FRACTURES AND DISLOCATIONS

Keith Kenter, MD

Assistant Professor
Sports Medicine & Shoulder Reconstruction
Director of Resident Education
Department of Orthopaedic Surgery
University of Cincinnati

IMPORTANCE

WHY DO WE NEED TO KNOW THIS ?

BECAUSE WE WANT TO BECOME
ORTHOPAEDIC SURGEONS
AND
THIS STUFF IS REALLY COOL

IMPORTANCE

- Communication
- Treatment plans/algorithms
- Prognostic indicators

FRACTURES

DESCRIPTION

- The bone – name
- Location on bone
- Type of fracture
- Fracture personality
- Fracture displacement
- Fracture angulation

BONE NAME

SIMPLY START BY NAMING THE BONE

Commonly named examples:

Jefferson Fracture
Both Bone Forearm Fracture
Tib/Fib Fracture
Jones Fracture
Bennett’s Fracture
Straddle Fracture

LOCATION ON BONE

DESCRIBE THE LOCATION

- Shaft, metaphysis, epiphysis
- Proximal, distal
- Neck, head, dome
- Condyle, tuberosity, styloid

FRACTURE TYPE

- Open (Compound) fracture
- Closed fracture
- Intra-articular fracture (periarticular)

FRACTURE PERSONALITY

GEOMETRIC PATTERN

- Oblique
- Spiral
- Transverse
- Comminuted
  - Multiple fracture fragments
  - Butterfly fragment
  - Segmental fragment
- Impacted (Compression)
- Burst (special pattern seen in vertebral bodies)
- Avulsion

FRACTURE DISPLACEMENT

BONY APPOSITION

- Nondisplaced
  "fractured not broken"
- Minimally displaced
- Incomplete - only one cortex disrupted
- Intra-articular - measure articular gap of step off

FRACTURE ANGULATION

- Direction of apex of angle
  (apex volar or dorsal, apex medial or lateral)
- Direction of distal fragment
  (Valgus or Varus)
- Length of fracture (shortened, distracted)
- Rotation
- Translation

SPECIAL FRACTURES

OPEN FRACTURE CLASSIFICATION

- Grade 1 wound < 1 cm
- Grade 2 wound 1 cm-10 cm
- Grade 3 wound > 10 cm
  - A adequate soft tissue coverage
  - B severe soft tissue stripping
  - C vascular compromise for repair

SPECIAL FRACTURES

PATHOLOGIC FRACTURES

Fractures that occur through abnormal bone and typically spontaneous or with minor trauma

