to either compress or distract the fracture. Loosening of pins can be minimized by keeping the pins under compression. Later fracture through pin tract is another potentially serious problem with use of external fixator.**
  - B. Loosening of pins
  - C. Stress protection osteoporosis
  - D. Fracture cannot be compressed
  - E. Another fracture can occur through pin tract.
71. What is the best treatment for an oblique tibia shaft fracture which has re- displaced after initial good closed reduction and plaster immobilization
- A. Wedging of plaster
  - B. Re- manipulation and plaster
  - C. **Open reduction and internal fixation → Oblique fractures are difficult to hold in plaster and best treatment is internal fixation if reduction cannot be achieved or has been lost after closed manipulation. Skeletal traction from calcaneal or supra- malleolar pin is the next best option available. Traction has to be maintained for 3-4 weeks until early union has occurred. At this stage when fracture is deformable but not displaceable plaster or cast brace can be applied. Cast brace cannot be used until there is early union of fracture.**
  - D. Skeletal traction
  - E. Cast bracing.

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72. Bumper fracture is the name given to:
- A. Fracture of tibia and fibula
  - B. Fracture of lateral tibial condyle → Historically tibial condylar fractures have been referred to as "bumper" or "fender" fractures. But falls from height are also common causes of these injuries.**
  - C. Fracture of patella
  - D. Fracture of lateral femoral condyle
  - E. Fracture of tibial spine.
73. Intramedullary nailing of femoral shaft fracture is contra- indicated:
- A. When there is compounding
  - B. When the fracture is transverse
  - C. When fracture is in narrowest part of bone
  - D. In non- union in adults
  - E. In a child → Intramedullary nailing is contraindicated in children because of danger of damage to growing ends of bone and also when the child grows the nail will become totally embedded deep inside bone and cannot be removed. In compound fractures any internal fixation device should be used after due consideration of complications. All other indications are ideal for intramedullary nail fixation.**
74. A patient develops compartment syndrome (swelling, pain, and numbness) following manipulation and plaster for fracture of both bones of leg. What is the best treatment?
- A. Split the plaster
  - B. Elevate the leg
  - C. Infusion of low molecular weight dextran
  - D. Elevate the leg after splitting the plaster
  - E. Do operative decompression of facial compartment → whenever diagnosis of compartment syndrome is confirmed (increased compartment pressure measured by transducer) or suspected; safest and best course of action is operative decompression of tight facial compartment. Any delay will produce irreversible muscle necrosis. All other treatments mentioned are an accompaniment to decompression operation.**
75. Which of the following is most important step when K-nailing is done for fixation of fresh femoral shaft fractures.
- A. Good reaming of medullary canal to take in widest diameter nail → Adequate reaming of medullary canal to accept widest diameter nail is most important step as this increases the rigidity of fixation. After this next important step is to use a nail of proper length. Closed nailing is a difficult procedure and for practical purposes open nailing is adequate. Bone graft should be added in old fractures, comminuted fractures and non- unions.**
  - B. No reaming of medullary canal
  - C. Closed nailing should be done
  - D. Bone grafting must always be done along with
  - E. Small diameter nail should be selected.

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76. Which of the following is commonest complication of Colles' fracture:
- A. **Stiffness of fingers** → all the complications mentioned can occur after Colles' fracture but out of these stiffness of fingers is the commonest complication. Next commonest complication is malunion followed next in frequency by stiffness of shoulder. Other are less common but by no means rare. Least common complication is spontaneous rupture of extensor pollicis longus tendon. Non-union is very rare.
  - B. Stiffness of wrist
  - C. Stiffness of shoulder
  - D. Subluxation of inferior radio ulnar joint with pain
  - E. Sudeck's osteodystrophy.
77. Mal- united Colles' fracture produces which of the following deformity:
- A. Garden spade deformity
  - B. **Dinner fork deformity** → Malunited Colles' fracture produces dinner fork deformity.
  - C. Madelung deformity
  - D. Swan neck deformity
  - E. Boutonniere deformity.
78. What is the usual treatment for symptomatic old acromio- clavicular dislocation?
- A. Arthrodesis of acromio- clavicular joint
  - B. K-wire fixation of joint
  - C. Lag screw fixation of joint
  - D. **Resection of outer end of clavicle** → Resection of outer 1" of clavicle and capsulorrhaphy produces satisfactory amelioration of symptoms. Transfer of Up of coracoid with its attached muscles is next best method of treatment. K-wire and lag screw fixation are the treatment of acute dislocation. Arthrodesis of acromio- clavicular joint is almost impossible to achieve and if achieved will greatly impair the mobility of shoulder girdle. Acromionplasty is used for intractable cases of impingement syndrome.
  - E. Acromionplasty.
79. Regarding fracture of clavicle which of the following statement is incorrect:
- A. **Fracture is commonest in medial third** → Clavicle fractures usually by fall on outstretched hand and the force transmitted breaks the bone at place where two curves meet and therefore fractures are most common in the middle third of bone. All other statements about union and treatment of clavicle fracture are correct.
  - B. Non-union is rare
  - C. Most cases can be treated conservatively
  - D. Fracture usually occurs due to indirect injury
  - E. Fracture is common in middle third.

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80. Which of the following statement is not correct about ankle fractures
- A. Undisplaced malleolar fracture can be satisfactorily treated by plaster immobilization
  - B. **Stress view X-Rays are required to understand full extent of injury in ankle fractures → In the presence of fracture, direction and displacement of fracture line indicates mechanism and extent of injury and also indirectly indicates presence of ligamentous damage. Stress view of ankle are important when no fracture is visible after significant injury and complete ligament rupture is suspected which is shown in stress view by tilt of talus and needs treatment to prevent chronic ankle instability. All other statements relating to ankle fractures are true.**
  - C. Accurate reduction is necessary to prevent development of osteoarthritis of ankle
  - D. External rotation and abduction of foot is the commonest mode of ankle fractures
  - E. Adduction injury is least common cause of ankle fractures.
81. In ankle sprain, the commonest ligament torn is:
- A. Tibio-talar ligament
  - B. Deltoid ligament
  - C. Posterior talo-fibular ligament
  - D. Calcaneo fibular ligament
  - E. **Anterior talo-fibular ligament → Ankle sprain is an inversion injury and anterior talo-fibular ligament is first to be damaged. More severe injury can also damage origin of extensor digitorum brevis and calcaneo-fibular ligament.**
82. Which of the following injury is called "Aviator's fracture"
- A. Pott's fracture
  - B. Total dislocation of talus
  - C. Fracture neck of metatarsal
  - D. Subtalar dislocation
  - E. **Fracture of neck of talus → sudden dorsiflexion of ankle, when aircraft crashes, produces impingement of anterior margin of distal tibia against neck of talus producing a fracture. This used to be the commonest mode of fracture of neck of talus and was therefore termed aviator's fracture. Same injury now a days quite often occurs in motorcycle and car accidents.**
83. Abduction, external rotation injury produces both the Dupuytren's and Maisonneuve fracture. Which of the following injury differentiates one from the other:
- A. Level of fracture in medial malleolus
  - B. Level of fracture in lateral malleolus
  - C. **Level of fracture in fibula → Both Dupuytren's and Maisonneuve fractures are similar injuries resulting in fracture of medial malleolus or rupture of deltoid ligament, tear in interosseous membrane, diastasis and fracture of fibula. Level of fracture in fibula differentiates one from the other. In Dupuytren's fracture fibular fracture is in its lower third while in Maisonneuve fracture fibular fracture is located in its proximal third.**
  - D. Presence or absence of diastasis of inferior tibio-fibular joint
  - E. Presence or absence of third malleolus.

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84. Concerning intra- articular fractures at knee which of the following statement is true:
- A. Early knee mobilization is inadvisable
  - B. Inter- condylar fracture of femur quite often leads to avascular necrosis
  - C. Non-union of tibial condyle fracture is common
  - D. Extra- articular adhesions play no role in producing joint stiffness
  - E. Displaced intra- articular fractures usually need open reduction.
85. In cases of leg fractures, above knee plaster is applied with knee slightly flexed for which of the following reason:
- A. To avoid stretching posterior capsule of knee joint
  - B. To keep the cruciate ligaments relaxed
  - C. To allow easier ambulation
  - D. To prevent rotational movements being transmitted to the fracture site
  - E. Plaster application is easier with knee slightly flexed.
86. Which of the following fractures of femoral shaft are most suitable to internal fixation by Kuntschner nail:
- A. Transverse fracture of mid shaft
  - B. Spiral fracture of mid shaft
  - C. Oblique fracture of distal third of shaft
  - D. Subtrochanteric fracture
  - E. Very comminuted fracture of mid shaft.
87. Best treatment for a sixty five year old patient with four week old intra- capsular femoral neck fracture is:
- A. Internal fixation
  - B. Internal fixation with muscle pedicle graft
  - C. Me Murray osteotomy
  - D. **Hemi- replacement arthroplasty → in old patients irrespective of the duration since injury hemireplacement arthroplasty is the procedure of choice as the patient can be mobilized early, thus avoiding general complications of immobilization. In old fracture internal fixation is ineffective. Internal fixation with muscle pedicle graft is useful procedure as it induces vascularity to aid in fracture union and also restores normal anatomy. With this operation and also with Me Murray osteotomy weight bearing has to be delayed for many months and therefore these operations are used only in younger patients.**
  - E. Total Hip replacement.

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88. Which of the following is preferable treatment for six weeks old intra- scapular fracture of femoral neck in a thirty five year old man:
- A. Hemireplacement arthroplasty
  - B. Me Murray Osteotomy → In an old intracapsular femoral neck fracture any form of external immobilization is of no use. Internal fixation is suitable in fresh fractures when neck is not absorbed and fracture surfaces are fresh. After three weeks some absorption of fractured ends starts and accurate reduction is not possible. At this stage Me Murray osteotomy is most useful procedure as it will increase the vascularity, reduce stress on fracture line and does not need accurate alignment of fractured ends.**
  - C. Smith Peterson Nailing
  - D. Moore's pin fixation
  - E. Plaster spica.
89. Which of following is the commonest cause of loose body in the knee joint.
- A. Tibial spine fracture
  - B. Osteochondritis dissecans
  - C. Intra-articular fractures
  - D. Synovial osteochondromatosis
  - E. Torn meniscus → statistically torn meniscus is the commonest cause of loose body in the knee joint Fractures and osteochondritis dissecans are second and third common causes of intra-articular loose body**
90. Which of the following is most true about displaced inter- condylar fracture (T-Y fracture) of distal femur:
- A. Can be treated adequately by skin traction
  - B. It should be accurately reduced and internally fixed → This fracture results in disruption of articular surface and should be accurately reduced and internally fixed. Skeletal traction may at times suffice for un- displaced fracture. These fractures cannot be satisfactorily reduced by closed manipulation and therefore percutaneous pin fixation is not possible. Pin fixation will also not be so strong as to start early knee movements which is important due to danger of knee stiffness which can be quite severe in spite of accurate reduction. Non-union is rare as the fracture occurs in area of abundant cancellous bone with good blood supply.**
  - C. Following good reduction and fixation there is no danger of knee stiffness
  - D. Non- union is not uncommon
  - E. Percutaneous pin fixation is best treatment.
91. What is true about supracondylar fractures of femur:
- A. Distal fragment tilts posteriorly due to pull of gastrocnemius → Gastrocnemius pulls the distal fragment and its upper end tilts posteriorly and malunion in this position will cause genu recurvatum deformity. It can be treated conservatively by reduction and traction with knee in 45° flexion, and for this reason Russel traction and traction on Thomas' splint with knee straight are useless. Best treatment for these fractures is internal fixation with angled blade plate appliance or Ender nails.**
  - B. Distal fragment tilts anteriorly due to pull of quadriceps
  - C. Can be treated quite well by K-nailing
  - D. Can usually be treated with Russell traction
  - E. Can be complicated by injury to sciatic nerve.

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92. Which of the following is not seen in intra-capsular fracture of femoral neck.
- A. Collapse of head after union of fracture
  - B. **Mal union with more than 3" of shortening → if the fracture has united shortening is only due to coxa vara and is usually not excessive. Diagnosis of un-displaced, impacted fracture can be missed on clinical examination since the patient can move the hip with little discomfort and may at times be able to walk also. Non-union and avascular necrosis are well known complications and their incidence is approximately 25% each. Although fracture can unite but still enough of blood supply to femoral head may have been jeopardized to produce avascular necrosis which in turn can lead to collapse of femoral head.**
  - C. Avascular necrosis of femoral head
  - D. Non union
  - E. Missed diagnosis.
93. Shenton line is broken in all of following except:
- A. Posterior dislocation of hip
  - B. **Impacted fracture of femoral neck → Shenton line will be broken in all cases when head is displaced away from acetabulum (dislocation) due to any aetiology. It will not be broken in undisplaced impacted femoral neck fractures.**
  - C. Congenital dislocation of hip
  - D. Pathological dislocation of hip
  - E. Tom Smith arthritis.
94. For a distended knee joint which of the following position is most comfortable:
- A. Full extension
  - B. **30° flexion → In 30° flexion, knee joint has maximum capacity and pressure of contained fluid or blood is minimum and consequently there is least pain. Capacity of knee joint decreases and pain thereby increases when the knee is fully extended or flexed more than 30°-45°.**
  - C. 60° flexion
  - D. 90° flexion
  - E. 120° flexion.
95. Which of the following is true about acute rupture of tendo calcaneus (tendo-achillis):
- A. It occurs due to direct injury
  - B. Radiograph will confirm the diagnosis
  - C. Compression of calf muscles produces plantar-flexion of ankle
  - D. **It usually occurs in middle aged persons → this is injury of middle aged persons usually occurring due to unaccustomed exercise. Direct injury is not the cause of tendon rupture although most patients feel as if something has hit. X-Rays are of no value in diagnosis. Plantar-flexion of ankle on compression of calf occurs when the tendon is intact and its absence signifies tendon rupture. Surgical repair is preferable treatment.**
  - E. Surgical repair is unnecessary.

