In the name of Allah The most gracious, The most merciful

MASTER THE SURGERY VIVA

Editors

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Dedicated to-Abu al-Qasim al-Zahrawi al-Ansari



Abu al-Qasim al-Zahrawi al-Ansari (936-1013 CE) Father of modern surgery

Al-Zahrawis principal work is the Kitab al-Tastif a thirty-volume encyclopedia of medical practices.

Al-Zahrawi's pioneered the use of catgut for internal stitches, and his surgical instruments are still used today to treat people.

He was the first physician to identify the hereditary nature of hemophilia and describe an abdominal pregnancy, a subtype of ectopic pregnancy.

He also developed surgical devices for Caesarean sections and cataract surgeries.

Al-Zahrawi also pioneered neurosurgery and neurological diagnosis.

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Surgical Safety checklist (by WHO)

Before induction of anaesthesia (with at least nurse and anaesthetist)	Before skin incision (with nurse, anaesthetist and surgeon)	Before patient leaves operating room (with nurse, anaesthetist and surgeon)
Has the patient confirmed his/her identity, site, procedure, and consent? Yes Is the site marked? Yes Not applicable Is the anaesthesia machine and medication check complete? Yes Is the pulse oximeter on the patient and functioning? Yes Does the patient have a: Known allergy? No Yes Difficult airway or aspiration risk? No Yes, and equipment/assistance available Risk of >500ml blood loss (7ml/kg in children)? No Yes, and two IVs/central access and fluids planned	 Confirm all team members have introduced themselves by name and role. Confirm the patient's name, procedure, and where the incision will be made. Has antibiotic prophylaxis been given within the last 60 minutes? Yes Not applicable Anticipated Critical Events To Surgeon: What are the critical or non-routine steps? How long will the case take? What is the anticipated blood loss? To Anaesthetist: Are there any patient-specific concerns? To Nursing Team: Has sterility (including indicator results) been confirmed? Are there equipment issues or any concerns? Is essential imaging displayed? Yes Not applicable 	Nurse Verbally Confirms: The name of the procedure Completion of instrument, sponge and needle counts Specimen labelling (read specimen labels aloud, including patient name) Whether there are any equipment problems to be addressed To Surgeon, Anaesthetist and Nurse: What are the key concerns for recovery and management of this patient?

Metabolic derangements in GOO



Common causes of intestinal obstruction:



Creamy yellow purulent inflammatory exudate rich in dead leukocytes is called pus.

[Robbins Pathology-10th-40]

Mention the composition of pus.

- 1. Neutrophil
- 2. Necrotic cell
- 3. Edema fluid
- 4. Certain bacteria e.g., staphylococcus

Define abscess.

Define pus.

Abscesses are localized collections of pus lined by pyogenic membrane caused by suppuration buried in a tissue, an organ, or a confined space.

[Robbins Pathology-10th-94]

Or

Abscess may be defined as a collection of pus (dead cells and neutrophils) covered by pyogenic membrane.

[SRB's Manual of Surgery-6^{th-38}]

Tell the steps of drainage of an abscess?

After counseling and taking consent, patient is sent to OT

- 1. Positioning of the patient
- 2. Painting, sterile draping and anaesthesia
- 3. Skin incision is given: In Most prominent part
- 4. Next, pyogenic membrane is opened using Sinus forceps and all loculi are broken up.
- 5. Abscess cavity is cleared of pus and washed with saline.
- 6. Wound is not closed: Wound is allowed to granulate and heal.
- 7. Abscess cavity is packed with povidone iodine-soaked gauze
- 8. Pus is sent for C/S
- 9. Biopsy: In suspected TB or malignancy
- 10. Regular dressing and empirical antibiotic coverage
- 11. Maintenance of nutrition, treatment associated illness e.g., DM, HTN

[SRB's Manual of Surgery-6th-41+Lecture of MMC]

What is pyogenic membrane?

