1. **Consider the following statements regarding typhus fever:a. It is caused by the rod-shaped spherical or pleomorphic gram-negative organisms which are smaller than true bacteriab. Erythematous maculopapular rash usually appear within first week in scrub typhus feverc. Weil-Felix test is positive in patients of typhus feverd. Tetracycline is the drug of choiceOf these statements**

a) 1 and 2 are correct

b) 2, 3 and 4 are correct

c) 1, 3 and 4 are correct

d) 1, 2, 3 and 4 are correct

Correct Answer - D
All the statements are correct and are self explanatory regarding typhus fever. Weil Felix test is not in common use now. Indirect immunofluorescence assay is used commonly. Doxycycline 200 mg/day is given for 7-15 days.

2. Which of the following statements about prolactin is correct?

a) Prolactin initiates ovulation

b) Prolactin causes milk ejection during suckling

c) Prolactin inhibits the growth of breast tissue

d) Prolactin secretion is tonically inhibited by the hypothalamus

Correct Answer - D
Unique among the pituitary hormones, prolactin secretion is tonically inhibited by the hypothalamus. Prolactin is a single-chain protein secreted by the anterior pituitary whose principal physiologic effects involve breast development and milk production. Consistent with its role in lactogenesis, prolactin secretion increases during pregnancy Dopamine has many characteristics of the hypothalamic inhibitory factor, although it is not found in the hypothalamus.

3. A 65-year-old man with diabetes, on an oral hypoglycemic, presents to the ER with a sports- related right shoulder injury. His heart rate was noted to be irregular and the following ECG was obtained. The best immediate therapy is

a) Atropine

b) Observation

c) Pacemaker

d) Electrical cardioversion

Correct Answer - B
This ECG shows Mobitz type I second-degree AV block, also known as Wenckebach phenomenon, characterized by progressive PR interval prolongation prior to block of an atrial impulse. This rhythm generally does not require therapy. It may be seen in normal individuals; other causes include inferior MI and drug intoxications such as from digoxin, beta blockers, or calcium channel blockers. Even in the post-MI setting, it is usually stable, although it has the potential to progress to higher-degree AV block with consequent need for pacemaker.

4. A 29-year-old male with HIV, on indinavir, zidovudine, and stavudine, presents with severe edema and a serum creatinine of 2.0 mg/dL. He has had bone pain for 5 years and takes large amounts of acetaminophen with codeine, aspirin, and ibuprofen. He is on prophylactic trimethoprim sulfamethoxazole. Blood pressure is 170/110; urinalysis shows 4+ protein, 5 to 10 RBC; 24-h urine protein is 6.2 g. What is the most likely cause of his renal disease?

a) Indinavir toxicity

b) Analgesic nephropathy

c) Trimethoprim sulfamethoxazole–induced interstitial nephritis

d) Focal sclerosis

Correct Answer - D
Although many glomerular lesions occur in association with HIV, focal sclerosis is by far the commonest etiology of this patient's syndrome. While focal sclerosis is more common in intravenous drug users than homosexuals, the lesion is different than so-called heroin nephropathy. Indinavir toxicity may cause tubular obstruction by crystals and is a cause of renal stones, but does not cause nephrotic syndrome. Analgesic nephropathy is a frequently

unrecognized cause of occult renal failure; this entity requires at least 10 years of analgesic use and rarely causes significant proteinuria. Trimethoprimsulfamethoxazole may cause acute interstitial nephritis, but there is no fever, rash, WBC casts, or eosinophils in the urinalysis.

5. As per "Drugs and cosmetic act" prescription drugs are included in?

a) Schedule C

b) Schedule H

c) Schedule P

d) Schedule X

Correct Answer - B
Section **H**
REF: Forensic Medicine and Toxicology by R.N. Karmakar page. 42
As per drug and cosmetic rule 1945, Drugs are classified into different schedule as follows:

Schedule C	Drugs Biological and special products
Schedule E	Poisons
Schedule F	Vaccine and sera
Schedule G	Hormone preparations, Anti histamines, Anti-cancer
Schedule H	Drugs and poisons to be sold only by prescription of a Registered medical practitioner
Schedule J	List of diseases for the cure and prevention of which, no drug should be advertised (cataract, epilepsy, hydrocele, blindness etc)
Schedule I	Antibiotics and other recent chemotherapeutic agents

6. Drug of choice in anaphylactic shock is?

a) Subcutaneous Adrenalin

b) Intravenous Adrenaline

c) Steroids

d) Atropine

Correct Answer - B
Intravenous Adrenaline REF: Harrison's Internal Medicinel7th ed> Chapter 311. Allergies, Anaphylaxis, and Systemic M astocytosis
Anaphylaxis: Treatment

- Mild symptoms such as pruritus and urticaria can be controlled by administration of 0.3 to 0.5 mL of 1:1000 (1.0 mg/mL) epinephrine SC or IM, with repeated doses as required at 5- to 20-min intervals for a severe reaction
- An IV infusion should be initiated to provide a route for administration of 2.5 mL epinephrine, diluted 1:10,000, at 5- to 10-min intervals, volume expanders such as normal saline, and vasopressor agents such as dopamine if intractable hypotension occurs.
- When epinephrine fails to control the anaphylactic reaction, hypoxia due to airway obstruction or related to a cardiac arrhythmia, or both, must be considered
- Oxygen alone via a nasal catheter or with nebulized albuterol may be helpful, but either endotracheal intubation or a tracheostomy is mandatory for oxygen delivery if progressive hypoxia develops.
- Ancillary agents such as the antihistamine diphenhydramine, 50 to 100 mgIM or IV, and aminophylline , 0.25 to 0.5 g IV, are appropriate for urticaria-angioedema and bronchospasm, respectively.
- Intravenous glucocorticoids, 0.5-1.0 mg/kg of medrol, are not

effective for the acute event but may alleviate later recurrence of bronchospasm, hypotension, or urticaria.

7. Reperfusion is useful for â€‘

a) Stunt myocardium

b) Hibernating myocardium

c) Non ischaemic viable myocardium

d) Mixed ischaemic myocardium

Correct Answer - B

Hibernating Myocardium *[Ref: Harrison I7/e p 1526]*

- *"Hibernating myocardium" is a state of persistently impaired myocardial and left ventricular function at rest due to reduced coronary blood flow that can be partially or completely restored to normal if the myocardial oxygen supply demand relationship is favourably allered either by improving blood flow and/ or by reducing demand*
  - Hibernation is a response to chronic reduction in resting coronary blood flow, leading to a new equilibrium where myocardial metabolism was altered with a subsequent reduction in energy production and myocardial contractility
- *The initial triggering event i.e., reduction the blood flow was followed by a downregulation in cardiac function to a point at which the limited Oxygen supply enabled the maintenance of biochemical functions that sustained cell integrity*
  - If the myocardial oxygen supply/demand was subsequently altered either temporarily or permanently then symptoms or signs of ischemia and/or necrosis might- occur
  - The hibernating response of the heart, namely a reduction of cardiac function to cope with a reduced myocardial blood flow was considered an act of self preservation (Little blood, Little work)
- *This chronic adaption occurs in the absence of angina (the lack of resting pain is a unique sign of chronic hibernation) or*

electrocardiographic evidence of ischemia and was thought to be a protective mechanism reducing the oxygen demand of hypoperfused myocardium and preserving long term viability

- *On imaging, the heart is presented as area of left ventricular wall that could have been hypokinetic, akinetic dyskinetic*

Myocardial stunning

- *This describes a clinical state where after a period of "transient ischemia" the heart goes into period of "Persistent dysfunction" even after the flow is reversed*
- *The important point to note in myocardial stunning is that the left ventricular dysfunction persisted after reperfusion despite the absence of irreversible damage and despite the restoration of normal or near normal coronary blood flow.*
- *It is believed or proposed that due to ischemia the heart is stunned for a period of time. So even after the blood flow is restored the heart will not regain its function immediately. It will remain in its dysfunctional state for a certain period of time and then resumes its normal activity.*
- *Its should be noted that myocardial stunning is a fully reversible abnormally, provided of course that sufficient time is allowed for myocardiunt to recover.*
- *Hibernating and stunned myocardium are clinically very important conditions of contractile asynergy, since they are potentially reversible*
- *Hibernating myocardium is similar to stunned myocardium in that both are characterized by viable myocardial cell with depressed function.*
- *When ischemia is relieved the hibernating myocardium exhibits nearly "immediate return" of function where as stunned myocardium exhibit "gradual recovery"*

8. A 9 yr old girl has difficulty in combing hairs and climbing upstairs since 6 months. She has Gower's sign positive and maculopapular rash over metacarphalangeal joints. What should be the next appropriate investigation to be done?

a) ESR

b) RA factor

c) Creatine kinase

d) Electromyography

Correct Answer - C

Creatine kinase *[Ref.. Harrison 17/e p. 2699]*

- Difficulty in combing hairs and climbing upstairs suggests proximal muscle weakness.
- Presence of proximal muscle weakness along with maculopapular rash suggests dermatomyositis.
- Dermatomyositis is an inflammatory myopathy.

9. A 14 yrs old girl on exposure to cold has pallor of extremities followed by pain and cyanosis. In later ages of life she is prone to develp?

a) Systemic lupus erythematosis

b) Scleroderma

c) Rheumatoid arthritis

d) Hisiocytosis

Correct Answer - B

Scleroderma *[Ref: Harrison 17/e p.* 2096]

- *Pallor of extremities on exposure to cold that is followed by pain and cyanosis suggests Raynaud's phenomenon.*
- *A Female patient with Raynaud's phenomenon should be evaluated for possibility of sclerodertna or any other connective tissue disease.*
- *Raynaud's phenomenon is the first manifestation of scleroderma in almost every patient with the disease and it preceedes other symptoms in 70% of caseso.*
- *The interval between Raynaud's phenomenon and appearance of other manifestations is* generally brief *(weeks to months)in* diffuse scleroderma, while in limited scleroderma the *period of onset between Raynaud's phenomenon and systemic manifestations is commonly several years.*
- *Scleroderma is a rare disorder but it initially presents with Raynaud's phenomenon which is quite frequent in the general population. Therefore it is important to keep scleroderma in mind while dealing with Raynaud's phenomenon.*

More on Scleroderma :*?*

- *Scleroderma is primarily a disease of the female*^{Q} *(female to male ratio of 3 : 1) with a peak incidence in the 50 - 60 year age group.*
- *Raynaud's phenomenon occurs due to microvascular involvementQ.*
- Microvascular disease is consistently present early *in the course* of systemic sclerosis. Intimal proliferation is evident in 100% of digital arteries of patients with systemic sclerosis. *Capillary dilatation* with *leaking* as well as destruction is also common.
- Stress and cold temperature induce an exaggerated vasoconstriction of the small arteries, arteioles and arteriovenous shunts of the skin of the digits. This is manifested clinically as pallor and cyanosis of the digits followed by reactive hyperemia after rewarming. Unlike episodes of uncomplicated primary Raynaud's phenomenon, attacks of Raynaud phenomenon in patient with scleroderma are often *painful* and frequently lead to *digital ulcerations, gangrenes* or *amputation.*

  Also know

  Diseases associated with Raynaud's phenomenon :
- Raynaud's phenomenon is associated with several connective tissue disease.
- Systemic sclerosis (scleroderma)
- Systemic lupus erythematosus
- Rheumatoid arthritis
- Sjogren syndrome
- Dermatomyositis
- Polymyositis
- Vasculitis
- *All patients with history of Raynaud's phenomenon should be asked about symptoms suggestive of autoimmune disease such as arthritis, dry eyes or dry mouth, myalgias, fever, skin rash or cardiontyopathy abnormalities.*
- *If underlying autoimmune disease is suspected, the patient should be evaluated for presence of specific autoantibodies.*
- *Antinuclear antibody (ANA) assays are highly sensitive for the type of connective tissue disorders that are often associated with Raynaud's phenomenon. However, positive ANA, are quite nonspecific and therefore should be followed by testing for autoantibodies with higher positive predictive values for such*

conditions.

10. Where pulsatile liver and ascites is found -

a) TR

b) Critical pulmonary stenosis

c) MR

d) MS

Correct Answer - A
Tricuspid regurgitation *[Ref: Oxford Textbook of Medicine 4/e p. 1012]*
"Pulsatile liver is almost pathognonionic for Tricuspid regurgitation".

- The most common cause of enlarged pulsatile liver is congestive cardiac failure *(it produces functional tricuspid incompetence).*
- Ascite can be seen in right heart failure.

11. Thrombotic event is seen in all of following except

a) PNH

b) DIC

c) ITP

d) Heparin induced thrombocytopenia

Correct Answer - C
ITP [Ref: Harrision I7/e p367]

- *Idiopathic thrombocytopenic purpura is not associated with thromboss. Its main clinical manifestation is bleeding which occurs due to thrombocytopenia.*
- *Heparin induced thrombocytopenia* ***(HIT)*** *is the most important and most frequent drug induced immune mediated type of thrombo-cytopenia.*
  - It is seen in about 1-5% of patients on heparin.
  - In patients receiving heparin for the first time, the onset of thrombocytopenia usually occurs 5-10 days after the administration of heparin.
  - The thrombocytopenia in HIT is usually moderate in severity with a median platelet count being between 50 and 80 x 109/L.
- *"Despite thrombocytopenia bleeding is rare. On the other hand heparin induced thrombocytopenia is strongly associated with thrombosis which frequently leads to diagnosis of heparin induced thrombocytopenia".*
  -Thrombosis in heparin induced thrombocytopenia is associated with a mortality of approximately 20-30% with an
  equal percentage of patients becoming permanently disabled by amputation, stroke or other causes.

