Nonunion & failed fracture healing

Find the reason healing has stalled before choosing a revision.

RECOVERY & COMPLICATIONS / ADULT TRAUMA

Evaluate mechanics, biology, infection and the patient's goals together; a persistent fracture line is only part of the problem.

01 Confirm the problem

Review symptoms and serial radiographs for progress over time. Distinguish slow healing from established nonunion and from symptomatic deformity after union. Use further imaging when it changes planning.

02 Assess stability & biology

Look for inadequate stability, alignment problems, bone loss and a compromised soft-tissue envelope. Review the original injury and procedures. Consider nutrition, smoking, diabetes and other factors that can impede healing.

03 Investigate infection

Review wound history, drainage, prior antibiotics and operative findings. Use the fracture-related infection pathway when indicated. Normal blood markers alone do not establish that a nonunion is aseptic.

04 Plan a realistic revision

Address the identified causes: stability, alignment, viable tissue, defects and host factors. Bone graft cannot compensate for an unstable construct. Discuss the number of procedures, recovery burden and meaningful functional goals.

WATCH POINT Avoid selecting a revision technique before identifying why the previous treatment failed.

DISCUSS WITH THE TEAM

Which mechanical, biological or infectious barrier will the proposed operation actually change?

READ THE SOURCES

[1] AAOS OrthoInfo: Nonunions, assessment and treatment principles.
[2] FRI Consensus Group: diagnosing fracture-related infection (2020).

Educational summary for clinicians. Apply local protocols and patient-specific judgement.