Membrane formed around abscess cavity formed by Granulation tissue (macrophages, fibroblasts and new blood vessel proliferation) characterized by collagen deposition.

[Bailey & Love's-28th-56]

Master The Surgery Viva

ABSCESS, BOIL, CARBUNCLE, CELLULITIS

[Robbins Pathology-10th-40-41]

What is the treatment of an abscess?

- 1. Incision and drainage or image guided aspiration e.g., hepatic abscess
- 2. Start empirical antibiotic
- 3. Send pus for C/S
- 4. Regular dressing with packing
- 5. Treating specific cause
- **6.** Healing by secondary intention

[Lecture of MMC]

Nice to know: Best local anesthesia for abscess- Ring block

Classification of abscess:

- 1. Hot abscess (with all typical features of inflammation)
- 2. Cold abscess

What is carbuncle?

Carbuncle is an infective gangrene of skin and subcutaneous tissue. Staphylococcus aureus is the main culprit.

Who are the risk groups?

- 1. Diabetes
- 2. Old age
- **3.** Immunosuppressive condition

What are the common sites of carbuncle?

- 1. Nape of the neck
- 2. Buttock
- 3. Abdomen
- 4. Chest
- 5. Also, can occur in shoulder, cheek, hand, forearm.

How will you treat carbuncle?

- 1. **Incision and drainage:** Drainage is done by a cruciate incision and debridement of all dead tissues
- 2. Antibiotics: Penicillins, cephalosporins or depending on C/S is given
- **3.** Control of diabetes
- 4. Skin grafting: May be required when wound granulates well

<u>Nice to know</u>: Never squeeze carbuncle (if squeeze it will increase the risk of complication and severe scarring)

BASIC SURGICAL SKILLS

Define incision, excision & resection?

Incision: Planned wound made by surgeon to explore operative field.

Excision: Surgical excision is the removal of part of tissue or whole organ using a sharp knife or other cutting instrument.

Resection: Resection is the removal of all of a body part

Dissection: Dissection means identifying and separating the anatomical planes.

Criteria of an ideal incision:

- 1. Easy to open
- 2. Minimise damage to tissues
- 3. Avoid cutting nerves
- 4. Split rather than transect muscles
- 5. Limit damage to fascia
- 6. Easy to close
- 7. Allow sufficiently strong closure
- 8. Allow sufficient access
- 9. Extendable if necessary
- 10. Target organ
- 11. In previous operations

[SRB's Surgical Operations: Text and Atlas-39 + Lecture of MMC]

Name some incisions on abdominal wall?

- 1. Midline incision (e.g., for laparotomy)
- 2. Kocher's incision (e.g., for cholecystectomy)
- 3. Thoracoabdominal incision
- 4. Rectus splits incision
- 5. Paramedian incision
- 6. Transverse incision
- 7. McBurney's gridiron incision
- 8. Inguinal incision (e.g., for hernia surgery)
- 9. Pfannenstiel incision (e.g., for caesarean section)
- 10. Rutherford-Morison incision
- 11. McEvedy incision



Skin incisions in general surgery. A, sternotomy; B, periareolar; C, inframammary; D, subcostal; E, paramedian; F, transverse; G, periumbilical; H, McBurney's; I, Pfannenstiel; J, Kocher's incision for thyroidectomy; K, clamshell thoracotomy; L, chevron incision; M, midline incision; N, inguinal incision

[Bailey & Love's-28th-98]

POSITIONING ON THE OPERATING TABLE

- **1. Supine position:** This is the most common position for general surgical procedures. This is a versatile position and can be modified as follows:
 - a. Rose's position: slight neck extension for head and neck surgery.
 - b. Shoulder and arm extended: to assist in axillary and breast surgery.
 - c. Trendelenburg position: the head end of the table is tilted down on an incline with the patient's knees slightly flexed. This is often used in pelvic procedures and **when resuscitating a patient in shock**.
 - d. Reverse Trendelenburg position: the head end of the table is tilted up, thereby placing the head higher than the feet
- 2. Prone position
- 3. Lateral position: Left or right lateral position
- 4. Lithotomy position



Figure 1: Trendelenburg position:



Figure 2: Reverse Trendelenburg position

[Bailey and Love's-28th-93 to 96]

DIATHERMY

Cutting or coagulation of body tissue by application of heat generated through high frequency electrical current.

