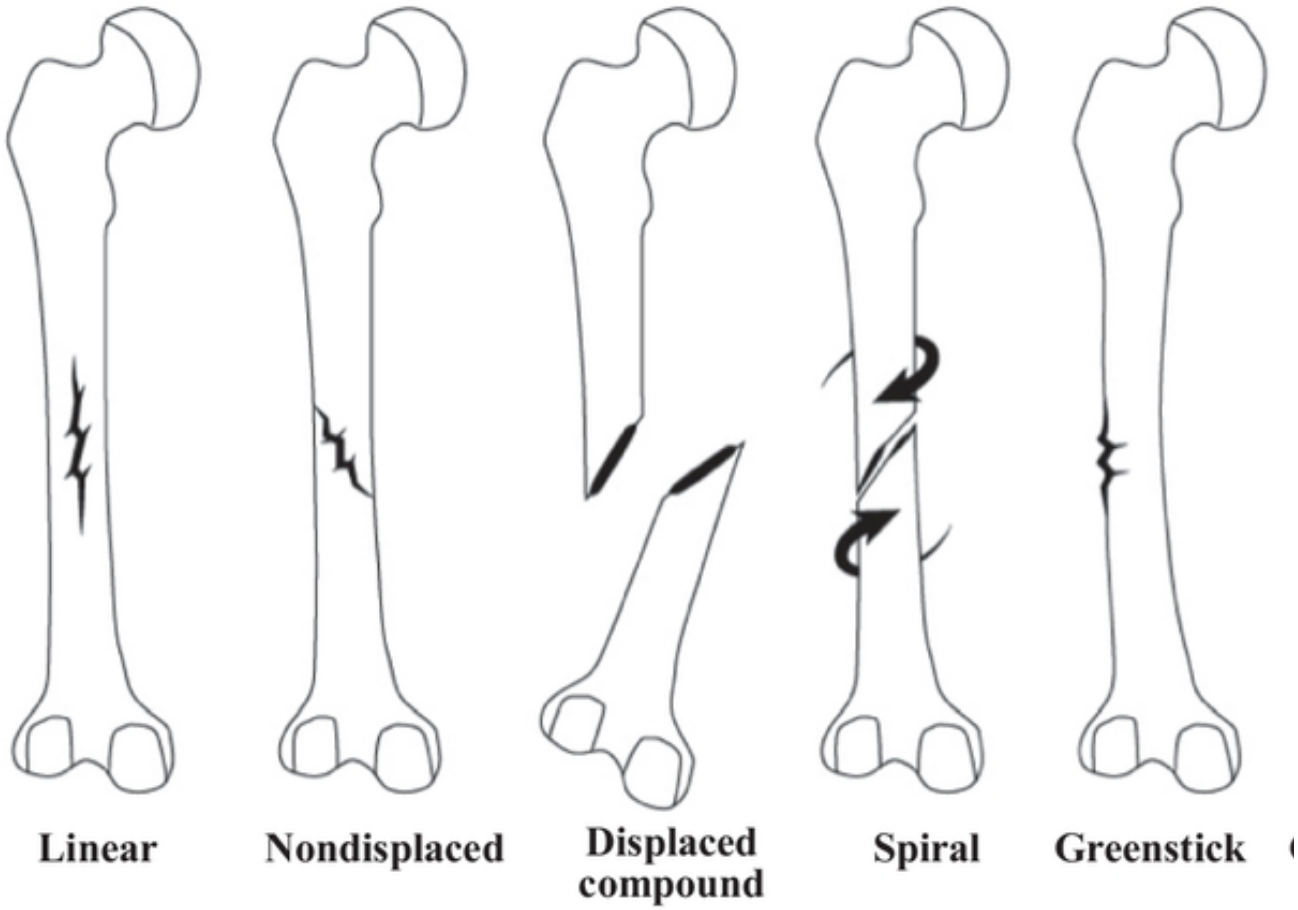
Orthopedic Terminology 101

Section 1:
Fracture Classification

Introduction: Fractures represent a common yet complex challenge in musculoskeletal healthcare, requiring a comprehensive understanding of both the injury and the patient's unique needs. Each fracture scenario is distinct, influenced by factors such as the mechanism of injury, the patient's age, bone quality, and overall health. To provide effective care, healthcare professionals must be proficient in fracture terminology, classification systems, and the principles guiding treatment. By understanding the nuances of fracture patterns—ranging from simple stress fractures to complex comminuted injuries—clinicians can tailor interventions that promote healing, restore function, and minimize complications. This discussion will explore key fracture scenarios, terminology, and the decision-making processes essential for patient-centered care, setting the foundation for a deeper dive into effective management strategies.



