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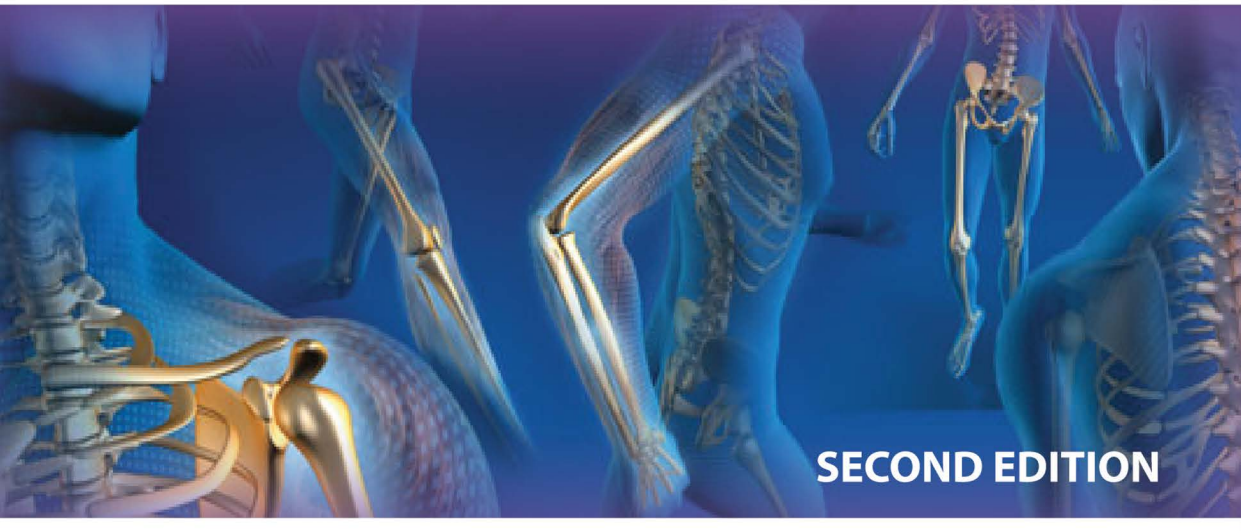
FAQs

Frequently Asked Questions (FAQs) for Postgraduate Practical Examination in

ORTHOPAEDICS



SECOND EDITION

KP Daga

Foreword
L Prakash

JAYPEE

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2
CHAPTER

Bone Infection (Osteomyelitis)

Q.1 What is osteomyelitis?

Ans. It is the infection of all layers of bone.

Q.2 What are types of osteomyelitis?

Ans. *Acute osteomyelitis:* Hematogenous systemic illness of less than 10 days without history of previous episode.

Subacute osteomyelitis: No systemic symptoms, with radiological changes, duration more than 10 days.

Chronic osteomyelitis: Duration more than one month, history of previous episode, radiological bony changes with or without systemic illness.

Q.3 What is acute osteomyelitis?

Ans. This is an acute infection of medullary canal with increased osteolytic activity, fat necrosis. Pathogens are passed through least resistant part causing periosteal abscess, ultimate result depends upon virulence of organism, resistance of host and local conditions.

Q.4 How do you diagnose an acute osteomyelitis clinically?

Ans. Severe localized bony pain and tenderness, soft tissue inflammation, fever (variable), loss of function of adjacent joint 12–48 hours after onset, painful and tense joint effusion either of septic arthritis or sterile effusion.

Q.5 What pathological tests are done to diagnose osteomyelitis?

Ans.

- ESR—highly raised (more of prognostic value)
- C-reactive protein—raised
- Blood culture—75% cases, this is positive and guile for organism, within 48–72 hours.
- Aspiration of fluid or pus of abscess also gives idea about organisms either by microscopic or culture examination.

Q.6 Why area of metaphysis is commonly involved?

Ans. Vessels at metaphysic have hair pin bend, tortuous course, sluggish blood flow, nidus for bacteria, rapidly growing end and due to trauma and weight bearing (physiological loading), there may be microfracture and thus due to increased blood supply, the area of metaphysis is commonly affected.

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Q.7 What are radiological ways to diagnose osteomyelitis?