- Thromboembolic complications can be venous, arterial both and include deep venous thrombosis, pulmonary
embolism myocardial infarction, thrombotic stroke and occlusion of limb arteries.

- The mechanism underlying heparin induced thrombocytopenia is an immune response.
- The principal antigen is a complex of heparin and platelet factor 4 (PF4).
- Patients who develop HIT produce antibodies against Heparin platelet F4 complex.
- *Thrombocytopenia in HIT is largely due to the clearance of activated platelets and antibody coated platelets by the reticuloendothelial system.*

12. A patient develops sudden palpitation with HR 150/min, regular. What could be the cause -

a) PSVT

b) Sinus tachycardia

c) Ventricular tachycardia

d) Atrial flutter with block

Correct Answer - A

PSVT *[Ref: Harrison 17/e p. 1431, 1427, 1426, 14351*

Sinus tachycardia

- Sinus tachycardia occurs when SA node discharges at a rate faster than 100 beats/minute.
- *Sinus tachycardia represents a normal or appropriate response to a physiological stress such as that occurs with exercise, anxiety or fever.*
- *It is important to distinguish sinus tachycardia from other SVT's.*
  - Sinus tachycardia will produce a Pwave contour consistent with its origin from the sinus node.
  - Sinus tachycardia is in absence of complicating conduction disturbance is characterized by normal P-QRS-T complexes which are recorded in rapid succession.
- Onset of sinus tachycardia is gradual.
  - *Sinus tachycardia is the normal physiological response to exercise and emotions. A sinus tachycardia that persists at rest is usually an expression of some underlying disorder.*

Atrial flutter

- In atrial flutter the impulse originates from a single focus in the atria.

- Classical or typical atrial flutter has an atrial rate of about 300 heats/minute.
- *The ventricular response to this rapid atrial activity depends upon the efficacy of A-V conduction. - Occasionally every atrial impulse is conducted to the ventricle i.e., a 1:1 response resulting in very .fast ventricular rate.*
  - More commonly second degree A-V block is present resulting in a relatively slow ventricular rate.
- The Atrial flutter commonly present in with a ventricular response that tends to be 2:1 or typically 130-150 *beats/minute.*
  - This means that every second atrial beat gets through the A-V node.
  - Because the ration of P to QRS is usually consistent atrial flutter is often regular.

  So atrial flutter commonly present as fixed 2:1 A-V block with a regular heart rate that is 150-200 b/rm
- These are spontaneously occurring and sporadic paroxysmal episodes of regular rapid heart rate of 150-250 beats/minute.
- Theoretically it refers to any tachycardia that is not ventricular in origin.
- In the widest sense SVT may include abnormal sinus tachycardia, ectopic atrial tachycardia (that is not from sinoatrial node), Atrial fibrillation1flutter and junctional tachycardial.
- Often, however, in clinical setting, it is used practically as a synonym for paroxysmal supraventricular tachycardia.
- Supraventricular tachycardia develops and ends abruptly and during the episode the heart rate is b/w 150-250 and is regular.
  - Symptoms in PSVT may start and stop suddenly often in response to quick movement such as picking up something from the floor.

  Because physiological sinus tachycardia has a gradual onset and atrial fibrillation is irregular they are excluded from the PSVT category. PSVT are most commonly AV nodal reentrant tachycardia or part of WPW syndrome.

  <u>Idioventricular rhvthum</u>
- In idioventricular tachycardia an ectopic focus in the ventricle is

enhanced and it exceeds or equals the sinus rate.

- The heart rate in idioventricular rhythm is in the rage of 70-80b/minute.
- Sinus tachycardia can be ruled out as it has slow onset.
- In idioventricular tachycardia the heart rate is usually 70-80 beats/minute.
- So we are left with I'SVT and Atrial flutter with block.
  - Atrial flutter has an atrial rate of 250-300 beat/minute and the heart rate is irregular but it is usually associated with fixed 2:1 block so the heart rate drops to 150 b/m and the rate becomes regular.
  - So both PSVT and Atrial flutter can have regular heart rate of 150 b/m.
  - Both have sudden onset.
- There is nothing much to differentiate b/w supraventricular tachycardia and Atrial fibrillation.
- Supraventicrucular tachycardia seems to be the correct option because it is quite rare for a normal person to develop atrial fibrillation.
- Atrial fibrillation usually develops in patients with preexisting cardiac disease. The question does not give any information regarding this, so it can be assumed that he is a normal healthy person.
- Sudden palpitation in a normal healthy person is most likely due to supraventricular tachycardia.

13. Non neoplastic lesions simulating bone tumor are all except?

a) Fibrous dysplasia

b) Bone island

c) Bone infarct

d) Hurler syndrome

Correct Answer - D
Hurler syndrome *[Ref: Campbell's Orthopaedics 11/e Chapter 20 – Benign Bone Tumors and Nonneoplastic Conditions Simulating Bone Tumors p885.1*
Following lesions have been mentioned to be non-neoplastic lesions resembling bone tumors (in Campbell's Orthopaedics Chapter 20 – Benign Bone Tumors and Nonneoplastic Conditions Simulating Bone Tumors).
Nonneoplastic Conditions Simulating Bone Tumors

- Nonossifying fibromas (aka fibrous cortical defects, and fibroxanthomas)
- Cortical Desmoid
- Fibrous dysplasia
- Osteofibrous dysplasia (ossifying fibroma of long bones, aka Campanacci disease)
- Bone islands
- Unicameral bone cysts
- Aneurysmal bone cysts
- lntraosseous Ganglion Cyst
- Epidermoid Cyst
- Paget Disease
- "Brown Tumor" of Hyperparathyroidism

- Bone Infarct
- Osteornyelitis
- Stress Fracture
- Posttraumatic Osteolysis

14. In "bounce home" test of knee joint, end feel is described as all except?

a) Bony

b) Empty

c) Springy

d) Firm

Correct Answer - B
Empty *[Ref- various intemet sites and Asst. Prof in KEM hospital Orthopaedics department.]*
Explanation is based on extensive discussions with our friend, an. Asst. Prof in KEM hospital Orthopaedics department.
Bounce home knee test.

- The bounce home test is designed to evaluate a lack of full extension in the knee, which may indicate a torn meniscus or other pathology, such as a loose body or a joint effusion.
- The test is performed *with the patient supine, with his/her foot cupped in the examiner's hand. With the patient's knee completely flexed, the knee is passively allowed to extend. The knee should extend completely or bounce home into extension with a sharp endpoint.*
- End feels can be of following type:
- Springy block end-feel: There is a *"rebound"* effect at the end point of movement. Typically caused by a mechanical block produced by a displaced meniscus.
- Bony end-feel: an abrupt, hard-feeling stop to movement due to a bone fragment in the joint space.
- Firm, leathery feeling (Capsular end-feel): seen in synovitis or soft tissue edema or capsular fibrosis.

Empty end-feel is not seen in bounce home test.
Empty end-feel implies: the examiner feels *no restriction to movement,* the patient stops the movement due to severe pain. An example is shoulder impingement, in which pain from the supraspinatus tendon being compressed will limit how far the arm can be abducted. Mechanically there is no further restriction, but the pain will prevent the individual from allowing further motion.

15. According to Enneking system, not true regarding an active benign tumor is

a) Intracapsular

b) Margin of reactive bone

c) Thick rim of reactive bone

d) Extended curettage is treatment

Correct Answer - C

Thick rim of reactive bone *[Ref: Campbell's Operative Orthopaedics I 1/e Chapter 19 – General Principles of Tumors]*

Thick rim of reactive bone is a feature of Latent benign bone tumors and not Active benign bone tumors. Active benign rumors have a thin rim of reactive bone.

Enneking has staged benign and malignant musculoskeletal tumors to aid in treatment decision making and to allow comparisons of treatment methods. The stages of benign tumors are designated by Arabic numbers, and malignant tumors are designated by Roman numerals.

Enneking staging of Benign tumors

Benign tumors are staged as follows: stage 1- *latent;* stage 2- *active;* and stage 3- *aggressive.*

Enneking staging of Benign tumors	
Stage 1	Intracapsular
Latent	Usually asymptomatic, frequently incidental finding Grows slowly and then stops. Remains static/ usually heals spontaneously Radiographic features: - well-defined margin with a thick rim of reactive

	bone
	- no cortical destruction or expansion
	Do not require treatment as they do not compromise the strength of bone
	e.g. Nonossib ing fibroma
Stage 2	Intracapsular
Active	Actively growing lesions
	Can cause symptoms or lead to pathological fracture
	Radiographic features:
	- well-defined margins with a thin rim of reactive bone
	- may expand and thin the cortex
	Treatment usually consists of extended curettage
	e.g. Aneurysmal bone cyst
Stage 3	Extracapsular
Aggressive	Aggressive clinically and radiographically
	Radiographic features:
	- Tumor breaks through the reactive bone and possible the cortex
	- Soft tissue mass may be present
	Metastasis may be seen in 5%
	Treatment consists of extended curettage and marginal or even wide resection
	Local recurrences are common
	e.g. Giant cell tumor

Enneking staging of Malignant Musculoskeletal tumors (Musculoskeletal sarcomas) Musculoskeletal sarcomas are classified into 3 stages.
Stage 1: Histologically low grade sarcomas
Stage 11: Histologically high grade sarcomas
Stage HI: Sarcomas which have metastasized
Each category is further subdivided into Type A and Type B
Type A: Intracompartmental (lesions are confined to an enclosed tissue space e.g. a bone, a joint cavity or a muscle group within its

tissue space e.g. a bone, a joint cavity or a muscle group within its fascial envelope)

Type B: Extracompartmental (lesions which extend beyond their compartment of origin)

Low-grade or Stage I lesions	High-grade or Stage II lesions
Well-differentiated	Poorly-differentiated
Few mitoses	High mitotic rate
Moderate cytological atypic	High cell-to-matrix ratio
Risk for metastasis is low	

16. Variant of Giant cell tumor is?

a) Ossifying fibroma

b) Non ossifying fibroma

c) Osteosarcoma

d) Chondroblastoma

Correct Answer - D
Chondroblastoma *[Ref http://emedicine.medscape.com/article/1254949-overview]*
This is the best we could find, after long hours of search.
"A chondroblastoma is a rare, usually benign, tumor of bone that accounts for approximately I% of all bone tumors. In 1931, Cadman classified it as a chondromatous variant of giant cell tumors, when he described these lesions in the proximal humerus. A decade later, Jaffe and Lichtenstein renamed the Codman tumor a benign chondroblastoma to emphasize the chondroblastic genesis of the lesion and to distinguish it from the classic giant cell tumor of bone."- emedicine.inedscape.com

17. All true about high tibial osteotomy except?

a) Can correct varus over 30 degress

b) Deformity recurs after a long time

c) Done through cancellous bone

d) Done in case of unicompartmental disease

Correct Answer - A
Can correct varus over 30 degrees *[Ref: Ebnezar Orthopaedics 3/e p547; Campbell Operative Orthopaedics 11/e, p 916]*
"Proximal tibial osteotomy is indicated for uniconzpartnzental osteoarthritis of knee with pain and also to correct varus (less than 15°)or valgus deformity (less than 12°)"-Ebnezar
According to Campbell's orthopaedics HTO is contraindicated if more than 20° of correction is needed.
High tibial osteotomy

- High tibial osteotomy is a procedure for the treatment of unicompartmental osteoarthritis of the knee (medial or lateral compartment osteoarthritis; usually it is medial; lateral compartment osteoarthritis is uncommon).
- Medial osteoarthritis is associated with varus deformity of the knee. Varus deformity causes stresses to be concentrated medially, accelerating degenerative changes in the medial part of the joint (similarly if the deformity is of valgus position, changes are accelerated in the lateral part).
- The biomechanical rationale for proximal tibial osteotomy in patients with unicompartmental osteoarthritis of the knee is "unloading" of the involved joint compartment by correcting the malalignment and

redistributing the stresses on the knee joint.

- Thus medial osteoarthritis is treated by a varus correcting osteotomy (k/a valgus osteotomy) and the uncommon lateral osteoarthritis corrected by valgus correcting osteotomy (k/a varus osteotomy).
- According to Ebnezar *(3/e p547) High tibial osteotomy is done for varus deformity less than 15° and valgus deformity less than 12°.* Valgus high tibial osteotomy for correction of varus deformity in medial compartment osteoarthritis
- The osteotomy incision is made through cancellous bone, which heals rapidly;
- Major complication is recurrence of deformity.(Rep *article on websiteorthobfin.comitiploadslalbums/0121 55400%201300568179. doc)*

Management of Osteoarthritis

<u>Surgical management in brief :</u>

The choice of surgical procedure depends on the patient's age and activity demand, severity of the disease and the number of knee compartments involved.