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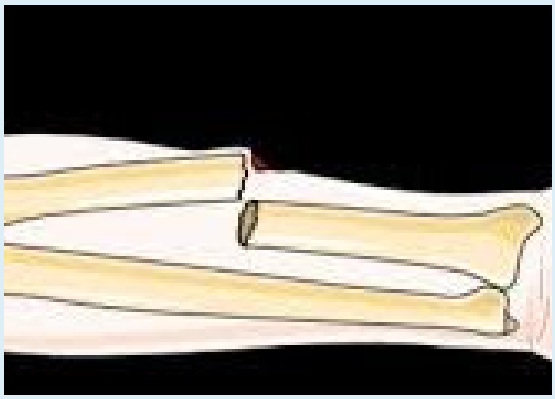
Upon successful completion of these orthopedic modules, students will be able to:

- ✓ Identify the primary types of fractures (e.g., transverse, oblique, spiral, comminuted) and their distinguishing features.
- ✓ Explain the criteria used in fracture classification, such as displacement, angulation, and location.
- ✓ Describe the clinical relevance of fracture classification in guiding treatment decisions.
- ✓ Use fracture classification to suport initial treatment plans or referral pathways, per MD guidance.
- ✓ Compare the utility of different fracture classification in specific clinical scenarios.
- ✓ Define key orthopedic terms, including terms related to anatomy (e.g., diaphysis, metaphysis), injury mechanisms (e.g., avulsion, compression), and procedures (e.g., ORIF, external fixation).
- ✓ Recall common abbreviations and their meanings in orthopedic practice.
- ✓ Explain the significance of precise terminology in effective communication among healthcare providers.
- ✓ Illustrate how anatomical and procedural terms are interconnected in describing orthopedic conditions and interventions.
- ✓ Use appropriate orthopedic terminology when documenting patient cases or communicating with colleagues.
- ✓ Match clinical terms with their corresponding definitions and contexts in orthopedic practice.
- ✓ Differentiate between terms with similar meanings but distinct applications, such as subluxation vs. dislocation or cast vs. splint.
- ✓ Appreciate the clarity and accuracy of orthopedic terminology used in patient records or interdisciplinary communication.

Closed (Simple) Fracture

- Definition: A fracture where the bone is broken, but the skin remains intact.
- Mechanism of Injury: Often caused by low-energy trauma, such as a fall or direct blow.

Open (Compound) Fracture



- Definition: A fracture where the broken bone penetrates the skin, creating an open wound.
- Mechanism of Injury: Typically caused by high-energy trauma, such as motor vehicle accidents or gunshot wounds.

Transverse Fracture

- Definition: A horizontal break across the bone.
- Mechanism of Injury: Direct trauma or repetitive stress.

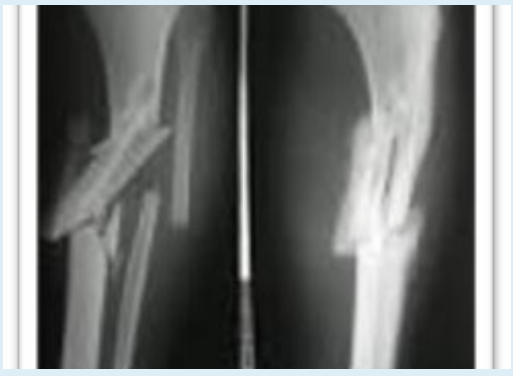
Oblique Fracture

- Definition: A fracture with an angled line across the bone.
- Mechanism of Injury: Caused by indirect trauma, such as a twisting force or a fall at an angle.

Spiral Fracture

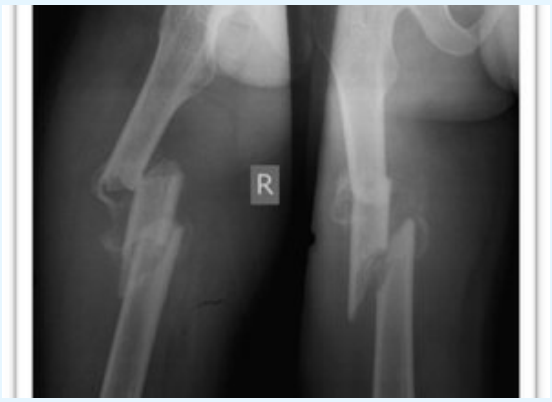
- Definition: A fracture that spirals around the bone, often resembling a corkscrew.
- Mechanism of Injury: Result of rotational or torsional forces, such as twisting injuries during sports.

