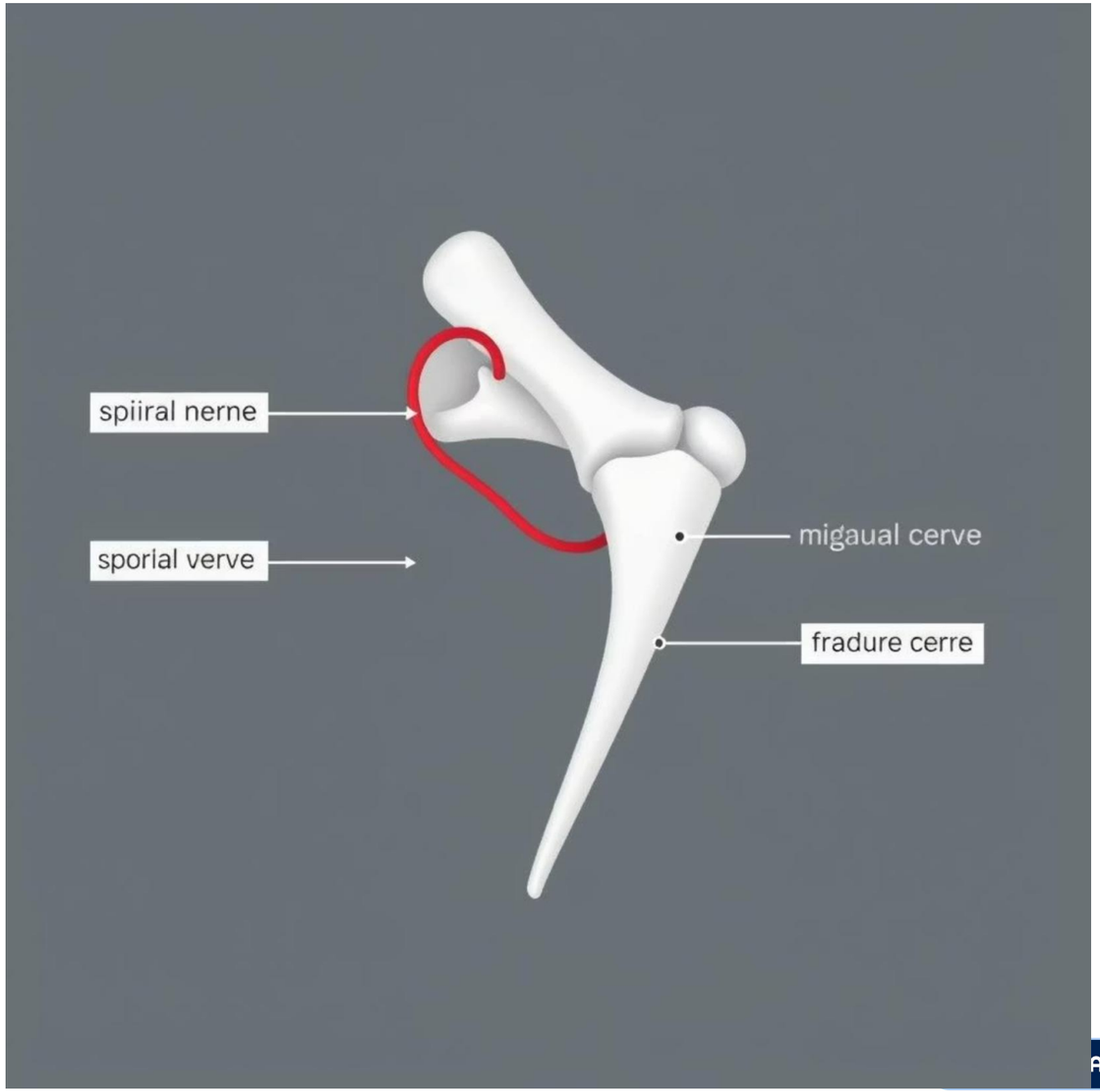
Humerus Shaft Fractures: Patient Management

Humerus shaft fractures represent a significant portion of all fractures, impacting upper limb function. This presentation outlines effective patient management strategies.

Anatomy & Fracture Classification

The humerus shaft extends from the surgical neck to the supracondylar ridge. A critical anatomical consideration is the radial nerve, which courses through the spiral groove and is susceptible to injury during a fracture.

Fractures are commonly classified by pattern, including spiral, oblique, transverse, comminuted, and segmental. The AO/OTA classification system is widely used for detailed surgical planning, providing a standardized approach to describe fracture characteristics (e.g., 12-A, 12-B, 12-C).



Diagnosis & Assessment

1

Clinical Examination

Pain, swelling, deformity, and inability to move the arm are key indicators. Assess for any open wounds.

2

Neurovascular Assessment

Crucial to check radial nerve function (wrist and thumb extension, sensation in the hand).

3

Comprehensive Imaging

AP and lateral radiographs from shoulder to elbow are standard. CT scans may be needed for complex cases or surgical planning.

Non-Operative Management

Approximately 80-90% of closed humerus shaft fractures are successfully managed non-operatively. The goal is to achieve acceptable alignment for healing.

Initial Immobilization

Utilize coaptation splints or U-slabs to stabilize the fracture early on.

Functional Bracing

The Sarmiento brace is a highly effective method, achieving 90-97% union rates.

Early Mobilization

Begin gentle shoulder and elbow range of motion exercises as pain allows to prevent stiffness.

Operative Management

Surgical intervention is indicated for specific situations, offering distinct advantages depending on the fracture type.

Technique	Description & Indications
ORIF (Plate & Screws)	Preferred for comminuted fractures, providing high stability. Risk of iatrogenic radial nerve injury is 3-5%.
Intramedullary Nailing (IMN)	Less soft tissue disruption, ideal for simple fracture patterns.
External Fixation	Used for severe open fractures or as a temporary stabilization method.

Potential Complications

While most humerus shaft fractures heal successfully, it's essential to be aware of potential complications.

Radial Nerve Palsy

The most common complication (10-18% primary incidence), with approximately 90% resolving spontaneously within 3-6 months.

Non-union

Occurs in 5-10% of cases, defined as no healing by 6 months, often requiring further intervention.

Malunion

Functional deformity resulting from the fracture healing in an unacceptable alignment.

Infection & Stiffness

Infection is rare for closed fractures (1-5% for open). Stiffness can occur in adjacent joints, particularly the shoulder or elbow.

Rehabilitation & Recovery

A structured rehabilitation program is crucial for restoring full upper limb function.

Immobilization Phase

0-6 weeks: Focus on protecting the fracture site and gentle range of motion for adjacent joints to prevent stiffness.

Early Mobilization

6-12 weeks: Progress to active-assisted and active range of motion, with introduction of light strengthening exercises.

Strengthening & Functional Recovery

12+ weeks: Progressive resistance training, focusing on regaining strength and endurance for daily activities and return to sports.

Full fracture union typically occurs within 8-12 weeks, with functional recovery extending to 4-6 months or more. Physical therapy is essential throughout this process.

Conclusion & Key Principles

- Most humerus shaft fractures respond well to non-operative treatment, achieving high union rates.
- Surgical intervention is a targeted approach for specific, complex indications.
- Thorough assessment of the radial nerve is paramount in all fracture evaluations.
- A comprehensive rehabilitation program is crucial for achieving optimal and long-lasting functional outcomes.
- Patient education and adherence to treatment plans are critical for successful recovery.