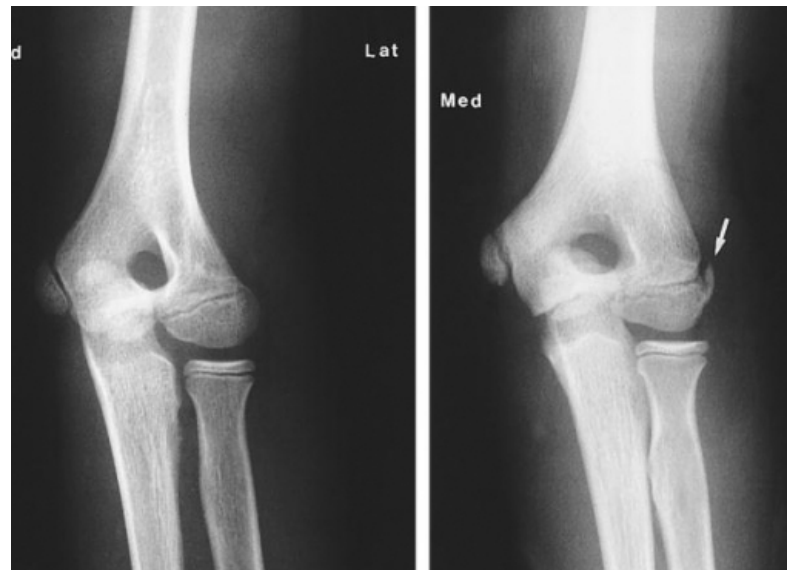
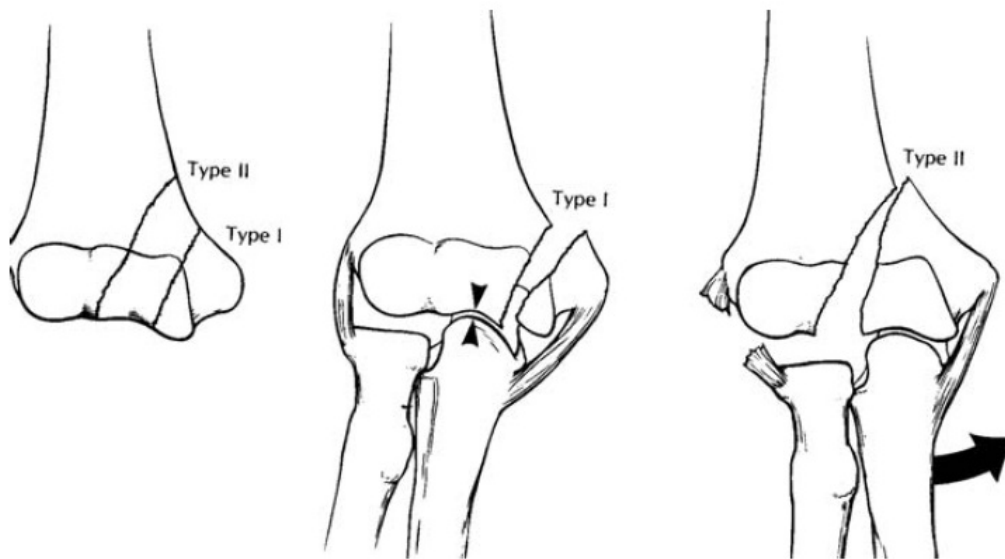


Case 1 7-year-old boy presented after a fall from his bicycle onto his outstretched arm. He had exquisite tenderness over the lateral aspect of his elbow without vascular or neurologic compromise.



Your Diagnosis

Diagnosis **Lateral condylar fracture**



Milch classification of fractures of the lateral condyle.

(Reproduced with permission from Milch, H. Fractures of the external humeral condyle. *J. Am. Med. Assoc.*, **160**, 529–539, 1956.)

Type I is Salter IV

Type II is Salter's Type II

Classification according displacement

- 1. Undisplaced
- 2. 2-4 mm
- 3. >5 mm Rotation

Useful classification

Lateral humeral condyle fractures make up 17% of all distal humeral fractures in children and are second only in incidence to supracondylar fractures.

Two mechanisms of injury are known to cause the lateral condylar fracture: the push off and pull-off. In

the push off mechanism, a fall on an outstretched hand causes impaction of the radial head and distal humerus, fracturing the lateral condyle. In the pull-off mechanism, a varus stress is applied to the extended elbow, causing the common extensor tendon to avulse the lateral condyle.

Lateral humeral condylar fractures occur in children aged 5 to 10 years, with a peak at age 6.2 .

A radiographic elbow :

- Look for soft tissue swelling

- Define fracture line

- Any associated displacement or rotation of the fragment

Many studies highlight the cartilage hinge (the distal humeral epiphysis) as an important indicator of the stability of the lateral condyle fracture.

Disruption of the epiphyseal cartilage hinge indicates a complete fracture that is unstable.

If operative fixation is not performed, delayed displacement may occur and lead to a poor clinical outcome. Conversely, an undisrupted cartilage hinge indicates a stable fracture that is unlikely to undergo any further displacement even with conservative therapy.

Because the inherent stability of the fracture and, therefore, its treatment depend on whether there is continuity of the distal epiphysis, publications have evaluated the use of magnetic resonance imaging (MRI) and arthrography.

