

# A Rare Case of Proximal Radioulnar Synostosis: A Case Report

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## Abstract:

Proximal radioulnar synostosis is a rare congenital or post-traumatic condition characterized by an abnormal bony or fibrous fusion between the proximal radius and ulna. It commonly presents in early childhood but may remain undiagnosed until adolescence or adulthood, especially in mild or unilateral cases. We report a rare case of unilateral proximal radioulnar synostosis in a 22-year-old male presenting with limited forearm rotation since childhood, affecting his daily activities. Imaging confirmed osseous synostosis at the proximal forearm. The patient underwent surgical excision of the synostosis with interposition of fascia to prevent recurrence. This case underscores the need for early diagnosis and intervention to restore functional range of motion and prevent long-term disability.

**Keywords:** Proximal radioulnar synostosis, congenital synostosis, forearm rotation, elbow deformity, surgical excision

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## I. Introduction:

Proximal radioulnar synostosis is a rare anomaly involving fusion of the proximal radius and ulna, either due to congenital malformation or acquired causes such as trauma, surgery, or infection. The congenital form results from failure of longitudinal segmentation of the radius and ulna during embryological development. It can be bilateral in up to 60% of cases and often associated with other skeletal anomalies.

Patients typically present with painless restriction of forearm rotation especially supination and pronation while elbow flexion and extension remain intact. Functional impairment varies depending on dominance and severity of rotational loss. Surgical treatment is considered in symptomatic cases with significant disability.

## II. Case Presentation:

A 22-year-old right-handed male presented with complaints of restricted supination and pronation of his left forearm since early childhood. There was no history of trauma, previous surgery, or systemic illness. The deformity had become more noticeable and functionally limiting as he grew older, especially during activities like writing, using tools, or sports.

### On examination:

- Visible deformity over the proximal forearm
- Forearm fixed in approximately 20 degrees of pronation
- Supination and pronation were severely restricted
- Elbow flexion and extension were normal
- No neurovascular deficits were noted

### Investigations:

**X-ray Left side** (AP and lateral views of the elbow and forearm): Demonstrated osseous bridging between the proximal radius and ulna, consistent with bony synostosis.

**CT scan of the forearm left side:** Provided detailed anatomy of the synostotic bridge and was essential for preoperative planning.

**MRI:** Ruled out associated soft tissue anomalies and confirmed absence of neurovascular involvement.

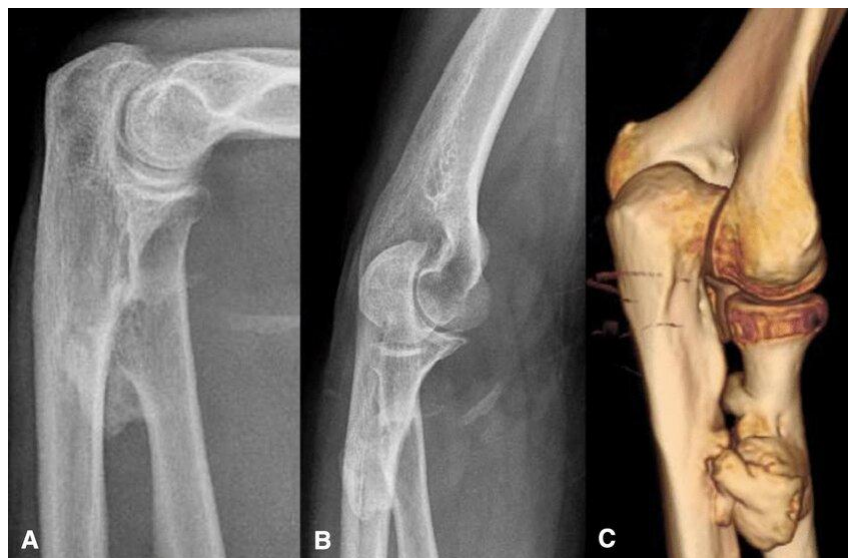


Fig1: Xray left side elbow showing proximal radio ulnar synostosis and CT scan of left elbow shows synostotic bridge



Fig2: shows deformity

### **Management:**

Surgical intervention was planned considering the patient's young age and significant functional limitation. Under general anesthesia, a posterolateral approach to the elbow was utilized. The osseous bridge between the proximal radius and ulna was identified and meticulously excised. Following excision, interposition of a fascia lata graft was performed to reduce the risk of recurrence. Additionally, tension band wiring was applied to stabilize the proximal ulna and maintain anatomical alignment during the healing phase. Postoperatively, the limb was immobilized in a neutral position. Gradual physiotherapy was initiated after 2 weeks to restore range of motion and prevent stiffness.

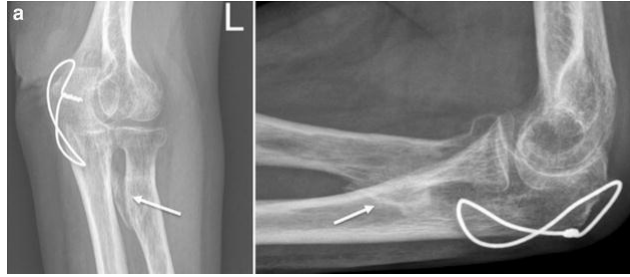


Fig3:post of x-ray showing satisfactory procedure

### **III. Discussion:**

Proximal radioulnar synostosis can be:

Congenital – due to segmentation failure of the developing cartilaginous anlage during the 7th week of gestation.  
Acquired – resulting from trauma, surgical complications, burns, or infections.

The congenital form is often painless and noticed during childhood when the child starts using the upper limb. Early diagnosis is crucial in deciding timing of surgery. CT scan is the gold standard for evaluating the extent and nature (fibrous vs. bony) of the synostosis.

Surgical outcomes are variable:

- Success depends on early intervention, type of synostosis, and postoperative rehabilitation.
- Recurrence remains a concern, particularly in younger children or when no interposition material is used.
- Alternative techniques include interposition of muscle, fat, or synthetic materials.

### **IV. Conclusion:**

Proximal radioulnar synostosis, though rare, should be suspected in patients with lifelong limitation of forearm rotation and no history of trauma. Accurate diagnosis using imaging and appropriate surgical planning can significantly improve functional outcomes. Early intervention with meticulous surgical technique and interposition grafting can restore a functional range of motion and enhance quality of life. The combined approach of osseous bridge excision, interposition grafting, and tension band wiring provided both structural stability and minimized recurrence risk, leading to a favorable functional outcome with improved range of motion in the affected limb.

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