Arthroscopic washout or debridement:

- It consists of trimming of degenerate meniscal tissue and osteophytes
- It may delay the need for a more definitive procedure, especially in younger, active patients with localised degenerative arthritis that causes pain at rest without malalignment or instability
- It may also be considered in active, older adults with mild to moderate OA

Realignment osteotomy:

- *High or proximal tibial osteotomy (HTO)?*
  - described above
- *Supracondylar or distal femoral osteotomy?*
  - distal femoral osteotomy is done for correction of valgus deformity more than 12 to 15° *(Ref Campbell's Orthopaedics 11/e chapter 25)*

Total knee arthroplasty:

- It is done for older patients with advanced OA that causes incapacitating pain and disability or young patients with tricompartmental (medial and lateral tibio femoral and

patellofemoral) disease. *But it should be delayed in young patients as long as possible as prostheses may wear out over time and may need further revision surgery.* Unicompartmental arthroplasty:
- In carefully selected patients with either medial or lateral osteoarthritis, it is becoming a viable alternative to TKA and HTO.
Knee arthrodesis:
- Arthrodesis is indicated less commonly than arthroplasty. If the patient is young and involved in heavy occupation, arthrodesis is indicated to give him a stable and strong knee.
- This procedure provides permanent pain relief and allows the patient to return to durable, active work. However arthrodesis results in a stiff knee which is a severe disability.

18. A patient met with Road Traffic Accident with injury to the left knee. Dial test was positive. What could be the cause?

a) Medial Collateral Ligament Injury

b) Posterolateral Corner Injury

c) Lateral Meniscus Tear

d) Medial Meniscal Injury

Correct Answer - B
Poster()lateral Corner Injury *iRef.- Turek's Orthopaedics 6/e* p5991
Dial test or Tibial External Rotation Test:
This is the test for posterolateral instability.
The tibia is externally rotated on femur first at 30° flexion and then at 90° flexion. Comparison is made with the normal side.
An increase in external rotation of greater than 10°
- at 30° of flexion but not at 90° indicates an isolated posterolateral corner injury.
- at both 30° and 90' of flexion indicates injury of both posterior cruciate ligament and posterolateral corner.
The posterolateral corner (PLC) is a complex that includes the lateral collateral ligament (LCL), popliteus tendon, fabellofibular ligament, arcuate ligament, popliteofibular ligament, and the short lateral ligament. *(Ref:*
Chapman orthopaedic surgery 3/e)

19. A newborn child presents with inverted foot and the dorsum of the foot cannot touch the anterior tibia. The most probable diagnosis is

a) Congenital vertical talus

b) Arthrogryposis Multiplex

c) CTEV

d) Flat foot

Correct Answer - C

CTEV *[Ref: Maheshwari Orthopaedics 3/e p195; Ebnezar 3/e p454J*

- In a new born child it is possible to dorsiflex and evert the foot till the dorsum of foot touches anterior surface of tibia.This is not possible in CTEV. This is known as *'clorsillexion test'* and can be used as a screening test.
- Arthrogryposis Multiplex Congenita is a rare congenital disorder that is characterized by multiple joint
- Congenital vertical talus is a'rare disease usually affecting both feet, characterized by rigid flatfoot deformity, with the plantar aspect of the foot having a convex contour. The heel is in valgus, and the forefoot is abducted and dorsiflexed. In the newborn having this condition, the *dorsal aspect of the foot may be in close approximation to the distal aspect of tibia.*
- Flat foot or Pes planus is a condition characterized by varying degrees of loss of the longitudinal arch of the foot. This condition can be normal which usually disappears as the child grows, or can be pathological as seen in Congenital vertical talus, tarsal coalition, inflammatory joint disorder or a neurological disorder.

- Congenital Talipes Equinovarus (Idiopathic club-food
-

20. Drugs not used for treatment of acute hyperkalemia -

a) Insulin + glucose

b) Potassium exchange resins

c) Calcium carbonate

d) Sodium bicarbonate

Correct Answer - B

Potassium exchange resins [Ref : *Harrison 17'Ve p. 84; CMDT 2007 p. 899]* Repeat from May 10 Q no. 101.

EMERGENCY

Modality	Mechanism of action	Onset	Duration
Calcium gluconate	Antagonizes cardiac conduction abnormalities	0-5 *minutes*	1 hour
Sodium Bicarbonate	Distributes K+ into cells (only indicated with acidosis)	15-30 minutes	1-2 hours
Insulin	Distributes K+ into cells	15-60 minutes	4-6 hours
Albuterol	Distributes K+ into cells	15-30 minutes	2-4 hours

NONEMERGENCY

Modality	Mechanism of action	Duration of treatment
Loop diuretic	I Renal K+ excretion	0.5-2 hours

Sodium polystyrene sulfonate (kayexalate)	Ion-exchange resin binds K+	1-3 hours
Hemodialysis	Extracorporeal K+ removal	48 hours
Peritoneal dialysis	Peritoneal K+ removal	48 hours

21. Best indicator of ovarian reserve is ?

a) FSH

b) Estradiol

c) LH

d) FSH/LH ratio

Correct Answer - A
FSH *[Ref : Harrison 17th le p. 2331]*
Repeat from May 10 Q no.171

22. Which of the following *is* not true?

a) William syndrome consists of precocious puberty, mental retardation and obesity

b) In absence of sunlight daily requirement of vitamin D is 400-600 IU

c) 1 alpha hydroxylation occurs in kidney

d) 25 alpha hydroxylation occurs in liver

Correct Answer - A

William syndrome consists of precocious puberty, mental retardation and obesity *[Ref: Nelson 17/e 215; http://www.jacn.org/egi/content/full/18/2/122*

- There is confusion between first 2 options. Last 2 options are well understood. (See the below given flow chart) Let's see **first option** first i.e. *William syndrome consists of precocious puberty, mental retardation and obesity*
- **William syndrome** is a rare genetic condition caused due to *mierodeletion* of a portion of **chromosome** *7(7(111. 23)* that involves the *elastin gene.*
- **The clinical manifestations** include a - Distinct facial appearance, - Cardiovascular anomalies, - Hypercalcemia, and
  - Characteristic neurodevelopmental and behavioral profile.
- Virtually all cases have typical facial features that can be recognized even at birth.
- All children and adults with Williams's syndrome have some combination of the following facial features: short upturned nose, flat nasal bridge, long philtrum, flat malar area, wide mouth, full lips, dental malocclusion and widely spaced teeth, micrognathia, stellate irides, and periorbital fullness. The **voice** may be harsh. Nails tend

to be hypoplastic and the skin soft and lax, and the hallices have a valgus deviation. ***"Elfin fades"* is** considered a pejorative term, and its use should be discouraged.

- Short stature
- Cardiovascular abnormalities e.g. ***supraventricular aortic stenosis***
- Children with Williams's syndrome are described as ***overly friendly,*** hyperactive, inattentive, and hypersensitive to loud sounds or certain types of sounds. Older children and adults have an ***outgoing "cocktail party" personality.*** Lack shyness with strangers. Relatively good verbal skills.
- Mild-to-moderate mental retardation,
- Very deficient visuo-spatial abilities
- Approximately 70% also suffer from attention deficit disorder.
- Though ***precocious puberty*** and ***obesity*** may also be seen in William syndrome, they are not the key features of this syndrome. Hence **I** would choose option a.

According to *Park 19/e* Daily requirement of vitamin D is:

Adults	2.5 mcg or 100 IU
Infants and children	5.0 mcg or 200 IU
Pregnancy and lactation	10 .0 mcg or 400 IU

Second option i.e. *In absence of sunlight daily requirement of vitamin D is 400-600 I U*

- According to the article *"Perinatal Vitamin D and Calcium Status of Northern Canadian Mothers and Their Newborn Infants" published in Journal of the American College of Nutrition, Vol. 18, No. 2, 122-126 (1998)*
- Daily requirement of vit D, has been a subject of controversy. For adults exposed to adequate sunlight, the latest recommended intake is 2.5 pg(100 1U) in Canada and 5.0 pg(200 1U) in the US. During pregnancy the daily recommended intake of vitamin D remains to be 2.5 pg in Canada [2], whereas in the US, it is increased to 10 [tg(400 IU). Since a primary source of the vitamin is believed to be the sunlight, its dietary recommendations vary for populations not exposed to sufficient sunlight. *Some recommend 15 pg/day (600 10 while others have estimated that 12.5 pg/day(500 IU) is sufficient in the absence of sunlight.*
- Although there are articles on net which quote different values, I

would still go with option a as the answer. For option c and d: Synthesis and metabolism of Vitamin D

- Calcidiol may undergo 24-hydroxylation to yield an inactive metabolite, 24, 25-dihydroxy vit. D mediated by vit. D 24 - hydroxylase.
- 1, 25 $(OH)_2D$ is the major inducer of vit-D-24 hydroxylase, thus promotes its own inactivation, thereby limiting its biologic effects.

23. Which is not a deep heat therapy

a) Short wave diathermy

b) Ultrasound therapy

c) Infrared therapy

d) Microwave therapy

Correct Answer - C

Infrared therapy *[Ref: Maheshwari 3/e, p 66; Internet - medicine]*

Heat therapy is a form of physiotherapy used in many painful conditions eg. arthritis, sprains, muscle spasms etc. It is of 2 types depending on *penetration of heat :*

- superficial heat therapy
- Deep heat therapy

Superficial heat therapy

- *Only the skin and subcutaneous tissues are heated*
- Superficial heating modalities do not heat deep tissues because the *subcutaneous layer of fat* beneath the skin surface acts as a *thermal insulator* and inhibits heat transfer.
- Superficial heating modalities include :

- hot water bottle - *chemical packs*
warm bath - *paraffin* wax *bath*
- hot packs (eg. Kenny pack) - *moist air cabinet*
- hot soaks or compresses - *infrared lamp*

Deep heat therapy

- *Deeper structures (including muscles) are heated*

- In general, the transfer of heat is of three types - *conduction, convection & conversion (or radiation) [We* have read these during our primary schooling]
- Whereas superficial heating modalities use all three modes of transfer of heat; *deep heating modalities use only conversion or radiation method to heat the deep tissues.*
- Deep heating modalities are
  a. *Short wave diathermy*
  - heat generated by high frequency alternating current using a short-wave diathermy emitter.
  b.Microwave *diathermy*
  - this uses electromagnetic radiation energy to heat the deep tissues
  c. *Ultrasound therapy*
  - uses high frequency sound energy

24. In patients with osteoarthritis of knee joint, atrophy occurs most commonly in which muscle :

a) >Qudriceps only

b) >Hamstrings only

c) >Both (a) and (b)

d) >Gastrocnemius

Correct Answer - A
Quadriceps only *Met Maheshwari 3/e, p 253;Apley's 8/e, p 472]*
In osteoarthritis of knee joint, the quadriceps muscle is usually wasted.

25. **A child is spinned around by holding his hand by his father. While doing this the child started crying and does not allow his father to touch his elbow. The diagnosis is:**

a) Pulled elbow

b) Radial head dislocation

c) Annular ligament tear

d) Fracture olecranon process

Correct Answer - A
Pulled elbow or **Nursemaid's elbow** occurs in children under 4 years old.
It is caused by a sudden pull on the extended pronated arm, usually by an adult tugging on a reluctant toddler.
The pronated radial head slips partially under the annular ligament and displaces into the radiocapitellar joint.
The child suddenly stops using the arm, holding it in a flexed and pronated position.

Radiographs show no abnormalities, since positioning for elbow films will often reduce the subluxation. Reduction is achieved by firmly supinating the forearm and flexing the elbow while pressing down on the radial head. Often, a "click" is felt when reduction is achieved. Soon after reduction the child becomes less apprehensive and gradually resumes use of the arm.

Ref: Srinivasan R.C., Tolhurst S., Vanderhave K.L. (2010). Chapter 40. Orthopedic Surgery. In G.M. Doherty (Ed), *CURRENT Diagnosis & Treatment: Surgery*, 13e.

26. Whicn is not a marker of new bone formation?

a) Alkaline phosphatase

b) Osteocalcin

c) Urine hydroxyproline

d) Pro collagen

Correct Answer - C
C i.e. Urine hydroxyl proline

27. In Recurrent Anterior dislocation of shoulder, the movements that causes dislocation is

a) Flexion and internal rotation

b) Abduction and external rotation

c) Abduction and internal rotation

d) Extension

Correct Answer - B
B i.e. Abduction & external rotation

28. A cricketer got injured while holding a catch, following which he complained of pain over the base of thumb. Which structure is most likely to be injured.

a) Volar plate

b) Extensor pollicis longus

c) Abductor pillicis longus

d) Ulnar collateral ligament

Correct Answer - D
D i.e. Ulnar collateral ligment

29. Return of Bulbocavernous reflex in spinal shock

a) Sign of recovery from spinal shock

b) Partial lesion of spinal cord

c) Complete transection of spinal cord

d) Incomplete transection of spinal cord

Correct Answer - A
A i.e. Sign of recovery from spinal shock
Spinal Shock

- Some times physical energy of the injury mechanism causes immediate *depolarization of axonal membranes* in the neural tissue. This results in *functional neurological defecit* that *exceeds the actual tissue* disruption. This condition is refered to as *spinal shock.*
- The presence of spinal shock *causes the absence of all reflexesQ.* And it typically *lasts upto* 24- *48 hours after the injuryQ.*
- The *bulbocavernosus reflex is the reflex that returns first, thus marking the end of spinal shockQ.*
- This point has *prognostic importance* because recovery from a complete neurological deficit that is still present at the end of spinal shock is extremely unlikely. In other words, a total absence of sensation & voluntary motor functions caudal to the level of spinal cord injury in the absence of spinal shock (i.e. bulbocavernosus reflex has recovered) is indicative of complete spinal cord injury and there is virtually no likelihood of functional spinal cord recovery.

30. Patient develops myelopathy post trauma. What dose of methyl prednisolone is to be given:

a) 30 mg/kg within 3 hrs

b) 45 mg/kg within 6 hrs

c) 60 mg/kg within 9 hrs

d) 75 mg/kg within 12 hrs

Correct Answer - A
A i.e. 30mg/kg within 3 hrs 38.

31. Percutaneous vertebroblasty is indicated in all except

a) Tuberculosis

b) Metastatis

c) Osteoporosis

d) Hemangioma

Correct Answer - A
A i.e. Tuberculosis
Osteoporotic vertebral fracture
Osteoporosis is complicated by vertebral fracture that occurs spontaneously or is caused by minor trauma.
Spinal tumors
In painful vertebral metastasis (ie, previously untreated), radiotherapy is useful in spinal pain.
Vertebroplasty is a palliative treatment that typically provides more immediate analgesia.
Vertebral hemangioma
Vertebroplasty has been used successfully in severe focal spinal pain with radiologically unaggressive vertebral (body) hemangioma.

32. A middle aged lady presents with complaints of lower back pain. ON examination there is weakness of extension of right great toe with no sensory impairment. An MRI of the lumbosacral spine would most probably reveal a prolapsed intervertebral disc at what level?

a) L3 - L4

b) L4-L5

c) L5-S1

d) S1-S2

Correct Answer - B
B i.e. L4 - L5

33. Posterior cruciate ligament- true statement is

a) Attached to the lateral femoral condyle

b) Intra synovial

c) Prevents posterior dislocation of tibia

d) Relaxed in full flexion

Correct Answer - C
C i.e Prevents posterior dislocation of tibia

34. A 68 yr old man came with pain and swelling of right knee. Ahlbeck grade 2 osteoarthritic changes were found on investigation. What is the further management:

a) Conservative

b) Arthroscopic washout

c) High tibial osteotomy

d) Total knee replacement

Correct Answer - D
D i.e. Total knee replacement
- Ahlbeck grade 2 osteoarthritis (i.e. *complete or almost complete obliterated joint space)* with symptoms of pain and swelling in a sedentary *patient (>65 years of age) is managed by knee replacementQ*
- Old (65 yrs) age, long standing history of pain & swelling interfering activities of daily living and *grade III radiological* grade of OA [i.e. *moderate 50-75% joint space narrowing* with definite osteophytes (a/t Kellgren / Brandt) and Minor < 5 nun bone attrition (a/t Ahlblack)] indicate moderately severe OA and is best managed by Total knee arthroplasty. Although it must be remembered that TKA is done only after conservative treatment measures have been exhausted. And in this case we have presumed that conservative treatment must have been tried (b/o long course) & failed.
- Because arthroscopic lavage (wash out) provides symptomatic improvements in *patients with normal alignment, joint space*

>3mmQ, stable ligaments, unicompartmental OA with relevant osteophytes at the site of symptom, loose bodies, minimal Fair bank lesions, meniscal flap tear, chondral fracture/flap and outerbridge I or II lesions. And patients with bi/tri compartmental OA, malalignment, irrelevant osteophytes away from symptom site, diffuse chondrosis, degenerative meniscus, significant Fair bank lesion and outbridge III or IV are poor prognostic factors for arthroscopic debridement. So obliterated joint space rules out the possibility of conservative and arthroscopic treatments.
- High tibial osteotomy is indicated in *physiologically young* (years) and active patients with unicompartmental OA *of tibiofemoral jointsQ.*

Radiological Grading Scale of OA **of Tibiofemoral** Joint

	Ahlback	**Kellgren Lawrence**	**Brandt**
0	No radiographic findings of osteoarthritis	No radiographic findings of osteoarthritis	No radiographic findings of osteoarthritis
1	Joint space narrowing < 3mm	Minute osteophytes of **doubtful** clinical significance	with secondary features
2	Joint space obliterated or almost obliterated	Definite osteophytes with unimpaired joint space	50-75% joint space narrowing without secondary features
3	Minor bone attrition (	Definite osteophytes	50-75% joint space narrowing with secondary

Arthroscopic Grading of Articular Cartilage Defect of knee joint

	Noyes
0	Normal articular cartilage
IA	Mild softening or discoloration of articular cartilage
1B	Severe softening or discoloration of articular cartilage
2A	Partial-thickness defect of

		with **moderate** joint space narrowing	features		the total thickness of articular cartilage
4	Moderate bone attrition (5-15 mm)	Definite osteophytes with **severe** joint space narrowing, subchondral sclerosis and definite deformity of bone contour.	>75% joint space narrowing with secondary features Severe subchondral sclerosis and definite deformity of bone contour	2B	Partial-thickness defect of >50% of the total thickness of articular cartilage
5	Severe bone attrition (>15 mm)			3A	Full-thickness articular cartilage defect with normal subchondral bone
* Secondary radiological features of OA include osteophytes, subchondral sclerosis & subchondral				3B	Full-thickness articular cartilage defect with erosion of subchondral bone

Surgical Management Plan of Arthritis Knee

- Before surgery is considered, **conservative management** (including *anti-inflammatory medications, modification of daily activities, weight reduction for obese patients, and use of cane for ambulation)* should be exhausted (adequately tried). *Intra arterial injections of hyaluronic acid & steroid* may be helpful in early minimal arthritis.

Arthroscopic lavage (wash out) provides symptomatic improvements in *patients with normal alignment, joint space >3mmQ,* stable

ligaments, unicompartmental OA with relevant osteophytes at the site of symptom, loose bodies, minimal Fair bank lesions, meniscal flap tear, chondral fracture/flap and outerbridge I or II lesions. And patients with bi/tri compartmental OA, malalignment, irrelevant osteophytes away from symptom site, diffuse chondrosis, degenerative meniscus, significant Fair bank lesion and outbridge III or IV are poor prognostic factors for arthroscopic debridement.

Total (Tricompartmental) Knee Replacement (TKR) : Indications

- Primary indication of TKR is to relieve *pain caused by severe arthritis with or without significant deformityQ.* Radiological finding must correlate with clinical impression of knee arthritis. *Patient who do not have complete cartilage space loss before surgery tend to be less satisfied* with their clinical result after TKR.
- *Severe pain from chondrocalcinosis & pseudogout* in an elderly patient is an occasional indication of TKR in absence of complete cartilage space loss. *Severe patellofemoral arthritis in elderly* may justify TKR because the expected outcome is better than that of patellectomy in these patients.
- Osteonecrosis with subchondral collapse of femoral condyle.
- Because knee replacement has a finite expected survival that is adversely affected by activity level, it generally is indicated in older patients with more sedentary life styles. It is preferable that patients undergoing TKA have a remaining normal life expectancy of between 20 & 30 years so that need for a repeat arthroplasty for a failed TKA will be minimal. It is clearly indicated in young patients who have limited function b/o systemic arthritis (eg rheumatoid arthritis) with multiple joint involvement. But the patient must understand the limitations of the procedure, be willing to modify life style to prolong the life of prosthesis and be willing to risk the lower success rate in a revision TKA.
- Deformity can become the principle indication for **TKR** *in patient with moderate arthritis & variable levels of pain when the progression of deformity begins to threaten the expected outcome* of an anticipated TKR. This includes **flexion contractures beyond 20° and vurus/ valgus laxity.** However, deformity without pain is not a suitable indication for surgery as it may be well tolerated by elderly.
- **Indications for leaving the patella unresurfaced** are, a primary

diagnosis of OA, satisfactory patellar cartilage with no eburnated bone, congruent patello femoral tracking, a normal anatomical patellar shape and no evidence of crystalline or inflammatory arthropathy and lighter weight of patient.

TKR: Contraindications

- **Absolute** contraindications include *recent or current knee infection;* a remote source of ongoing infection; extensor *mechanism discontinuity or severe dysfunction; recurvatum deformity* secondary to muscular weakness; and presence of painless, well functioning knee arthrodesis.
- Relative contraindications include *fragile medical conditions, severe atherosclerotic disease* of operative leg, skin conditions such as *psoriasis* within the operative field, venous stasis disease with recurrent cellulitis, *neuropathic arthropathy,* morbid obesity, recurrent UTI, and a h/o osteomyelitis in the proximity of knee.

35. A patient presented with a history of fall on outstretched hand. There is pain & swelling over the radial aspect of the wrist without any obvious deformity. Radial styloid process is at a lower level than the ulnar styloid process. Tenderness can be elicited in anatomical snuff box. Findings are consistent with the diagnosis of:
March 2013 (e)

a) Fracture scaphoid

b) Fracture Colle's

c) Fracture pisiform

d) Wrist osteoarthritis

Correct Answer - A
Ans. A i.e. Fracture scaphoid
Scaphoid

- Only carpal bone to undergo fracture as well as AVN: Scaphoid
- Fragment undergoing necrosis in fracture scaphoid: Proximal
- MC site of fracture scaphoid: Waist

36. Sectoral sign is positive in ?

a) Avascular necrosis of femur head

b) Osteoarthritis of hip

c) Protrusio acetabuli

d) Slipped capital femoral epiphyses

Correct Answer - A
Ans. is 'a' i.e., Avascular necrosis of femur head
Clinical features of AVN
In the earlier stages of AVN, the patient is asymptomatic, and by the time patient presents, the lesion is well advanced.
Common histories patient gives (Any of the following) : -
i) Dislocation of Hip
ii) Alcoholism
iii) Steroid intake for any disorder
iv) Nephrotic syndrome
Pain is a common complaint. Pain is felt in the grain and may radiate to knee.
Decreased range of motion especially internal rotation followed by abduction.
Sectoral sign or Differential rotation : - Internal rotation is possible in extended position of hip, but as seen as the hip is flexed to 90° no internal rotation is possible. This is the characteristic sign of AVN. o
Limp with antalgic gait.
Trendelenberg's test positive.

37. Gallows traction is used in management of fracture shaft ?

a) Femur

b) Tibia

c) Humerus

d) Ulna

Correct Answer - A

Ans. is *'a' i.e.,* Femur

Gallows traction is used for treatment of fracture shaft femur, in infants and children < 2 yrs of age.

Fracture shaft femur in infant and young children

- It is published that upto one half of infants and young children who sustain femur fractures are victims of child abuse and child abuse occurs in 50 - 80% of children (< 2 years of age) with femoral fracture.
- Other causes of fracture are osteogenesis imperfecta (blue sclera, hearing loss, multiple fracture), bone tumors (eosinophilic granuloma, aneurysmal bone cyst).
- Fracture heals within 2 weeks in infant and children upto 2 years of age.
- Treatment depends upon the age of the patient : ?

1) Conservative : - *It is the treatment of choice in children.*

i. *0-2 yeas :-* Plaster spica or modified Bryant or Gallow's traction or pavllic harness (< 6 month of age).
i. *2-10 years :* - Split Russel traction
i. *10-15 years :* - 90-90° femoral skeletal traction.

2) Surgical

- Surgery is done less commonly in children.

- It is indicated in older children when closed reduction by conservative treatment is not possible.
- Intramedullar titanium elastic nailing is the surgery of choice.

38. Osteoporosis is characterized by all the following except ?

a) Decreased bone mineral density

b) Decreased Serum Calcium, phosphorus and alkaline phosphatase is seen

c) Glucocorticoids can cause osteoposis

d) Dorsolumbar spine is the most coomon site of osteoporotic fracture

Correct Answer - B
Ans. is 'b' i.e., Decreased Serum Calcium, phosphorus and alkaline phosphatase is seen
Osteoporosis is a state of decreased mass per unit volume of a normally mineralized bone. Osteoporosis is the *commonest metabolic bone disease.* Osteoporosis is characterized by an *abnormally low bone mass (low bone density)* and defects in bone structure, a combination of which renders the bone unusually fragile and at greater than normal risk of fracture. Bone depletion may be brought about by predominant bone resorption, decreased bone formation or a combination of the two.

39. Congenital elevation of scapula is called ?

a) Sprengel shouder

b) Bouchard

c) Boutennier

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Sprengel shoulder

<u>Congenital high scapula (sprengel's shoulder)</u>

- Congenital high scapula is an uncommon congenital deformity characterized by an *abnormally high position and relative fixity of scapula.*
- The anomaly represents a *failure of the scapula to descend during development to its normal thoracic position.*

40. A moving vehicle hits a pedestrian on his lateral aspect of the knee and causes a fracture. The fracture line is passing through the intercondylar eminence. Which of the following structures will most likely be injured

a) Medial collateral ligament

b) Lateral collateral ligament

c) Anterior cruciate ligament

d) Medial meniscus

Correct Answer - C
Ans. c. Anterior cruciate ligament

41. Ankle sprain due to forced inversion of a plantar flexed foot is due to injury to

a) Anterior talofibular ligament

b) Posterior talofibular ligament

c) Calcaneofibular ligament

d) Posterior fibres of deltoid

Correct Answer - A

Ans. a. Anterior talofibular ligament

* Structures damaged due to inversion injury.
  - Peroneal tendon injury.
  - Avulsion fracture of tip of lateral malleolus .
  - Avulsion fracture of anterolateral surface of talus & calcaneum (sustentaculum tali).
  - Fracture of base of 5th metatarsal.
  - Lateral collateral ligament injury (anterior talo fibular *> calcaneofibular > posterior- talofibular ligament).*
  - Medial malleolus fracture.