State the Principle of diathermy/ Electrosurgery.

Alternating current (AC) is solely employed in electrosurgery.

Diathermy converting electrical frequencies from the wall outlet (50– 60 Hz) to high frequencies ranging from 500 000 to 3000 000 Hz



Energy is converted to neat, which is used to cut or coagulate tissue

[Bailey and Love's-28th-110]

What are the types of diathermy?

- 1. Monopolar
- 2. Bipolar

Diathermy can be used for three purposes:

- 1. **Cutting:** used to divide tissues during bloodless
- 2. **Coagulation:** the sealing of blood vessels.
- 3. Fulguration: the destructive coagulation of tissues with charring.

The effects/ use of diathermy:

Diathermy can be used for two basic purposes

- 1. Coagulation: to achieve haemostasis
- 2. Cutting: incision and dissection of tissues during surgery

[Bailey & Love's-28th-110]

Several 'blend' options are also available, combining various proportions of the two main modalities.

Fulguration: the destructive coagulation of tissues with charring

What are the complications of diathermy?

- 1. Burns (Most common)
- 2. Electrocution
- 3. Explosion
- 4. Channelling: e.g.
 - ✓ Coagulation of the penis in a child undergoing circumcision
 - \checkmark Coagulation of the spermatic cord when the electrode is applied to the testis.
- 5. **Interference with implantable electronic devices:** Diathermy currents can interfere with the working of a gastric or cardiac pacemaker, implantable cardioverter defibrillator, cochlear implants, etc.
- 6. **Occupational hazard from surgical smoke:** Viral particles, bacteria, respiratory and ophthalmic irritants and carcinogens have been identified in surgical smoke from diathermy devices.

[Bailey and Love's-28th-112]

Advanced vessel-sealing devices:

- 1. Advanced bipolar tissue fusion technology: It uses a combination of pressure and energy to create vessel fusion that can withstand up to three times the normal systolic pressure. New technology such as the LigaSure[™] system (Medtronic).
- 2. Ultrasonic energy devices: The harmonic scalpel is an instrument that uses ultrasound technology to cut tissues while simultaneously sealing them. During use, the scalpel vibrates in the 20 000–50 000-Hz range and cuts through tissues, effecting haemostasis by sealing vessels and tissues by means of protein denaturation caused by vibration rather than heat.
- 3. Combination energy devices

[Bailey and Love's-28th-113]

PYLORIC STENOSIS

A 35-year-old man was suffering from peptic ulceration for long. Now he complains of repeated vomiting of whatever he eats /drinks. He also complains of generalized wellness and spasm of hands and feet muscles. Lab investigations: blood pH 7.52, Na+ 125 mmol/4, K+ 2.75 mmol/1, Cl-8.5 mmol/1, Ca2+ 1.3 mmol/1.

What is your primary diagnosis?

Gastric outlet obstruction due to duodenal stenosis

What are usual biochemical abnormalities here?

- 1. Metabolic alkalosis
- 2. Hyponatremia
- 3. Hypochloremia
- 4. Hypokalemia
- 5. Hypocalcemia

Where is the exact site of pyloric stenosis? First part of duodenum.

What is the definitive surgery here?

Bilateral truncal vagotomy (TV) with gastrojejunostomy.

Note: The term 'pyloric stenosis' is a misnomer.

- \checkmark The stenosis is seldom at the pylorus.
- ✓ Commonly, when the condition is due to underlying peptic ulcer disease, the stenosis is found in the first part of the duodenum, the most common site for a peptic ulcer.
- ✓ **True pyloric stenosis** can occur due to fibrosis around a pyloric channel ulcer

What are the common presentations of pyloric stenosis?