Comminuted Fracture



- Definition: The bone is shattered into three or more fragments.
- Mechanism of Injury: High-energy trauma, such as vehicle collisions or severe falls.

Segemental Fracture



- Definition: A bone is fractured in two distinct places, creating a segment of bone that is unattached.
- Mechanism of Injury: High-energy trauma..

Greenstick Fracture

- Definition: An incomplete fracture where one side of the bone bends, and the other side breaks.
- Mechanism of Injury: Common in children due to the flexibility of their bones.

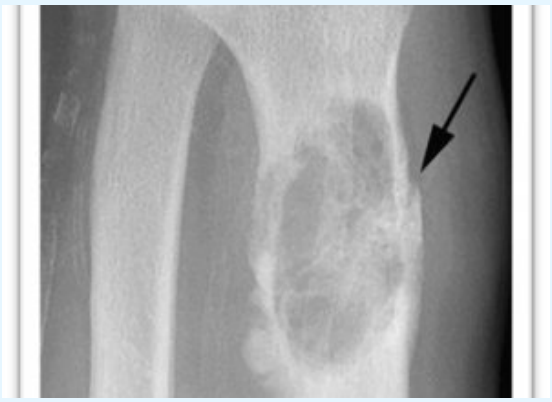
Buckle (Torus) Fracture

- Definition: A compression fracture where the bone buckles outward.
- Mechanism of Injury: Typically caused by axial loading in children.

Impacted Fracture

- Definition: The broken ends of the bone are driven into each other.
- Mechanism of Injury: Results from compressive forces, such as a fall from height.

Pathologic Fracture



- Definition: A fracture occurring in bone weakened by disease (e.g., osteoporosis, cancer, Paget's disease).
- Mechanism of Injury: Minimal or no trauma.

Stress Fracture

- Definition: A small crack in the bone caused by repetitive stress.
- Mechanism of Injury: Overuse or repetitive loading.

Avulsion Fracture

- Definition: A fragment of bone is pulled away by a tendon or ligament.
- Mechanism of Injury: Sudden forceful contraction or trauma.

Compression Fracture

- Definition: A fracture resulting in bone collapse, often in vertebrae.
- Mechanism of Injury: Osteoporotic bones subjected to axial loading.

Displaced Fracture

- Definition: Bone fragments are out of alignment.
- Management: Reduction and surgical fixation.

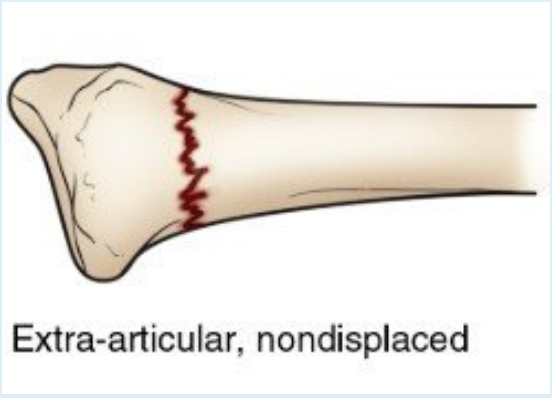
Non-Displaced Fracture

- Definition: Bone fragments remain in alignment.
- Management: Immobilization.

Intra-Articular Fracture

- Definition: The fracture extends into the joint surface.
- Mechanism of Injury: High-energy trauma.

Extra-Articular Fracture



- Definition: The fracture occurs outside the joint capsule.
- Clinical Significance: Easier to manage than intra-articular fractures.

Hairline Fracture

- Definition: A thin, incomplete fracture that may not be visible on initial X-rays.
- Mechanism of Injury: Repetitive stress or minor trauma.

Fatigue Fracture

- Definition: A type of stress fracture caused by abnormal stress on a normal bone.
- Mechanism of Injury: Overuse, especially in weight-bearing bones.

Section 2:
General Orthopedic Terminology

Orthopedics

The branch of medicine dealing with the correction of deformities or functional impairments of the musculoskeletal system, including bones, joints, muscles, tendons, and ligaments.

Musculoskeletal System

The organ system comprising bones, muscles, cartilage, tendons, ligaments, and connective tissues that support and enable movement.

Biomechanics

The study of the mechanical laws relating to the movement or structure of living organisms, particularly relevant to joint function and load distribution.

Fracture

A break in the continuity of a bone.

Osteology

The study of bones and their structure.

