
CASE-BASED LEARNING GAMES

UPPER LIMB FRACTURES, LOWER LIMB FRACTURES & SPINAL FRACTURES

COURSE TITLE

Fractures – Upper Limb, Lower Limb & Spine (Clinical and Operative Principles)

CLASS DETAILS

Total number of students: 100

Group division: 10 groups × 10 students each

TEAM ROLES (Rotate for Each Puzzle)

Team Leader

Recorder

Timekeeper

Presenter

Imaging Analyst – 2 students

Clinical Reasoner – 2 students

Rehabilitation Planner – 2 students

GENERAL RULES FOR ALL PUZZLES

Time allotted per puzzle: **20 minutes**

15 minutes: Group discussion

5 minutes: Presentation

Only **provided materials** (case sheets, X-rays, clinical clues) may be used

All students must participate

Each group presents a **2-minute summary** after solving the puzzle

SCORING RUBRIC (10 MARKS PER PUZZLE)

Correct fracture identification / classification – **3 marks**

Clinical reasoning and justification – **3 marks**

Management / operative principles – **2 marks**

Rehabilitation planning – **1 mark**

Teamwork and communication – **1 mark**

Total marks per team (10 puzzles): 100 marks

PUZZLE SET

(Aligned with **Bloom's Taxonomy: Apply – Analyze – Evaluate – Create**)

UPPER LIMB FRACTURES

PUZZLE 1: THE PAINFUL SHOULDER (Apply)

Clinical Scenario:

A 65-year-old woman falls on an outstretched hand and presents with severe shoulder pain and inability to lift the arm.

Clues Provided:

Swelling around the shoulder

X-ray shows fracture of surgical neck of humerus

Tasks:

Identify the type of fracture

Decide conservative versus operative management

Suggest immobilization and early rehabilitation goals

PUZZLE 2: THE DEFORMED ELBOW (Analyze)

Clinical Scenario:

A 10-year-old child falls from a tree with painful, swollen elbow.

Clues Provided:

X-ray shows supracondylar fracture

Radial pulse is weak

Tasks:

Classify the fracture

Identify emergency warning signs

Explain operative principles

PUZZLE 3: THE WRIST THAT WON'T HEAL (Evaluate)

Clinical Scenario:

A 30-year-old man complains of wrist pain 6 weeks after a fall.

Clues Provided:

Tenderness in anatomical snuffbox

X-ray shows scaphoid fracture

Tasks:

Identify the fracture

Analyze reasons for delayed healing

Plan appropriate management

LOWER LIMB FRACTURES

PUZZLE 4: THE SHORTENED LIMB (Apply)

Clinical Scenario:

A 70-year-old man falls at home and is unable to stand.

Clues Provided:

Limb is shortened and externally rotated

X-ray shows intertrochanteric fracture

Tasks:

Identify the fracture

Choose the operative option

Plan early mobilization

PUZZLE 5: THE SWOLLEN KNEE (Analyze)

Clinical Scenario:

A 25-year-old motorcyclist presents with knee swelling after accident.

Clues Provided:

X-ray shows tibial plateau fracture

Tasks:

Assess joint involvement

Decide indication for surgery

Plan weight-bearing protocol

PUZZLE 6: THE OPEN LEG INJURY (Evaluate)

Clinical Scenario:

A factory worker presents with an open injury to the leg.

Clues Provided:

Bone visible through wound

X-ray shows open tibial fracture

Tasks:

Grade the open fracture

Outline emergency operative principles

Suggest infection prevention measures

SPINAL FRACTURES

PUZZLE 7: THE FALL FROM HEIGHT (Analyze)

Clinical Scenario:

A construction worker falls from scaffolding and complains of severe back pain.

Clues Provided:

X-ray/CT shows wedge compression fracture

Tasks:

Identify the fracture type

Assess spinal stability

Decide management principles

PUZZLE 8: THE NUMB LEGS (Evaluate)

Clinical Scenario:

A patient after road traffic accident cannot move both legs.

Clues Provided:

Loss of sensation below umbilicus

MRI shows burst fracture

Tasks:

Identify neurological level of injury

Decide need for surgery

Outline acute rehabilitation priorities

PUZZLE 9: THE ELDERLY BACK PAIN (Analyze)

Clinical Scenario:

A 75-year-old woman develops sudden back pain after minor fall.

Clues Provided:

X-ray shows vertebral compression fracture

Tasks:

Identify cause

Decide conservative versus operative management

Give posture and exercise advice

INTEGRATION PUZZLE

PUZZLE 10: DESIGN THE REHABILITATION PLAN (Create)

Clinical Scenario:

A post-operative patient following fracture fixation (upper limb / lower limb / spine).

Tasks:

Design a phased rehabilitation protocol

Prevent complications (stiffness, DVT, pressure sores)

Provide patient education points
