1 Introduction and Anaesthesia

The practice of surgery demands a logical, methodical approach that requires a round knowledge of anatomy, physiology and pathology of any condition encountered. Understanding and presentation are the key to success in any examination.

The basis of all pathologic processes requires a clear definition of the condition.

Features of condition that need to be described

Incidence
Age
Sex
Geography
Aetiology
Pathology
Macroscopic/microscopic appearance
Management
Staging/spread
Prognosis

The mnemonic which outlines it "In a surgeon's crown, a physician might make some progress".

Management describes the process of diagnosis (history/examination), specific tests for investigation and treatment.

Describe the detailed history, examination and proposed investigation and presumptive differential diagnosis whenever student is asked to describe or present a case. Therapy should include treatment modalities, prevention and education.

General measures should include rest, hygiene, diet, pharmacological agents, nursing, support therapy and therapeutic modalities follow-up.

One should describe and classify conditions into:

- Infective
- Neoplastic
- Drugs
- Iatrogenic
- Collagenosis
- Autoimmune
- Traumatic
- Idiopathic

- Vascular
- Endocrine or environmental
- Psychological
- Metabolic

Infective procedures can be further divided into bacterial, viral, fungal, parasitic, spirochaetal rickettsial, retroviral. Complications should always be described in terms of general and specific complications.

HISTORY

It is much debated issue and should form a part and parcel of every procedure and has medicolegal implications. All complications should be clearly described to patient and recorded on the consent form.

Work up of Patient

1. Detailed history
   - Present and past history
   - Drug history
   - Allergies
   - Family history
   - Social history
   - Gynaecologic and obstetric history

For Example

Taking history of pain one can define as–Mnemonic Socrates

- **S**ite
- **C**haracter
- **A**ssociation
- **E**xacerbation
- **O**nset
- **R**adiation
- **T**iming
- **S**everity

2. Examination
   - General condition
   - Cardiovascular system
   - Abdomen
   - Mental and Physical State (CNS)
   - Chest
3. Investigations
   - Basic investigations like function tests. Haemogram, kidney function test that X-ray chest, ECG, serum electrolytes.
   - Specific investigations

Preoperative preparation

- After history, examination, tests marking the site, marking the side and specific preoperative preparation for specific surgery.
  Example: Bowel preparation for colonic surgery.

Antibiotics for prophylaxis is to be given placement of tubes like urinary catheter to decompress bladder, nasogastric tube.

Medical management of systemic conditions like diabetes, heart diseases, chronic obstructive pulmonary disease (COPD) should be routinely done.

Operative Steps

- It should include description of anaesthetic technique local or regional, position of patient, e.g. midline prone lithotomy, etc.
- Skin preparation should describe antisepsis, draping and toweling, position of surgeon and assistants and in case of laparoscopy, the position of camera and monitor as well operative steps should mention the approach entering tissue planes, findings of diagnostic laparotomy or laparoscopy, pathology or coexisting pathologies, detailed procedure. One should also describe detailed closure with details of haemostasis, drainage, suture material, swab and instrument check.

Example: Postoperative management should include fluid and electrolyte and nutrition management, administration of antibiotics or other drugs, timings for removal of draw sutures, dressings, investigation specific nursing instructions like detailed parameter and input/output and nutrition chart specimen for histology and microbiology, radiology reports and date and time of discharge and subsequent follow-up.

Example

Suture material	*Absorbable*	*Nonabsorbable*
Monofilament	1. Surgical gut • Plain • Chromic	1. Polyamide
	2. Collagen • Plain • Chromic	2. Polypropylene
	3. Monocryl	3. Stainless steel
	4. PDS II	4. Polyester
	5. Polyglactin	
Multifilament	1. Polyglycolic acid 2. Polyglactin 910 3. Polyglactin 910 Rapid	1. Surgical silk 2. Surgical linen 3. Cotton 4. Polyamide 5. Polyester 6. Stainless steel

Synthetic absorbable sutures like vicryl rapid, monocryl, etc. Needles can be eyed or eyeless round bodies, uppercut and cutting or micropoint of special needles like tapercut needles.

WOUND HEALING AND INFECTION

Definition: The term **Healing** refers to the replacement of destroyed tissue by living tissue.

The healing process has two aspect:

A. ***Contraction:*** A mechanical reduction in the size of the defect occurring in the first few weeks.

B. ***Replacement of lost tissue:*** This is brought about by:

a. Migration of cells

b. Multiplication of adjacent cells to provide extra time to fill the gap. This is accomplished in two ways:

- *Regeneration:* Replacement of lost tissue by tissue similar in type due to the proliferation of surrounding undamaged specialized cells.
- *Repair:* The replacement of lost tissue by granulation tissue, which matures to form scar tissue. This is inevitable when the surrounding specialized cells do not posses the capacity to proliferate, e.g. muscles and neurons.

