

Elbow Pain in an Adult: Keeping Nursemaid's Elbow in the Differential Diagnosis

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Review began 09/27/2026

Review ended 10/21/2026

Published 10/27/2026

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DOI: 10.7759/cureus.118685

Abstract

Nursemaid's elbow is a common and well-recognized diagnosis in pediatric patients presenting to the ED. These encounters are often characterized by a classic mechanism of injury, predictable physical examination findings, and a rapid, effective reduction technique, frequently resulting in immediate symptom resolution. As a result, both patients and caregivers typically experience a high degree of satisfaction with the ED visit, particularly when recovery is swift and more serious pathology is excluded.

In contrast, nursemaid's elbow is rarely considered in adult patients. The injury is uncommon beyond early childhood and is exceedingly rare after skeletal maturity, largely due to increased annular ligament strength and greater stability of the proximal radioulnar joint. Consequently, clinicians may be less inclined to include radial head subluxation or dislocation in the differential diagnosis when evaluating adults with elbow pain and restricted range of motion.

This case of a radial head dislocation in a 21-year-old male underscores the importance of maintaining diagnostic vigilance when clinical findings do not align with more common adult elbow injuries. It highlights the value of thorough history-taking, careful physical examination, and independent review of imaging studies, even when real-time radiologic interpretations are available. Additionally, this case illustrates the risk of premature diagnostic closure when atypical presentations are encountered and reinforces the need to consider less common etiologies, particularly in patients with prior elbow injury or recurrent symptoms.

Categories: Sports Medicine, Emergency Medicine, Orthopedics

Keywords: annular ligament, elbow range of motion, nursemaid's elbow, pain in elbow, radial head, radial head reduction, radial head subluxation

Introduction

Upper extremity injuries are a frequent cause of ED visits in the United States, accounting for an estimated 3.5 million visits annually, with approximately 360,000 involving the elbow as the primary injured joint [1]. The elbow's complex anatomy and reliance on both osseous and ligamentous stabilizers contribute to diagnostic challenges, particularly when radiographic findings are subtle or absent.

Radial head subluxation, commonly referred to as nursemaid's elbow, is a well-recognized injury in the pediatric population and typically results from axial traction on the pronated forearm, leading to displacement of the annular ligament over the radial head [2,3]. In adults, however, isolated radial head subluxation or dislocation without an associated fracture is exceedingly rare, owing to increased annular ligament strength and mature joint anatomy [4]. When radial head dislocation occurs in adults, it is most often associated with high-energy trauma and concomitant osseous injury, such as Monteggia fracture-dislocations [5].

As of 2023, only two published case reports described recurrent isolated radial head subluxation in adults, highlighting the rarity of this presentation and the limited understanding of its natural history and optimal management [6]. Patients typically present with elbow pain and restricted range of motion, symptoms that overlap substantially with those of more common adult elbow pathologies, increasing the risk of misdiagnosis or delayed recognition.

Failure to identify subtle elbow instability may result in recurrent symptoms, chronic pain, and functional impairment, emphasizing the importance of maintaining a high index of suspicion when evaluating adults with recurrent or unexplained elbow dysfunction [7]. We present a case of a young adult with recurrent radial head dislocations and subluxations, providing additional insight into this rare and underreported clinical entity.

Case Presentation

The patient is a 21-year-old male who presented to the UF Health Jacksonville ED in Jacksonville, FL, with

How to cite this article

Nutter C W, Storch I, Nippert J (October 27, 2026) Elbow Pain in an Adult: Keeping Nursemaid's Elbow in the Differential Diagnosis. Cureus 18(10): e118685. DOI 10.7759/cureus.118685

right elbow and forearm pain. He was a poor historian and initially reported a previous injury several years earlier but stated that he had never required surgery. He reported that he was carrying lumber when he felt a pop in his forearm. On physical examination, he had reproducible pain over the extensor muscles and tendons of the proximal forearm and the posterior right elbow. He was unable to completely flex his biceps, pronate or supinate at the wrist. However, wrist flexion and extension strength were intact, although these movements caused pain localized to the proximal elbow. Handgrip strength was intact. Sensation was intact across all dermatomes. Pulses and capillary refill were normal.

