Olecranon Stress Fracture Treatment Handout

An olecranon stress fracture is a condition that involves the breaking or cracking of the olecranon, which is the bony tip of the elbow. This type of fracture is considered a stress injury, meaning it occurs gradually over time due to repetitive strain on the bone.

Treatment options

Nonoperative treatment

Nonperative therapy is effective for nondisplaced fractures with intact extensor mechanism

- **Immobilization**

Suspected olecranon fractures necessitate orthopedic consultation. After a comprehensive history, physical examination, and imaging, the fracture should be immobilized in a posterior splint with slight extension. Reduction is indicated for type 3 injuries to realign the remaining articular surface with the trochlea.

Nondisplaced olecranon fractures can be initially managed with immobilization in a posterior long-arm splint, keeping the elbow in 45-90 degrees of flexion. This should be followed by early progressive active range of motion exercises, avoiding active extension.

For non-operative treatment, patients should be monitored with serial radiographs to ensure proper healing and to check that the fracture does not displace.

Surgical intervention

Type II and III injuries generally require surgical intervention. However, non-operative management of type II injuries may be an option, especially in patients over 70 years old.

- **Tension wiring**

Displaced, stable, non-comminuted fractures (Mayo type 2A) may be suitable for tension band wiring (TBW). This technique converts the tension force from the triceps pull into a compressive force at the articular surface and requires an intact dorsal cortex.

Fractures treated with TBW should not have significant comminution, as this could cause collapse and narrowing of the distance between the coronoid and olecranon.

- **Plate and screw fixation**

Plate and screw fixation is recommended for unstable fracture patterns with significant comminution or fractures that extend distal to the semilunar notch (Mayo Type 2B) and for fracture-dislocations (Mayo Type 3).

An oblique fracture line may be amenable to lag screw and plate fixation. Plate options include one-third tubular plates, hook plates, limited contact dynamic compression plates, and frequently, fracture-specific locked plates.

Care should be taken to achieve an anatomic reduction with direct visualization of the articular surface. The olecranon has a bare area without articular cartilage, which should be reduced to maintain joint congruity. The plate is typically placed on the dorsal aspect.

- **Intramedullary nails**

Intramedullary nails are now available and may be suitable for certain fracture types, potentially avoiding wound complications associated with the superficial location of traditional hardware used to treat olecranon fractures.

- **Excision and triceps advancement**

Excision and triceps advancement is an option for elderly, low-demand individuals where the fragment is too small for fixation or involves less than 50% of the joint surface. It is crucial to ensure the integrity of the collateral ligaments, distal radioulnar joint, and intraosseous membrane to prevent instability. This procedure involves removing the fracture fragment and reattaching the triceps muscle to the proximal ulna.

Reference

Sullivan, C. W., Herron, T., & Hayat, Z. (2020). *Olecranon fracture*. PubMed; StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK537295/#:~:text=Nondisplaced%20olecranon%20fractures%20can%20be