Wound healing is a complicated process involving:

- Movement of cells
- Division of cells
- Rearrangement of tissues
- Biochemical changes

In healing the phases are as follows:

1. *Lag phase:* For a few days no marked changes are seen in the wound.

2. *Rapid change in size due to contraction:* Biochemical changes take place in the early period. On Microscopic examination there is an acute inflammatory reaction, initially and rapid cell division is occurring later.

The basic that happen in wound healing are:

1. Wound contraction
2. Granulation tissue formation
3. Biochemical changes

1. Wound contraction

a. *Lag phase:* Initially for 2–3 days followed by

b. *Period of rapid contraction:* Which is largely completed by the 14th Day. The wound is reduced by approximately 30% of its original size. Contraction of the wound results in much faster healing as 1/4th to 1/3rd amount of new tissue have to be formed.

Causes of wound contraction: No definite causes are known, but the accepted ones are:

1. Removal of fluid by drying.
2. Contraction of collagen: It is supposed that the contraction mechanism lies in the edge of the wound. Interference with this area delays contraction.

Preoperative care

- Proper diagnosis
- Informed consent

- Preoperative evaluation of cardiorespiratory system, exercise tolerance, illness, drugs allergy
- Type of anaesthesia/analgesia
- Investigation

ASA (American Society of Anaesthesiologists)

1. Normally healthy
2. Mild systemic disease
3. Severe systemic disease
4. Incapacitating disease
5. Moribund

Preoperative preparation

- Fasting
- Bowel and skin preparation
- Investigation
- DVT prophylaxis Fragmin 5000 SC before surgery and compression garments.
- Prophylactic antibiotics

Anaesthesia

- Premedication
- Patients are administered general anaesthesia, regional anaesthesia
- Local anaesthesia is by giving lignocaine 3 mg/kg and 7 mg/kg if adrenaline is mixed, bupivacaine 2 mg/kg.

Postoperative Complications

Pyrexia: Lung collapse, infection, anastomotic leak, UTI blood culture cannulations meningism, endocarditis and deep vein thrombosis.

Pain: Narcotic analgesics like morphine nonsteroidal NSAIDs.

Hypoxia: Pneumonia, pulmonary embolism, lung collapse, pneumothorax, fasting blood culture, arterial blood gases, X-ray chest and ECG.

Hypotension: Oxygen, hypovolaemia to be managed cardiogenic causes like embolism, inspiration, anaphylaxis and sepsis.

Nausea/Vomiting: Ileus, emetic drugs like opiates, digoxin, nasogastric, anaesthetic drugs and antiemetics.

Oliguria: Output should be 50 ml/hr replacement of lost fluid, shock nephrotoxic drugs and transfusion trauma, and fluid retention.

Day care surgery: Do not discharge until **LEAPFROG** is established.

L Lucid, not vomiting, cough reflex
E Easy breathing, urination
A Ambulant
P Pain relief
F Follow-up, removal of drain
R Rhythm like pulse, BP

O Operation site checked
G GP orders

Approach to Examination

Initial impression: Appearance and mannerisms, speak clearly and loudly
The acronym **PLANT** can be used to answer
PAUSE
LISTEN
ANALYSE
NOTE
TALK

QUESTIONS AND ANSWERS

1. **What is suture?**
   Ans: Any strand of material used to ligate blood vessels or approximate tissues.
2. **What are types of sutures?**
   Ans: Absorbable and nonabsorbable.
3. **What are catgut sutures and two types of catgut sutures?**
   Ans: Purified collagen from intestines of cows and sheep, plain catgut and chromic catgut treated with chromium.
4. **What is suture?**
   Ans: Absorbable, braided, multifilamentous copolymer of lactide and glycoside. It retains strength 60% 2 weeks, 8% 4 weeks.
5. **What is PDS?**
   Ans: Absorbable monofilament of polydiaxanone. 150 days absorption period.
6. **What is silk?**
   Ans: Branded protein filament spleen by silkworm larva.
7. **What is prolene?**
   Ans: Nonabsorbable suture.
8. **What is vertical mattress and horizontal mattress?**
   Ans: Far-far, near-near vertical mattress and horizontal mattress sutures is taken, needle is reversed and same bite is taken again parallel to wound.