His initial X-rays were interpreted as showing no acute fracture or dislocation, but an old, well-corticated osseous fragment was noted, similar to that seen on prior X-rays (Figure 1). The patient's limited range of motion raised concern for subluxation or dislocation, and the lack of an adequate 90-degree view may have influenced the initial radiographic interpretation. We independently reviewed the X-rays and noted that a line drawn through the center of the radius did not pass through the center of the capitellum, suggesting radial head dislocation, despite the elbow not being flexed at 90 degrees. We obtained repeat images, ensuring that an adequate 90-degree view was obtained (Figure 2). When evaluating for radial head subluxation, a line drawn through the center of the radial neck and head should bisect the capitellum on all radiographic views. In our patient, X-rays revealed dislocation of the radiocapitellar joint with 7 mm of diastasis of the ulnohumeral joint, findings concerning for chronic ligamentous injury (Figures 2-3).

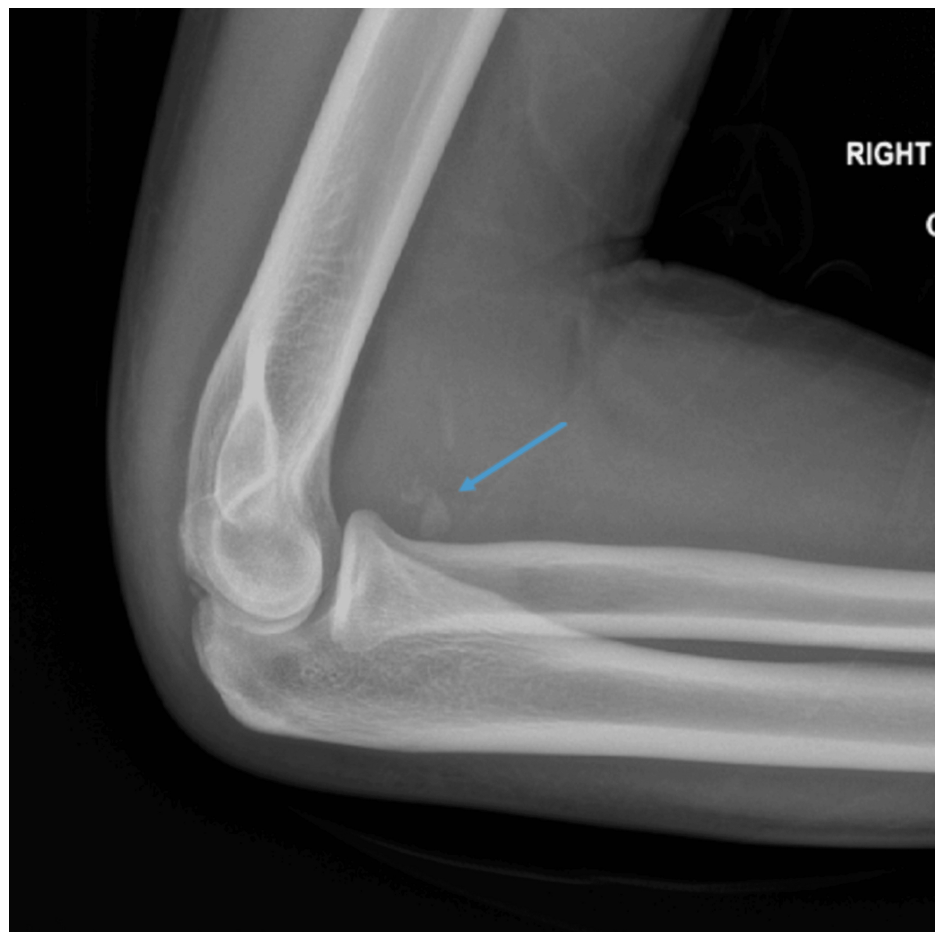


FIGURE 1: Previous X-ray for comparison.

No acute fractures. An osseous fragment (blue arrow) is seen adjacent to the proximal radius or ulna, likely related to a prior injury.