42. Dennis stability concept is based on which of the following

a) 2 columns

b) 3 columns

c) 4 columns

d) 5 columns

Correct Answer - B
Ans. b. 3 columns

43. A young male after sudden unconsciousness following an episode of seizure.ori awakening, finds that both of his arms were adducted and internally rotated. The most probable diagnosis i

a) Anterior dislocation

b) Posterior dislocation

c) Greater tuberosity fracture

d) Rotator cuff injury

Correct Answer - B
Ans. b. Posterior dislocation

- Posterior Dislocation of Shoulder is caused by indirect force producing marked internal rotation and adduction, most commonly during a fit, convulsions or an electric shock

Posterior Dislocation of Shoulder

Mechanism of injury:

- Indirect force producing marked internal rotation and adduction^{Q} most commonly during a fit, convulsions or an electric shock^{Q}

Clinical Presentation:

- Diagnosis is frequently missed°, patient may have normal contour of shoulder
- The classical clinical feature is arm is held in medial rotation and is locked in that position° and the examiner cannot externally rotate it.

Diagnosis:

- X-Ray: Due to medial rotation, head looks abnormal (electric bulb sign)° and it stands away somewhat from glenoid fossa (empty

glenoid sign)Q

44. After a orawl, a young male presented 6, itti inability to extend his distal interphalangeal joint. An X-ray was taken and was shown to be normal. What should be the next step in managing the patient?

a) Splint

b) Surgery

c) Wax bath

d) Ignore

Correct Answer - A
Ans. a. Splint

45. A 12-years-old boy presents with a symmetric, expansile cystic lesion in the proximal humerus. All of the following can be done for his treatment except

a) Curettage

b) Intralesional steroids

c) Intralesional sclerosing agents

d) Radiotherapy

Correct Answer - B

Ans. B

- Solitary bone cyst is the diagnosis of a 12 years old boy, who presents with a symmetric, expansile cystic lesion in the proximal humerus.

Solitary Bone Cyst:

- Common in first two decades, primarily between 5-15 years
- More common in males
- MC site: Proximal humerus (50-60%) >Femur (25-30%)
- Cyst appears as centrally radioluscent lesions, on the metaphyseal side of the growth plate of a long bone

Treatment:

- Curettage
- Methylprednisolone acetate injection into lesion
- Radiographic contrast injection into lesion
- Intralesional injection of sclerosing agents

Solitary Bone Cyst (Unicameral Bone Cyst)

- Common in first two decades, primarily between 5-15 years[Q]
- More common in males[Q]
- MC site: Proximal humerus[Q] (50-60%) >Femur (25-30%)
- It is not a true cyst° because not lined by endothelial cells but lined

by fibrous tissue and blood vessels

Clinical Features:

- Asymptomatic° unless presents as a fracture

Radiological Investigations:

- Cyst appears as centrally radioluscent lesions[Q], on the metaphyseal side of the growth plate of a long bone
- Cortex is thinned but intact[Q]
- Fallen fragment sign" may present indication that the lesion is fluid filled rather than solid[Q]
- Other tests are usually not required except in unusual locations such as pelvis. In such locations MRI or CT is indicated
- MRI can document extent of the lesion and its cystic nature[Q]
- MRI helps in distinguishing unicameral cyst (SBC) from aneurysmal bone cyst (ABC), giant cell
- tumor (GCT) and fibrous dysplasia[Q]

Treatment:

- Curettage[Q]
- Methylprednisolone acetate[Q] injection into lesion
- Radiographic contrast injection[Q] into lesion
- Intralesional injection of sclerosing agents[Q]

46. True regarding nerve injury is:

a) In all cases of open wound with clinical signs of nerve injury, nerve exploration should always be done

b) Nerve conduction velocity is best predictor within 48 hours of injury

c) Positive Tinel's sign indicates the accurate location of lesion

d) Traction nerve injury should be repaired immediately

Correct Answer - A

Ans. a. In all cases of open wound with clinical signs of nerve injury, nerve exploration should always be done

Indications of Exploration in Nerve Injuries: (Apley's 9/e p274)

- Nerve was seen to be divided and needs to be repaired, i.e., open injury
- If the type of injury (example a knife wound or high energy injury) suggest that the nerve has been divided or severely damaged.
- If recovery is inappropriately delayed and diagnosis is in doubt.
- Positive Tinel's sign tells about the regeneration of the nerve (does not indicates the accurate location of lesion) Traction nerve injury are usually neuropraxia (managed conservatively, should not be repaired immediately)

Nerve Injury

Neuropraxia

- Reversible physiological nerve conduction block[Q]
- Seen in crutch palsy, tourniquet palsy, and Saturday night palsy[Q]

Axonotemesis

- Loss of conduction due to axonal interruption[Q]but the nerve is in continuity and the neural tubes are intact
- Seen in closed fractures and dislocations

Neurotemesis

- There is complete division of nerve° (epineurium, perineurium, endoneurium and axon all lost their continuity)
- Seen in open wounds

Nerve Repair

- A clean cut nerve is best repaired as soon as this can be done safely[Q].
- The higher (proximal) the lesion, the worse the prognosis[Q].
- Pure motor or pure sensory nerves recover better than mixed, because there is less chances of axonal confusion.
- Tinel's sign indicate regeneration of nerve[Q]
- Rate of regeneration of nerve is 1mm/day[Q]

Prognosis after Nerve Suturing

- Radial nerve (best)° >Median nerve >Ulnar nerve >Peroneal nerve >Sciatic and femoral nerve (worst prognosis)[Q].

47. After lifting something heavy from the ground, a patient complains of back pain, which is radiating to lateral leg and great toe of lower limb. The most probable diagnosis:

a) L3-L4 disc prolapse

b) L4-L5 disc prolapse

c) L5-S1 disc prolapse

d) L5 fracture

Correct Answer - B
Ans. b. L4-L5 disc prolapse
prolapse (Ref *Apley s 6/e p390-395, lordi p497-496, 509-512; Maheshwan 3/e p230, 231)*
The most probable diagnosis in a patient complaining of back pain, which radiates to lateral leg and great toe of lower limb after lifting something heavy from the ground is L4-L5 disc prolapse.

- The commonest site of disc prolapse is lumbar spine, more than 90% cases are localized at **$L_{4..5}$** (more common)`) and L5S1.
- The next common site is lower cervical spine C6_7°.

MRI is the investigation of choice

48. An 8-year old boy presents with swelling in mid-thigh region. On examination, femoral thickening was found with Codman's triangle. On aspiration, greyish white liquid was aspirated that showed atypical round cells with MIC-2 positivity. The most likely diagnosis is

a) Osteosarcoma

b) Ewing's sarcoma

c) Tubercular osteomyelitis

d) Pyogenic osteomyelitis

Correct Answer - B
Ans. b. Ewing's sarcoma
Ewing's sarcoma:

- A type of primitive neuroectodermal tumour (PNET)
- On histopathological examination shows small round cells, which show positive immunohistochemical staining or CD-99 and MIC-2 gene
- Although the classical periosteal reaction seen in Ewing's sarcoma is onion peel appearance but sometimes it can present as Codman's triangle.
- Sunray appearance and Codman triangles are usually associated with osteosarcoma, but they are just as common in Ewing's sarcoma. For the diagnosis of osteosarcoma, histopathology must show the presence of immature new bone cells, i.e. osteoid.

Classical radiological

features	Found in
Codman's triangle, Sun ray appearance	Osteosarcoma[Q]
Onion peel appearance	Ewing's Sarcoma[Q]
Soap bubble appearance	Osteoclastoma[Q]
`0· ring sign	Enchondroma[Q]
Wormian Bones	Osteogenesis imperfecta[Q]
Honey comb appearance	Admantinoma[Q]
Driven snow appearance	Pindborg tumor[Q]
Speckled/ Mottled/ Patchy calcification	Chondrosarcoma[Q]

49. A 60-year old female had fallen in the bathroom and she is not able to stand on her feet. On examination, her right leg was in external rotation and was not able to move her leg. There was tenderness in Scarpa's triangle. There is no history of fever. X-ray shows no fracture line. What is the nest step of management

a) MRI

b) Strict bed rest for 10 days and repeat X-ray

c) Joint Aspiration

d) Start proper anlgesia and start mobilization to prevent stiffness

Correct Answer - A
Ans. a. MRI
History of fall followed by tenderness in Scarpa's triangle and leg in externally rotated position is suggestive of fracture neck of femur. An impacted, undisplaced fracture is likely to be missed on an X-ray. An MRI or a bone scan would be needed to diagnose the lesion.
"Impacted fractures may be extremely difficult to discern on plain X-ray. If there is a fracture it will show up on MRI or **a** bone scan after few days.

50. Gallows traction is used for fracture:

a) Shaft femur

b) Neck femur

c) Shaft tibia

d) Tibial tuberosity

Correct Answer - A
Ans. a. Shaft femur
Gallow's traction is used for treatment of fracture shaft of femur, in infants and children

Gallow's Traction

- Gallow's traction is used for treatment of fracture shaft of femur, in infants and children
- Weight must not be >12 kgs
- *Both the fractured and the normal femur are placed in skin traction and infant is suspended by these from a special frame. The buttocks should be lifted just off the bed so that the weight of the body provides counter traction and the fracture is reduced*

Uses of Tractions

Name	***Use***
Bryant's Traction[Q]	Fracture shaft of femur in children
Gallow's Traction[Q]	Fracture shaft of femur in children
Russel's Traction[Q]	Fracture shaft of femur in older children
Perkin's Traction[Q]	Fracture shaft of femur in adults

90°-90° Traction[Q]	Fracture shaft of femur in children
Agnes-Hunt Traction[Q]	Correction of Hip deformit
Well-Leg Traction[Q]	Correction of adduction or abduction deformity of hip
Dunlop Traction[Q]	Supracondylar fracture of humerus
Smith's Traction[Q]	Supracondylar fracture of humerus

Uses of Tractions

Name	**Use**
Calcaneal Traction	Open fractures of ankle or leg
Metacarpal Traction	Open forearm fractures
Head-Halter Traction	Cervical spine injuries
Crutchfield Traction[Q]	Cervical spine injuries
Halo-Pelvic Traction	Scoliosis

51. A 40-year old male after binge drinking slept on a chair. On the next day, he presented with weakness of the right arm and was not able to move his hand. Examination showed ulnar nerve palsy. What would be the management

a) Instant exploration

b) Give a knuckle bender splint

c) Electromyography after 2 days and decide after results

d) Neurolysis

Correct Answer - B

Ans. b. Give a knuckle bender splint

(Ref: Maheshwari 3^{d}/50, 51)

The above patient is most likely suffering from a neuropraxia because of abnormal positioning of limb causing pressure on the ulnar nerve and he is expected to recover spontaneously and completely.

Splints used in various Nerve Injuries

Nerve Injured	***Splint Used***
Axillary nerve (Deltoid paralysis)	***Shoulder abduction splint***
Radial nerve palsy	***Cock-up splint***
Ulnar nerve palsy	***Knuckle-bender splint***
Sciatic nerve or common	***Foot drop splint***

peroneal nerve palsy

52. A person is able to abduct his arm, internally rotate it, place the back of hand on the lumbosacral joint, but is not able to lift it from back. What is the etiology

a) Subscapularis tendon tear

b) Teres major tendon tear

c) Long head of biceps tendon tear

d) Acromioclavicular joint dislocation

Correct Answer - A
Ans. a. Subscapularis tendon tear

53. You are testing knee jerk reflex in a patient. The afferents in deep tendon reflexes are carried by:

a) Dynamic intrafusal fibers

b) Golgi tendon organ

c) Nuclear bag and static chain fibers

d) Both Golgi tendon and muscle spindle

Correct Answer - A
Ans. a. Dynamic intrafusal fibers
'Dynamic nuclear bag fibers are highly sensitive to the rate of change in muscle length, providing velocity sensitivity to muscle stretch.'
'Nuclear bagfibers can be divided into nuclear bagfibers type I and nuclear bagfiber Ope 2. The sum of these difference renders: (l) the nuclear bag type I fibers with littte elasticity in their polar regions making them sensitive to dynamic changes (velocity of length-change); and (2) nuclear bag type 2 with significant elasticity in their polar region making them sensitive to the changes in length (but not to the velocity of length change). Hence, nuclear hag fibers type I are also called dynanmic nuclear big fibers and nuclear bag fibers type II fibers are also called static nuclear bag fibers.