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96. Stability of knee joint depends mainly on:
- A. Bony configuration
  - B. Muscles
  - C. **Ligaments: In knee as well as other joints like interphalangeal, wrist and intervertebral joint stability mainly depends on ligaments. In ball and socket joint like hip, stability is provided by bony configuration. In very mobile shoulder joint main stabilizing structures are muscles. Menisci and tendons do not contribute significantly to stability.**
  - D. Tendons
  - E. Menisci.
97. Complete rupture of tendo calcaneus is best treated by:
- A. Physiotherapy
  - B. Arthrodesis of ankle and subtalar joint
  - C. Raised shoe
  - D. Tendon transfer
  - E. **Surgical exploration and repair → Rupture of tendo-achillis whether spontaneous or traumatic should be treated by surgical repair as soon as possible after injury. Ununited tendon produces severe disability in walking as the push off is lost. If repaired later fascial or tendon graft has to be used to bridge the gap and post operative recovery is slow and end result is less than perfect.**
98. In ankle sprain, the commonest ligament torn is:
- A. Tibio-talar ligament
  - B. Deltoid ligament
  - C. Posterior talo-fibular ligament
  - D. Calcaneo fibular ligament
  - E. **Anterior talo-fibular ligament → Ankle sprain is an inversion injury and anterior talo-fibular ligament is first to be damaged. More severe injury can also damage origin of extensor digitorum brevis and calcaneo-fibular ligament**
99. Which of the following statement is not true about fracture of patella.
- A. **Even undisplaced fractures require patellectomy → Undisplaced fractures do not have significant roughening of articular surface and quadriceps mechanism also remains intact therefore patellectomy is not indicated. Operation is required to repair quadriceps expansion and to either realign and fix displaced patellar fragments if a reasonably smooth articular surface can be restored, or to excise patellar fragments when fracture is so comminuted that patellar articular surface will remain rough.**
  - B. Quadriceps expansion may be intact in direct injury
  - C. Quadriceps expansion is ruptured when gap is palpable between patellar fragments
  - D. Knee cannot be actively extend if quadriceps expansion is ruptured
  - E. Displaced patellar fractures require operative treatment.

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100. Which of the following statement is not true about severe varus strain injury of knee:
- A. **Usually no specific treatment is required → If the injury is severe operative repair of torn structures (lateral collateral ligament, lateral capsule and biceps femoris) is required followed by plaster immobilization with knee 30 degrees flexed. X-ray may quite often be normal or may only show avulsion fracture of head of fibula. Stress radiographs or examination under anaesthesia will reveal full extent of damage. Lateral popliteal nerve can also be damaged due to traction injury.**
  - B. Fracture of head of fibula should arouse suspicion of this injury
  - C. Lateral popliteal nerve can be damaged
  - D. Stress radiographs are required to confirm the diagnosis
  - E. Plain X-ray can be normal even in the presence of extensive damage.
101. How does paralytic scoliosis differ from idiopathic scoliosis:
- A. Progress of curve stops after maturity
  - B. **Scoliosis can progress even after maturity → Asymmetrical paralysis of paraspinal muscles produces paralytic scoliosis. Curve can develop and progress even after maturity, is usually long and can become very severe. Bracing is not as effective in controlling paralytic scoliosis as it is in controlling idiopathic scoliosis.**
  - C. Curves are usually short
  - D. Bracing is quite effective in controlling progress
  - E. Curve never becomes very severe.
102. In myelomeningocele scoliosis occurs due to:
- A. Asymmetrical paralysis of spinal and abdominal muscles
  - B. Congenital deformities of vertebrae
  - C. Fixed pelvic obliquity
  - D. **Any of above → In addition to causes mentioned, scoliosis can also occur due to static forces of chronic mal- posture necessitated by paralysis or by a period of recumbency for care of frequently reclining ischial or trochanteric pressure sores.**
  - E. None of above.
103. Before surgery, forcible correction of severe scoliosis curve can be achieved by:
- A. **Halter traction → Halter traction does not provide enough force to correct a severe scoliosis deformity, for which any of the other mentioned methods can be used.**
  - B. Halo-pelvic traction
  - C. Turnbuckle cast
  - D. Riser jacket
  - E. Cotrel cast.
104. Commonest late complication of spinal fusion in scoliosis is:
- A. Recurrence of deformity
  - B. **Pseudoarthrosis → Pseudoarthrosis is the commonest complication and this in some cases leads to development of recurrence of deformity.**
  - C. Neurological deficit
  - D. All of above
  - E. None of above.