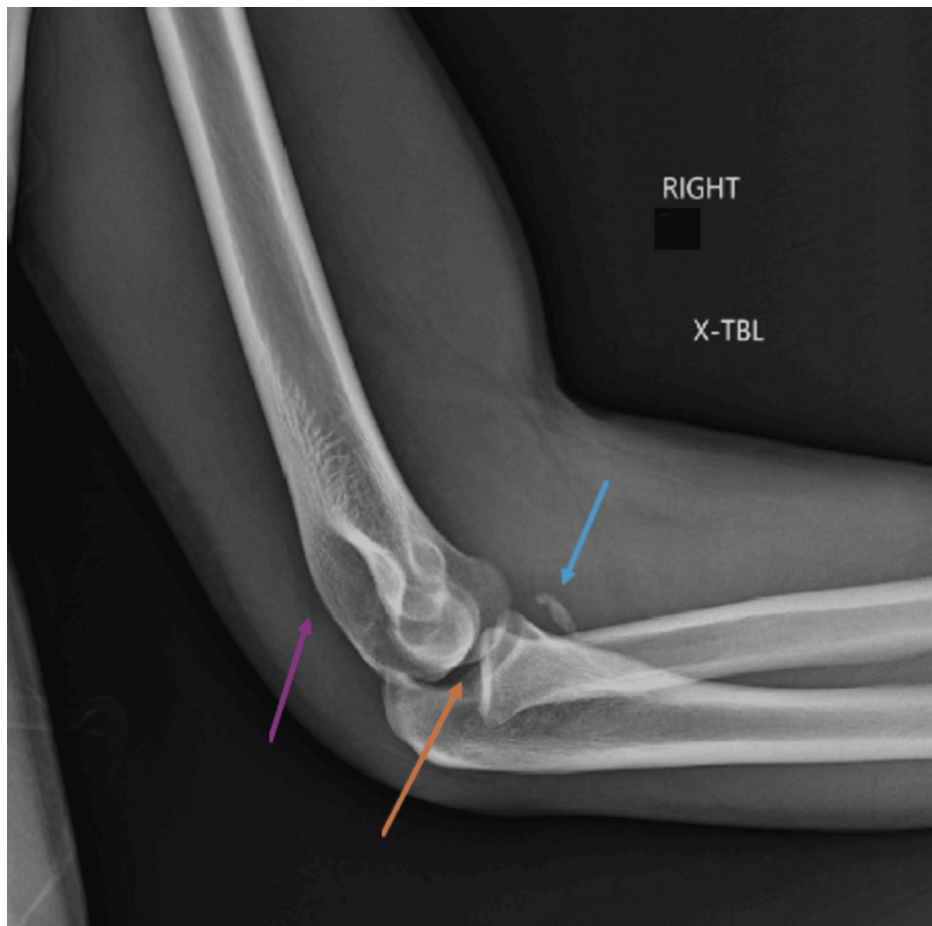


FIGURE 2: Right elbow X-ray, attempted 90° view.

The patient was unable to fully flex the elbow for a 90° view. An old osseous fragment is noted in a similar location (blue arrow). A posterior fat pad sign is noted (purple arrow). Radial head dislocation is noted despite inadequate elbow flexion (orange arrow).



FIGURE 3: Right elbow X-ray.

Slight widening between the proximal radius and ulna (orange arrow).

The patient provided consent for moderate sedation and reduction. A sugar-tong splint was applied because the patient had a history of recurrent subluxations/dislocations. Post-reduction radiographs demonstrated improved, now near-anatomic alignment of the radiocapitellar joint with decreased diastasis of the ulnohumeral joint (Figures 4-5). He was then instructed to follow up with orthopedics as an outpatient.



FIGURE 4: Right elbow X-ray, post-reduction.

A 90° view. The patient is now able to fully flex his right elbow. The radial head is in normal anatomical alignment. An old osseous fragment is noted in a similar location.



FIGURE 5: Right elbow X-ray, post-reduction.

The right elbow is in normal anatomical alignment.

A chart review revealed that he had presented to various institutions for recurrent radial head dislocations and subluxations. The chart review indicated that two months earlier, the patient had sustained a nondisplaced radial head fracture and fractures of both the lateral and medial epicondyles following a ground-level fall. He subsequently had multiple ED visits for recurrent dislocations. Outpatient surgical reconstruction of the right elbow was recommended once the soft tissues allowed, but for unknown reasons, the patient never followed up with orthopedics.

A review of the literature indicates that recurrent findings such as these are very rare in adults. In many cases of radial head dislocations and subluxations, there is an associated fracture. Although there was no acute fracture in our patient, the prior radial head fracture likely resulted in disruption of the annular ligament, causing recurrent instability in the context of ligamentous insufficiency.

Discussion

Nursemaid's elbow, or radial head subluxation, is a common pediatric musculoskeletal injury, most often occurring in young children aged 1–4 years. One large study demonstrated a mean age of 2.1 years at presentation, with 59% of cases occurring in female patients and the left arm affected in approximately 60% of cases [2]. The high prevalence in young children is largely attributable to immature ligamentous structures and the relatively underdeveloped radial head. In contrast, this condition is relatively rare in adults, and its true incidence in this population remains poorly defined.

This injury typically results from a sudden pulling or traction force applied to the forearm, causing the radial head to slip partially out of its normal position within the annular ligament. While the prevalence and mechanism are well described in the pediatric population, nursemaid's elbow in adults is less well understood and is more frequently associated with predisposing factors such as prior trauma, ligamentous insufficiency, or atypical loading mechanisms, rather than simple traction alone [4].