- 1. H/O chronic duodenal ulcer for 10-15 years
- 2. **Vomiting**: Usually occurs during evening, may occur after taking meal, Projectile containing Undigested food particle,
- 3. **Pain:** In the epigastrium, Continuous pain with loss of periodicity & no relation with food.
- 2. Weight loss: Due to vomiting & starvation

Signs:

- 1. Ill looking, Emaciated
- 2. Lymph node: Not palpable
- 3. Visible peristalsis: May be present
- 4. Succussion splash: After 4 hours of taking last meal.

What investigations will you advice?

- 1. Endoscopy of upper GIT
- 2. Ba meal X-ray: Findings:
 - a. Stomach is hugely dilated & low down reaches to the pelvic cavity
 - b. Soap bubble appearance of stomach/multiple negative shadow in the stomach indicates -Residual food particle
 - c. No dye pass beyond the pylorus

Management of Infantile hypertrophic pyloric stenosis

- ✓ Ramstedt's operation: Hypertrophied muscle is cut along the whole length adequately until the mucosa bulges out.
- ✓ Laparoscopic pyloromyotomy is becoming popular.

[SRB's Manual of Surgery-6th-811, 819]

Why should you do gastrojejunostomy after truncal vagotomy?

- 1. Vagus is secretomotor to stomach.
- 2. So, after vagotomy the motility of stomach is lost, and gastric stasis occurs.
- 3. Hence, drainage procedure is a must.

Is there any other drainage procedure other than posterior GJ?

Yes, pyloroplasty which is making the pyloric canal opened always.

Why should you prefer posterior GJ?

Posterior GJ is preferred because it gives a dependent drainage by gravity.

What are (name 2 for each) the names of operation done for gastric ulcer and duodenal ulcer?

A. For duodenal ulcer:

- 1. Billroth's II gastrectomy
- 2. Gastrojejunostomy

B. For gastric ulcer:

- 1. Billroth's I gastrectomy
- 2. Selective vagotomy

[Bailey & Love's-28th-1160]

What is duodenal stump blow out?

It is the leakage of the blind end of the duodenum that occurs as a complication of Billroth's II gastrectomy.

What is the treatment of this?

- 1. **Resuscitate the patient:** With IV fluid and IV antibiotic
- 2. Surgery: Laparotomy & resuturing the stump with drainage

VAGOTOMY [FOR UNDERSTANDING PURPOSE ONLY]



Figure: Anatomy of vagus nerve

Branches of vagus nerve:

1. Anterior vagus:

- ✓ Hepatic branch: In selective vagotomy, it remains unaffected.
- ✓ Gastric branch: Main branches are called 'Nerve of Laterjet' lying along lesser curve.
- 2. Posterior vagus: Main gastric branch and Coeliac branch

Function of vagus nerve on stomach: Parasympathetic

- 1. Secretomotor: Increases secretion of HCl, pepsin
- 2. Increases motility of stomach

[Bailey and Love-27th -1149]

Types of vagotomy:

- **1. Truncal:** Resection of main trunk (Anterior and posterior vagus)
- 2. Selective: Only gastric branches are cut off. Hepatic branch and coeliac branch are preserved.
- 3. **Highly selective:** In this procedure only the terminal branches (Parietal cell) of nerve of Laterjet of antrum are cut; preserving the nerve of Laterjet (Crow's foot) supplying the pylorus.

Advantages of highly selective vagotomy (HSV):

- 1. More physiological with minimal disturbances
- 2. No drainage procedure is required because pyloric function is preserved
- 3. Nerve supply to gallbladder and liver are not disturbed
- 4. No diarrhea which occurs in 5.8 percent of cases of truncalvagotomy.

Disadvantage: High incidence of recurrence (20%).