On MRI, the lateral condylar fracture is best visualized

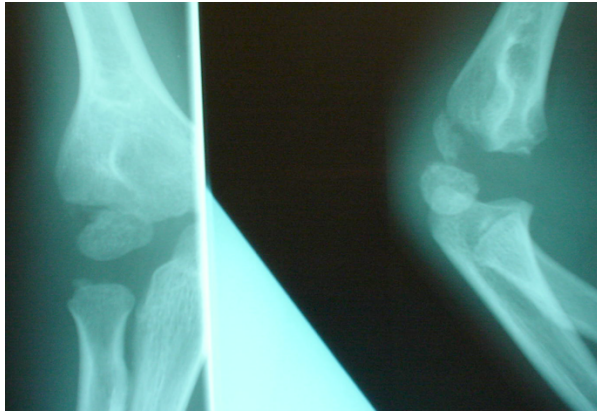
in the axial and coronal planes and cartilage sensitive sequences such as gradient echo or proton density are essential. A lateral condylar fracture will present as a low-signal-intensity linear focus on all imaging sequences.

The fracture through the cartilaginous epiphysis is intermediate in signal intensity relative to the hyperintense signal of the cartilage on gradient echo sequences.

Evaluate the amount of rotation and displacement of the fracture fragment to infer the extent of involvement and, therefore, likelihood of fracture instability.

General agreement exists that displaced fractures should be treated operatively to restore the articular surface.

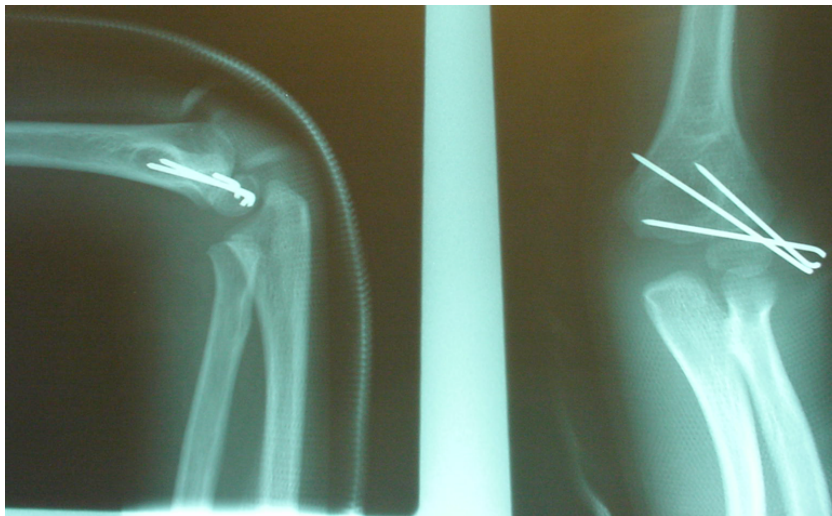
- <2mm: careful observation: weekly X ray;
- late displacement is 10%
- or
-
- Immediate surgery/or arthrogram
- **If gap + ie., no cartilage hinge => percutaneous K wire**
-
- 2-4 mm: >20 % late displacement and NU
- Percutaneous 2 K wire
- Strong wires and parallel orientation than cross wire
-
- >5 mm: Always ORIF through lateral approach
- High NU with percutaneous fixation



Type II

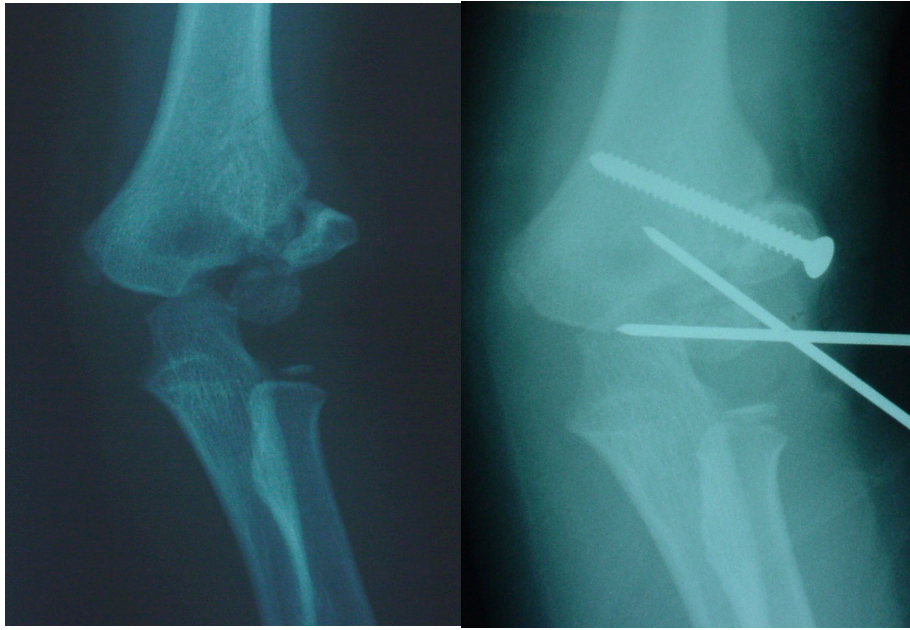


Type III



Complications of operative fixation for lateral condyle fractures are reported to include nonunion, avascular necrosis, premature epiphyseal fusion, lateral condylar overgrowth, stiffness, and deformity.

Nonunion



Osteotomy may be required for Cubitus Valgus deformity a common late complication:

