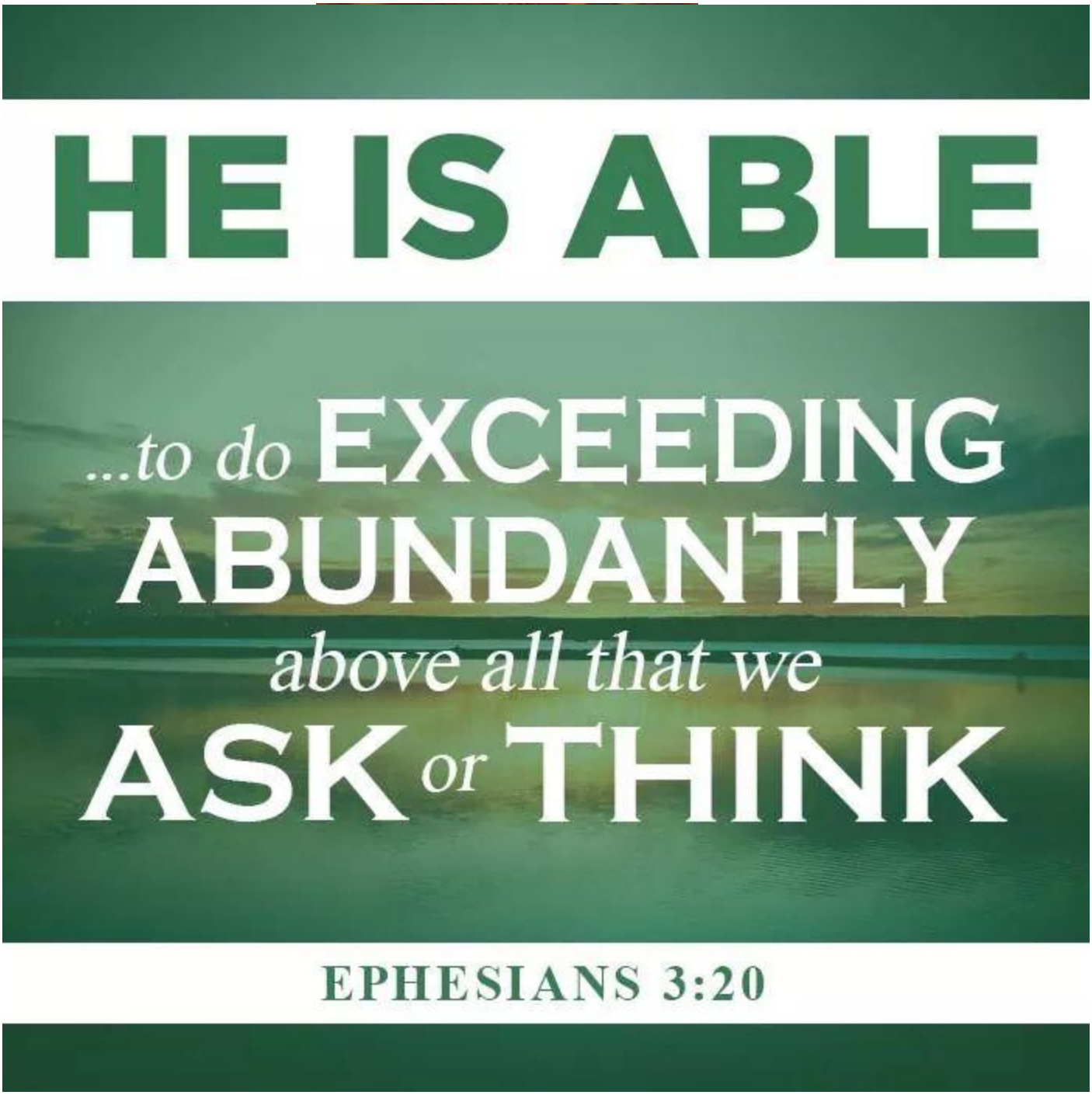
LECTURE NOTES IN ORTHOPAEDICS AND TRAUMA SURGERY



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COURSE OUTLINE

TRAUMATOLOGY:

a) Introduction

Surgical history

Clinical examination in orthopaedics

Procedure for Local examination

b) Fractures

Classification of fractures

Types of fractures

Healing of fractures

Principles of management of fractures

Complications of fractures

Application of Plaster of Paris

SPECIFIC FRACTURES AND INJURIES

Clavicle

Scapula

Shoulder dislocation

Humerus

Radius & Ulna

Femur + Dislocations

Tibia and fibula

Pelvis

spine

ORTHOPAEDICS:

a) Bone infections

Acute Osteomyelitis

Pyogenic Arthritis

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Syphilitic arthritis

Gonococcal arthritis

Tuberculous Arthritis

b) **Degenerative conditions**

- Osteoarthritis
- Gouty Arthritis
- Ankylosing Spondilities
- Prolapse intervertebral Disc
- Rheumatoid Arthritis

C) **congenital abnormalities**

Congenital Talipes Equinovarus

Congenital Mid tarsal varus

Spina Bifida

osteogenesis imperfecta

d) **bone tumours**:

a) Malignant-

b) Benign

OTHERS

Perthes diseases

Pagets disease

Slipped upper femoral epiphysis (ostochondritis) of femur.

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INTRODUCTION:

The word orthopaedics comes from two Greek words,

Ortho - means Straight

Paeds - means children.

It was an art of straightening children's deformed bones. It constitutes 10% of all clinical contact in general practice. Orthopaedics is as old as mankind. It has only been modified to the current technology.

Formal orthopaedics was started in 1741 by Nicolas Andry, a French physician. Physicians were not always respected and they were regarded as bone setters who earned a leaving by fixing bones. The medical act of Britain restricted the use of the word Doctor in 1858 and therefore they were not registered.

In 1918, 12 surgeons founded the British Orthopaedic Association.

Today the modern orthopaedics has changed radically since the time of Andry and now extends from the neonate to the elderly.

Definition

Orthopaedics is the art of correcting deformities in children by such means as may easily be put in practice by parents and by themselves and all such others as are employed in children department. It is broadly classified into two:

i) **Cold Orthopaedics**

ii) **Traumatology** –the study of bone, articulars and soft tissue injuries

COLD ORTHOPAEDICS

Congenital deformities

a. **Congenital talipes equinovarus** (CTEV)

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A **clubfoot** or congenital talipes equinovarus (CTEV) is a congenital deformity involving one foot or both. The affected foot appears rotated internally at the ankle.

b. Osteogenesis imperfecta.

Congenital disorders of the connective tissue formation that affects bone, teeth and soft tissue

c. Congenital Dislocation of the Hip (CDH)-head of the femur is displaced or easily displaceable from the acetabulum (socket) of the Ilium, which is poorly developed; it frequently affects both hip joints.

d. Spina- Bifida (split spine)- caused by incomplete closure of the embryonic neural tube.Some vertebrae overlying the spinal cord are not fully formed and remain unfused and open. If the opening is large enough, this allows a portion of the spinal cord to protrude through the opening in the bones. There may or may not be a fluid-filled sac surrounding the spinal cord.

e. sprengelis shoulder/sprengel's deformity

Congenital abnormality of the scapula which is small and positioned high in the shoulder. Congenital elevation of the scapula

f. Cervical Rib-(Supernumerary rib sometimes found in the neck above the usual first rib.)

a slight increase in the costal process, not reaching beyond the transverse process; (2) when the rib protrudes beyond the transverse process to a certain degree and either terminates in a free end or is attached in

a. some way to the first rib;

b. it does not show signs until adolescence or adult

QUIZ.What is cervical rib?

-Ans.(a) Present in 0.5% of cases.

(b) It is attached to the transverse process of 7th cervical vertebra and its distal extremity is free or articulates with first thoracic rib.

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QUIZ. What is the clinical importance of a cervical rib?

Ans. It may press on the lower trunk of brachial plexus producing paraesthesia along ulnar border of forearm and wasting of small muscles of hand. Less commonly, vascular changes are produced due to pressure on subclavian artery.

g. Torticolis

An irresistible turning movement of the head that becomes more persistent, so that eventually the head is held continually to one side. It may be caused by a birth injury to the sternomastoid muscle.

h. Kyphosis

Outward curvature of the spine, which if excessive causes hunching of the back.

ii) Acquired

- Infection of bones
  - Osteomyelitis
  - Pyogenic Arthritis
  - Syphlitic Arthritis

Degenerative Conditions

- Oesteo Arthritis
- Ankylosing Spondilitis
- Rhematiod Arthritis

Biochemical diseases

- Gout Arthritis
- Osteo malacia
- Oestioporosis.

Neoplasm

Primary

- Osteo sarcoma
- Ostochondroma
- Ewings tumour
- Mutiple mycloma

Malignant - Secondary

Benign

Including- Osteod Osteoma

- Chondroma
- Osteochondroma
- Giant cells tumours

Determinants of diagnosis in orthopaedics

Diagnosis of bone conditions depends on the following factors.

a) Good surgical history can diagnose about 85%

b) Clinical examination

c) Radiology

d) Other specialized methods of investigations e.g. CT scan, MRI

SURGICAL HISTORY

The surgical history is very important in making a diagnosis of an orthopaedic problem. The problem can sometimes be diagnosed as from the history alone.

After picking the chief complains, the symptoms should be traced step by step from the beginning up to the end. E.g. History of fall from height, – pain at the knee joint, restrictions of movements.

Patients own knowledge of the cause of the symptoms is very important. The aggravating and relieving factors are also important.

When symptoms of the local region have been exhausted, other symptoms should be sought from the rest of the body in the review of the systems and enquire whether general body health is affected.

CLINICAL EXAMINATION

Before a clinician embarks on carrying out any clinical examination, thorough explanation of the exact examination that is supposed to be carried out.

This should be followed by proper positioning of the patient and adequate exposure of the area to be examined.

The clinical Examination should be done in 4 phases.

1. General Examination of the feature.
2. Local Examination – Examination of the suspected source of problem.
3. Systemic examination of the rest of the body.
4. Investigations.

LOCAL EXAMINATION

i) Exposure – Expose the part to be examined as much as possible.

- Ensure that there is good lighting and avoid use of colored bulbs.

ii) Inspection – Observe the:

- Bones for alignment.
- Any obvious shortening
- Any obvious abnormality
- Soft tissues – Observe the contours of the soft tissue

Compare both limbs.

- Color and texture of the skin; note any change or color.
- Scars and sinuses – If scars are present determine whether they are surgical, therapeutic or cosmetic.

Palpations: Palpate for the following:

- Skin for local temperature and compare both limbs.
- Bones- general out- line of the bone.

- Soft tissues for any spasm, wasting thickening of synovial membrane in joint, localized swelling e.g. tumors and cysts, increased synovial fluid.
- Local tenderness – note the site of tenderness.

iv) **Measurements.**

The length of the limbs especially the lower limbs should be measured with a tape measure [cms].

There are several points of measurements in a human being;

A - The umbilicus

B – Anterior superior iliac spine

C – The knee

D - Medial malleolus

(E)Sternal angle (angle of louis)

There are two types of shortening:

a) True shortening – This is where a limb is actually short due to overlapping of the bones due to any other.

b) Relative shortening – This where there is tilting of a part of the body making a limb look shorter but it's not actually short.

I) Movements

- Active movements – Patients moves on his own.
- Passive movements where the examiner moves part of the patient's Limb. While doing the movements note for:

-tenderness

- Crepitus – sounds produced by the two surfaces (rubbing each Other).

-Restrictions of joint movements.

Power - note whether there is complete loss of power or general weakness of the joint by doing straight leg raising test, the stability depends on the integrity of the articular surfaces and the ligaments.

Peripheral Circulation- The part distal to the affected site should be examined for,

a) Local temperature

b) Color of the skin

c) The capillarity filling capacity in the nail beds.

d) Arterial pulses – Anterior tibial pulse (tibia dorsalis) or posterior tibial pulse.

TRAUMATOLOGY

Definition: This is the study of injuries of bones and or soft tissue injuries.

Definitions of common terms

a) **A fracture-** is a break in continuity of a bone.

b) **Dislocation**- Persistent loss of contact of two articular surfaces due to a tear of ligaments.

c) **Sprain-** Temporary loss of articular surfaces due to over stretching of the ligaments.

d) **Epiphyseal separation** – This is a fracture that occurs through epiphyseal surfaces.

e) **Fracture dislocation**- A fracture that involves an articular surface.

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CLASSFICATION OF FRACTURES

Fracture can be classified into the following types:

i) Simple fracture – This is a fracture that does not communicate with the surface of the skin.

ii) Compound fracture – This is a fracture that communicates with the surface of the skin.

Gardens classification

Grade I- bruise over fracture site.

Grade II- communication of the bone with the surface

Grade III- communication of the bone with the surface with gross contamination.

iii) Stress fracture – This is a fracture that occurs due to repeated trauma e.g. military training.

iv) Pathological fracture – This is a fracture that occurs due to an underlying disease.

Clinical presentation of fractures:

Patient will give a history of –

-Causative force (factor)

-Severe pain

-Swelling

-Inability to use the limb.

+ Loss of bone contour.

+ Bleeding

- Crepitus.

- X-ray confirms

PRINCIPLES OF MANAGEMENT OF FRACTURES

Management of fractures depends on the following;

1. Degree of illness of the patient.patient may require resuscitation.
2. Nature of the fracture that is, if open or closed.
3. Age of the patient.

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4. The type of bone involved.
5. The fracture line.

Fractures depending on the nature and severity of the effect can be managed in the following stages **(5Rs**)

1. Resuscitation- In the severely injured patients, resuscitation will be necessary. Follow the ABC of resuscitation.

A. Open the Airway by positioning the patient properly (Head tilt- chin lift). Support the tongue if the patient is unconscious and Remove any foreign body.

B. Breathing – Assist the patient in breathing using mouth to mouth, giving oxygen using an ambu bag or use end tracheal tube.

C. Ensure that there is sufficient circulation. If the patient is in hypovolaemic shock, give Intra venous fluids or whole blood.

D. Deal with the diagnosis.

2. Reduction: - The facture needs to be reduced so that healing can occur. Reduction of a fracture can be done in two ways:

1. Closed reduction
2. Open reduction

Closed reduction includes the following methods:

a) Manual- where the clinician pulls the two fragments using his hands e.g. in upper limb.

b) Skin – This is by use of pulleys and a weight over the patient's skin using a strapping.

This is usually indicated in children or where there is less musculature not more than 7 I b is required.

Types

i) Gallow's skin traction.
ii) Russell's skin traction.
iii) Balanced skin traction.

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c) Skeletal traction. This involves use of Steinman pin through a bone. The selected sites include the following:

a) Skull

b) Olecranon

c) Supracondylar Region of femur

d) Tibia tuberosity.

e) Calcaneum.

This is usually done in adults & or where more than 7 Ibs adults will be required to reduce a fracture to over 18 years.

Open reduction:

This is where a patient must be operated on to reduce a fracture and fix it. It involves use of implants for instance

a) Kuntcher nail K- nail

b) Plate –straight - angle

c) Screws.

Primary Indications of open reduction and internal fixation

1. Failed conservative #
2. Segmental fracture
3. in elderly
4. Early mobilization is required
5. Multiple fractured patient

3. Restriction of movement:

The objectives are;

- ✓ To prevent angulations or displacement of fragments
- ✓ To prevent movements that interferes with union of a fracture
- ✓ To relieve pain.

This is usually achieved by use of splints such as;

a) Plaster of Paris- is anhydrous calcium sulphate

b) Traction

- Skin

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- Skeletal

c) Internal fixators

d) External fixators

4. Restoration of the function:

This is achieved through physiotherapy

i) Exercise - Passive – Active

ii) Massage – Kneading – friction - Effleurage

iii) Heat treatment: -

IRR, SWD, MWD, UVL, Faradic stimulation, Wax bath.

5. Rehabilitation

Patient needs to emback to his/ her normal duties after treatment of fractures. This includes counseling and where applicable, compensation by insurance firms.

GENERAL COMPLICATIONS OF FRACTURES.

Despite effective management of fractures, complications are likely to occur. They can be early, intermediate and late complications.

1. Early complications (local) within few weeks

- *Fracture fever* – due to normal tissue response to trauma.
- *Soft tissue injuries to blood vessels, muscles and nerves*.
- *Bleeding* –This may be revealed or concealed.
- *Crush syndrome* – When there is prolonged compression of muscles, there is tendency to release myoglobin which is circulated in blood. When it reaches the kidney it may block the renal tubules or cause renal artery spasm which leads to renal tubular necrosis leading to renal failure.

2. Early general.

a) Hemorrhage – If severe, leads to hypovolaemic shock.

b) Neurogenic shock- This is due to involvement of the nerves, # Ribs.

3**. Intermediate local (24-48hrs**).

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a Infections -if the wound is left uncovered or contaminated. It can lead to the following;

i) Local wound infection

ii) Tetanus

iii) Gangrene-gas

iv) Osteomyelitis

b) Fat Embolism

c) Pulmonary Embolism- far- gas

d) Compartment syndrome

e) Delayed union.

4. Intermediate general.

- Hypostatic pneumonia due to inhalation of secretions
- Bed sores due to prolonged bed rest.
- Anuria due to renal failure.

5. Late local complications.

Mal union

non- union which may be;

i) Atrophic

ii) Hypertropic

iii) Horse whoff

iv) Oligotrophic

- Osteoarthritis – if fracture occurs through a joint.
- Sundecks atrophy- due to lack of use of the limb.(Disuse atrophy)
- Contracture due to stiffness of the joins.

6. Late general.

- generalized bony osteoporosis
- Delirium tremens – due to withdrawal
- Accident neurosis.

HEALING OF A FRACTURE

Healing of a fracture starts immediately when it occurs.

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There are several factors that influence the healing of a fracture.

a) Age – fracture tends to heal faster in children than adults.
b) Type of bone involved – cancerous bones tends to heal faster than cortical bone.
c) Type of fracture - The bigger the fracture surface the faster the healing. E.g. an oblique fracture, occurring at the same site with a transverse fracture, will heal faster.
d) Blood supply – healing is faster where the blood supply is abundant.
e) Nutritional status- Well nourished persons whose immunity is high will heal faster than poorly nourished.
f) Infections- Presence or absence of infections influences the healing of a fracture.

STAGES IN HEALING OF A FRACTURE

There are five stages in healing of a fracture.

1. Haematoma formation

The first stage is the stage of haematoma formation. The bleeding occurs from the rupture of the local blood vessels. Within 48 hrs the blood forms a semi solid clot.

2. **Granulation tissue formation**. (**Cellular proliferation)** Within 8hrs after the fracture has occurred. There is growing of capillaries into the haematoma. Fibroblasts proliferate and there is phagocytosis of the nucleic materials. The fibroblasts later differentiates into fibrocytes which forms a fibrin collagen. This later matures and forms parallel bundles. They form a fibrous tissue that joins the bones initially. bone cells mainly osteoblasts are active during this stage and they also recanalize the medullary canal completing the programme of reconstruction.

3. Callous formation.

Chondroblasts and osteoblasts invade the area and thus, replaces he fibrous tissue. The cartilaginous material is absorbed and replaced by the bone (woven bone).

4. Ossification (consolidation) - this is the stage when inorganic salts are deposited into the newly formed bone. The new bone has no proper arrangement of the trabeculae. The woven bone is transformed into lamella bone, the bone is now strong enough to carry weight.

5. Remodeling - This is the stage of maximum structural strength. The trabeculae is arranged in the lamellae pattern and the normal lines of stress are reformed.

Non- union – A non- union is where two fragments of bones fail to unite within the expected duration and the fragment becomes sclerosis.

Causes: - A. Local causes

a) Soft tissue interposition

b) Mal- alignment of fragments.

c) Actual loss of bone tissue.

d) Poor mobilization that

interferes with the granulation tissue formation.

e) Poor blood supply.

f) Infections due to the destruction of the callous

B. General causes:-

a) Endocrine deficiency

b) Acute or chronic illness

Clinical features;

- Movements between fragments.
- Pain in early stages & latter, no pain.

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- Swelling at the bone ends
- X- Ray.
- Management operative.

PLASTER AND TRACTION

Plaster of Paris is made from hem hydrous calcium sulphate. It is basically used as a splint but it is ideal for healing some fractures. The indications of Plaster of Paris includes the following;

1. To immobilize bony fragments in the right position.
2. To protect the limb as the fracture unites.
3. To make the patient comfortable.

Plaster requirements

1. guys shears
2. stirrups
3. Lorenz's shears
4. cast bending forceps
5. Plaster knife.
6. cast cutter
7. Cast spreader.

NB

1. Plaster of Paris can be applied as a slab or circular. A slab where indicated, has an advantage of allowing the limb to swell without causing damage to blood vessels and nerves.

2. Circular bandage can be dangerous if tightly applied. Clinical examination to the distal end should be done within 24 hours after application for any nervous or vascular complications.

There are three commercial types

- ✓ Gypsona
- ✓ Crystaciona
- ✓ Johnson and Johnson

Before application of POP it is hemi- hydrated in warm water before application. Proper padding of the affected part is first done to prevent pressure of the P.O.P on any prominence.

P.D.P is then rapped around the part that is to be immobilized. It dries within 5-7 minutes. A P.D.P immediately after application is called greed P.O.P

Complications

1. Gangrene-this occurs when the P.O.P is applied very tightly to compress on a blood vessel.
2. damage to the skin, muscles, and nerves due to pressure leading to loss of sensation distal to the site of application.
3. Reaction (eczema). If the patient is sensitive to chemicals such as the calcium sulphate, he or she will react.
4. plaster disease – stiffness or joints immobilized almost always, accompanies the P.O.P (physiotherapy should be done).
5. Change in skin color.
6. pressure sores if proper padding is not done.
   Vascular complications should be worked for 24 hours application
7. Muscle atrophy due to disuse.
8. Post traumatic osteodystrophy which is common in the hand and the foot.

TRACTION

Traction means to pull or apply a force. Traction can be used for the following functions:

I. To pull fractured bones to place.

II. To keep them in place until union occurs.

There are two types of traction:

fixed traction

-where reduction has been done and only mechanical maintenance is required due to instability.

Sliding traction

-where counter-traction force in opposite direction is required.

Skin traction – in this type, the skin below the required traction site is used using adhesive strapping. The strapping is normally reinforced by gauze.

Types of skin traction:

- Balanced skin traction where the patients' weight counteracts the applied weight.
- Russels skin traction. This requires 4 pulleys before applying the weight.
- Gallow's skin traction used in children under 5 years maximum weight is 10% of pt weight

Skeletal traction

This involves use of a stein- man pin through the bone. A stirrup is then applied and a traction cord tied on it before applying weight. Maximum weight applied is about 20% of patient's weight.

The common sites used for skeletal traction are the following:

a) Skull- about I cm above and 2cm posterior to tip of the ear against the scalp.
b) Olecranon – Dunlop method of reducing fractures of humerus.
c) Supra condylar region of femur
d) Tibial tuberocity
e) Calcaneum.

EQUIPMENTS FOR BONE TRACTION

Denham nail

handle

Steinman pin

boiler's stirrup

hand drill

wire cutting forceps

Procedure

- It should be done under asceptic technique done under pethidine and valium.
- clean the area with antisceptic
- drap the area with a clean towel.
- inject local anaesthesia
- make a nick
- introduce Steinman pin from the lateral aspect.
- clean and dress the wounds.
- apply the stirrup
- fix the cord and the weight.

COMPLICATIONS OF SKELETAL TRACTION

- Pin tract infection (osteomyelitis) damage.
- Hemorrhage.
- Over traction leading to non- union.
- Damage to soft tissues.

SPECIFIC FRACTURES OF THE UPPER LIMBS

FRACTURE OF CLAVICLE

It is common in both children and adults.

The commonest site is the mid 1/3

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The mechanism of injury is a fall on an outstretched hand.

Outer fragment is pulled downwards by the weight of the arm and the inner is held by sternocleidomastoid muscle.

Clinical features

♦ history of injury.

♦ an obvious lump on inspection, no swelling

♦ tenderness of the lump

♦ pt is reluctant to move the shoulder

♦ x – Ray confirms the fracture.

♦ In children it could be greenstick hence, difficult to see.

Management

1. if there is no displacement, a sling for 3/52 is enough
2. if there is displacement, figure 8 bandage is applied for 3 weeks
3. exercises to the elbow, wrist, and fingers including the shoulder,sh'd be done.
4. analgesics

NB-Accurate reduction is not essential

DISLOCATIONS OF CLAVICLE

STERNO CLAVICULAR

A clavicle can dislocate **anteriorly** or **posterior**.

In anterior dislocation, there is swelling and tenderness of the joint.

Manual reduction and analgesics are enough

Posterior dislocation is rare and is usually combined with chest injuries

They dislocate and obstruct the mediastinum which causes severe pains.

Pt may have distended neck veins.

Try manual reduction by placing a sand bag (pressure) against the scapular. If not successful refer to a specialist.

DISLOCATION OF ACROMIO CLAVICULAR

There are two types

where the ligaments are completely torn

where ligaments are partially torn .If partially torn, the clavicle is stable.

When all the ligaments are torn, the weight of the hand pulls the shoulder down while the sternomastoid muscle pulls the clavicle upwards.

In partial tear, a sling is enough. In complete tear, reduce manually, apply adhesive strapping then put the hand in a sling.

It is not necessary to refer.

FRACTURED SCAPULA

Sites:

1. the body of scapular is usually fractured by a crushing force.
2. the neck may be fractured by a blow or a fall on the shoulder.
3. the coracoids process may be fractured by a blow or fall on the shoulder.

Clinical features.

♦ Swelling or bruise at the back

♦ Localized tenderness.

♦ Shoulder movements are painful

♦ Breathing may be painful

♦ X-Ray will show a comminuted fracture.

Management

- Reduction is impossible and un-necessary.
- Give a patient a sling for comfort.
- Exercises
- Analgesics

3 ACROMIO-CLAVICULAR INJURIES

M.O.I- the mechanism of injury is a fall on the point of the shoulder.

There is tearing of the acromio clavicular ligaments with upward sublimation of the clavicle. If the injury is more severe, it tears off the coracoid and trapezoid ligaments leading to dislocation.

Clinical features.

♦ History of injury

♦ A visible step on the shoulder

♦ Tenderness of the joint

♦ Limited movements of the shoulder

♦

Management

❖ Reduction by application of pressure on the outer end.

❖ A sling.

❖ If there is dislocation, internal fixation with screw (Crawford Adams pins)

❖ Exercise.

STERNO-CLAVICULAR DISLOCATIONS

It is rare

M.O.I- fall on the shoulder

Clinical features

- history of fall.
- Visible lump.
- Tenderness at sterno-clavicular joint.
- Painful shoulder movements.
- X-ray may be difficult to interpret.

Management

1. manual reduction under anesthesia.
2. strapping of the arm.

3. Exercises.
4. Analgesics.

DISLOCATION OF THE SHOULDER

The shoulder can dislocate anteriorly or posteriorly.

ANTERIOR DISLOCATION

Incidence: it is very common

M.O.I : fall on the hand.

Management:

the humerus is driven forward tearing the capsule of the glenoid labrum.

Occasionally the posterior-lateral part of the head is crushed.

The arm nearly always drops.

Pt cannot touch the other shoulder.

Clinical features:

- Pt comes in supporting his/her arm with the normal.
- The arm is abducted and internally rotated.
- It appears longer than the normal.
- The contour is angular due to unduly prominent acromion process.
- The humeral head is anterior on palpation-If palpated at the axilla.
- Shoulder movements are impossible.
- X-ray confirms the dislocation.
-

Management

Kocher's method:

♦ Give the patient pethidine 100gms or G.A

♦ Flex the forearm

♦ Apply a constant traction along the shaft of humerus.

♦ Gradually, externally rotate the arm

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♦ Adduct the arm.

♦ Internally rotate

♦ Strap tear, x 3

♦ Exercise.

2. HYPPOCRATES METHOD/BOILER

1. patient under pethidine and valium
2. patient in supine position
3. place your foot at the patients axilla
4. apply constant traction along the humerus.
5. internally rotate the arm.
6. strap for x3
7. exercise

complications

tear of supraspinatus tendon.

injury to;

-the circumflex nerve

-greater tuberosity

-neck of humerus

recurrent dislocation

RECURRENT DISLOCATION OF THE SHOULDER

If there is tear of the **glenoid labrum**, makes the shoulder joint unstable. It is commona in young patients.

Clinical features.

The history of the patient is diagnostic. The patient complains that the shoulder dislocates with relatively trivial activities. Often, he can reduce it by himself/herself.

Test: ask the patient to place his hand behind the coronal plane in a position of abduction and lateral rotation. If you ask the patient to resist, it dislocates automatically. This is pathognomic.

Management;

-reconstruction of soft tissues.

Conservative management cannot work, it can only be managed by operation.

1. Blankart's operation – the labrum and the capsule are re-attached in dull holes through the anterior corner of the glenoid.
2. Putt –Platt- the capsule and the subscapularis are each stitched to overlap one another.
3. after either operation the arm is bandaged for 5 weeks

POSTERIOR DISLOCATION

This is a rare injury. It is usually not a complete dislocation but a fracture dislocation.

M.O.I- it is caused by a forced internal rotation of an abducted arm

It can be suspected after an epileptic fall or electric shock.

Clinical features

- Arm is held medially rotated
- The coronoid process is prominent while the head is impalpable
- All the movements are restricted
- x-Ray will confirm.

Management

- Reduce by pulling the arm and rotate externally
- Push the head of humerus.
- Abduct and laterally rotate the arm in a plaster x 3
- Exercise.

FRACTURE OF HUMERUS

FRACTURE UPPER END

MOI

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- the greater tuberocity may sustain a dwell injury if the patient falls on abducted arm.
- An allusion fracture occur in a patient who is saving himself from a fall when the action of supraspinatus is resisted by an obstacle
- It is common in the elderly women

Clinical features

♦ its of trauma

♦ swelling of the shoulder

♦ tender tuberocity

♦ abduction is very painful and restricted

♦ The tubercle is usually not displaced.

♦ X-ray shows a communicated fracture

Management

If there is no displacement, reduction is not necessary. Early mobilization is recommended.

Watson Jones manovoure

♦ Bring the humerus into contact with the tuberocity at 90

♦ Laterally rotate 60

♦ Anterior flexion of 40

♦ Use abduction from x3 lower the abduction from continuously for 12/52

♦ P.O.P

♦ Exercise the elbow and fingers should start early

Complications

1. delayed union
2. non union
3. stiffness of joints
4. radial nerve palsy

SUPRA- CONDYLA FRACTURES

Incidence – it is common in children

Very rare in adults

M.O.I

- ✓ It is caused by a fall on the point of the elbow joint. The humerus breaks just above the condyles 2.5cm. the distal fragment of the forearm is pushed backwards and rotated medially. There are high chances of injuring *brachial artery.*

Clinical features

♦ The child supports the injured hand with the other hand.

♦ There is obvious deformity.

♦ Swelling

♦ Acutely tender

♦ crepitus by movement.

♦ Palpate for the radial pulse.

♦ X-ray lateral view confirms the fracture.

Management

Conservative management.

- ✓ Accurate reduction of the displaced fracture is very important.

The child is put under anesthesia or pethidine and valium.

- ✓ Manual traction is applied along the forearm on one hand
- ✓ Correct the displacement with the other hand.
- ✓ Flex the elbow at 20-30
- ✓ Palpate for the radial pulse and If no pulse extend the elbow

Until it is felt.

- ✓ A U-slab application for 6-8 weeks
- ✓ Confirm reduction with an x-ray.

Operative:

- ♦ Open reduction with 2 kirchner wires can be done if acceptable position cannot be achieved.
- ♦ Dunlop traction can then be applied.

- ♦ Then plaster of paris is applied. Union takes place within 6 weeks.
- ♦ Exercise of the fingers and elbow flexion is encouraged but not extension.

Complications

VOLKMANNS ISCHAEMIC CONTRACTURE

This is one of the common complications that can occur in supracondylar fracture. Efforts should be made out of this complication.

Clinical features.

♦ Pain

♦ Pallor

♦ Pulselessness

♦ Paraesthesia

♦ Powerless

♦ Perishable cold

joint stiffness- elbow stiffness is common

malcinion sideways or backwards shift of distal

nerve injuries which recovers spontaneously (median)

myositis ossificans (deposit of calcium in a joint)

growth disturbance in children

T AND Y FRACTURES

M.O.I -a fall on the point of the elbow dules olecranon process upwards, splitting the condyles apart.

Clinical features.

♦ The elbow is grossly swollen

♦ Acute tenderness of the elbow

♦ Restricted elbow movements

♦ X-ray confirms fracture

Management

Conservative:

- Manual traction under pethidine and valium.

- Apply P.O.P in an obtuse angle (more than 90) x 4/52
- A sling to support the arm
- Exercises after removal of P.O.P

Operative

The approach is from lateral side.

The condyles are fixed with a screw

FRACTURED HEAD OF RADIUS

Mechanism: fall on an outstretched hand pushes the radial head against the capitulum.

The radial head may be split or broken.

Clinical features:

♦ The elbow may look normal

♦ The head of the radius is tender

♦ Rotation leads to a lot of pain

♦ X-ray confirms.

Management

1. if no displacement a collar and cuff x 3/52
2. if severe, excursions of the head should be done.

FRACTURES OF RADIUS AND ULNAR

Classification

1. Olecranon fracture
2. monteggia fracture
3. galleaz fracture
4. collies fracture

FRACTURE OLECRANON

They can be:

1. crack without displacement
2. fracture with displacement
3. comminuted fracture.

MOI :

1. Fall on the hand while the triceps are in action
2. fall on the point of the elbow
3. direct trauma

incidence

it is common in adults.

Clinical presentation

- swelling behind the elbow
- the gap may be palpable
- the patient cannot extend the elbow against resistance.
- X-ray confirms the fracture.

Management

Depends on the type

♦ Crack fracture – immobilize with a pop 3/52

♦ If there is separation, internal fixation with long screws is done and then pop 4/52 in functional position

♦ Comminuted fracture

Give pt a sling for comfort pt as a bruise disregard the fracture

P.O.P

MONTEGGIA

This was first described by a valiant surgeon in 1814

Definition: it is the fracture of upper 1/3 of ulna with dislocation of proximal radio –ulna joint.

MOI

✓ Direct injury

- ✓ Fall on hand in pronation
- ✓ Hyper extension

CLINICAL FEATURES

- ➢ There is an obvious deformity
- ➢ Massive swelling
- ➢ Palpable gap and dislocation
- ➢ All movements are restricted.

Management

1. conservative

♦ Reduce by applying traction manually with assistance under pethidine and vallium.

♦ Thumb the head of the radius back.

♦ Apply P.O.P for 12/52

♦ Exercise the shoulder & fingers.

2. operative

if manual reduction fails open reduction is done.

After reduction it is held by plate or screws.

P.O.P is then applied after reduction.

GALEAZZI FRACTURE

Definition:

This is the fracture of lower 1/3 of radius with dislocation of distal radial- ulna joint.

Mechanisms of injury

1. fall on the hand
2. rotation force

the fracture is exact counterpart of the monteggia fracture dislocation

clinical features

- common in elderly women due to osteoporosis.
- unduly prominence of lower end
- obvious deformity
- acute tenderness
- ulnar nerve may be affected.

Management

Conservative:

Manipulative reduction with POP X 8/52

COLLES FRACTURE

This is the commonest of all fractures in older people.

Definition

It is the fracture of distal end of the radius 2.5 cm from the distal radial-ulna joint with or without dislocation of the distal radio/ulna joint.

It was first described in 1814 by Abraham Collies of Ireland

Incidence

- it is common in elderly women due to osteoporosis
- it is also common in the young.

MOI- fall on an outstretched hand.

Clinical presentation

1. history of trauma
2. obvious deformity,dinner folk deformity
3. posterior displacement
4. posterior angulations
5. ulna deviation
6. impaction

   7.ulna displacement

   8.separation of the styloid process.

Management

- Disimpaction ;apply constant traction along the shaft.

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- Pronation; correct the lateral displacement by a strong pronation
- pressure; apply pressure to the lower radius firmly forwards and towards the ulna
- Apply POP from below elbow up to metacarpal region (collies POP 6/52
- Provide a sling for the patient
- Exercises to the fingers

NB pt should be able to comb the hair

Complication

1. malunion is common either because of poor reduction or displacement within the plaster.
2. delayed union
3. non union

SMITH'S FRACTURE

- It is a reverse of colles
- It is caused by a fall on the hand behind the body.
- Management is the same as collies.

SCAPHOID

The commonest carpal bone to be injured

Causes

1. fall on the hand
2. back kick while starting handle of a car.

Clinical features

♦ hx of trauma

♦ fullness of the snuff box (swelling)

♦ acute local tenderness (pathogenic)

♦ limitation of joint movements

x-ray

- Ap
- lateral
- oblique views not always obvious.

Management

Scaphoid plaster of Paris

ACUTE OSTEOMYELITIS

Definition

It is an acute infection of the bone caused by pyogenic organisms.

Organisms

1. staphylococcus
2. streptococcus
3. pneumococcus
4. salmonella

incidence

♦ it is the commonest bone infection

♦ age 5-15 years is the peak age

♦ site upper tibia

lower femur are the commonest sites.

Pathogenesis

The organisms reach the bone through various routes.

through haematogeneous spread from a distant foci e.g. tonsils, pharynx, skin etc.

direct spread from a foci e.g. infected compound fracture

extension from a foci e.g on abscess

the commonest site is metaphases of the long bones. The organisms favor this place because:

1. it is well vascularised
2. there is presence of rapidly changing cells hence weakness.
3. there is network of capillaries giving stasis (pooling) of blood which is a good media for microorganisms

when the organisms settles at the metaphysics they cause an inflammatory exudates. This causes pressure and the exudates may spread towards the medullar Conley to involve the whole bone or outwards to involve the cortex. This is the commonest route of spread and it leads to stripping off the periosteum. When the periosteum is striped off the bone dies due to lack of blood supply. The dead bone is called sequestrium. A new bone starts to form at the angle of the periosteum and bone. The new bone is called involucrum. The stripping of the periosteum and the new bone formation is called periosteal reactions. This makes the bone to cook under. Due to continued pressure the skin may break leading to disturbing sinuses.

Clinical features.

pain.

General malaise and fever

it is acute on onset

commoner in boys than girls due to injuries

history of trauma

acute pain at the site (near the end of the bone)

Restricted joint movements (pseudo paralysis).

A pulse rate

In infants, the baby may present with failure to thrive.

Sympathetic effusion in the neighboring joint.

Investigation

blood for full hemogram shows leucocytosis

blood culture is positive

pus aspirate for c/s

x-ray is normal up to 14 days after

will show

periosteal reaction

sequestrum

sclerosis of the bone

rare faction

management

admit the patient

advice on the bed rest

immobilize the affected limb by splinting.

while waiting to c/s

♦ iv crystalline penicillin's fascine

COMPLICATIONS

1. spread to involve the whole bone
2. chronic osteomyelitis
3. septicemia
4. growth disturbance
5. septic arthritis.

♦ Pyogenic arthritis tenderness is diffuse

♦ Acute chaumalism pain is migratory + carditis

♦ Resteigebuc sarcoma

CHRONIC OESTEO MYLITIS

Definition:

It is a sequel of acute oesteomyelitis

It often follows open fracture or operation.

Pathology: an area of the bone is destroyed during the acute phase. This leads to cavities surrounded by bone sclerosis bits of the dead bone which still remains acts as foreign bodies providing the living tissue to produce pus. The organisms also remain trapped in the fibrous tissue leading to persistent discharging sinuses.

Clinical varieties

sinus – this persists because of the sequestra

flares – recurrent acute oesteomyelitis bacterial may escape after a long time to cause an acute infection elsewhere.

recurrent smelly discharge

broodies abcess- is usually small and situated in the metaphysis of long bone

treatment

antibodies fucidine

sequestrectomy

immobilization POP

local irrigation of the wound.

ACUTE SUPPURATIVE ARTHRITIS (PYOGENIC)

Definition;

it is an acute infection of a joint by pyogenic organisms.

Organisms

staphylococcus

H. influenza

the organisms gains access to the joint through

a penetrating wound

eruption of a bone abscess

blood spread from a distant foci

the infection spreads through the joint leading to disintegration of articular cartilage. Pus may burst outside leading to abscess or sinuses. The opposing surfaces may adhere (fibrous ankylosis)

Clinical features

acute pain on the joint usually the hip

swelling adults and knee in children

fever

pulse

skin looks red

joint is in flexion

all joint movements are restricted

x-ray 2-3 weeks appears normal later there is narrowing of the joint irregular joint. Calcification

management

aspiration

antibodies facidin, clindamycin, floxapen

continuous irrigation

splintage in abduction and 30 flexion

TB ARTHRITIS

Definition

This is a local manifestation of a general disease. Bones are affected in 5% of patients.

Pathology

The mycobacterium bacili is carried in the blood stream and deposited in a joint. There is an abscess cavity in the metaphysic and it may extend to epiphysis synomal membrane maybe involved due to extension or as a direct infection. The synovial membrane thickens and turns grey and oedematous. When the disease progress the articular cartilage is damaged. The opposing joint surfaces sticks together leading to fibrous ankylosis.

Clinical features

- pain constant worse at night
- limping is the first sign
- swelling minimal in early tuberculosis
- stiffness
- deformity these comes later after the articular cartilage is damaged
- wasting of muscles is important characteristic
- skin is warm
- joint is held in deformity position
- all the joint movements are restricted

x-ray

- rare faction
- epiphysis are enlarged
- thinning of the cortex (penicillin)
- medulla looks like ground glass
- irregular joint
- narrowing of the joint

rheumatoid arthritis

management

1. rest – by use of a splint which should be prolonged uninterrupted rigid and enforced.
2. traction – to overcome spasms skin traction
3. operation – osteotomy athrodesis or joint replacement
4. drugs -Rifampicin and isoniazid for six months other new regimens.

TYPICAL TB FINDINGS

1. involvement of only one joint.
2. the long history
3. marked synovial thickening
4. marked muscle wasting
5. periarticular osteoporosis
6. DESR and positive mantoux test.
7. synovial biopsy for histology.

TB SPINE

Definition

It is a local manifestation of a systematic disease caused by mycobacterium tuberculosis

- 80% of the cases is to secondary to a focus somewhere
- It is the commonest site of extra pulmonary tuberculosis

Aetiology

1. mycobacterium tuberculosis
2. protection by BCG is debatable

predisposing factors

1. low immunity
2. malnutrition
3. poor general health

site

children around T6

adults T9-Li peak T10

pathology

blood borne infection settles in a single vertebra which collapses on the adjacent one below. Or two body vertebrates are affected simultaneously leading to forward angualtion (kyphosis) gibbus.

The collapsed vertebrae pushes our caseous material which may press the cord paralysis or escape of soft tissues leading to cold abscess.

The vertebrae may recalcify and re unite clinical features

Clinical features

1. History of cough 3 weeks
2. History of contact
3. History of previous systemic disease
4. look of kyphosis (Gibbus)
5. fluctuant abscess
6. neurological deficits (Potts paraplegia)
7. pain is minimal

- x-ray two adjacent bodies are destroyed narrow interspaces
- sputum AA8b
- blood WBC
- Aspiration cytology cutine

Management

1. anti TB chemotherapy
2. back support
3. traction if neurological deficits are present.

FRACTURES OF THE PELVIS

Mechanisms of injuries

1. direct force
2. violent force along the shaft of femur
3. fall especially in elderly
4. horse riding

fractures of the pelvis can lead to blood loss of 1.5 -2 litres which can lead to hypovoleamic shock.

Classification

1. stable fractures these are fractures without disruption of the pelvic ring.
2. unstable fracture fractures with disruption of the pelvic ring.

Sites

1. superior rami
2. inferior rami
3. through the acetabulum central dislocation of the Hip
4. iliac wing
5. separation of symphysis pubis e.g during delivery (CPD)

unstable injuries

these are injuries with disruption of the pelvic ring which is composed of the sacrum and the two inominate bones.

1. The disruption occurs when there is a fracture with or without dislocation at two points approximately opposite each other. They are usually associated with injuries to the internal viscera eg the bladder urethra uterus etc
2. separation of symphysics pubis during delivery
   clinical features

- Hx of trauma
- Pain
- Inability to move
- Blood from the urethra

Pt may presents with hypovolaemic shock due to internal bleeding

- Blood pressure
- Respiration
- Fast thready pulse
- Skin cold and clammy
- Try to pass a catheters if it posses if there is blood in males
- Sweat

x-ray confirms

rectal examination may reveal a bone fragment

management

if stable fracture

more special treatment

bed rest

analgesics

physiotherapy

with disrupted pelvic ring

separation of symphysics pubis

apply hip spica

strip one inch

apply tight rubber bandage upward displacement of half pelvis

skeletal traction along the shaft of femur.

dual skin traction (bilateral)

Complications

intra pelvic hemorrhage

shock

paralytic ulnas

damage to internal organs

ureters

bladder

urethra

ovaries

uterus

damage to sciatic nerve

DISLOCATION OF THE HIP

It is classified into three categories

1. posterior dislocation is the commonest
2. anterior dislocation
3. central dislocation (fracture dislocation)

POSTERIOR DISLOCATION

The femoral head is forced out of the acetabullum and displaced posterior by a force along the hip is flexed in adduction. It may be associated with fracture of the acetabulum (fracture dislocation)

Causes

Dashboard injuries

Clinical features

1. obvious shortening of the limb
2. fully internally rotated
3. adduction
4. flexion of the hip
5. the head is palpable behind the acetabulum(in the gluteus muscle.)
6. x-ray shows

- free acetabulum
- head behind the acetabulum

management

1.reduction under pethidine and valium

- an assistance stabilized the hip
- apply a constant traction along the shaft of femur
- gently externally rotate the limb
- a click confirms reduction

2. apply light skin traction
3. analgesics
4. physiotherapy

complications

injury to sciatic nerve in 10%

post traumatic ossification

oesteo arthritis

rarely fracture neck femur either primarily or during reduction

CENTRAL DISLOCATION

Definition

This is displacement of the head of femur through the acetabulum. The joint capsule remain intact.

MOI

Fall from a height and landing on the calcaneum.

RTA with the force driven along the shaft of femur when the limb is in abduction.

It is always associated with fracture of the four of the acetabulum.

Clinical features Hx of trauma

The patient presents with features of hypovolaemic shock

Fast thready pulse

Low blood pressure

Slow respiration

Cold sweat

Skin cold and clammy

Restriction in are hip movemnts obvious shortening.

X-ray shows fracture floor of acetabulum.

Treatment

manage shock

skeletal traction in Thomas splint

complications

shock and osteo arthritis

damage to organs, bladder ureters, urethra ovaries

ANTERIOR DISLOCATION

Definition

This is displacement of the head of femur anteriorly to the acetabulum.

It is rare

MOI

Forced abduction in rotation

Force along the shaft of femur in abduction.

Clinical features

1. limb appears longer
2. flexious of the hip
3. external rotation of the hip
4. abduction

x-ray confirms head interiorly.

Management

Treatment

under pethdine ivonys and valium

reduction application of constant traction along the shaft of femir

gradually internally rotate the limb

a click confirms reduction

apply light skin traction

physiotherapy

complications

avascular necrosis

oesteo arthritis

post traumatic myositis

FRACTURES OF FEMUR

Fractures of femur are classified according to the anatomical position in which it occurs

1. subcapital fracture
2. trans cervical fracture/neck
3. inter trachanteur fracture
4. infra (sub) trachanterie fracture
5. upper 1/3 fracture
6. mid 1/3 fracture

7. cover 1/3 fracture
8. lower 1/3 fracture
9. T and Y fractures

Fractures o f the neck are classified according to garden classification

1. incomplete
2. complete
3. complete with angulations
4. displaced fracture

FRACTURES OF THE FEMORAL NECK

Definition

This is a complete or incomplete fracture neck of femur with or without displacemtn

Incidence

Sex – its commoner in females after menopause than males due to osteoporosis

Age – common in the elder lady

95% are usually displaced

Mode of injury

1. fall on the hip
2. rotatitional forces
3. RTA

The fracture of the neck of femure is important because of the complication it causes. One of th serious complication is a vascular necrosis head of femur. This is because all the blood supply to the head is all off. They include:

1. intracapsular artery
2. ligamentum teres

clinical features

- history of a fall and then inability to wake up.
- Marked lateral rotations
- Loss of function

- Shortening due to impaction
- Greater trachanter

x-ray confirms the diagnosis

management

1. the best method of management is through internal fixation.
   - Angle plate
   - Smith patterson nail
2. discharge on non weight bearing (crutches)
3. physiotherapy exercise

conservative management

indications:

all children under the neck fenune

all crack fracture

awaiting surgery

russels skin traction.

Other surgical operations

If a vascular necrosis occurs total hip replacement may occur.

1 using Austin moore

1. arthrodesis with dynamic hip screw
2. mc murry operation

change the line of force

complications

protussa aetabulae

loosening of the prosthesis

infections

reactions

thrombosis

pulmonary embolism

pneumonia

bed sores

TROCHANTERIC FRACTURES

Definition

It is a fracture that occurs through the trachanter.

Incidence

common in the elderly

females are more affected than men.

MOI

Fall on the point of the hip

Clinical features

history of a fall and inability to walk

shortening

complete lateral rotation

pt unable to lift the curb

x-ray the lesser trachanter ma be avulsed and the medical cortex fust distal to it is inspecied.

Management

skeletal fraction in adduction

operative angle plate

complications

malcinion

shortening

coax vara

FRACTURE OF THE SHAFT OF FEMUR.

MOI

Fall on a trusted limb leading to spiral fracture

direct injury leading to transverse or communities

RTP

pathological oblique

incidence

they are very common NB the femur is the longest bone

it is commoner in the elderly after 50 years

sites upeer

mid

lower

clinical features

history of trauma

laterial rotation of the foot

shorter than normal

obvious deformity

mobility to use the limb

pateient may present with hypovolaemic

shock (NB blood loss is 1.5 – 2 L)

BP

Respiration

Pulse

Faintness

Skin is cold and clammy (extremities

Management Emergency

1. shock should be treated first and the fracture site splinted a Thomas splint
2. wound toilet if open fracture

age 0-6 years gallows traction or balanced

6 – 8 years skin traction russels balanced

18 skeletal traction internal fixation

conservation management

6- 18years russels skin traction for 8 -10 weeks.

Maximum weight 10% of patients body weight

Over 18 years

Skeletal traction 10 12 weeks

Steinman pin at tiblal tuberosity sliding traction

Under 5 years

Gallows traction

1. femur
2. rectal prolapsed
3. burns of the peuroun
4. contractive
5. oesteomyelitis

OPEN REDUCTION

Indications

serule osteoporosis

failed conservative

segmental fracture

pathological fracture

mentally handicapped

early mobilization

upper 1/3 =angle plating and screw

=screw

Mid 1/3 = keintcher nail (k-nail)

Lower 1/3 – plating

Complications

malunion pulmonary embolism

non union delayed

fat embolism

shock

stiffness of the joint – knee

hypotastic pneumonia

joint stiffness

muscle atrophy.

SUPRA CODYLAR FRACTURE FEMURE

The commonest mode of injury is direct trauma.

Incidence – common in elderly due to osteoporosis otherwise any age can be affected

Displacemtn

The distal fragment is pulled by the gastroc nemurs muscle producing posterior displlacemnt

Clinical features

history of trauma

swollen knee joint

obvious deformity

tenderness on movements

pain

x-ray confirms the fracture.

Management

Conservation – skeletal traction through tibia tuber sit extended knee 12/52

- exercise to guard creeps exercise

operative – if conservative falls

- vascular embassaasment
- elderly patients
- plating / rush nails non weight bearing

complications

1. skin damage
2. artery damage – poplitial artery
3. stiffness of the knee
4. non union

SUPRA CODYLAR FRACTURES

MOI direct injury

Fall from height

Clinical presentation

- theknee is swollen
- may be defined
- tenderness over the fracture site
- “doughy” due to haemoarthrosis
- Restriction in knee movements.

- X-ray confirms T and Y shaped.

Treatment

Under anaesthesia

Aspirate the joint

Skeletal traction 6/52 ISLB

Non weight beaving 6/52 crutches

Exercise quadriceps

FRACTURE TIBIA CODYLES

MOI

- Fall from height
- Direct blow especially laterial codyle
- (lumber injury) fall on extended knee and slightly valgus
- Incidence 50-60 years
- The laterial codyle is driven upwards and smashed by the laterial femoval codyle.

Types

1. depressed
2. hinge type
3. transverse

clinical presentation Hx of the causatiave mechanism

swollen knee

valgun position

doughly feeling because of haemoarthros

PT unable to move the limb

X- ray confirms

Reduction – skeletal traction tibia tuberosity 10cb x 6/52

Full cylinder POP

Non weight beaving 6/52

Exercise quadriceps

Operative – pin

THE KNEE JOINT

APPLIED ANATOMY

- The knee joint is the largest joint in the body.
- It is themeeting point of the longest bones in the body tibia and femur.
- The knee joint is unstable joint very small. Its stability surfaces are on the supporting ligaments.
- It is a synomial joint of diarturoses. (high movements)

Classification of joints

1. synarturoses – these have very limited movemnts. They are further subdivided into
   - syndemosis – e.g talo fibular joint
   - synchrondosis – symphisis pubis
   - synostosis – e.g cranio suluses these are usually calcified.
2. duarterosis – these have wide range of movements.

They are further classified into

- hunge joint
- ball and socket joint
- pivot joint

the knee joint bony components consists of

1. codyles of femur
2. codyles of tibia
3. patella

the soft tissues components consist of

1. extra articular ligaments
   - laterial collaterial ligaments
   - medial collaterial ligaments
     - these gives medial stability
     - limitation of external rotation of the tibia
     - attachment of the medial meniscus
2. intra articular
   - menisci – medial

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laterial

cruciates – anterior

stops anterior gude of tibia on fixed femur

restricts medal rotation of tibia on fixed femur. Posterior

stops posterior glide of tibia on fixed femur.

SUPRA- CODLAR FRACTURE

M.O.I

Direct trauma

Incidence - Common in elderly (osteoporosis)

- Any age can be affected

The distal fragment is pulled by the gastrocnemius and may injure popliteal artery.

Clinical presentation

Swollen knee

Oblivious deformity

Tenderness on movements

X- ray - transverse- comminuted fractures

Treatment

conservative

Reduction - skeletal traction

- Steinman pin through

- Knee straight tibia tubercle

12/52 (20 Ib)

Exercise - Quadriceps exercise

Operative -If conservatoire fails

- Vascular embarrassment

- Elderly patients

-Plating / Rush nails

- non weight bearing.

Complications

Skin damage

Artery damage – popliteal artery

Stiffness of the knee.

Non union

FEMORAL CODYLE FRACTURES

M.O. Direct injury - see notes ahead

Clinical presentation

The is swollen

May be defined

Tenderness over the fracture site

"Doughy" due to haomoarthrosis

Restriction in he knee movement

X-ray confirms T&Y shape

Treatment

Under anaesthesia

Aspirate the joint

Skeletal traction 6/52 15 Ib.

No weight bearing 6/52 crutches

Exercise quadriceps

FRACTURE TIBIA CODYLES

M.O.I

Fall from a height

Direct blow especially lateral codyle

(Bumper injury) Jau on extended knee and slighter valgus.

Incidence 50-60 years

The lateral codyle is driven upwards and smashed by the lateral femoral codyle.

Types

a. Depressed
b. Hinge type
c. Transverse.

Clinical presentation HX of the causative mechanism

- ❖ Swollen knee
- ❖ Valgus position

Doughy feeling because of haemoarthrosis

PT, unable to move the limb.

X-ray confirms.

- ✓ Skeletal traction Tibia tuberosity 10cb *6/52
- ✓ full cylinder P.O.P
- ✓ Non weight bearing 6/52

Exercise – Quadriceps

Operative – pin.

THE KNEE JOINT

INJURIES OF THE KNEE

BONY INJURIES.

FEMORAL CONDLAR FRACTURES

TYPES:

1. Lateral
2. Medal
3. T type

Incidence common in elderly > 50 years.

M.O.I

i) RTA Asymmetrical axial loading

ii) Lateral codyle is commonly affected than the medial if is firstly protected by the other limb.

iii) The degree of the injury depends on the amount of force e.g. if gradual force is applied on medial codyle.

- ➢ # Medial codyle.

- Depressed fracture plateau of tibia.
- Tear of the lateral ligament.

iv) T fracture is usually due to a force symmetrically drawing the tibial spine between the two codyles of femur.

Presentation –

Hx of trauma

Pain

Swelling (haemoarthrosis)

Limitation of knee movements.

X-ray confirmation.

Treatment –

- Aspiration of the haemoarthrosis
- Skeletal fraction 15 Ib * 6/52.
- Cylinder P.O.P 10◦ flexion
- Non weight bearing 6/52
- Exercise – Quadraceps from start

FRACTURE PATELLA

M.O.I i) Direct injury:

communited

retinaculi is not torn

minimal separation

ii) Indirect – powerful contraction of the quadriceps muscle – of the transverse.

TYPES: - Crack fracture

- fracture with separation

- communited fracture

Clinical features:-

- Hx traum ,0a
- Pain at the knee
- Swelling of the knee.

- ♣ Tenderness over the patella.
- ♣ Palpable gap in type two.
- ♣ X-ray confirms

DD Bipartite patella.

# Patella	Bipartite
1. Tender	Non tender
2. Gap in central	Superior lateral aspect
3. Irregular edges	Regular edges
4. Unilateral	Bilateral
5.Effusion present	Effusion absent
6.Aquired	Congenital

Treatment-

Type one i) Aspiration of the joint

ii) Cylinder P.O.P from groin to the maleola, 10◦ flexion

iii) Analgesics

iv) Physiotherapy.

TYPE TWO-

Figure eight waist band.

Cylinder P.O.P x 6/52 at 10◦ flexion.

Analgesics

TYPE THREE-

Palellectomy – removal 0f the patella

DISLOCATION OF THE PATELLA

Types - Acute dislocation

- Recurrent dislocation

M.O.I Violent force e.g. R.T.A

It is almost always laterally displaced

Presentation –

Oblivious deformity – uncovered

Medial codyle is very prominent

Palpable patella laterally

All the movement are Restricted both active & passive.

X-ray Patella seen laterally.

Treatment –

Reduction of the patella NB anaesthesia is not always important to use.

Analgesia

Crepe bandage 3/52.

Fracture codyle Tibia – Reffer back

RECURRENT DISLOCATION OF THE KNEE.

Common in girls

Usually secondary to highly placed patella

Under development of the lateral femur codyle

Genu valgium

Rx Surgical – transfer of the patella tendon

- Patellectomy

.

SOFT TISSUE INJURIES OF THE KNEE.

Anterior cruciates

M.O.I sports injuries – stress in a horizontal line of the knee in extension. In children it is usually associated with avulsion fracture tibial spine.

This injury is the commonest cause of haemoarthrosis in children.

The problem is that the medial genicular artery is cut which is the main blood supply to the knee.

Clinical features –

- Swelling (haemoarthrosis)

- Anterior drawers test positive
- Lach man test +ve.
- Pivot shift test +ve.
- Instability – Patient cannot stop immediately when running.

Treatment –

conservative

Full leg P.O.P (from groin to the knees) 20-30◦ flexion in extension x 6/52.

Exercise – quadriceps & hamstring Patient P.O.P

Lenox brace while doors (knee cage)

Surgery –

- In chidren – fix the tibial spine with a screw or pin.
- In adults – Recostruction surgery the anterior cruciale is replaced with an artificial material – gotex – Docron – salvage Jones prcodure.

Complications –

- ♣ Early osteoarthritis
- ♣ Treatment failure
- ♣ Instabilities

Posterior cruciates

M.O.I – Dash board injuries.

Clinical features – Hx of trauma

- ♣ Haomoaarthrosis
- ♣ Postrior drawers test positive
- ♣ Lach man test +ve
- ♣ Acute tenderness.

Treatment Full leg P.O.P x 6/52 20-30◦ flexion.

DD Osgood scholars disease

- Pain at the tibia tuberosity
- Warm
- Tender

Rx Inj. hydrocortisone + local anaesthesia

LATERAL COLLATERAL COPMLEX

This includes – lateral collateral ligament

- Biceps tendon

- Illio Tibial tract

MEDIAL COLLATERAL COMPLEX

This includes - Medial collateral ligament

- Medial menisci

- Pes Anserinus tendon

M.O.I - Force from opposite direction

- Swelling in the knee
- Tenderness – depends on the ligament
- Adduction r adductin or abduction of the knee gives a gap opposite side.
- Pain at the side affected.

Treatment –

- Conservature
- Aspirale the knee
- Cylinder P.O.P from groin to malleolus x 3/52.
- Exercise after.

THE MENISCUS

M.O.I – Usually a football injury

Incidence – Common in men wh work n a squatting position.

- Common n coal minors
- Common in te medial than the lateral

- Age 18-45 years.

There are types of tears.

1. Backet handle – commonest
2. Posterior horn tear
3. Anterior horn tear.

The semi lunar cartilage is almost a vascular so after tear there is no effusion in the joint. There is usually effusion of synovial fluid secreted in response to he injury.

Presentation-

- ♣ Hx of trauma
- ♣ Unable to continue working
- ♣ Un able to straighten the leg fully
- ♣ After 24 hrs there is swelling of te knee (effusion)
- ♣ Swelling subsides after two weeks and pt returns to work
- ♣ After one month the knee "gives way" after twisting.
- ♣ These repeat several times
- ♣ Locking – inability to extend he knee fully.
- ♣ Wasting of the quadriceps menisectomy.

Complications - Osteoarthritis.

SWELLNG AROUND THE KNEE

1. Bony swellings -
   i) Tumours – begnin – chondrosarcoma
      Malignant – Osteochondroma
   ii) Osteogenesis imperfecta.
2. Synovial membrane-
   - Tuberculosis
   - Septic arthritis
3. Menisci i) Menisci cysts
4. Lyphnodes – Pep teal lymphnodes
5. Blood vessels - aneurysms

6. Trauma - Haemoarthrosis.

FRACTURE OF TIBIA & FIBULA

M.O. I - Twisting force applied to the foot usually leads to spiral fracture of tibia and fibula.

- Direct trauma
- Motorcycle accident

Clinical features:-

Obvious deformity

Lateral rotation

Bruising over the skin or pen.

Feel for the pulse (Anterior tibial pulse) and the sensation (popleteal nerve).

Ask the pt to move the toes.

X-ray - spiral – communited

Pt shock – transverse.

Treatment –.

Compound - if pt is in shock

- Resuscitation.
- IV fluids N/S alt 5% dextrose
- blood transfusion
- Aim-convert it to simple fracture
- Surgical loder – Dirt

- Foreign body
- Dead tissues
- Ligate bleeding vessel

Close the wound * If there is tension make a release incision next to the wound and then close it after 48hrs.

Manipulative reduction – if this fails skeletal traction

Insert pin at the calcaneum 10 Ibs.

Limb s tested on a Browms pin until the swelling has subsided

Back slab is usually applied when there is swelling.

Full leg P.O. P after the swelling has subsided with a window at the site of the wound for dressing x 12/52.

Non weight bearing 8/52

Antibiotics

Analgesics

Tetanus toxoid.

Operative- Failed conservature

Complications

Compartment syndrome

Pressure in the tissues may lead to obliteration of the blood vessels.

Normal pressure in the tissues.

Investigation – Arteriograme.

Rx fasciostomy – wound closure

THE ANKLE JOINT

THE TALUS

Incidence – rear

site– head- neck- body

Types- Longitudinal compression

Planter

Crush variety

Swivel type (medial & lateral displacements)

Dorsalis pedis puse may be absent.

Lumination in movement f the foot.

X-ray -Ap

- oblique

Treatment –

- ♣ Un displaced fractures back slab – then complete p swelling .
- ♣ Displaced fractures –

a. Closed manipulation – forced planter flexion

If this fails Steinman pin through the calcaneum is tried for traction.

b. Open reduction.

Complications -

- o Skin damage
- o A vascular necrosis

FRACTURE CALCANEUM

M.O.I i) Fall from a height often from a ladder on one or both heels.

NB: A fracture calcaneum has almost always an associated spinal injury

Clinical features –

- ♣ The heel looks broader than normal.
- ♣ It is `D`shaped
- ♣ Lack of normal contour of the lateral malleolus.
- ♣ Tenderness of the heel
- ♣ The subtalar is not mobile.

X- Ray – Every pt with a painful heel following a trauma should be X-rayed.

Rest all fractures of calcaneum will be missed.

- Lateral
- Axial – Passing through the surgical plane.

Types: Split fractures – medial aspect of the bone to the lateral aspect.

- Crush fractures – damage to substalars joint.

Treatment: (CHIP fractures)

1. I f there is no displacement neither reaction nor splint age is necessary. A crêpe bandage is applied and pt, advised to walk.
2. If there is displacement reduction under an aesthesia and then below knee P.O.P.

- Remove POP for after 6 weeks
- Apply a crepe bandage
- Exercise.

RX CRUSH FRACTURES

There are three methods:

1. Closed reduction and plaster.

- The lateral displacement is reduced using the thenar Eminesis
- Back slab until swelling is reduced
- Complete P.O.P after swelling subsides x 6 weeks.
- Exercise
- Non weight bearing 6 weeks.

2. Open reduction and grafting.

- Expose the fracture from lateral aspect .
- Kirscner wises with the lancellous bone grafts filling the interior of the bone.
- Plaster is applied for 6- 12 weeks.

3. Functional treatment.

Under general an aesthesia

Closed reduction as already described.

Elevate the limb for the swelling to sub side or apply a pneumatic stocking.

Physiotherapy.

After 3-4weeks – start partial weight bearing.

HEAD INJURIES.

Defn: Head injury is damage to the scalp and or its contents.

CAUSES:

i). Road traffic accident.

ii) Fall from heights

iii) Assault

iv) Diving in shallow waters.

Classification: 1. Scalp - laceration

- contused

- cut

2. Fracture skull - Vault – Base of skull

3. Brain – Damage

- Concussion
- Contussion
- Compression.

THE SCALP:

This consists of skin.

Connective tissue

Areola

Loose connective tissue

Perostium

The wound can be:

Contused wound – wound with no definite margins. It is usually due to a blunt object.

Incised wound –This is due to a sharp object.

Lacerated.

NB: There is very profuse bleeding because:

i) Scalp is well vascularised

ii) Blood vessels are held within the subcutaneous tissues which do not retract.

MANAGEMENT OF HEAD INJURY

ESSAY WAY TO REMEMBER

BBC OFTEN CALLS:

Breathing –suction- airway – artificial respiration

Blood circulation-External cardiac massage.

Consciousness- Asses Glasgow coma scale and tear accordingly.

Oxygen – (PRN) and other injuries

Fluids- when necessaryTension –watch for signs of I.C.P.

Estimation of vital signs – P, RR, BP, TEMP

ENT features of # base skull –rhinorrhoea.

Neurological signs to localize haematomia.

Care for the back, bowel, and bladder.

Antibiotics/ Antipyretics/Anaigesics/ Anticoagulants.

Lucid interval/ Limb care for contractures.

Lab tests –Hb, Electrolytes, Urea.

Skull X-ray – CT-scan.

Factors which determine severity of head Injuries.

1. Distortion of the brain:

The brain in wormed circumstances has an area of mobility. When there is an access shearing force, the brain moves excessively damaging the brain tissue and the nerves. This would be local or diffuse loss of consciousness is due to damage of the mid brain.

2. Mobility of brain in relation to the skull & membrane.

The dura matter is close to the skull almost adherent. This gives the brain big won for movement. Excess movement may occur due to decelerating or accelerating forces. This may led to blood vessels which cross the subdural space.

3. The configuration of the interior of the skull.

the skull is not all smooth serious injuries to the brain occurs in `rough` in areas e.g. the temporal tube is likely to be damaged by the sharp sphwind ridge.

4. Deceleration ad acceleration.

Marfortility of severe cranium cerebral injuries re due to traffics accidents. The skull will rapidly accelerate and there fore distort the stationary brain. The complexity and extent of damage occurs when the

patient becomes unconscious town the initial injuries and the falls down causing more damage.

5. The pre- existing state of brain.

The aging brain as fewer reserves than the young brain and therefore the lasting effects of an injury are likely to be greater in the elderly.

Pathology (Secondary).

Brain swelling:

The brain often reads to any injury by swelling due to oedema. The accumulation is both intracellular and extracellular.

2. Brain Neurosis :

By a combination of oedema and Venus congestion scheremia leading to haemorrhage infaction and neucrosis there may be a localized mass. This is known as Burst temporal lobe syndrome.

3. Haematoma:

The haematoma could be extradueral subdueral, or intracerebral.The deeper the haematoma the more likely it is to be associated with mid brain damage.

4. Vascular changes:

In normal circumstances there are auto regular mechanisms which protect cerebral circulation despite changes in blood pressure in injuries as a result or increased intracranial pressure. Ischemia sets in worsening the brain oedema.

5. Coning or herniation

Herniation of the brain may occur in two areas supratentorial compartment through foramin maquum. The results of this is a deteriorating level or consciousness dilation of pups on the same side impressing mass and hempresis on the same side of the mass. The situation is called “Kerrohans` Notch”

6. Coup & countre coup

These words are used to indicate types of cranium – cerebral damage. Coup refers to injuries on the side of the brain giving symptoms of one side of the brain giving symptoms on the opposite side.

FRACTURE OF THE SKULL

They can be:

Linear
Simple
Compound
Communited

These can be diagnosed clinically esp. if open fractures or radio logically.

Fracture base skull: presents with:

Orbital haematomia.
Retro mastoid
C.S.F rhinorrhea
Bleeding from the ears
Bleeding from the nose
Subconjuctival blood spreading from behind the eye.

These fractures may be complicated by crania nerve damage. The community affected one is the olfactory nerve and this results into anosmia. Facial nerve palsy may result from direct trauma or bleeding into the facial canal. Deafness may result due to damage of auditory nerve either primarily or delayed due to involvement of the nerve in scar tissue.

Treatment:

1. Linear fractures do not need Rx
2. Elevation of depressed fractures to prevent fits (Epileptic form)
3. A compound depressed fracture should be heated immediately to prevent infections.(Emergency)

Surgical toilet

Elevation

Antimenengitic treatment – chloramphenical.

Avoid nose bleeding.

Glasgow coma scale

It is concerned with tree main areas:

1. Motor function:

Obey command

Painful stimuli

Abnormal flexion

2. Verbal responds:

- Orientation
- Confused
- Conversation

3. Eye opening:

Spontaneous

To speech

Pupil

COMA	EYES OPEN	Spontaneously To speech To pain None	4 3 2 1	
SCA	BEST VERBAL RESPONSE	Oriented Confused Ina prop irate In comprehensible	4 3 2 1 0	5 4 3 2 1

LE	BEST MOTOR RESPONSE	Obey commands Localize pain Flexion to pain Flexion abnormal Extension to pain	3 2 1 0 2	6 5 4 3
		No response.	1	

BRAIN DAMAGE

BRAIN CONCUSSION:

This transient loose of consciousness following head injury. There is no demonstrable brain damage but is usually followed by amnesia. The loss of consciousness lasts for less than 1 hour. The type of amnesia is retrograde and the pt. can not recollect the events prior to the accident.
Rx –no management – adult – observe.

CEREBRAL CONTUSSION:

This is a severe form and usually from fracture skull.
Contre (Injury opposite the site of trauma) is common in this type of brain damage. Haemorrahage from torn vessels may lead to compression. The common cause of death damage to the vital centries to the brain stem and the medulla.

Restlessness, crutability
Photophobia.
Brady cardiac – sign of brain compressed by oedema clot
Unconsciousness
Breathing (Kausmal breathing).

Treatment:

Paralaedehyde in case of restlessness
Clear way
Restrict fluid intake.
Mgsulphate per rectum.

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Low molecular weight dextrose IVfliuds.

Pathophysiology

Increased intracranio pressure.

Presentation- BP, RR Pulse} cushings Triad

Vomiting

Drowsiness

Headache – wakes the patient in the morning.

Palp Oedema (in adults)

Blurred vision.

Rx

Osmotic diaretics

- mannitor
- Diamox – One molecule of drug escapes with 2 molecules of H2o.
- Urea- Concentration at the glomerulars interferes with the reabsorption of fluids leading to diuresis in pts with normal renal fuction.
- Dexamethasone.
- Glyceral.

-Catheterization in case of urinary retention.

-NG, tube for feeding

INTRACRANIO- HAEMORRHAGE

This can either be Extradural or subdural or sub cortical

Exradural Haemorrhage:

This usually follows damage to the medial meningeal vessels.

The initial damage may be minor but it is later followed by deterioration when the bleeding continues and a classic lucid interval is achieved (lose of consciousness on and off).

Presentation:

1) Brusing or oedema on the scalp affected side
2) Spastisity of contra lateral upper and lower limbs.

3) Pupils are dillated fixed on the affected side (compression oculomotor)
4) High pulse rate and low blood pressure.
5) Lucid interval.
6) Signs of intracranial pressure.

Indications for admission

1) All children
2) All patients with neurological deficit
3) All patients with increased intracranial pressure.
4) All patients with P.T.A.
5) All patients with Retrograde amnesia.

Rx –

- Observation P,T,R.
- 2 hourly turning
- IV feeding
- Twice daily blood sugar.
- Physiotherapy.

CAUSES OF COMA:

1. Supra tentouar lesion
2. Damage to the cerebral hemisphere.

Metabolic condition.

Supratentorial lesions

1. Cerebral haemorrhage.
2. Massive cerebral infaction oedema
3. Subdural haematoma
4. Extradural haematoma
5. Brain tumour.

Brain stem lesions

1. Infarction

2. Pontine haomorrhage.
3. Cerebral haematoma
4. Tumour
5. Secondary effect of mass lesion in cerebral hemisphere.

Metabolic

1.Hypoglucaemia.

Infections: Meningitis - Encephalitis - Rabies

Poisonous – Organophosphate

- Drug overdose e.g. Phenothiazines
- Co poisoning.

Non communicable diseases:

Epilepsy

Cerebral vascular accidents.

Space occupying lesions.

Diabetes – DKA – hypogyl

Uremia

Anoxia.

Management of head injury can be classified into the following.

Resuscitation

Prevention of complications.

General management.

Specific management.

Management of complications.

Resuscitation:

To effectively resuscitate a patient, use the ABCD.

A -Air way: Hypoxia- will kill a patient before hypovilae clean the airway.

Finger scalp

Inspect oralphanyinx for any foreign body & remove them.

A dimension 100% of Oxygen at 10Lmin wa an oxygen mask.

Oxygen toxicity is not a problem initially.

B. Breath: Seal sucking chest wounds to give efficient respiration of the diaphram.

- Intermittent positive pressure respiration by inhibition.

C. Circulation: Give IV fluids – plasma expanders.

- Stop any further external bleeding.
- Major thoracic injuries will require urgent thoractomy .

This should be suspected in patients:

- With obvious injuries.
- Fail to respond to O2.
- Fail to respond to IV fluids.

D. Neurological deficit:

This should be monitored using a Glasgow coma scale.

If there is any deterioration repeat ABC above

GENERAL MANAGEMENT

Regular turning of the patient.

Feeding the patient using an NG tube.

Position the patient in coma toes position (Semi prone position).

Catherize the patient.

Monitor the vital signs & chart them in a head injury chart.

Control any convulsions with Epanutin.

Give analgesics.

SPECIFIC MANAGEMENT

aDepressed fracture skull requires # base skull with Rhinorrhea & ohorrhea require ant- meningitic IV cystalline peninc or IV gentamycin in children.

b)Intracranial haemorrhage requires agent craniotomy and evacuation.

Increased intracranio pressure.

Medical Rx diamox – manitial IV fluids.

Surgical – Drill bevy holes.

Other osmotic derivatives include:

a)Isosorbide – well absorbed in the gut.

Excreated unchanged in urine.

- Given orally.

b. Urea- Dose 15-20 grams.

- Orally or IV CT in renal failure

- Side effects – nausea & vomiting.

c. Sucrose - Orally – Dose 50-100 mls PRN.

COMPLICATIONS OF THE HEAD INJURY

1. Infections: Encephalitis- Inflammation of the brain tissue.

- Meningitis – inflammation of the meninges

2. Epilepsy: - It may occur earlier or later.

- Occurs in 40% of open head injury and 10% of

- Closed major injuries.

3. Increased intracranial pressure due to

i) Brain oedema ii) intracranial bleeding.

4. Brain abscess: common in depressed fracture skull.

5. Hydrocephalus

6. Parkinsonism.

Causes of death in head injury:

- ♣ Massive haemorrhage
- ♣ Hypoxia
- ♣ Cerebral compression

♣ Chest complications: include-

- Inhalation of blood.
- Pulmonary embolism
- Acute pulmonary oedema.

Metabolic disorders- Uremia - Dehydration

Cerebral far embolism.

Meningitis

Multiple injuries.

SUBDURAL HAEMATOMIA

There exist two types: The acute is associated with brain laceration. A gradual deepenening 0f coma indicates a rise in intra cranio pressure and papuloedema.

Chronic subdural haematoma usually results from minor head injury perssting for several weeks or months.

Persistent headache.

Drowsiness

Dementia

Cranio nerve pareses

Epilepsy

Treatment:

Evacuation through burr holes.

Complication of head injury

Post concussion syndrome

Epilepsy.- 405% form pen head injury- 10% from closed.

Amnesia (PTA)

Infection – meningitis

Diabetes inspidus- if pituitary is compressed.

Hydfro cephalus.

Hyperpyrexia.

Increased intra cranio pressure.

ANATOMY SPINAL INJURY:

The spinal cord measures 45cm long in length.

It starts from the upper atlas to the lower border of the 1st lumbar.

In early life, the code occupies the whole of the canal but it grows shorter in life. The cord enlarges from the 3rd cervical to the second thoracic vertebrae at which levels the cord almost fills the spinal canal. The cord is surrounded by the pia matter provides a tough membrane and protects the cord from the infections. The cord is attached to the Durra by fibrous bands called dentate ligaments.

Lumber punduise is done for diagnosis sand therapeutic purpose and is done at the level of between 3rd & 4th membrane.

Compression of both jugular vein cause increase intra cranio pressure and thus is transmitted to the spinal theca. This is called Quecknstedts phenomena.

Cerebral spinal fluid cistern magma (between the occipital and the body of the axis)

NEUROLOGY

CT scanning due to its being exposed has been replaced by servisaj stroke score.

Scores = (2.5 x consciousness) + (2x vomiting)

+ (2x headache) + (0.1 x diastolic) – (3x atheroma) – 12.

Where Conscious alert -0- drowsy 1- semi coma 2.

Vomiting no- 0 –yes- 1

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Headache within 2 hrs no- 1 –yes – 1

artheroma marllers – none- 0

One or more - 1

SCORES > 1 Indicates supratentovial haemorrrahage.

< 1 indicates infarction.

between 1& -1 is equivocal.

SPINAL INJURIES:

Spinal injuries are some of the commonest injuries following a R.T.A. They are important due to the complication they leave behind.

CAUSES: - Road traffic injuries

- Fall from a height.
- Direct injury as in trauma.

Other causes of paraplegia.

Tumors of the spinal cord & metastases.

Infect ions e.g. Tuberculosis – Oestomyelitis- Poliomyelitis.

Guerin bare syndrome

A fracture of the spine like a fracture of the skull is less important than the injury to the nervous system inside.

The aim of management:

1) Is to make sure that injuries are not mad e worse.
2) To diagnose stable fracture of the cervical spine and put a cellar.
3) To apply a neck traction to those with unstable injuries.
4) To care for the ni9juries of the thoracic and lumbar spines conservatively.
5) To care for the paraplegics.

TYPES:

Spinal injuries can be – stable no code compression.

- Unstable – has compression and subsequent neurological signs.

NB: Assume that all spinal are unstable until proved otherwise.

Serious spinal injuries can damage.

a. The cells of the spinal cord.

b. Spinal tracts

c. Spinal nerve roots.

d. All the above.

The diagnosis should therefore be made as per:

a) Level of sensation (pin prick)

b) Level of motor function

c) Level of bone injury.

* Injuries above C4 leads to death due to phrenic nerve.

* Injuries between C7 and C4 leads to Quadraplegia.

* Injuries below C7 leads to paraplegia.

Clinical Assessment

1. Gather a proper history of the injury and the site of the pain.

a. Dislocation between CI & C2 cause severe continuous pain radiating from the neck to the occipital.

b. Dislocation between C3 & C5 causes Quadriplegia.

c. Dislocation between C7 & TI leads to Horner's syndrome. (ptosis, constricted pupil anhydrosis, enopthalmos).

Penile reflex- Squeeze his glands penis and feel his bulbocavernosus muscle. If they contract the reflex is positive.

Anal wink reflex – Scratch the skin around his anus. If his anus contracts and wunkles, the reflex is positive.

MANAGEMENT

1) Avoid twisting the back. A spinal injury patient should be carried by a least by 5 people.
2) Prevent secondary injuries.
3) Care for the skin. – Apply powder Bd.

- Protect pressure areas – knees, ankles, Sacrum,
heels (Tranchanteric region.
- Turn patient after every 2 hrs at most four.
Rotating beds: This is to avoid bed sores.
4) Care for the bowels.
- Regulate bowels by using laxatives e.g. Dulcolax senokot.
- High fibre diet.
5) Care to the bladder.
Incidence 2% of orthopaedics problems.
Spinal injuries can be classified into:

Stable- There is no neurological deficit.

Unstable –There is compression of the cord and hence neurological deficit.

Causes: Road traffic accident

Fall from height

Gun shot wounds

Tumours of the cord

Infections – Tuberculosis of spine – Osteomyelitis of the vertebra.

Diving in shallow water.

Gullaine barre syndrome.

Assault.

Chan's # - fracture body of vertebra.

Jefferson's - fracture of the spinous process.

Clay shoulder- fracture of transverse process.

In an unstable spine all these ligaments are torn and the cord is compressed. The extent of the injury depends on the severity and the level of the injury.

Common sites – C5 C6 c/o Tingling sensation

- Head is falling off.
- Severe pain at the neck.

Clinical Presentation

The first stage is the spinal shock.

Paralysis of the muscles

Loss of sensation below the lesion.

Absence of the reflexes.

Retention of urine.

This stage usually lasts for 3 weeks.

Any persistence after 3 weeks denotes a permanent damage of the cord.

The permanent state presents with:

Return of the reflex activities.

Automatic micruration & defecation.

Flexor spasm of the lower limb.

Incontinence of urine.

Sweating.

The level of the lesion corresponds the bony injury with slight discrepancy because of the anatomy.

Occasionally oedema and haemorrhage may compress the cord.

- Spinal injuries above C4 result into paralysis of both the diaphragm hence death.
- Injuries above TI results into paralysis of both upper and lower limbs.
- Injuries of T12 and LI are commonly affected and results into the lower limbs.

EMERGENCY RX

1. Positioning:

- a cervical injury patient should be transported by at least 5 people to prevent tilting the head.

- ♣ Poiklothermic temp.
- ♣ Bp.

2. Traction – Skull traction (skull calipers)

- 2 cm above tip of the ear.
- 2 cm Posterior to avoid damage to medial meningeal artery.

x 3/52.

Cellular collar.

Treatment: (elective management))

The most important form of management of the spinal injury is to prevent complications. Special attention should be paid to the skin, bladder bowels.

CARE FOR THE SKIN:

Proper bed making- no creases - no particles on the bed.

Protect pressure areas i.e. sacrum, greater tranchantar, heel, knees the shoulders. – Support with pillows, cotton wool.

Frequent turning of the patient 2 hourly at most 4 hourly.- Use of rotating beds.

Apply powder to the skin.

Massaging of the skin with Vaseline glycerin.

Stages of buster formation:

Erythema formation

Blusters formation.

Breakdown of the skin.

Fully developed pressure sores.

Predisposing factors: Poor nutrition,Low haemoglobin ,Low proteins Systemic infections.

CARE FOR THE BLADDER

There are two types of bladder in paraplegia.

1. Upper motor neuron bladder in lesions above L1 (Automatic spar tic bladder). Rx catheterize the pt initially.

- start training the bladder after 3/52 .

- Control fluid intake. (In put out put chart).
- Give specific amount in of fluids.
- Empty y the bladder after specific times 6/52 by tapping the abdomen muscles. NB: If pt develops headache, sweating, Restlessness the Bp should be high.
- Catheterize he pt and know the amount remaining. If less than 50mls the bladder tone is good. Stop training.

Lower motor neuron bladder – (automatic) lesion below L1.

Catheterize the pt
Compression of Abdomen muscles.
Intermittent catheterization.
Bladder training after 3/52 same as above.

Antibiotics

CARE FOR THE BOWELS

Diet – fibre diet – bananas
- Bulk former drugs Metamucil
- If hard caxature – senokot – Dulcolax

Digital extraction- manual – glycerol passerines.

COMPLICATIOS OF – SPINAL INJURIES

Death – injuries above C4.
Hypostatic pneumonia
Bed sores
Infections – systemic – Urinary tract.
Bed sores -pressure
Deep venous thrombosis – unilateral oedema

- Pain

Rx – Elevation of the limb.-

- Anti coagulants- heparin – warfarin.

NB: P.T.I. bleeding time.

7. Acute renal failure.

8.Contractures of joints.

CHEST INJURIES:

Anatomy;

Chest is cone shaped.

There are twelve pairs of ribs.

Between each two ribs there is intercostals muscles.

Muscles that cover the rib cage runs longitudinally . They include supra spmalis infra smatiis.

Pectorase major.

Pectorase minor.

Serrator anterior

Latiss mass dorsi. Bony – sternum – Ribs – scapula- Clavucle.

Trapezium.

Anterior to the chest is the sternum.

Inferiorly is the diaphragm. The nerves and the artery pass inferiorly to each rib in the inferior giolle.

The lung is covered by pleura membranes. One (Inner visceral pleura) is adherent to the lungs. The outer pleura s adherent to the pleural cavity (potential space in the pleural cavity there is sevous fluid amounting to 120 mls.

- Acting in the chest is the atmospheric pressure at 760Hg.
- I side the chest there is intrathoracic pressure.
- The pleural pressure measures 756-762: + 2- 4.

If the pressure inside is more than the pressure out side air moves from the chest to the atmosphere.

Causes of chest injuries:

- Sharp objects- assault- knife, spear.

- Missiles Gun shots, arrow.
- Blunt objects – fall form a height.

FRACTURE RIBS

Presentation - Acute pain – patient may go to neurogenic shock

Hypoxia due to improper gaseous exchange –chest expansion due to pain 4CMCM.

Bleeding – haemothorax – lung collapse. If the luscara pleura is damaged you get pneomothorax tympanic note.

Degrees of Rib fractures.

1 Single simple fracture

Rx Relive pain- systemic analgesics – local analgesics.

2. Single simple with haemothorax.or pneumothorax

- Admit the Patient – UWSD – Relieve pain.

3. multiple fractures- Emergency.

- One rib sat more than two sites

- may ribs at two sites.

This type of chest is called flail chest.

During g inspiration the p0ressure inside the chest is 756mmHg. Rx The fragment rise out during inspiration and in during expiration. When it moves in, it compresses the air in the chest out and you end up with a lot of deoxygenated air taking place. This may lead to lung collapse.

This type of breathing is called paradoxical breathing.

Presents –

Pain.

Abnormal chest movements

Pneumothorax (Tympanic note)

Haemothorax (dullness)

Chest movement.

Rx- Relieve pain – Analgesics Stick the fragment either in or out.

- At the road side – use a belt and tie around the chest.

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- At the health center- hook the skin and apply weight.
- Arrange for transport.

At the hospital:

Put the patient on IPPV end.

Incubation.

Plate the fractured ribs

UWSD.

PNEUMOTHORAX

Defn: Accumulation of air in the pleura cavity.

Types 1. Traumatic pneumothorax – follows injury either from external or internal.

2. Spontaneous pneomothorax

Causes – B asthma - Lung abscess - Emphysema – Tuberculosis –

- Pleural adhesion.

3. Tension Pneumothorax- where air is allowed in & not out. The intrathoracic pressure is more than the atmospheric pressure. The medeastinium is shifted to the normal side.

Clinical features:

- ♣ Sudden onset.
- ♣ Dysphea
- ♣ Shock + .
- ♣ Dry harsh cough.
- ♣ Age 20-40 years.
- ♣ Males.
- ♣ Tightness of the chest.
- ♣ Trachea is shifted.
- ♣ Vocal tremitus.
- ♣ Hypersonance.
- ♣ Breath sounds.

Indication for surgery in Haemo/pneumothorax.

- A gush of 300- 500 of blood at a go or within 0-1 hour.
- A volume of 100ms it the 1st 1 hour and second hour.
- A lot of bubbles with every inspiration – mean damage to major alveoli.

Before pneomothorax.

This is usually due to direct communication between the atmosphere ad the visceral pleural. Or a flap on the visceral on the visceral pleural that only allows the air out & not in. This causes lung collapse and the mediastinum shifts to the normal side.

For under water seal drainage to work:

1. There must be a water seal.
2. The bottle must be below the chest.
3. The adaptors must be reinforced.
4. Put a clamp above and below the adaptors.

Indications.

1. Pneumothorax
2. Haemothorax
3. Emphysema thoraces (plus)
4. Pleural effusion.
5. Chyle thorax.

Complication of chest injury.

- ♣ Pneumothorax
- ♣ Haemothrax.
- ♣ Infections.
- ♣ Lung collapse
- ♣ Surgical emphysema

BONE TUMOURS

Definition: It is a new formation of cells of indepenct growth usually arranged a typically, which fulfils no useful function and has no typical termination.

CLASSIFICATION

Bone tumours can be classified in several ways but the best way is according t the cell of origin.

There are two broad classifications:

True bone tumours.

Tumours arising from tissue normalluy7 found in but not participating in bone formation.

There are four main groups according to the predominant cell type present. Depending on the mutation f the predominant cell it could result to benign or malignant.

Cell type		Benign	Malignant
1	Osteoblast(shows active ossification)	Osteoma	Osteosarcoma
2	Chondroblast (cartilage formation)	chondroma	Chondrosarcoma
3	Fibroblast(collagen formation)	Fibroma	Fibro sarcoma
4	Osteoclasts(bone destruction)	Osteoclastoma	Malignant osteoclastoma

2. Tumours arising from Tissues normally found in bone but not participating in
bone formation.

1. Tumours arising from fibrous tissue. e.g. periosteal fibroma periosteal fibro sarcoma.

2. Tumours arising from bone marrow. e.g. multiple mylema, reticulum cell sarcoma, Hodgkin's` disease.
3. Tumours arising from blood vessels. e.g. haemangcoma, haemangioblastoma.
4. Tumours arising from adipose tissue e.g. lipoma, liposarcoma
5. Tumoours arising from nerves e.g. neuronal met static tumours of bone.

OSTEOMA.

This is a benign tumor arising from osteobastic cells. Types – Ivory – cancellous.

Incidence -rare

Sites – Orbit – Nasal sinuses – External auditory meatus

- Oral side of the mandible.

Osteomas are not true tumors because growth ceases when ossification of the bone i complete. They are out growth of bones called exostosis.

They present as swellings that are not progressive.

X-ray shows and outgrowth of the bone.

PRIMARY BONE TUMOURS

Introduction:

Primary bone tumours are rare. The use of chemotherapy has improved the prognosis.

OSTEOSARCOMA

This is the commonest malignant tumour of the bone. I t commonly affects the osteoblasts i.e. osteogenic sarcoma.

Age: Incidence 10- 30 years.

Sex: Males are affected more than females.

Site: Around the knee i.e. lower femur 40% Upper tibia- 20%.

Upper humerus 10% Pelvis 10%.

Predisposing factors: 1. Irradiation 2. Pagets disease in >60 years.

Clinical presentation:

- ♣ Common in male's trauma may trigger.
- ♣ Acute pain – deep well localized, worse at night, - Intermittent.
- ♣ Swelling.
- ♣ Pathological fracture.

O/E Diffuse bone.

- ♣ Tender
- ♣ Swelling. Local high temperature
- ♣ Dilated blood vessels over the mass.

Prognosis – Poor pulmonary metastasis usually occurs before the primary lesion is diagnosed. It may be present for the 1st time with metastases.

Investigations:

1. X-ray- Swollen soft tissues.
   Codman's triangle.
   Sunrays appeared from raised perrosteum.
   Chest may show some deposites.
2. Blood- ESR
   Alkaline phosphates.
3. Biopsy- Spindle shaped cells.

Treatment:

1. Radiotherapy - Super voltage after you certify that there is no metastases Amputation to involve the whole of the limb affected.

Raised periosteum

- New bone formation at the angle – Codman's triangle.

CHONDROMA.

This is a benign tumour rising from cartilaginous elements of the developing bone.

Common sites- Fingers – Toes – Sternum – Ribs

Age: 30-40 years.

Clinical features:

Pathological # may be the 1st presentation.

Swelling

Deformity

Pressure to surrounding tissues.

X-ray- dense shadow. ↑ Density of the soft tissues.

CHONDROSARCOMA

This arises from malignant change from a pre- existing benign chondroma or may be malignant from the beginning.

Age incidence: 20- 40 years. Constitutes 20% of all tumours.

Site flat bones- Scapular - Pelvis 30%

- Upper femur - Upper humerus - Ribs.

Sex - same

Spread - Locally – commonly

Haematogenously rarely

Clinical presentation:

Arise denovo.

- A swelling slowly increases in size - Pain.

X-ray - Translucent area - Areas of calsificals.

Treatment- wide extension - Amputation

- It is radio resistance.

EWINGS TUMOUR(MALIGNANT ENDOTHELIOMA)

1ST described by Ewing's in 1921.

This is a rare tumour – 10% of all tumours.

Age: 5-25 years.

Site: Diaphysis femur Tibia 20% humerus 10%.

Spread: Vascular and lymphatic.

Clinical presentation, presceding tumour

- Pain.
- Swelling overlying skin is never affected.
- Fever, anemia.

X-ray - Elevation of periosliumwith onion peel appearance due to new bone formation.

Blood- ↑ ESR - ↑ WBC.

FIBRICOMA

These tumours are rare.

They arise from a fibrous tissue.

The growth is slow and unlimited common in the age of 20-30 years.

There is an irregular lying down of the fibroblast cells when it occurs in the periosteum, it is referred to as periosteal fibroma and is extostosis if calcification has occurred.

FIBROSARCOMA

This is a malignant tumour arising from the fibrous tissue. In this tumour definite collagen formation has been the predominant feature.

REGIONAL CLINICAL EXAMINATION IN ORTHOPAEDICS

THE SHOUDER JOINT

Pain is the commonest symptom. It is however important to note that it is not every pain in the shoulder that originates from it.

Stiffness is important if it is persistent. If it is very severe it is referred to as “frozen shoulder. “

Deformity of the shoulder is rarely noticed unless it is very marked. E.g., Sprengels.

Instability of the joint may be gross where the head comes out of the socket e.g., in recurrent shoulder dislocation.

EXAMINATION

Observe while the patient gets undressed how he/ she moves. Whether she can reach forwards, backwards and upwards and whether or not she appears to be in pain.

Look for symmetry of the shoulder form the back.

Note the level of the shoulders, the position of the spine (scoliosis) and the size and shape of the scapular.

- Muscle wasting particularly above the spine of the scapulae.

  Look at the axiom for a bulge which could be effusion or swollen lymph glands.
- Feel from sternoclavcular joint along the clavicle to the prominent acromiocvllar joint for malposition or signs of arthritis.
- Try to localize any point of tenderness. One of the commonest. Cause of shoulder pain is su[praspinatus tendonitis.
- Movements are best observed from behind the –patient where you can see the scapular. Start with abduction, netting the range. the rhythm and symmetry of movements. These are the commonest features of the rotator cuff disorders. Ask his / her arms sideways and upwards above her head.
- Flexion and extension can be measured by asking the patient to lift the arms forwards and backwards as far as possible the normal range is 0 – 170◦ and 0 – 40◦ for extension.
- If the shoulder is markedly unstable you can passively move the head of the humerus backwards and forwards in and out 0f the glenoid fossa.
- Lastly examine the axilla, the chest and the neck which can be the source of unexplained shoulder pain.

THE HIP

SYMPTOMS

1PAIN

Pain rising from the hp is felt at the groin characteristically. Pain at the back of the hip originates from the spine. If it occurs after the exercise it is most likely due to adductor tendonitis, traumatic osteitis pubis or stress fracture.

2 LIMP

This s the commonest symptom. It could be due to pain 0r change in length, weak ness of the hip abductors or instability. Snapping or clicking could be due to snapping of gluteus maximums tendon backwards and forwards, Psoas bursitis or detachment of the ace tabular labrum

3 STIFFNESS AND DEFORMITY

These are late symptoms of hp disorders because the hip is able to compensate for loss of hip movements. Patients are unaware of small changes in the range of motion.

Functional activity may be progressively curtailed. Walking becomes slower and tiresome, stairs are difficult to negotiate. Setting down and standing up becomes a burden, putting on socks and shoes is difficult, walking distance is curtailed and the patient starts using a walking stick.

EXAMINATION

Immediately the patient enters the examination room note, if he\she limps or use4s a walking stick. Expose the patient from the hip to the toes.

WITH PATIENT STANDING

1.Stand at the back and look at the posture.

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2.Look for the symmetry, shortness or thinness of the limps comparatively.

Note for any scars or swellings.

Trendelen burgs sign: ask the patient to slightly lift up one limb. Normally the pelvis is placed directly over the tending foot. If the unsupported limb is unstable the pelvis drops on the unsupported side and to avoid falling he patients throws the body towards the loaded side so that the center of gravity is again over the foot. It is positive Oest Arthritis and congenital dislocation of the hip.

ILIOPSOAS FUNCTION

With the patient sited on the coach ask her \him to lift he thigh and resist at the knee. Pain or the weakness suggest a local disorder such as Psoas bursitis.

With a patient lying supine.

Palpate for the femoral artery between the anterior superior iliac spine and the pubis deep to this point is the heads of femur.

With the pelvis stabilized flex both hips as far as they will go noting the angle in each.

Then flex one at a time as you extend the other lb. If there is a fixed flexion deformity it could be Oesteoarthyritis.

Adduct each limb as a time while the pelvis is stabilized as you note the range of movements.

Rotate the limb with the limb extended fully and when it is flexed at the knee and the hip.

MEASUREMENT

1. Measure for apparent shortening from the anterior superior iliac spine upon the mid of medial malleolus.

2. Measure for true shortening fr4om the xiphoid process or the umbilicus or the sternal angle up the mid of medial malleolus. Always compare the two length.

THE KNEE

The common symptoms suggesting a problem of the knee includes the following:
Pain – This is due to inflammatory or degenerative disorders
Injuries
Pain when going downstairs may be due to patella femoral
Stiffness: This usually gradual and is attributed to old age a wrong Impression people have.
The main cause is Osteo- Arthritis especially after long periods of inactivity.
3. Limp: Accompanies Pain and Stiffness.
4. Locking: This is an ambiguous term.
At on time the knee joint moves at the other is locks. The commonest cause of this is tear of the meniscus or a loose body in the joint.
5 Swelling: If it appears immediately after an injury, it is due to haemoarthrosis due to torn ligament fracture.
If it occurs after sometime it I due to a torn meniscus. Chronic swellings is due to arthritis or synovitis.
6 Deformity: It may be unilateral or bilateral genu valgium (knocked knees) or (bow legs) genu varuim may occur in children and collect as they grow.

EXAMINATION

Examine the gait as the patient walks into the examination room.
Examine when the patient is standing for the following:

1. Shape and the posture of he knee.
2. Scars or signs or inflammation.
3. Swelling
4. Muscle wasting.

NB: Food disorders may cause secondary problems.