The pathophysiology of nursemaid's elbow in adults is thought to be similar to that in children. An axial traction force applied to a partially pronated or extended forearm can lead to displacement of the radial head relative to the annular ligament. In adults, however, this mechanism may occur in the context of high-energy trauma, repetitive strain, or occupational activities involving lifting or pulling that place increased stress on the elbow joint. Disruption of normal radiocapitellar alignment results in pain, restricted range of motion, and often a characteristic guarding posture of the affected limb [8].

Unlike in children, adult anatomy may contribute to increased susceptibility under specific conditions. Degenerative joint changes, such as osteoarthritis, generalized ligamentous laxity associated with hypermobility syndromes, or sequelae of previous elbow injury may compromise joint stability and predispose patients to recurrent subluxation or dislocation events. A prior history of fracture or ligamentous injury is particularly relevant, as chronic annular ligament disruption can lead to persistent instability even with low-energy mechanisms [9].

The clinical presentation in adults may resemble that seen in children but is often more variable and less stereotypical [10,11]. Patients commonly report an acute onset of lateral elbow pain following a specific event or repetitive activity. The affected extremity is frequently held in a flexed position with forearm pronation, accompanied by tenderness over the radial head or lateral elbow. In adults, associated swelling, ecchymosis, or mechanical symptoms may be present, particularly when trauma or chronic instability is involved.

Accurate differentiation of nursemaid's elbow from other elbow pathologies, including fractures, ligamentous injuries, and true dislocations, is essential. This distinction relies on careful history-taking, physical examination, and judicious use of imaging. Although plain radiographs are often obtained to exclude fractures, they may appear normal in cases of simple subluxation, and subtle malalignment may be overlooked without careful assessment of radiocapitellar congruency. Normally, a line drawn through the center of the radius and extending through the radial head should bisect the capitellum. As such, the diagnosis may remain primarily clinical, with imaging serving to rule out alternative diagnoses or associated injuries [12].

In pediatric patients, nursemaid's elbow is typically managed with a simple reduction maneuver involving forearm supination and elbow flexion, resulting in rapid symptom resolution in the majority of cases. In adults, reduction may be more challenging due to increased muscle tone and ligamentous stiffness, and some patients may require analgesia, sedation, or local anesthetic for adequate pain control. Despite these differences, closed reduction remains generally successful.

The prognosis for nursemaid's elbow in adults is typically favorable following successful reduction. However, complications such as recurrent subluxation, chronic pain, or persistent joint instability may occur, particularly in individuals with underlying joint pathology or prior traumatic injury. In recurrent cases, management strategies may include immobilization, activity modification, and referral for orthopedic evaluation. Surgical stabilization may be considered in select patients with refractory symptoms or demonstrable ligamentous insufficiency. Although rare, recurrent radial head subluxation in adults represents a clinically important entity that warrants recognition to prevent long-term functional impairment.

The limitations of this case report include its single-patient nature and the lack of long-term follow-up data on outcomes after referral. The patient's status as a poor historian and noncompliance with prior recommendations may introduce recall bias or result in an incomplete history. Additionally, advanced imaging (e.g., MRI) was not obtained acutely, potentially limiting the assessment of subtle ligamentous injuries, although this is consistent with ED practice for initial management.

Conclusions

Radial head subluxation, while classically considered a pediatric injury, can occur in adults in rare circumstances, particularly in the setting of prior elbow trauma and ligamentous insufficiency. This case highlights an unusual presentation of recurrent radial head dislocation in a young adult, emphasizing the importance of maintaining a broad differential diagnosis when evaluating elbow pain and limited range of motion in the ED. Careful history-taking, independent review of radiographic imaging, and attention to subtle anatomic alignment, such as the radiocapitellar line, are critical to avoiding missed or delayed diagnoses. Recurrent instability in adults may result from chronic annular ligament disruption and can present with seemingly benign mechanisms of injury. Early recognition and appropriate orthopedic follow-up are essential to preventing long-term functional impairment. Increased awareness of this rare entity may help emergency physicians and sports medicine clinicians identify similar cases and improve patient outcomes.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Ian Storch, Justin Nippert, Christopher W. Nutter

Acquisition, analysis, or interpretation of data: Ian Storch, Christopher W. Nutter

Drafting of the manuscript: Ian Storch, Christopher W. Nutter

Critical review of the manuscript for important intellectual content: Ian Storch, Justin Nippert, Christopher W. Nutter

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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