Tumors

Osteoporosis

SPECIAL FRACTURES

STRESS FRACTURES

Microscopic fractures that occur from repetitive microtrauma

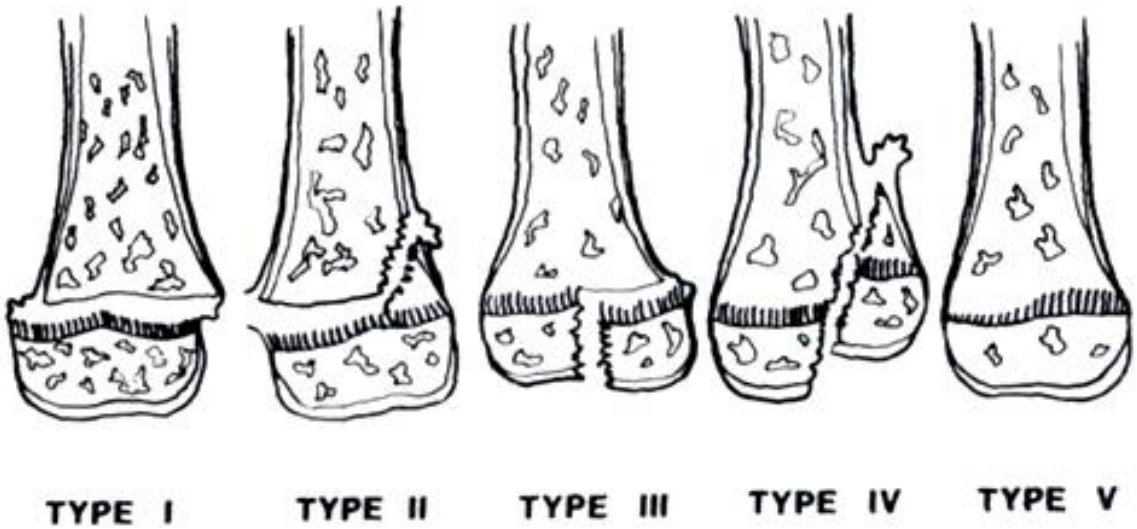
Military recruits

Female triad

(stress fracture, anorexia, amenorrhea)

SPECIAL FRACTURES

SALTER-HARRIS FRACTURES



SPECIAL FRACTURES

AVASCULAR NECROSIS

- Femoral neck
- Scaphoid
- Talar neck

COMPLICATIONS

- Neurovascular injury
- Acute compartment syndrome
- Infection – osteomyelitis
- Nonunion/Delayed union
- Malunion
- Fat embolism
- DVT-Pulmonary embolism

COMPLICATIONS

BLEEDING

- Tibia fracture - 1 unit pRBCs
- Femur fracture - 2 units pRBCs
- Pelvic fracture - 3 units pRBCs

DISLOCATIONS

DEFINITIONS

- Dislocation – Complete disruption of the articular surface of a joint
- Subluxation – partial dislocation
- Laxity – physiologic translation of a joint

DISLOCATIONS

DESCRIPTION

- Typically described in the direction of the distal most bone

- Do not forget rotational types of dislocations (usually in the knee)