Ask the patient to walk forth and back several times and look for stakeouts and wobbling.
Ask the patient to squat and look for lose of flexion.
Any deformity is quickly noticeable, with the patient standing.
Let the patient sit at the edge of the bed.
Look at the shape and he position of the patella.
Look for symmetry of the knees. Side ways displacement of one.
Check if one patella is higher than the other
Let the patient straighten one knee at a time observe movements of the Patella.In patella sublaxation it slips or tits laterally as the knees flexes and then veers back to the midline.
With the patient at supine.
inspection

1. Examine the whole limb and compare he two.
2. Co lour of the skin if red - inflammation.
3. Compare knees for signs of swelling or muscle wasting. Swelling could be due to rheumatoid synovitis or effusion.
   Other swellings could be cartilaginous lose bodies.
4. Measure he diameter.

palpation

1. Feel for the warmth of the skin.,
   Always compare the two sides.
2. Solomons test (for thickened synovial membrane) grasp the edges of the Begin with the Patella between your thumb and middle finger and try to lift the patella away from the femur. If synovium is thickened your fingers will slip off the edges of the bone.
3 Feel for the fluid by patella tap. With your left hand, squeeze out any fluid from the supra patella pouch into the main compartment of the joint if there is moderate amount of fluid it will left the patella off he femoral codyles. With fingers of the right hand and push sharply backwards n the patella. If the patella can be felt striking the femur and bouncing off again ballotment.
4. Tenderness – (palpate as you gently flex the knee and note the point of tenderness.

Movements

1. Begin with the knee at full extension then flex then knee as far as it can go without causing pain. Normally the limit is reached when the calf meets he ham. It should be recorded in degrees.

2. Examine for the rotation with the knees flexed with one leg feel the knee while you rotate with the other. Medically and laterally.
   You may feel the click of a torn meniscus and note pain on patient face.
   Repeat the test while exerting a valgus stress – Mc Murray's tests.

Test for cruciates ligaments.

With the patient knees flexed at 90◦ and his feet resting on the couch and try to push the tibia back. If it goes back the posterior cruciate is torn.

This test is called "Sag sign". It is a common injury in sports.

Flex the knees and try to lock it forwards and backwards with the hamstrings relaxed. If it draws forwards the anterior cruciate is torn.

This test is called the drawer test.

THE ANKLE AND FOOT

The symptoms that are likely to arise from the foot includes the following:

1. PAIN

In a local pathology, one foot is usually affected. Acute excruciating pain on the right is metatarsophalangeal in typical of gout.

2. DEFORMITY

This could be due to congenital abnormalities e.g. congenital tallies equinovarus pes planus (flat footed) etc.

3 SWELLING It may be diffuse, and bilateral or localized. Unilateral swelling often has a surgical cause and bilateral oftenly has is of medical origin.

4. Corns and callosities – usually come of light because of tenderness and pressure from the shoes.

5. Numbness and par aesthesia. This could be in a circumscribed area served by a nerve It could be due to Polyneuritis.

EXAMINATION

The limbs could be exposed from the knee downwards. Ask the p-patient to tip toe to and fro.

Look for any scars, colour or the skin, corns, under prominences or deformity.

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Look at the toes for halux valgus and claw toes. Infections like infected ingrown nail, exostosis and gout arthritis.
Skin lesions can manifest and be diagnostic e.g. keratoderma blenorrhagica or complicated Reuters disease callosities.
FEEL – For joint swelling, bony limbs and tenderness.

- Tenderness of the foot could be due to:
- Plantar fascilitis – a type of enthesopathy.
- Rarely chondromalacia of sesamoid metatarsals.

MOVEMENT

- Begin with the ankle joint. For dorsiflexion pull the foot down with your left hand and push up with right hand. For plantaflexion, pull the foot down with your right hand while retaining your grip on the heel with your left hand.
- Do the eversion and the inversion noting that inversion has a greater range than the eversion. Fore foot rotation combined with in inversion is called supination when combined with eversion, It is called pronation.

Normal range.
Simmonds test or a torn tendon achilis.
When the calf is squeezed the foot automatically pantaflexes.
If the tendon is ruptured this fails to occur.
THE BACK

Pain is the usual presenting symptom. It may be gradual or suddenly after lifting a weight. The commonest sigh is lumbarsacro junction.

Sciatica is pain radiation from the buttocks to the thigh and calf. It is oftenly a referred pain form he other structures.

Stiffness may be sudden in onset and almost complete or continuous. If t s worse in the mornings I s suggestive of arthritis or ankylosing spondylitis.

Deformity may be due to muscle spasm or it may signify a true structural arbn0omarlity e.g. scoliosis or excessive kyphosis.

Neurogical symptoms may not be at first be associated in the patients mind with a back problem. Ask specifically about feels of numbness or possibly weakness in the lower limbs. Urinary retention or incontinence may be due to pressure on the caudal equine.

EXAMINATION

Expose the trunk and both the lower limbs. Examine the patient three phases.

With the patient in upright.

With lying face downwards prone position.

With the face upwards – supine position.

When upright

- Examine for symmetry of the trunk wasting or the thighs and general posture.
- Excessive curvatures e.g. kyphosis scoliosis lordosis.
- Examine the spine movements starting with extension and then when bending.

In prone position

- Examine how the patient climbs on the couch.
- Check for gluteal wasting then gently feel along the spinous process for any bump or step in the vertebral column.
- Repeat the process three finger breaths from the midline on each side, the line of the articular processes and he facet joints.

Femoral stretch test

This test is done to detect undue irritability or tension of the nerve roots supplying the femoral nerve (L2, L3, L4,) with he hip extended. In a positive test the pati4ent complains of acute pain in the front of the thigh. A false positive may be due to tightness of the quadriceps.

THE ROLE OF DISINFECTANTS / ANTISEPTICS IN CONTROL OF COMMUNITY, NOSOCOMIAL INFECTIONS AND OPPORTUNISTIC PATHOGENS.

Introduction:

New, emerging infectious diseases like HIV/AIDS, food borne infection due to toxigenic Escherichia coli and re- emerging infectious diseases like resistant TB, shigella, Salmonella, Pneumococci and Yellow Fever are becoming a global problem. The dramatic impact of HIV/ AIDS on public health is due in large part to the multiple opportunistic infections that develop in association with this condition. Most of these infectious micro-organisms mutate and become multi- resistant to commo0nly used drugs. The emergence of his germs are making health care facilities more risky to health care providers and patients if proper protective gears, and infective disinfectants and antiseptics are not used properly to prevent cross infection and nosocomial infection. Nosocomial infection due to HIV, Hepatitis, Yellow Fever and TB may take years to detect. Once it happens the results are deadly because currently here is n effective treatment and it may be quite expensive. Some 0f the opportunistic pathogens do not respond to convectional drugs. As a result some drugs are over used e.g. steroids which might endanger patient's life.

The nosocomial and community acquired infections can largely be controlled by use of effective disinfectants and antiseptics. Broad spectrum disinfectants like chlorines, glutaraldehydes phenols and alcohols are able to kill viruses, TB, gram positive and gram negative

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bacteria and spore formers at the right concentration. Community members must also pay a major role in controlling some of these infectious diseases.

Alcohols

Alcohols do not penetrate body fluids so it can not be used as disinfectants on dirty instruments!

Glutaradehyde

There are two types of glutaraldehydes,

Alkaline glutaraldehydes

Good for delicate instruments like endoscopes and dental chairs.

It acts faster than acid glutaraldehydes.

Acid glutaraldehydes

i) Good for general instruments.

ii) Ii) Acid may destroy endoscopes if special attention is not taken.

NB: Do not inhale aldehydes – hey are toxic.

c)Chlorines- there are many sources of chlorines

a. Hypochlorites (bleach)

i) Corrosive to metal

ii) Good for disinfecting plastics, non-metallic and environments.

iii) It is easily inactivated by light or alkaline, acid ph and organic matter.

Dichloroisocyanurates

i) Not corrosive to metals at low concentration.

ii) Stable in light, in acid and alkaline pH and inorganic matter.

d)Saline

Saline solutions do not kill bacteria. It enhances the spread of Staphylococcus species.

It is good media for staphylococcus species.

Chlorohexidine cetrimide (Hibicet, Savlon)

This kills only gram positive and gram negative bacteria. It does not kill virus, TB, spore formers, pseudomonas in the presents of body fluids. It is inactivated by organic matter. It is never absorbed n dead tissue. It is only absorbed on the service. This shows it is not good for cleaning wound. When chlorohexidine cetrimide 80% alcohol, it is able to kill virus and TB. Chlorohexidine cetrimide when applied on itchy skin with rashes, it reduces the itching by reducing the bacterial load on he skin. It is also good for controlling MRSA on burns.

Hydrogen Peroxide

Hydrogen peroxide kills only anaerobic bacteria by increasing oxygen tension in deep wounds. It is good for removing dead tissue but it should be as an antiseptic. Once the hydrogen peroxide has been used to remove the dead tissue, a broad spectrum antiseptic (e. g. buffered povidone iodine) must be used to clean the same wound before dressing. It delays the healing of the wound.

E.U.SO.L - Endingburc University Solution Organization Limited

This is a chlorine solution. It kills most bacteria. However it is highly toxic to granulating cells. Therefore it is not good for cleaning wounds.

Disadvantages:

It enhances bleeding of the wounds.

It is destroyed by organic matter from the wound – hence its toxicity to bacteria is only for a short time.

NB: It is better to withdraw it from your antiseptics list.

Iodines

Are easily absorbed in the body.

There are two types:

a. Tincture of iodine.

i) Painful on wounds

ii) Toxic on tissue and is easily absorbed in the blood stream.

iii) Kills virus, spore formers and all bacteria.

b. Povidone Iodine (Betadine)

i) Kills all bacteria, fungi and virus

ii) It is a absorbed into dead tissue

iii) It is not painful on wounds.

iv) It is not toxic as natural iodine.

NB: *Good for dressing deep wounds. It is the best first line of dressing open wounds at casualty to prevent secondary infections. It should be used for a short time. Once the wound is clean you should change to chlorohexidine cetrimide.*

Formulations of povidone Iodine (Betadine)

a. PVP- I Antiseptic solution.

i) Contains PVP-I 10% IN an aqueous solution

ii) Used in pre- operative preparing of skin and mucous membrane (nasal oropharngeal, vaginal areas).

iii) Post- operative surgical wound treatment.

iv) Treatment and prevention of wound and skin infections.

b. PVP-I Alcoholic Skin Prep For Operation

i) Contains PVP I 10% and ethanol (alcohol) 30%

ii) Pre- operative prepping of intact skin

iii) Orthopaedic preps where a sporocidal effect is required.

iv) Skin infection in high risk areas before invasive procedures.

c. PVP-I Antiseptic Ointment

i) Water soluble ointment

ii) Used in exudation wounds as base absorbs exudate.

iii) Also extremely useful in minor burns, cuts, and grazes.

iv) Treatment of minor skin infections (especially mixed and secondary infections).

d. PVP- I Dry Powder Spray

i) Contains PVP-2.5%.

ii) Antiseptics of minor cuts, abrasions and minor burns.

PVP -I Surgical Scrub.

Contains PVP- I 7-5% in an anionic surfactant detergent base.

For pre and post operative hand washing by all high risk area personnel (e.g. Operating room, A& E, Oncology personnel).

NB: *Other PVP-I preparations are also available in the forms of a mouth wash and gargle for oral indications microbicides for vaginal antisepsis and treatment of various infections.*

E.U.S.O.L. and hydrogen peroxide delays healing of wounds.

Dressing the wound with dry gauze causes mechanical damage on wound when undressing, thus delays healing. And sometime cases bleeding resulting in anemia (use Vaseline gauze or a non adhesive gauze).

Machines

Use broad spectrum disinfectants to disinfect before cleaning to protect the environment and yourself.

NB: Never clean contaminated equipment before disinfection.

CONTROL OF FOOD / WATER BORNE DISEASES (DIARRHOEA)

The current pathogens which cause food / water borne diseases are toxigenic Ecoli, Shigella and Salmonella species. It is well documented that these organisms are resistant to commonly used antibiotics. The current toxigenic Ecoli cause diarrhea by producing various toxins. (heat stable) unfortunately current treatments do not include toxin-neutralizing agents: hence some patients might continue having he diarrhea problem (or stomachache) for some time despite being an effective antibiotic.

The following chlorine concentration has been found effective in water/ food treatment.

Using sodium hypochlorite with 35,000 ppm - 3.5% chlorine solution:-

To treat river, piped, springs water:

Add 10-20 mls of 3.5% sodium hypochlorite solution to 20 litres of water. Ready for use after 20 minutes. This freshly is suitable for cleaning salads/ fruits before eating. Soak them for 20 minutes the prepare salads.

Treatment for food poisoning due to toxigenic Ecoli: Use antibiotics which have toxin neutralizing chemicals like attapulgite, activated charcoal or kaolin e.g. Furazolidine/ attapulgite (Diadis).

POVIDONE IODINE THERAPY FOR RECURRENT ORAL CANDIDIASIS AND TO PREVENT EMERGING OF ANTIFUNGAL RESISTANT CANDIDA STRAINS

Candida species have become a major opportunistic pathogen causing recent oral thrush and oesophageal candidiasis in HIV/AIDS in Kenya. This has resulted to repeatedly high use of expensive antifungal drugs i.e. (Clotrimazole, Amhpotrericin B and Nystatin) which most of these

patients can not afford full dose. This has resulted to development of resistant Candida strains to common antifungal in the community. Patients do not seek treatment early as a result, oral candidiasis degenerates to oesophageal candidiasis or extensive ulceration in the mouth and odour smell thus affecting their nutrition and social life respectively.

It has been found Povidine Iodine mouth gargle is effective and cheap therapy for managing recurrent oral thrush ad prevents it from degenerating to oesophageal candidiasis of HIV/AIDS patients.

INCREASED SKIN INFECTION BY EXFOLIATIVE STAPHYLOCOCCUS AUREUS PHAGE 3A AND HIGH USAGE OF STERODIS: HEALTH PROBLEM FOR NON HIV/AIDS PEOPLE IN KENYA.

Skin infection due to opportunistic pathogens has become a major problem to HIV/ AIDS and non- HIV/AIDS people in Kenya aw HIV prevalence keeps rising. The infection mimics cellulitis erythyma, impetigo acne, eczema, articaria, photosensitivity, or drug reaction. This has resulted to high use of steroids/ antibiotics and antifungal without success. The immunosuppressant effect of steroids could be worsening these conditions on HIV/ ADS patients. Most of the locally available ammonium compounds/ antiseptic are not effective in controlling these bacteria infections on the skin. Data from MSF, NGOs and catholic health provider shows savlon Ointment when used properly is effective in managing these conditions.

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