Fig: Types of Vagotomy

ACUTE LIMB ISCHEMIA

A 30 years male patient develops sudden severe pain on his right upper limb with blackening of his right thumb.

What is your probable diagnosis?

Acute upper limb ischaemia

What are the cardinal features of this condition? / What are the clinical features of acute limb ischemia?

- 1. Pain
- 2. Pallor
- 3. Paralysis
- 4. Pulselessness
- 5. Paraesthesia (or anaesthesia)

[Bailey & Love's-28th-1011]

What are the most common causes of it?

- 1. Embolic occlusion (Most common)
- 2. Trauma.
- 3. Thrombosis of an artery

Cause of acute limb ischemia

- A. Embolic occlusion: Common sources of embolism-
 - 1. Left atrium in AF
 - 2. Left ventricular mural thrombus following MI
 - 3. Vegetations on heart valves in infective endocarditis

4. Thrombi in aneurysms and on atherosclerotic plaques.

B. Trauma

- C. **Thrombosis of an artery:** Normal artery can develop sudden acute thrombosis in certain special situations with hypercoagulable status like
 - 1. Malignancy
 - 2. Leukaemia
 - 3. Antiphosholipid antibody syndrome
 - 4. Protein C/protein S/antithrombin deficiency
 - 5. Polycythaemia rubra vera, thrombocytosis.
- D. Thrombosis of a bypass graft

[SRB Manual of Surgery-6th-183]

What are the investigations you want to do for acute limb ischemia?

- 1. **Emergency Doppler angiogram** (Gold standard, differentiates between embolism and thrombosis; status of vessel proximally and distally)
- 2. ECG and echocardiography
- 3. PT, APTT, BT, CT, platelet count

[SRB Manual of Surgery-6th-185]

Nice to know: Ischaemia beyond 6 hours is usually irreversible and results in limb loss

[Bailey & Love's-28th-1011]

How will you manage acute limb ischemia?

- 1. Embolectomy (Surgical exploration and removal of clot)
- 2. Endovascular therapy:
 - a. **Intrarterial thrombolysis:** Using streptokinase, Tissue plasminogen activator (tPA): Alteplase, Reteplase etc.
 - b. Percutaneous mechanical thrombectomy
 - c. **Ultrasound accelerated thrombolysis** (Using catheter based or transdermal using acoustic cavitation to ablate thrombus)

[Bailey & Love's-28th-1013]

What are the contraindications for thrombolysis?

- 1. Recent stroke, Recent eye surgery, Pregnancy
- 2. Recent major surgery or major bleed like of varices
- 3. History suggestive of or confirmed active duodenal/gastric ulcers
- 4. Uncontrolled hypertension or coagulation disorders

[SRB Manual of Surgery-6th-185-86]

HEAD INJURY

Classify head injury\ Traumatic brain injury.

Traumatic brain injury classification according to Glasgow Coma Scale (GCS) score:

Minor head injury	GCS 15 with no loss of consciousness (LOC)
Mild head injury	GCS 14 or 15 with LOC
Moderate head injury	GCS 9–13
Severe head injury	GCS 3–8

[Bailey & Love's-28th-361]

How will you assess neurological progression in case of TBI?

By GCS

What is the best investigation tool for diagnosis of traumatic brain injury?

CT scan of Brain with Bony window view

A 20-year-old male struck by a cricket ball in his head with a history of brief loss of consciousness (LOC) and admitted into your department through emergency. After 04 hours of admission his GCS is 13/15, pulse: 60/min, BP: 150/90, Respiratory rate: 14/min.

What will be the probable diagnosis?

Moderate Head injury

How will you investigate this patient?

Urgent CT scan of Brain with Bony window view.

How will you manage this patient?