54. In an encephala isole preparation, the transections is done at:

a) First cervical spinal segment

b) Level of medulla

c) Midpontine level

d) Midcollicular level

Correct Answer - A
Ans. a. First cervical spinal segment
In an encephale isole preparation, the transection is done at first cervical spinal segment
Encephale isole preparation- Post-medullary section at either the first cervical spine segment of the spinal cord

55. In a case of tuberculosis of the thoracic spine, the earliest sign of cord compression is:

a) Bladder dysfunction

b) Extensor plantar

c) Motor weakness

d) Sensory loss

Correct Answer - B
Ans. b. Extensor plantar
"Pott's paraplegia is an appet motor neuron (UMN) type of paraplegia to begin with and the earliest features of Pott's paraplegia are features of spasticity, i.e. increased tone, axaggerated reflexes and extensor plantar.
The order of involvement in Potts paraplegia is motor first,then sensor,and fnally sphincter weakness." S.M. TULI'S

56. A 5-year old boy presents with pain and swelling in diaphysis of tibia. He also complains of fever. On examination, his ESR was raised. Which of the following is the likely diagnosis?

a) Ewing sarcoma

b) Chondrosarcoma

c) Osteogenic sarcoma

d) Fibrosarcoma

Correct Answer - A
Ans. a. Ewing sarcoma
Arises from endothelial cells of the bone marrow in the diaphysis (medullary cavity) of long tubular boneso
(especially femur) and flat bones of pelvis.
Highly malignant, undifferentiated peripheral primitive neuroectodermal tumor (PNET)
MC site: Diaphysis of femuro >fibula > ilium > tibia.
Pathology:
. Arising in medullar cavity usually invade the cortexo and periosteum producing a soft tissue massQ.
' Composed of sheets of uniform, small round cellso (that are slightly larger than lymphocy'tes), with pale clear
appearing cytoplasm due to presence ofglycogena.
. Cytoplasm is PAS positive and diastase digestiblea.
. Presence of Homer-wright rosettes and pseudo rosette is indicative of neural differentiation (i.e. pNET)
. Express MIC 2 gene in very high amount, distinguish from other

round cell tumorsa.
. Most definitive test: Demonstration of chromosomal translocation by karyotyping or RT-PCR
detection of t(11 :22)
. 80- 95%o patients have a translocation mostly t (lll.22) > t (21 : 22) and rarely t (7 :22)a
. Ewing sarcomas are periodic acid Schiff positive (owing to intracellular glycogen) and reticulin negative.
Clinical Feature:
. Mostly in males between 10-20 years of ageo.
. Pain, swelling, tenderness, urinary/rectal complaints (when ilium involved) pathological fracture.
. Systemic symptoms such as fever, generalized weakness, weight loss, and lab anomalies as anemia, leukocytosis and raised ESR are hallmark of fulminating course, advanced disease or metastasis.
Diagnosis:
. Mottled rarefaction of spongiosa with permeation of overlying cortex, reflecting rapid bone destruction is the
principal finding
. Laminated (layered) periosteal new bone formation known as onion-peel appearance
. Soft tissue masso, indicating neoplasm has perforated cortex
Treatment:
. Highly radiosensitive (melts on radiotherapy)o but overall survival is not much enhanced
. Chemotherapy is much more effective and include vincristine, actinomycin D, adriamycin, ifosfamide and etoposide
. Best results are achieved try:
- Preoperative chemotherapy then wide excision

57. The signs of malignant transformation in osteochondroma are all except

a) Pain

b) Weight loss

c) Increase in size

d) Increase in thickness of cartilage cap

Correct Answer - B
Ans. b. Weight loss
The signs of malignant transformation in osteochondroma:
Increase in size
Increase in thickness of cartilage cap: Cartilaginous cap (best visualized on MRI) Thick, > 2 cm, lobulated, extending into soft tissues in chondrosarcoma (Malignant degeneration of a peripheral solitary osteochondroma leads to chondrosarcoma.)
Pain: When malignant changes occuq the lesions become painful and show evidence of growth.

58. A 27-year old male presents with low backache, that occurs early in the morning, associated with stiffness, and persists for more than 30 minutes. On examination, his chest expansion is also restricted. The most probable diagnosis is:

a) Rheumatoid arthritis

b) Oteoarthritis

c) Gouty arthritis

d) Ankylosing spondylitis

Correct Answer - D
Ans. d. Ankylosing spondylitis
A 27-year old male presents with low backache that occurs early in the morning, associated with stiffness, and persists for more than 30 minutes. On examination, his chest expansion is also restricted. The most probable diagnosis is ankylosing spondylitis.

59. Shortening of lower limb with abduction and internal rotation is observed in which of the following types of hip dislocation?

a) Anterior dislocation

b) Posterior dislocation

c) Central dislocation

d) Lateral dislocation

Correct Answer - C
Ans. c. Central dislocation

60. In 2 years old child gallows traction is applied. Child is suffering from fracture *OHMS* 'Vov *201?* if

a) Neck of femur

b) Greater trochanter of femur

c) Fracture shaft of femur

d) Shaft of tibia

Correct Answer - C

Ans. c. Fracture shaft of femur

Russel's traction or Thomas splint is used for fracture shaft femur in older children.

Gallow's Traction

- Gallow's traction is used for treatment of fracture shaft of femur, in infants and children <2 years of ageQ.
- Weight must not be >12 kgs
- Both the fractured and the normal femur are placed in skin traction and infant is suspended by these from a special frame. The buttocks should be lifted just off the bed so that the weight of the body provides counter traction and the fracture is reduced.

61. A policemen foo..a a person In ing unconscious in iglu lateral position on the road with superficial injury to the face, bruises on the right arm, and injury to the lateral aspect of right knee. Nerve most probably injured:

a) Femoral nerve

b) Radial nerve

c) Common peroneal nerve

d) Trigeminal nerve

Correct Answer - C

Ans. c. Common peroneal nerve

Common peroneal nerve (L4, L5, Sl, S2) is the smaller terminal branch of sciatic nerve. The larger terminal branch of sciatic nerve is the tibial nerve. The common peroneal nerve is relatively unprotected as it traverses the lateral aspect of the head of fibula and is easily compressed at this site.'

Common Peroneal Nerve Injury

- Common peroneal nerve (L4, L5, Sl, S2) is the smaller terminal branch of sciatic nerve.
- The larger terminal branch of sciatic nerve is the tibial nerve.
- The common peroneal nerve is relatively unprotected as it traverses the lateral aspect of the head of fibula and is easily compressed at this site.

Common Modes of Injury

- Fracture of neck of fibula

- Plaster on the leg
- Lathi injury on the lateral side of knee joint

Clinical Features:

- Injury to common peroneal nerve results in paralysis of all muscles in the anterior and lateral compartment of the leg (dorsiflexors of the ankle and evertors of the foot) which results in:
- Loss of eversion of foot and dorsiflexion of the ankle causes foot drop
- Foot drop and toes drags on the floor while walking
- Foot comes down suddenly producing a distinctive plop
- Variable loss of sensation on the anterolateral aspect of the leg and dorsum of the foot
- Articular loss the lateral side of the knee joint
- In common peroneal nerve injury, only eversion and dorsiflexion is lost, while inversion and plantar flexion remains normal, therefore ankle reflex is intact.

62. Vascular repair to be done in which Gustilo Anderson type?

a) Inc

b) I

c) II

d) IIIb

Correct Answer - A
Ans. is 'a' i.e., Inc
<u>Treatment of Open Fractures</u>

- **Gustilo's classification of open fractures :**

Type I

- Small clean puncture wound with/ without protruded bone spike.
- Low energy non-comminuted fracture(low energy trauma).
- Little soft tissue injury with no crushing.

Type II

- More than 1 cm long wound.
- Moderate soft tissue damage and crushing.
- Low to moderate energy trauma with moderate comminution.

Type III

- Large laceration, skin flap, crushing.
- IIIA: fractured bone can be adequately covered by soft tissue despite laceration.
- IIIB: extensive periosteal stripping and fracture cover is not possible without use of local or distant flaps.
- IIIC: associated arterial injury that needs to be repaired regardless of the amount of other soft tissue damage.

63. Oligoarthritis with ascending joint involvement is seen in?

a) Juvenile osteoarthritis

b) Seronegative arthritis

c) SLE

d) Septis arthritis

Correct Answer - B
Ans. is 'b' i.e., Seronegative arthritis

- "The Arthropathy of Reiter's syndrome is typically an acute, assymetrical, additive and ascending inflammatory oligoarthritis "_____ Clinical primer of Rheumatology
- Reiter syndrome is a seronegative spondyloarthropathy.

Common causes of oligoarthritis ?

- Gout
- Juvenile idiopathic rheumatoid arthritis
- Psoriasis
- Seronegative spondyloarthropathies (SpA)

Seronegative spondyloarthropathies (SpA)

- Ankylosing spondylitis
- Reactive arthritis (including Reiter's syndrome)
- Psoriatric spondyloarthopathy
- Inflammatory bowel disease (Enteropathic spondyloarthopathy) o Juvenile spondyloarthropathy
- Unclassifiable or undifferentiated spondyloarthropathy

64. First sign of compartment syndrome is ?

a) Pain

b) Tingling

c) Loss of pulse

d) Loss of movement

Correct Answer - A
Ans. is 'a' i.e., Pain
Clinical features of compartment syndrome

- Four signs are reliable in diagnosing a compartment syndrome :-
1. Paresthesia or hypesthesia in nerves traversing the compartment
2. Pain with passive stretching of the involved muscles (stretch pain)
3. Pain with active flexion of the muscles
4. Tenderness over the compartment
- Amongst these, stretch pain is the earliest sign of impending compartment syndrome. The ischemic muscles, when stretched, give rise to pain.
- Passive extension of fingers (streching the fingers) produce pain in flexor compartment of forearm.
- Other features are Pulselessness, paralysis, Pallor and pain out of proportion to physical findings.
- Peripheral pulses, are present initially and disappear later. Therefore, pulse is not a reliable indicator for compartment syndrome.

65. Most common tumor producing osteoblastic metastasis?

a) Kidney

b) Lung

c) Prostate

d) Thyroid

Correct Answer - C

Ans. is 'c' i.e., Prostate

Osteolytic bone metastases	Osteoblastic bone metastasis	Mixed osteolytic-osteoblastic
Renal (kidney)	Prostate (most common)	Breast
Thyroid	Prostate (most common)	Lung (Bronchus)
Ewing's sarcoma	Medullary carcinoma of thyroid	Urinary bladder
Uterine carcinoma	Osteogenic sarcoma	Pancreatic
GIT cancers & Hepatoma	Neuroblastoma	Testicular
Wilm's tumors	Medulloblastoma	Cervical
Myeloma		Ovarian
Melonoma & SCC		
Malignant pheochromocytoma		

66. Which of the following is true about supracondylar Fracture of humerus?

a) Distal segment is dislocated anteriorly more than posterior

b) Cubitus valgus more common than cubitus varus during malunion

c) Nerve injury related manifestations are transitory

d) Injury causes weakness of elbow flexion

Correct Answer - C

Ans. c. Nerve injury related manifestations are transitory (Ref: Apley's 8/e p596-599; Rockwood 6/e p543-586)

- Supracondylar Fracture Humerus:
- Distal segment is dislocated posteriorly more than anterior
- Cubitus varus more common than cubitus varus during malunion
- Cubitus valgus more common than cubitus varus during nonunion
- Nerve injury related manifestations are transitory due to neuropraxia
- Weakness of elbow flexion is not seen in supracondylar fracture

67. A 24 years old college student while playing hockey injured his right knee. This patient presents after 3 months with instability of knee joint in it full extension without instability at 90 degree of flexion. The structure most commonly damaged is:

a) Posterolatilal part of anterior cruciate ligament

b) Anteromedial part of anterior cruciate ligament

c) Posterior cruciate ligament

d) Anterior hom of medial meniscus

Correct Answer - A
Ans. a. Posterolateral part of anterior cruciate ligament

68. An elderly female sustained Colle's fracture in her right hand, which was properly treated and cast was removed. After some weeks, she now complains of pain out of proportion and swelling with stiffness in the wrist with cyanosis discoloration and trophic changes in the fingers. X-ray of the hand revealed complete decalcification. She is most likely suffering from:

a) Causalgia

b) Tubercular arthritis of wrist joint

c) Traumatic tenosynovitis

d) Sudeck's atrophy

Correct Answer - D

Ans. d. Sudeck's atrophy (Ref Rockwood 7/e p603-606)

- Presence of severe pain out of proportion, stiffness in the wrist with cyanosis and trophic changes in the fingers, weeks after injury suggests a diagnosis of Complex Regional Pain Syndrome Type I (Reflex Sympathetic Dystrophy).

69. A 2-year-old child with rickets is on calcium supplements and is also suffering from congenital Talipes equinovarus (CTEV). The child will be referred to a surgeon for the correction of the deformity when:

a) Serum vitamin D levels are normal

b) Growth plate healing becomes normal

c) Bone specific alkaline phosphatase levels become normal

d) Serum calcium levels are normal

Correct Answer - B
Ans. b. Growth plate healing becomes normal

- Although, serum alkaline phosphatase level is the most persistent biochemical marker of active rickets, but surgery' in case of rickets should be performed only after healing of active rickets. For surgical correction, the most important criteria is to look for growth plate healing on imaging. Before performing surgery in rickets it should be first treated by medical management in the form of vitamin D and calcium supplementation in appropriate doses.

70. Jersey finger is caused by rupture of:

a) Flexor digitorum superficialis

b) Flexor digitorum profundus

c) Extensor digiti minirni

d) Extensor indicis proprius

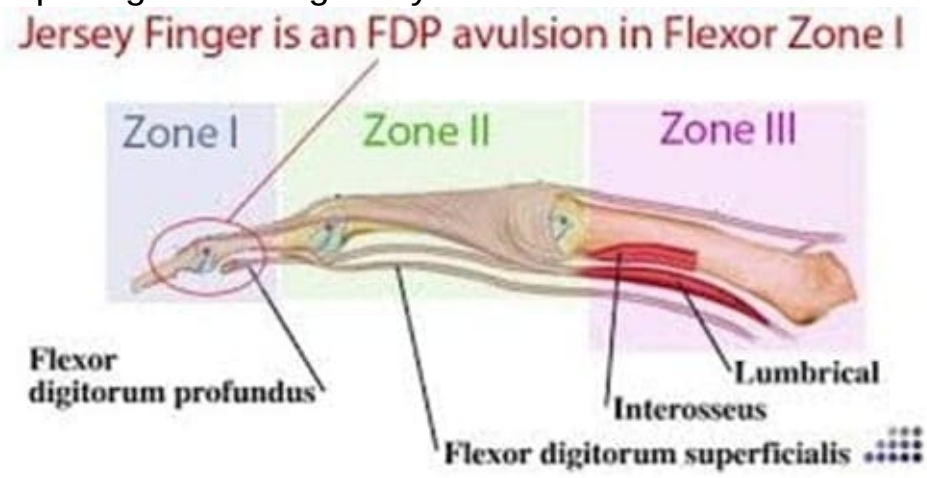
Correct Answer - B

Ans: B. Flexor digitorum profundus

(Ref Bailey 26/e p465)

Rugger jersey finger:

- Caused by rupture of flexor digitorum profundus.
- Injury to flexor profundus tendon at its attachment point to distal phalanx.
- Occurs mostly in American football when a player grabs another player's jersey with the tips of one or more fingers while that player is pulling or running away."



71. Shenton line is seen in X-ray of:

a) Shoulder

b) Elbow

c) Knee

d) Hip

Correct Answer - D

Ans: D. Hip

Ref. Apley 9/e p354)

- Shenton's line - Seen in hip X-ray.

Shenton's line:

- An imaginary line drawn along inferior border of superior pubic ramus (superior border of obturator foramen) and along inferomedial border of femur neck.
- Should be continuous & smooth.
- Breached in fracture neck of femur, head of femur, superior pubic rami & hip dislocation.

72. Judet view of X-ray is for:

a) Calcaneum

b) Scaphoid

c) Shoulder

d) Pelvis

Correct Answer - D

Ans: D. Pelvis

(Ref Maheshwari 5/e p38, 369)

- Judet's view of X-ray – For acetabular (pelvic) fracture.

Judet's views:

- Standard radiographic projections employed in acetabulum fractures patients.
- Basically 45" oblique of affected hip.
- 45" angle best achieved by rolling patient.

Uses:

- Generally only performed as supplementary view.
- Useful in demonstrating or confirming acetabular fractures in acute injury cases.

73. Removal of vertebral disc can be done by all these approaches except:

a) Laminotomy

b) Laminectomy

c) Laminoplasty

d) Hemilaminectomy

Correct Answer - C

Ans: C. Laminoplasty

(Ref Maheshwari 5/e p257)

- Removal of vertebral disc can be done by all these approaches except laminoplasty.

Laminoplasty:

- Describes process of increasing available space for spinal cord by laminar arch reconstruction by posterior approach.

Methods of Removal of Disc

Fenestration	• The ligamentum flavum bridging the two adjacent laminae is excised and the spinal canal at the level exposed.
Laminotomy	• In addition to fenestration, a hole is made in the lamina for wider exposure.
Hemi-laminectomy	• The whole of the lamina on one side is removed
Laminectomy	• The laminae on both sides, with the spinous process are removed. Such a wide exposure is required for a big, central disc producing cauda equina syndrome.

74. NN hick of the following tractions is not used in lower limb?

a) Gallows

b) Bryant

c) Dunlop

d) Perkin

Correct Answer - C

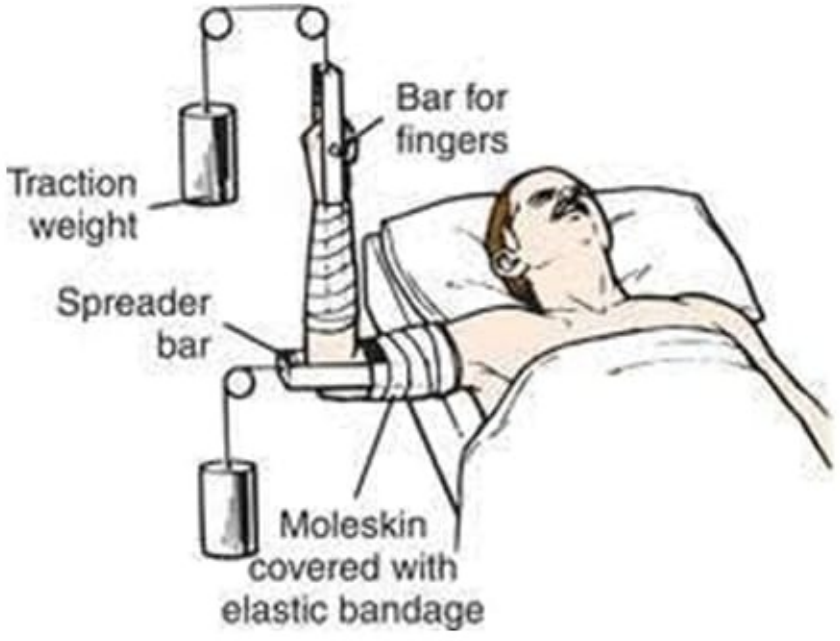
Ans: C. Dunlop

(Ref Maheshwari 5/e p27)

Dunlop traction:

- Used for supracondylar fracture of humerus, not for lower limb.

Moleskin covered with elastic bandage:



Uses of Tractions

Name	Use
**Bryant's Traction('	Fracture **shaft of femur** in children **<2 years**
Gallow's Traction°	Fracture **shaft of femur** in children **<2 years**
Russel's Traction°	Fracture **shaft of femur** in **older children**
Perkin's Traction°	Fracture **shaft of femur** in **adults**
90°-90° Traction	Fracture **shaft of femur** in **children**
Agnes-Hunt Traction	Correction of **Hip deformity**
Well-Leg Traction	Correction of **adduction or abduction deformity of hip**
Dunlop Traction	Supracondylar fracture of humerus
Smith's Traction	**Supracondylar fracture of humerus**
Calcaneal Traction	**Open fractures of ankle or leg**
Metacarpal Traction	**Open forearm fractures**
Head-Halter Traction	**Cervical spine injuries**
Crutchfield Traction°	**Cervical spine injuries**
Halo-Pelvic Traction	Scoliosis

75. In Osteoporosis which of these is seen?

a) Normal calcium, normal ALP

b) Decreased calcium, increased ALP

c) Decreased calcium, decreased ALP

d) Normal calcium, decreased ALP

Correct Answer - A

Ans: A. Normal calcium, normal ALP

(Ref Harrison 19/e p2493, 18/e p3120; Apley 9/e p131-133).

Features:

Osteoporosis:

- Mainly causes fractures) occur
- MC symptom of osteoporosis is back pain secondary to vertebral compression fracture
- Sites of Osteoporotic (Fragile) Fractures
- MC site: Fracture vertebrae (Dorsolumbar pine is the MC site)°
- Colle's fracture; Fracture neck femur
- Serum calcium, phosphate and alkaline phosphatase are normal in osteoporosis.

Diagnosis of osteoporosis:

- At least 30% of bone mass must be lost before becomes apparent on X-ray.

Osteoporosis: X-ray findings:

- Loss of vertical height of a vertebra - Due to collapse.

Cod-fish appearance:

- Disc bulges into adjacent vertebral bodies resulting in biconvex disc.
- Ground glass appearance of bones - Evident in pelvis.

Measurement of Bone Mass:

Noninvasive techniques for estimating skeletal mass or

density:

- **Dual-Energy X-ray Absorptiometry (DEXA) - Gold standard for screening (estimation) of bone density, bone mass and osteoporosis diagnosis.**
- Single-energy X-ray absorptiometry (SEXA).
- Quantitative CT.
- Ultrasound (US).

76. A young patient is diagnosed to have irreparable tear of the rotator cuff. Treatment of choice will be:

a) Tendon transfer

b) Total shoulder replacement

c) Reverse c shoulder replacement

d) Acromioplasty

Correct Answer - A

<u>Ans: A. Tendon transfer</u>

(Ref Apley 9/e p347,348)

- Treatment of choice for irreparable tear of rotator cuff in young patient = Tendon transfer.

Subacromial decompression and debridement of degenerate cuff tissue:

- Useful for irreparable massive full thickness tears.
- Pain relief allows reasonable shoulder abduction by remaining muscles.

Other methods:

- Supraspinatus advancement.
- Latissimus dorsi transfer.
- Rotator cuff transposition.
- Fascia Iota autogruit.
- Synthetic tendon graft.

77. Investigation of choice in stress fracture:

a) CT scan

b) MRI

c) X-ray

d) Bone scan

Correct Answer - B

<u>Ans: B. MRI</u>

(Ref bApley's 9/e p724-725)

- **Investigation of choice in stress fracture = MRL**

MRI findings:

- Reveals earliest changes (particularly 'spontaneous' undisplaced osteoarticular fractures).
- Requested in older patients (mainly osteoporosis) complaining of sudden pain onset over anteromedial knee part.

78. Most metabolically active layer in the bone is:

a) Periosteum

b) Endosteum

c) Cancellous bone

d) Cortical bone

Correct Answer - B

Ans: B. Endosteum

(Ref Osteoporosis and Bone Densitomeny Measurements edited by Giuseppe Guglielmi/ p72)

The most metabolically active component of bone is the endosteal surface of cortex with trabecula bone being next most common active area .

Metabolically active layer in bone:

- Are in immediate contact with bone marrow
- Endosteum of cortex - Most active layer in bone (overall).
- Total area of endosteal surface approximately 0.5 m2.
- Higher remodelling activity than periosteal surface –
- Due to greater biomechanical strain or greater cytokine exposure from adjacent hone marrow compartment.

Order:

- Trabecular bone - Next most metabolically active area.
- In children = Periosteum is very active.

79. A 56-year-old female presents with nocturnal pain in the right thumb, index and middle finger for the past 3 months. All of the following provocative tests can be performed for the diagnosis of the condition except :

a) Phalen's test

b) Finkelstein test

c) Tinel's sign

d) Tourniquet test

Correct Answer - B
Ans. b. Finkelstein test (Ref. Maheshwuri 3/e
Nocturnal pain in the right thumb, index and middle finger for the past 3 months in a 56-year old female is highly suggestive of Carpal tunnel syndrome. Finkelstein test is used to diagnose DeQuervain's tenosynovitis, not the carpal tunnel syndrome.

80. All the following can lead to damage of the axillary nerve except:

a) Fracture of surgical neck of humerus

b) Intramuscular injection

c) Improper use of crutches

d) Shoulder dislocation

Correct Answer - C
Ans: C. Improper use of crutches
(Ref Apley's• 9/c p282)

- Improper use of crutches causes radial nerve palsy mostly rather than axillaty nerve injury.
- Radial Nerve Injury:
  - Very high lesions may be caused by trauma or operations around the shoulder.
  - Due to chronic compression in the axilla.
- Seen in drink & drug addicts who fall into a stupor with the arm dangling over the back of a chair - Saturday night palsy.
- In thin elderly patients using crutches - Crutch palsy.
- Weakness of wrist & hand.
- Paralysed triceps.
- Absent triceps reflex.

81. Meralgia paresthetica is due to involvement of:

a) Lateral cutaneous nerve of thigh

b) Genitofemoral nerve

c) llioinguinal nerve

d) Saphenous nerve

Correct Answer - A
Ans: A. Lateral cutaneous nerve of thigh
(Ref Apley:s 9/e p292)

- The lateral cutaneous nerve can be compressed as it runs through the inguinal ligament just medial to the anterior superior iliac spine.
- The patient complains of numbness, tingling or burning discomfort over the anterolateral aspect of the thigh (meralgia paraesthetica).
- Testing for sensibility to pinprick will reveal a patch of numbness over the upper outer thigh.
  - If the symptoms are troublesome - Nerve can be released.

82. All of the following are regarding osteoporosis except.

a) Calcitonin decreases pain

b) Bisphophonates are work horse for treatment

c) T-score <1.5 in osteoporosis

d) PTH is used in severe osteoporosis

Correct Answer - C

Answer- C. T-score <1.5 in osteoporosis

TLscore -2.5 or less is seen in osteoporosis.

T-score	**Interpretation**
-1 or more-	Normal
Between -l and -2.5	Osteopenia
-2.5 or less-	Osteoporosis
-2.5 or less with fragility fracture -	Severe osteoporosis

83. Both bone and disc spaces are destroyed in-

a) Tuberculosis

b) Metastasis

c) Lymphoma

d) Multiple myeloma

Correct Answer - A
Answer- A. Tuberculosis
The spine is the MC site of skeletal tuberculosis, accounting for 5OVo cases followed by hip and knees.
MC infective pathology of spine is tuberculosis.

84. Which of the following is not a cause of clubfoot in newborns?

a) CTEV

b) Arthogryposis multiplex cngenita

c) Polio

d) Spina bifida

Correct Answer - C
Answer- C. Polio
Etiology of club foot
Idiopathic (MC) or CTEV
Secondary club foot:

- Neurological disorders and neural tube defects (myelomeningocele, spinal dysraphism)
- Paralytic disorders as spina bifida, myelodysplasia and Freidreich's ataxia
- Arthrogryposis multiplex congenita
- Larsen syndrome
- Freeman-Sheldon (Mobius) syndrome
- Diastrophic dwarfism
- Sacral agenesis, tibial deficiency, constriction rings and amniotic bands
- Fetal alcohol syndrome
- Down's syndrome
- Larsen syndrome

85. A 7 years old child comes with fever and tibial swelling exhibits on X- ray exhibits periosteal reaction. Laboratory results show raised ESR and TLC. What is the next step in diagnosis of the patient?

a) MRI

b) Pus culture

c) Bone biopsy

d) Blood culture

Correct Answer - A

Answer- A. MRI

Ewingts sarcoma:

- MRI is essential to elucidate soft-tissue involvement in Ewing's sarcoma, because the tumor has low signal intensity on Tl-weighted images compared with the normal high signal intensity of the bone marow.