COMPLICATIONS

- Neurovascular compromise
- Articular surface and cartilage
- Blood supply

REDUCTION

- Gentle maneuver
- Pain medication
- Control muscle spasms

URGENCIES

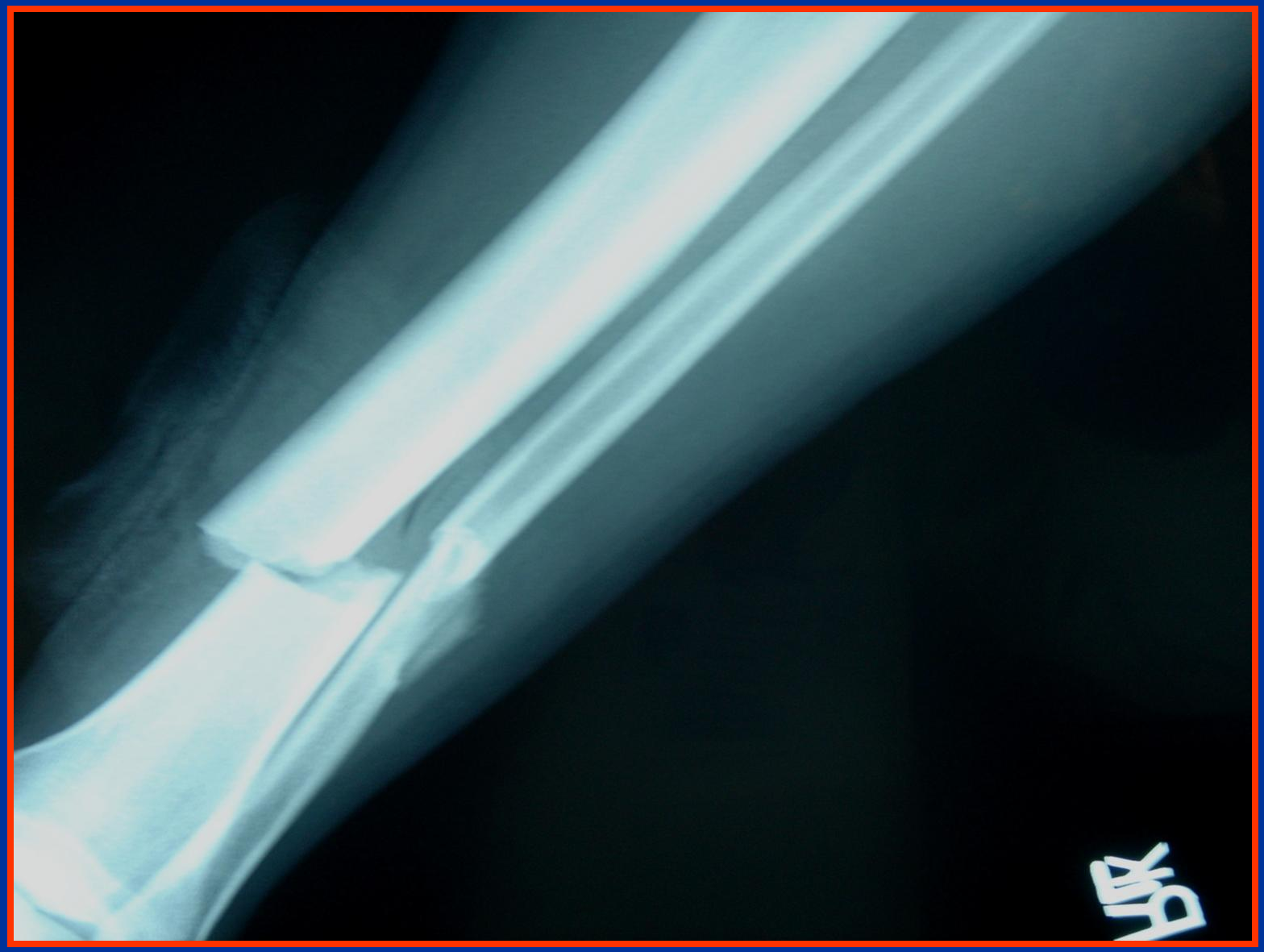
- Open fracture
- Dislocations
- Fractures that demonstrate skin compromise
- Neurovascular compromise
- Acute compartment syndrome
- Unstable pelvic fractures with hemodynamic instability
- Multiple fractures in polytrauma patient

CASE PRESENTATION

58 year old female walking in yard stepped on a small rock and inverted her ankle. She felt a pop and had pain with weight-bearing on the lateral aspect of her foot.

CASE PRESENTATION

19 year old male kicked in shin when playing soccer. Significant pain in leg and unable to weight bear.



CASE PRESENTATION

18 year old male involved in MVC – head on, unrestrained driver with no LOC. Complaining of abdominal pain and thigh pain. No N/V compromise in leg and skin intact.

CASE PRESENTATION

23 year old male playing ultimate Frisbee twisted his ankle after catching a long pass. Immediate pain and swelling and a deformity noted by his teammates. Unable to weight bear. Brought to UC where x-rays are obtained.

CASE PRESENTATION

78 year old female with DM, CHF, and HTN fell from chair today while in her room at the nursing home. She is brought to the office because of pain in her knee region and a external rotated leg.