According to ATLS protocol Following for Head injury-

- 1. Oxygen inhalation
- 2. Head end Raised
- 3. Nil by Mouth
- 4. Inf. Normal Saline
- 5. IV Antibiotic, Analgesic, PPI, Anticonvulsant
- 6. Urinary Catheterization

What do you mean by primary & secondary brain injury\ Traumatic brain injury? Primary brain injury: Direct and immediate consequences of trauma to brain

1. Concussion

- 2. Cortical contusions/lacerations
- 3. Diffuse axonal injury
- 4. Brainstem contusions

Secondary brain injury: Indirect and delayed consequences of trauma to brain

- 1. Intracranial hematoma
- 2. Cerebral edema
- 3. Hypoxemia
- 4. Ischemia
- 5. Infection
- 6. Epilepsy
- 7. Metabolic\Endocrine disturbances

[Lecture of MMC]

What are the causes of secondary brain injury?

A. Extracranial causes:

- 1. Hypoxia
- 2. Hypotension
- 3. Hyponatremia
- 4. Hyperthermia
- 5. Hypoglycemia

B. Intracranial Causes:

- 1. Hemorrhage Extradural, Subdural, Subarachnoid, Intracerebral, Intraventricular
- 2. Swelling
- 3. Infection
- 4. Meningitis
- 5. Brain abscess

[Lecture of MMC]

How will you prevent secondary brain injury in a case of head injury?

- 1. Adequate Oxygenation
- 2. Maintenance of blood pressure
- 3. Prevention of hypoglycaemia
- 4. Correction of any electrolyte imbalance
- 5. Specific management of primary brain in jury

What are the points you will remember while taking a history in head injury patient?

History From patient or attendant:

- 1. Nature of injury
- 2. Time elapsed since injury
- 3. Loss of consciousness or amnesia

- 4. Level of consciousness at scene and on transfer
- 5. Evidence of seizures
- 6. Probable hypoxia or hypotension
- 7. Pre-existing medical conditions
- 8. Medications, especially anticoagulants
- 9. Illicit drugs & alcohol

[Bailey & Love's-28th 363 + Lecture of MMC]

What are the points will you see when examining a head injury patient? Primary survey: ATLS protocol

- 1. GCS
- 2. Vital sign: Pulse Blood pressure, Respiration, Temperature
- 3. Check pupil size and response
- 4. Check for focal neurological deficits
- 5. Ensure adequate oxygenation and circulation
- 6. Exclude hypoglycaemia

Secondary survey:

1. Evidence of Basal skull fracture:

- a. Racoon's eye
- b. Battle's sign
- c. CSF otorrhoea/ rhinorrhoea
- d. Haemotympanum
- 2. Limbs: Power, tone, Reflexes, Sensation, Co-ordination
- 3. Fundi, other cranial nerves
- 4. Examination of neck and spine
- 5. Facial skull fracture
- 6. Peri-orbital oedema, Proptosis
- 7. Cranio-cervical auscultation:
 - a. Over carotids: carotid dissection
 - b. Over globe: carotid- cavernous fistula

[Bailey & Love's-28th-364 + Lecture of MMC]

What are the features of skull base fracture?

- 1. Battle's sign
- 2. 'Racoon' or 'panda' eyes (bilateral periorbital bruising).
- 3. Haemotympanum,
- 4. Overt bleeding from the ear if the tympanic membrane has ruptured,
- 5. CSF rhinnorrhoea
- 6. CSF otorrhoea

[Bailey & Love's-28th-365]

What is Glasgow coma scale? What are the components of Glasgow coma scale?

It is a scale to measure level of consciousness.

In 1974, Teasdale and Jennet in Glasgow, developed a system for measuring conscious level.

What is the interpretation of E2V2M2?

GCS score 6 which indicate severe head injury

- 1. Eye opening= To painful stimulus
- 2. Best verbal response= Sounds only
- 3. Best motor response =Extension

Role of mannitol in management of head injury

Mannitol is an osmotic diuretic which reduces cerebral edema in severe head injury by drawing water across blood brain barrier into vascular compartment.

What is Cushing triad?

Cushing triad

- 1. Bradycardia
- 2. Hypertension
- 3. Irregular respiration

[Bailey & Love's-28th-361]

What are the indications of CT scan in head injury? Indications for CT imaging within 1 hour:

- 1. GCS <13 at any point
- 2. GCS <15 at 2 hours
- 3. Focal neurological deficit
- 4. Suspected open, depressed or basal skull fracture
- 5. More than one episode of vomiting
- 6. Post-traumatic seizure

Indications for CT imaging within 8 hours:

- 1. Age >65 years
- 2. Coagulopathy (e.g., aspirin, warfarin or rivaroxaban use)
- 3. Dangerous mechanism of injury (e.g., fall from a height, road traffic accident)
- 4. Retrograde amnesia >30 minutes

[Bailey & Love's-28th-362]

What are the criteria for hospital admission in a case of head injury?

- 1. Presence of indication of CT scan head
- 2. Initial GCS 14 or less then 14
- 3. Patient neurologically unstable
- 4. There is no responsible, sober adult that can observe the patient
- 5. Patient has no reasonable access to return to the hospital emergency if needed

[Handbook of Neurosurgery-10th-1012]

NICE discharge criteria in minor and mild head injury-

- 1. GCS 15/15 with no focal deficits
- 2. Normal CT brain if indicated
- 3. Patient not under the influence of alcohol or drugs
- 4. Patient accompanied by a responsible adult
- 5. Verbal and written head injury advice: Seek medical attention if
 - a. Persistent/worsening headache despite analgesia
 - b. Persistent vomiting
 - c. Drowsiness
 - d. Visual disturbance
 - e. Limb weakness or numbness

[Bailey & Love-28th-362]

RAISED INTRACRANIAL PRESSURE (ICP)

What are the signs symptoms of raised intracranial pressure? Symptoms:

- 1. Headache
- 2. Vomiting, Nausea
- 3. Blurred vision
- **4.** Double vision

Signs:

- 1. Papilloedema
- 2. Bradycardia
- 3. Hypertension
- 4. Irregular respiration
- 5. Cranial nerve palsy (sixth cranial nerve commonly)

In infants:

- 1. Fontanelle is tense and bulging
- 2. Increase in head circumference
- 3. Bulging scalp veins
- 4. Impairment of conscious level
- 5. Parinaud's syndrome results from dorsal midbrain compression, with a loss of upgaze known as **sunsetting.**



Figure 3: Parinaud's syndrome with sunsetting.

Raised ICP requires urgent evaluation and management delay risks progression to cerebral herniation resulting in cardiovascular instability, neurological deficit and death. Vision may also deteriorate rapidly and irreversibly.

How will you manage raised ICP?

- 1. Mannitol infusion
- 2. Anticonvulsants: Barbiturate, Levetiracetam
- 3. Neurosurgical intervention

[Bailey & Love's-28th-702 + Lecture of MMC]

What instrument is needed to see papilledema?

Ophthalmoscope (also called fundoscope)

What are the causes of raised ICP?

A. Increased brain volume

- 1. Intracranial space occupying lesions:
 - a. Brain tumors
 - b. Brain abscess
 - c. Intracranial hematoma
- 2. Intracranial vascular malformation
- 3. Encephalitis (viral, inflammatory), Meningitis
- 4. Hypoxic ischemic encephalopathy
- 5. Traumatic brain injury
- 6. Stroke
- **B.** Increase in CSF volume:
 - 1. Hydrocephalous
 - 2. Choroids plexus papilloma

C. Increased blood volume:

- 1. Vascular malformations
- 2. Cerebral venous thrombosis
- 3. Meningitis, Encephalitis

[Bailey & Love's-28th-703 + Neurology and Neurosurgery Illustrated Review-5th-76-84]

CAUDA EQUINA SYNDROME

What is cauda equina syndrome?

CES is a very serious and urgent condition that arises from compression of the cauda equina nerve roots, which supply the perineum and genital regions and bladder, bowel and sexual function.

CES may result from acute or chronic compression of the cauda equina nerve roots.

What are the causes of cauda equina syndrome?

- 1. The most frequent cause is a massive central lumbar disc protrusion at L4/5 or L5/S1
- 2. Lumbar fractures
- 3. Postoperative epidural haematoma, spinal stenosis
- 4. Spinal tumours.
- 5. Occlusion of the lumbar arteries by dissection or aneurysm of the abdominal aorta can lead to similar dysfunction of the **cauda equina without compression**.

How will you diagnose a case of cauda equina syndrome clinically?

By History and Clinical Features

History:

- 1. Any History of PLID, Trauma to back, Long term low back pain.
- 2. CES presents most commonly in the 20- to 45-year age group

Clinical Features:

- 1. Low back pain
- 2. Unilateral or bilateral sciatica
- 3. Lower limb motor weakness and sensory abnormalities
- 4. Saddle anaesthesia,
- 5. Bladder dysfunction (initially sensory changes, later painless retention and overfow incontinence in later stages)
- 6. Sexual and bowel dysfunction.

How will you initially manage a case of cauda equina syndrome?

- 1. Complete Bed Rest
- 2. Urinary catheterisation
- 3. Strong Analgesia: Prefer Opioid
- 4. Muscle relaxant
- 5. Arrange urgent surgical decompression

[Bailey & Love's-28th-513, 14+ Handbook of Neurosurgery-10th-1238]

FRACTURE

What is fracture?

A fracture is a break in the structural continuity of bone.

[Apley's System of Orthopaedics and Fractures-10th-711]

What are the causes of fracture?

- 1. Injury
- 2. Repetitive stress
- 3. Abnormal weakening of the bone (a pathological fracture)

[Apley's System of Orthopaedics and Fractures-10th-711]

How will you classify fracture?

According to communication:

- 1. Closed fracture: If the overlying skin remains intact, it is a closed fracture.
- 2. **Open fracture:** if the skin or one of the body cavities is breached, it is an open fracture (also known as a **compound** fracture), liable to contamination and infection.
- According to etiology:
 - 1. Traumatic
 - 2. Pathological
 - 3. **Stress Fractures** (Fractures in normal bone which is subject to repeated heavy loading, typically in athletes, dancers or military personnel e.g., march fracture in metatarsal bone)

According to fracture shape/radiological classification:

- 1. Spiral fracture
- 2. Oblique fracture
- 3. Transverse fracture
- 4. Segmental fracture
- 5. Comminuted fracture



Figure 4: (a) transverse; (b) segmental, (c) spiral.

[Apley's System of Orthopaedics and Fractures-10th-711 to 713 + B & L-28th-421]

CONSTIPATION IN CHILD

Causes: The passage of hard or infrequent stools is common. Severe constipation may be secondary to-

- a. An anal fissure
- b. Hirschsprung's disease
- c. An anorectal malformation
- d. A neuropathic bowel.

Clinical evaluation:

- 1. A detailed history and examination of the abdomen, anus and spine will identify most causes.
- 2. Rectal examination
- 3. Plain abdominal radiography

Rx: In the absence of specific underlying pathology, the child is best managed jointly with a pediatrician, using a combination of

- 1. Diet
- 2. Extra fluids
- 3. Reward systems
- 4. Laxatives

[Bailey & Love's-28th -261]

Congenital malformations managed by neonatal surgeons:

- 1. Oesophageal atresia/ tracheoesophageal fistula
- 2. Duodenal atresia
- 3. Intestinal atresias
- 4. Anorectal malformations
- 5. Hirschsprung's disease
- 6. Biliary atresia
- 7. Gastroschisis
- 8. Exomphalos (major and minor)
- 9. Congenital diaphragmatic hernia
- 10. Congenital pulmonary airway malformations (CPAM)

[Bailey & Love's-28th-264]