Osteomyelitis:

- MRI allows early detection of osteomyelitis and assessment of the extent of involvement and the activity of the disease in cases of chronic bone infection.
- It is considered the most useful imaging technique to evaluate suspected osteomyelitis because of its ability to demonstrate
- changes in the water content ofbone marrow with an excellent structural definition and spatial resolution.

86. Which of the following is true about supracondvlar fracture of humerus?

a) Distal segment is dislocated anteriorly more than posterior

b) Cubitus valgus more common than cubitus varus during malunion

c) Nerve injury related manifestations are transitory

d) Injury causes weakness of elbow flexion

Correct Answer - C

Answer- C. Nerve injury related manifestations are transitory

Supracondylar Fracture Humerus:

- Distal segment is dislocated posteriorly more than anterior
- cubitus varus more common than cubitus varus during malunion
- cubitus valgus more common than cubitus varus during nonunion
- Nerve injury related manifestations are transitory due to neuropraxia
- Weakness of elbow flexion is not seen in supracondylar fracture

87. A 24 year old college student while playing hockey injured his right knee. The patient presents after 3 months with instability of knee joint in full extension without instability at 90 degree of flexion. The structure most commonly damaged is-

a) Posterolateral bundle of anterior cruciate ligament

b) Anteromedial bundle of anterior cruciate ligament

c) Posterior cruciate ligament

d) Anterior horn of medial meniscus

Correct Answer - A

Answer- A. Posterolateral bundle of anterior cruciate ligament

When knee is extended, resistance to anterior drawer test is by posterolateral bundle.

It limits anterior translation, hyperextension and rotation.

Hyper extension and internal rotation place posterolateral bundle at greater risk of injury.

Rupture cause increase in hyperextension and anterior translation (extended knee).

88. Patellar cluck syndrome is interposition of soft tissue at or hypertrophied scar:

a) Superior pole of patella and impinging on femoral component during flexion

b) Superior pole of patella and impinging on femoral component during extension

c) Inferior pole of patella and impinging on femoral component during flexion

d) Inferior pole of patella and impinging on femoral component during extension

Correct Answer - B
Ans: B. Superior pole of patella and impinging on femoral component during extension

- Patellar Clunk Syndrome is a painful condition associated with a mechanical catching or clunking during active extension following total knee arthroplasty (TKA).
- The syndrome is caused by growth of interposing soft tissue usually at the superior pole of the patella.
- This interposed soft tissue cannot be visualized on plain radiographs.

89. Which metabolic condition has phosphaturia and osteomalacia?

a) Fibrosarcoma

b) Osteosarcoma

c) Undifferentiated sarcoma

d) Malignant peripheral nerve sheath tumor

Correct Answer - A
Ans: A. Fibrosarcoma

- Phosphatonin (FGF-23) oncogenic osteomalacia (paraneoplastic syndrome) seen in fibrosarcoma.

90. A patient came with complaints of lower limb weakness. Examiner places one hand under the patient's heel and patient is asked to raise his other leg against downward resistance. What is the name of this test?

a) Hoover test

b) Waddell's test

c) O'Donoghue test

d) McBride test

Correct Answer - A
Ans. a. Hoover test

- In Hoover test, the subject relaxes in a supine position on the table while the examiner places both of the subject's heels into the palm of the examiners hands.
- Test positioning: The subject relaxes in a supine position on the table while the examiner places both of the subject's heels into the palm of the examiners hands.
- Action: The subject is asked to perform a unilateral straight leg raise
- Positive finding: Inability to lift the leg may reflect a neuromuscular weakness. A positive finding is also noted when the examiner does not feel increased pressure in the palm that underlies the resting leg

91. About giant cell tumor, all are true except:

a) Commonly presents in the 20-40 year age group

b) Matrix consists of proliferating mononuclear cells

c) Osteoclast giant cells constitute the proliferative component of the tumor

d) It is a benign tumor which may have lung metastasis

Correct Answer - C

Ans: C. Osteoclast giant cells constitute the proliferative component of the tumor

(Ref: Robbins 9Ie p1204; Apley's 9Ie p202).

- In giant cell tumors, osteoclast giant cells are the malignant cells, which induce the proliferation of mononuclear macrophage lineage cells, hence the dividing cell population is the mononuclear cells which form the matrix.
- Osteoclast giant cells do not constitute the proliferative component of the tumor.

92.

Which part of 2nd metatarsal is involved in the March fracture?

a) Head

b) Neck

c) Shaft

d) Base

Correct Answer - B
Answer- B. Neck
Most common site of stress fracture or March fracture is second metatar'sal neck.
likely site for stress fracturces are common in distance runners and ballet dancers. The second metatarsal neck is the most likety sitefor stressfractures, but all metatarsals are susceptible

93. Haglund's deformity is seen in which joint?

a) Elbow

b) Wrist

c) Knee

d) Ankle

Correct Answer - D
Answer- D. Ankle
Prbminence of posterosuperior portion of calcaneus leading to heel pain is called Haglund deformity.
A Haglund deformity, or pump bump, is caused by chronic inflammation of the adventitious superficial pretendinous
Achilles bursa that separutes the Achilles tendon from the overlying skin."-Campbell's operative

94. Which of the following is true regarding Galeazzi's fracture dislocation?

a) Interosseous membrane tear with ulnar shaft fracture

b) Radial collateral ligament tear with interosseous membrane tear with radial shaft fracture

c) Interosseous membrane tear with triangular fibro-cartilage complex (TFCC) tear and ulnar shaft fracture

d) Interosseous membrane tear with triangular fibro-cartilage complex (TFCC) tear and radial shaft fracture

Correct Answer - D

Answer- D. Interosseous membrane tear with triangular fibro-cartilage complex (TFCC) tear and radial shaft fracture

Guleazzi'sfracture is afracture of lower one-third of radius wilh dislocation of distal radioulnar joint. It is associated with tearing of interosseous membrane and triangular fibrocartilage complex (TFCC).

"Components of Distal Radioulnar Joint (DR(LJ): The distal radius and ulna are linked to each other by the interosseus membrane, the capsule of DRUJ and the triangular fibrocartilage complex (TFCC).

95. What is the most common sequelae of traumatic shoulder dislocation in young adults?

a) Rotator cuff tear

b) Recurrent shoulder dislocation

c) Adhesive capsulitis

d) Subscapular tendinitis

Correct Answer - B

Answer-B. Recurrent shoulder dislocation

Most common sequelae of traumatic shoulder dislocation in young adults are recurrent shoulder dislocation. Anterior tlislocation Type I is the most common type of traumutic shoulder dislocation and its mosl common sequelae in young adults is recurent dislocation in around 1/3rd patients. In fact, more than 9094 patients < 20 years have some shoulder instability as sequelae.

96. A Patient of supracondylar humerus fracture is unable to flex interphalangeal joint of the thumb. Which nerve is most likely injured?

a) Median nerve

b) Superficial branch of ulnar nerve

c) AIN

d) PIN

Correct Answer - C

Ans: C: AIN

Ref: Apley's system of orthopaedics and fracture 9'h ed., pg. 750,758-760.

- Flexion at IP joint of thumb is caused by Flexor Pollicis Longus which is supplied by Anterior Interooseous Nerve a pure motor branch of Median nerve.
- Also AIN is most common nerve to be injured in supracondylar fracture of humerus while ulnar nerve is least common.
- But in Flexion type of injury to supracondylar fracture most common nerve to be damaged is ulnar nerve.

97. A 55 year old female came with hip flexor contracture. What is the most likely test to be done in this case?

a) Allis test

b) Thomas test

c) Ober test

d) Trendlenberg test

Correct Answer - B

Ans : B : Thomas test

Ref. Apley's system of orthopaedics and fracture 9'h ed., pg. 495

- Full name of test is Hugh owen well leg hip flexion Thomas test. This test is to find out fixed flexion deformity of hip joint.
- Other test to determine Iliotibial band contracture.
- Trendelenberg test is to find out abductor weakness of hip joint
- Allis test or Galleazi sign is used to diagnose DDH in children

98. A 55-year-old male presents with severe backache for 10 days and urinary incontinence with a H/o Intervertebral lumbar disc prolapse. There is no H/o fever or weight loss. What is the likely diagnosis?

a) Potts spine

b) Multiple myeloma

c) Cauda equine syndrome

d) Bone metastasis

Correct Answer - C

Ans: C: Cauda equine syndrome

Ref: Apley!c system of orthopaedics and fracture 9" ed., pg. 246,480

- Cauda equina is tuft of fibres which begins at the end of spinal cord.
- Compression over this part may cause cauda equina syndrome.

Causes of Cauda equina syndrome are:

- Lumbar disc herniation, Spinal canal stenosis, Trauma, Abscess etc.

99. Which of the following match is correct in the following

a) Pilons fracture- fracture of the radial styloid process

b) Chauffeur fracture-fracture of the distal part of the tibia

c) Cotton fracture-Medial malleolar #

d) Runner fracture- Trimalleolar #

Correct Answer - D

Answer- D.

- Pilons - fracture of the distal part of the tibia
- Chauffeur- fracture of radial styloid process.
- cotton- Lateral malleolar #
- Runners fracture- Trimalleolar #

100. Specific for Ankylosing spondylitis is true?

a) HLA

b) B27

c) Sacroileitis

d) Raised ESR

Correct Answer - C
Answer- C. Sacroileitis

101. Scaphoid fracture at waist with retrograde blood supply. Which segment is most susceptible to avascular necrosis?

a) Proximal

b) Distal

c) Middle

d) Scaphoid tubercle

Correct Answer - A

Answer- A. Proximal

- Most common site of scaphoid fracture is Waist.
- Fractures can occur essentially anywhere along the scaphoid, but distribution is not even:

1. waist of scaphoid: 70-80%
2. proximal pole: 20%
3. distal pole (or so-called scaphoid tubercle): 10%

102. Which of the following is true about anterior shoulder dislocation

a) It is the most common type of shoulder dislocation

b) It is most commonly subclavicular

c) Patient keeps his arm in saluting position

d) Injury to brachial plexus may occur

Correct Answer - A

Answer- A. It is the most common type of shoulder dislocation

The most common type of shoulder dislocation is anterior dislocation (subcoracoid being most common).

The patient keeps his arm by the side of the body in a position of abduction and internal rotation.

103. Which among the following is not true about ankylosing spondylitis?

a) Enthesis is the primary site of pathology

b) More common in Females

c) TNF plays an important role in the pathogenesis of ankylosing spondylitis

d) Sacroiliitis is the earliest manifestation of ankylosing spondylitis

Correct Answer - B

Ans.B. More common in Females

Ankylosing spondylitis is more common in males.(M:F is between 2:1 to 3:1).

There is preferential involvement of entheses (Site of attachment of ligament or tendon to the bone).

TNF α plays a major role in immunopathogenesis.

Sacroiliitis is often the first manifestation of ankylosing spondylitis.

Synovitis, pannus, subchondral granulation tissue and marrow edema, enthesitis and chondroid differentiation are also found.

104. All are wrong about CTEV except

a) Foot is in adduction

b) Equinus is corrected first

c) All deformity corrected simultaneously

d) CTEV is more common in females than in males

Correct Answer - A
Answer: A. Foot is in adduction
CTEV is more common in malesthan in females
Equinus is corrected last

105. Marathon runner had pain in anteromedial tibia on regular walking/jogging for long hours. X ray is normal. Doctor orders a bone scan. What may be the probable diagnosis

a) Jones fracture

b) Shin splint

c) Lisfranc fracture

d) Nutcracker

Correct Answer - B
Answer: B. Shin splint
Shin splints (medial tibial stress syndrome) is an inflammation of the muscles, tendons, and bone tissue around your tibia.
Pain typically occurs along the inner border of the tibia, where muscles attach to the bone.
Shin splint pain most often occurs on the inside edge of your tibia

106. Match the following

Column A	column B
a.Madelung deformity	
1.Cubitus varus	
b.Haglund deformity	2. wrist
c.Button hole deformity	3. Rheumatoid arthritis
d. Gunstock deformity	4. Calcaneus

a) a-2 ,b-1,c-3,d-4

b) a-4 ,b-3,c-1,d-2

c) a-3 ,b-4,c-2,d-1

d) a-2 ,b-4,c-3,d-1

Correct Answer - D

Ans. D. a-2 ,b-4,c-3,d-1

Madelung deformity (MD) of the wrist is characterized by a growth disturbance in the volar-ulnar distal radial physis that results in a volar and ulnar tilted distal radial articular surface, volar translation of the hand and wrist, and a dorsally prominent distal ulna.

Haglund's deformity was first described by Patrick Haglund in 1927. It is also known as retrocalcaneal exostosis, Mulholland deformity, and 'pump bump.

A boutonnière (buttonhole) deformity (BD) may develop either in the acute setting (secondary to trauma) or progressively (secondary to arthritis). The term is used to describe the clinical scenario in

which a patient’s finger exhibits pathologic flexion at the proximal interphalangeal (PIP) joint and hyperextension at the distal interphalangeal (DIP) joint

Cubitus varus or bow elbow or gunstock deformity is the result of malunion occurring as a complication of supracondylar fracture of the humerus.