CASE PRESENTATION

35 year old female involved in a MVC – T-bone, restrained driver with no LOC. Only complaint is pain in her ankle. Her passenger is upset because of the amount of blood on her friend's pants and exposed bone.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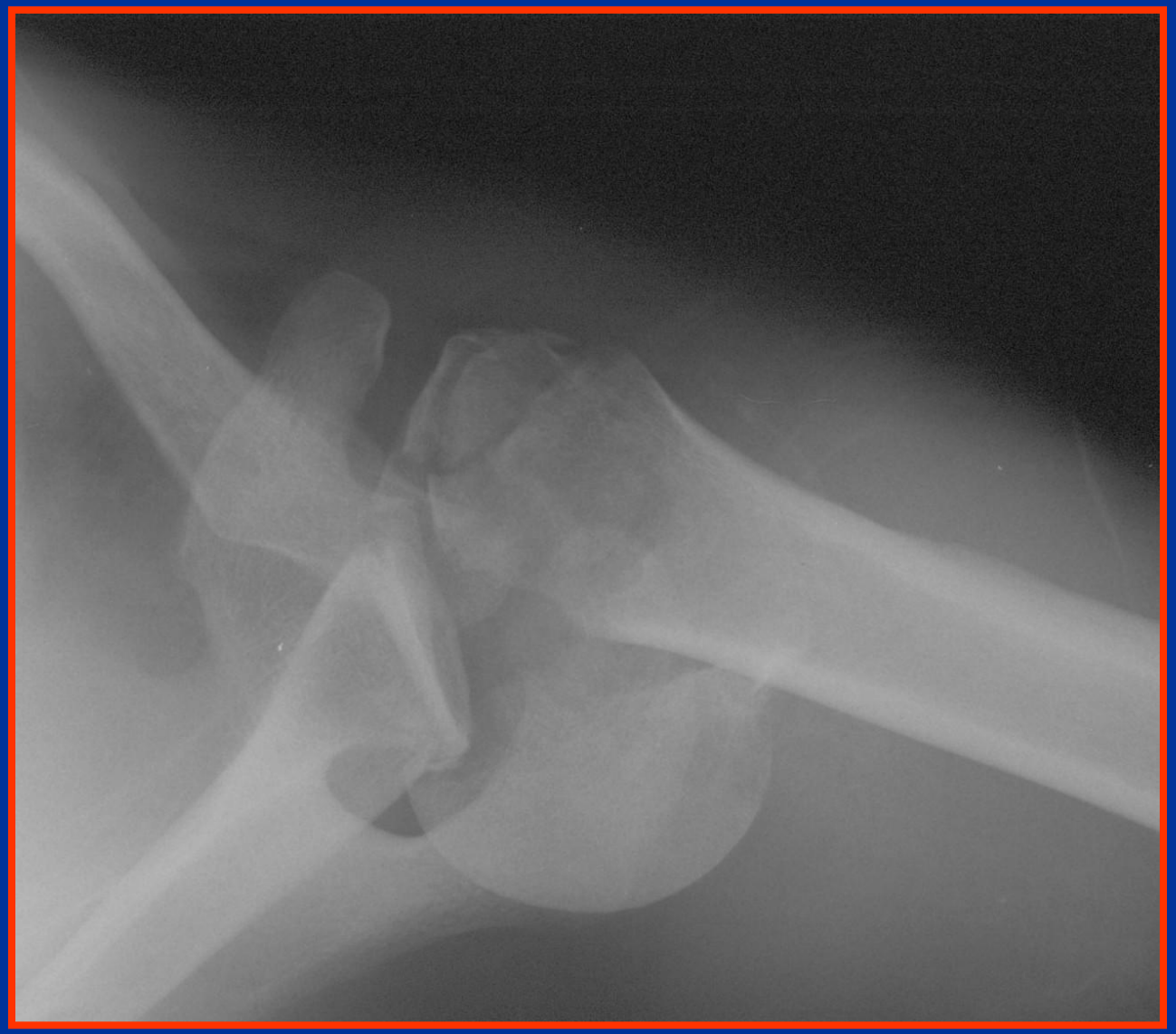
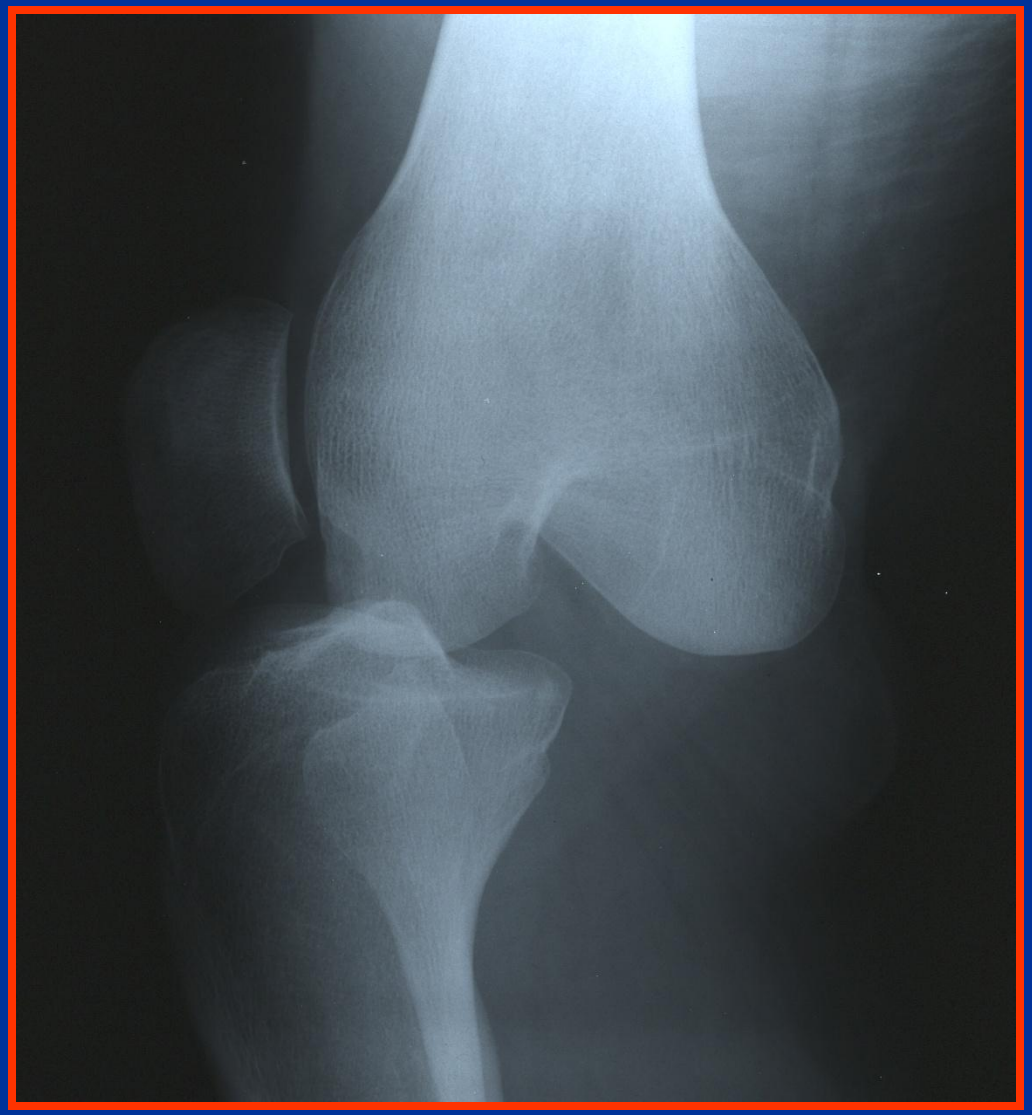
CASE PRESENTATION

65 year old female slipped on ice 2 days ago onto her outstretched hand. Immediate pain in her shoulder with any motion. She has also noticed swelling and numbness on the lateral side of her shoulder.



CASE PRESENTATION

17 year old male playing rugby cut when running the ball. He was immediately hit anteriorly and had a twisting and hyperextension injury to his knee with severe pain. He notices a deformity about the knee and a cold foot.



SUMMARY

- Organized approach when looking at the x-rays.
- Always keep in mind the clinical presentation and always perform a detailed history and PE.
- Understand that orthopaedic emergencies do occur and that prompt treatment can save a limb or life.

THANK YOU