Fracture-Related Terms

Closed Fracture

A fracture where the bone does not break through the skin.

Open Fracture

A fracture where the bone breaks through the skin, increasing infection risk.

Greenstick Fracture

An incomplete fracture common in children, where one side of the bone bends while the other breaks.

Comminuted Fracture

A fracture where the bone is shattered into multiple fragments.

Reduction

The process of realigning a fractured or dislocated bone to its normal anatomical position.

Nonunions

Failure of a fractured bone to heal properly.

Malunion

Healing of a fractured bone in an incorrect anatomical position.

Stress Fracture

A small crack in the bone caused by repetitive stress or overuse.

Pathologic Fracture

A fracture occurring in a bone weakened by disease.

Callus

New bone tissue that forms around a fracture during healing.

Casting & Splinting Terms

Cast

A rigid, external immobilization device used to stabilize fractures or injuries.

Splint

A flexible or rigid device used to support or immobilize a body part temporarily.

Plaster of Paris

A quick-setting material made from calcium sulfate, used historically for orthopedic casting.

Fiberglass

A lightweight, durable material commonly used for modern casts.

Bivalve Cast

A cast that is split into two halves to allow removal and adjustment.

Stockinette

A tubular layer applied to the skin beneath the cast for protection and comfort.

Padding

Material used between the skin and casting material to prevent pressure sores and enhance comfort.

Windowing

The creation of an opening in a cast to access underlying tissues for inspection or treatment.

Casting Saw

A specialized oscillating tool used to safely remove casts.

Bracing Terms

Brace

A device used to support, align, or stabilize a joint or body segment.

Orthosis

A custom-fitted appliance designed to correct or support musculoskeletal function.

Spinal Brace

A brace designed to stabilize or immobilize the spine, often used in scoliosis or post-surgical recovery.

Knee Brace

A brace used to support the knee joint, commonly for ligament injuries or arthritis.

Functional Brace

The process of realigning a fractured or dislocated bone to its normal anatomical position.

Hinged Brace

A brace with mechanical joints to facilitate controlled movement of a limb.

Dynamic Splint

A splint that applies continuous force to improve mobility or correct deformity.

Anatomical Terms

Cortex

The dense, outer layer of bone.

Medullary Cavity

The hollow, inner part of a bone where bone marrow is stored.

Articular Cartilage

The smooth, white tissue that covers the ends of bones in joints, allowing them to move smoothly.

Periosteum

A dense layer of vascular connective tissue enveloping bones, except at joint surfaces.

Ligament

A band of tough connective tissue that connects bones to other bones.

Tendon

A fibrous connective tissue that connects muscles to bones.

Synovial Joint

A type of joint that is surrounded by a fluid-filled capsule, allowing a wide range of motion.

Orthopedic Conditions

Arthritis

Inflammation of one or more joints, causing pain and stiffness.

Osteoarthritis

A degenerative joint disease resulting in cartilage breakdown.

Rheumatoid Arthritis

An autoimmune disease that causes inflammation of the joints.

Bursitis

Inflammation of a bursa, a small fluid-filled sac that reduces friction between tissues

Tendonitis

Inflammation of a tendon, often due to overuse.

Scoliosis

Abnormal lateral curvature of the spine.

Kyphosis

Excessive outward curvature of the spine, leading to a hunched posture.

Lordosis

Excessive inward curvature of the lumbar spine.

Osteoporosis

A condition characterized by weakened bones, increasing fracture risk.

Bone Tumor

An abnormal growth of tissue in the bone, which may be benign or malignant.

Surgical & Treatment Terms

Internal Fixation

The surgical insertion of plates, screws, or rods to stabilize a fracture.

External Fixation

A stabilization technique using pins and a frame outside the body.

Arthroscopy

A minimally invasive procedure using a small camera to visualize and treat joint problems.

Osteotomy

Surgical cutting of a bone to correct deformity.

Arthroplasty

The surgical reconstruction or replacement of a joint.

Bone Graft

Transplantation of bone tissue to aid in healing or repair.

Joint Replacement

Surgical replacement of a damaged joint with a prosthetic implant.

Other Relevant Terms

Range of Motion (ROM)

The degree of movement a joint is capable of performing.

Prosthesis

An artificial device used to replace a missing body part, such as a limb or joint.

Rehabilitation

The process of restoring function and mobility through physical therapy and exercise.

Gait Analysis

The study of a person\u2019s walking pattern to identify abnormalities or inefficiencies.

Orthopedic Trauma

Severe injury to the musculoskeletal system requiring urgent care.