Ans. Plain X-ray shows changes after at least 10 days after onset of disease, such as periosteal reaction, thickening, lytic lesions can be seen between 2–6 weeks after onset of disease, sclerotic changes are seen in chronic osteomyelitis. Soft tissue oedema of surrounding tissue may be present in 35–50% cases.

Radiolnuclide scanning—more sensitive than plain X-ray. Changes can be seen quite early.

Magnetic resonance imaging—quite sensitive even within 24–72 hours of onset of disease, helpful in diagnosing, extent of disease, better anatomic details, localisation can also be done specifically, and helps in localising aspiration of pus or site of biopsy, can detect early marrow oedema, periosteal reaction, sequestrum formation.

Computed tomography (CT)—good for differentiation between bone and soft tissue infections, but not as useful as MRI.

Q.8 At what stage are radiological changes seen on plain X-ray in osteomyelitis?

Ans. When changes are seen on plain X-ray, the disease is either subacute or chronic. It takes few days:

- Subacute—usually lytic lesion is seen
- Chronic—sequestrum and involucrum are present.

Q.9 What is picture of untreated osteomyelitis?

Ans. Local abscess, bony absorption in patches, periostitis, periosteal abscess.

Q.10 What is sequestrum?

Ans. It is dead piece of bone lying in pool of pus.

Q.11 What is involucrum?

Ans. This is new cortical bone laid down by periosteum around old bone (sequestrum).

Q.12 What are types of sequestrum?

Ans. Flake sequestrum, tubular sequestrum, ring sequestrum, coral form sequestrum, colored sequestrum, ivory sequestrum, coarse sand-like sequestrum, feathery sequestrum, Bombay nigra sequestrum, muscle sequestrum.

Q.13 What are common organisms in osteomyelitis?

Ans. Mainly they are *Staphylococcus aureus*, less commonly, *Streptococcus* Gram-negative bacilli.

Q.14 What is Cierny and Mader (1981) classification of chronic osteomyelitis?

Ans.

- *Anatomic Type I:* It medullary osteomyelitis–hematogenous and infected fracture non-union. This is primarily endosteal disease, may be sequelae of medullary fixation-infected

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- *Type II:* Superficial osteomyelitis
- *Type III:* localized infection with sequestrum, cavitation
- *Type IV:* Diffuse osteomyelitis—combination of Type I, II, III and with instability.

Q.15 What is Brodie's abscess?

Ans. This is form of chronic osteomyelitis. This is encapsulated abscess in the bone surrounded by sclerotic margin with or without sequestrum in the cavity which is filled with pus or fluid which may be sterile. There is osteolytic lesion. Clinically, patient complains of dull aching pain at the site of lesion.

Q.16 What is treatment of Brodie's abscess?

Ans. Decompression with excision of lesion with sclerotic margin till one gets normal bone margin with or without continuous saline irrigation for few days with either saline or selected antibiotics as per culture report.

Q.17 Where do you get bilateral osteomyelitis?

Ans. When there is *Salmonella* osteomyelitis in cases of sickle cell anemia.

Q.18 How do you define sclerosing osteomyelitis of Garre?

Ans. This is subacute form of osteomyelitis, with lowgrade infection with patchy sclerosis in long bones at diaphysis.

Q.19 What is the treatment of chronic osteomyelitis?

Ans. This is staged as follows—*First stage:* Adequate debridement and curettage with or without antibiotic-laden cement depots in the form of beads or dowels. *Second stage* is of placement of bone grafts and fixation of bone if needed.

Saucerisation with or without filling cavity by bone grafts or muscle flaps principle is that by making shallow cavity so as there should not be any collection.

Closed suction irrigation (Carel and Dakin's method)—with or without gentamicin or tobramycin beads. Which may be removed after 10–14 days after formation of granulation, tissue otherwise it is difficult to remove them.

Intramedullary reaming is good way of debridement for diaphyseal involvement.

Q.20 What is Bier's method?

Ans. Putting Maggots and liquid paraffin in the wound to get sealed cavity by scavenging.

Q.21 What is Halstead's method?

Ans. This is electromagnetic induction of chronic infection which started in 1984.

Q.22 How cavities after osteomyelitis are closed after operation?

Ans. By bone grafts, muscle flaps and gentamicin or tobramycin beads.

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Q.23 What is Papineau Rhinelanders' method?

Ans. This is divided in four stages:

1. Debridement
2. Saucerisation
3. Bone grafts with or without myocutaneous flaps
4. External fixators for stability.

Q.24 What are common complications after chronic osteomyelitis?

Ans.

- Shortening or lengthening (5% cases)
- Pathological fractures
- Septic arthritis
- Joint stiffness
- Contracture of joints especially flexion contracture
- Secondary skin infection
- Amyloidosis
- Generalised septicemia or bacteraemia
- Squamous cell carcinoma at sinus.

Q.25 What are the causes of death in osteomyelitis?

Ans. Without proper treatment, the patients may die of thromboembolism, amyloidosis and sqamous cell carcinoma.

Q.26 How do you diagnose chronic osteomyelitis on X-ray?

Ans. By presence of sequestrum as seen as sclerosed piece of bone in the cavity with involucrum, bony irregularity (due to periosteal reaction) and improper remodeling after healing of sinuses and cavities.

Q.27 Where do you use methylene blue?

Ans. This is used at the time of operation of sinus excision. When injected through sinus it demarcates the dead tissue by staining blue by living tissue stained as grey.

Q.28 How do you differentiate sequestrum from living bone?

Ans. Sequestrum may be ivory, pale white, rough surface on one side, smooth on other side, lies in pus, seen sclerosed piece on X-ray. Heavy sinks in water.

Living bone-bleeds on removal, floats in water.

Q.29 What are success rate of treatment of osteomyelitis?

Ans.

- *Type I*—If treated as per protocol such as debridement by intramedullary reaming or saucerisation, closure of dead space by antibiotic-laden cement, bone grafting or muscle flap, etc. success rate is 89% to 100%.
- *Type II*—When treated by drainage and curettage—success rate is 79% to 100%

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- *Type III*—By simple stabilisation and closure of dead space, combination of methods used for type I and type II are used with or without antibiotic-laden cement, followed by reconstruction. Success rate is 92 to 98%.
- *Type IV*—Complex stabilisation, dead space closure, reconstruction after removal of dead bones, gap is filled, leads to 80 to 98% success.

Q.30 Summarise the picture of osteomyelitis as per age and clinical behavior and treatment.

Ans.

	Infancy	*Childhood*	*Adult*
1.	Secondary to umbilical inf.	Hematogenous	Open fracture
2.	Less constitutional symptoms	More	Moderate
3	*Site:* Intraarticular Metaphyseal and epiphyseal	Metaphyseal	Diaphyseal
4.	Local temperature—raised little	Raised	Moderately raised
5.	Periosteum perforated by pus	Subperiosteal abscess adherent	Periosteum
6.	Frequent joint affection as vessels passing through epiphysis and growth plate	Less frequent muscular adhesions	In late cases due to
7.	Less sequestrum	Very common	Smaller thin
8.	Shortening	Shortening or lengthening	No effect

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Frequently Asked Questions (FAQs)
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ORTHOPAEDICS

Salient Features

- Discusses the important questions which are generally asked in practical examinations of orthopaedics with their appropriate answers
- Thoroughly revised the chapters in this edition as per the developments in orthopaedics
- Incorporates questions based on author's own experience of examinations as examinee and as examiner for various universities
- Includes the latest information on the subject as far as possible
- Useful for MS, DNB and Diploma examinations in orthopaedics.



KP Daga MS (Orth) FCPS (Orth) D (Orth) Fellow of AO (Switzerland) has invented the first Indian interlocking nail for fracture of tibia, which is economical and less invasive less instruments and patient can be made to stand on their lower limbs within 6 hours after operation. He has done more than 2,000 surgeries and carried out more than 50 workshops across the country and in Kingdom of Saudi Arabia, Nepal, and Mauritius. He is known for his fast surgery. He has visited many countries such as UK, USA, Mauritius, UAE, Kingdom of Saudi Arabia, etc. He was active member of Lions' Club, Giants and Rotary Club. In addition, he was teacher for undergraduates in Shivaji University, Mauritius University, Aurangabad University, etc. and for postgraduates in Gulburga University, Shivaji University, Hubli University, Kanpur University, and many more. He is good orator and good teacher. He was second orthopaedic surgeon to get this National Research Development Corporation (NRDC) award in India.

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