

## Case Report

### Subluxation of the Head of the Radius (Nursemaid's Elbow)

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## Abstract

In uncomplicated subluxation of the head of the radius should be reduced by applying either supination or pronation combined with downward pressure on the radial head. A click may be heard or felt as the trapped annular ligament is released. Use of a sling for a few days may assist recovery and protect the elbow from further immediate injury.

## Introduction

A child's elbow can be easily injured by forcible traction to the pronated wrist, while the elbow is extended. It is characterized by slippage of the radial head through the annular ligament (figure 1).

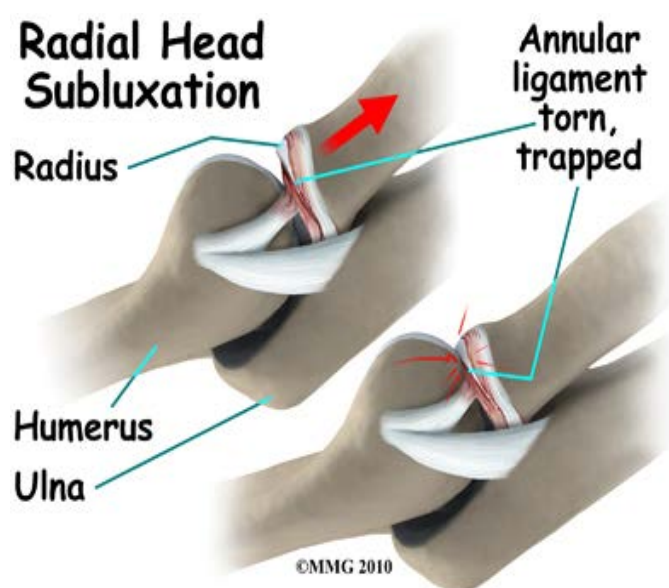


Figure 1. Anatomical lesion of nursemaid's elbow injury.

The common names for the condition are descriptive the mechanisms types of damage (e.g., baby-sitter's, nursemaid's elbow, supermarket elbow, pulled elbow syndrome, temper tantrum elbow). A history is often enough to reach a diagnosis (child pulling away while being firmly held by the hand, or child being rolled or lifted by one arm) [1,2]. On child's examination, the arm is held flaccidly with the elbow extended and wrist pronated, and the child resists any attempted supination of the arm [1]. Pain is usually radiated to the forearm, wrist and elbow, but there is little swelling or deformity. Radiographs usually unnecessary, but it shows a distal shift of the radius and are useful to exclude fracture or bone injury. After the radiograph had been taken (because the anteroposterior imaging view need for elbow supinated) many toddlers showed relief of symptoms [1,2].

## Case Presentation

A two-years- Bahraini toddler had received a sudden pulling the child up out of left arm, causing enough pain that he held the injured arm in motionless. The parent had no accurate idea about the site of the injury, and they thought that the child had injured his shoulder or wrist. Physical examination revealed an anxious infant; who had protected the left arm which was supported by the other hand, in partially pronated /mild elbow flexion (15-20 degrees). The child distal forearm circulation, sensation, and motor activity were normal. The child presented with resisting wrist and finger movement probably from fear of eliciting pain in the elbow. Tenderness at the head of the radius was present;

the toddler resists supination/pronation as well as flexion/extension of the left forearm, there was no deformity, crepitus, swelling, or discoloration of the arm. There was also no palpable tenderness except over the radio humeral joint; the child started crying with any movement of the elbow.

**Discussion**

Nursemaid’s elbow is a common and easily treated condition in primary care settings, with a slight case predominance in females, [1-3] mostly the left arm [1-3].

Usually toddlers have a history of axial traction, from either pulled hand in opposite directions or pulled by the wrist up and over an obstacle (figure 2). Then the infant suddenly refuses to use armloads. The condition is usually unilateral. However, repeated elbow subluxations have been reported [3].



**Figure 2.** Mechanism of nursemaid’s elbow injury.

Primary care physicians (PCPs) should have a high index of suspicion of elbow, wrist fracture, soft tissue and hand injury (table 1), Imaging studies are useful in ruling out elbow, wrist fracture but are often unnecessary. If reduction is futile after 2-3 attempts, radiography of the extremity is warranted (figure 3) [3, 4].

**Table 1.** Common pediatric elbow injuries [5].

Pediatric Elbow Injury Frequency & Treatment			
Fracture Type	% elbow injuries	Peak Age	Requires open reduction
Supracondylar fractures	41%	7	majority
Radial Head subluxation	28%	3	rare
Lateral condylar physeal fractures	11%	6	majority
Medial epicondylar apophyseal fracture	8%	11	minority
Radial Head and Neck fractures	5%	10	minority
Elbow dislocations	5%	13	rare
Medial condylar physeal fractures	1%	10	rare

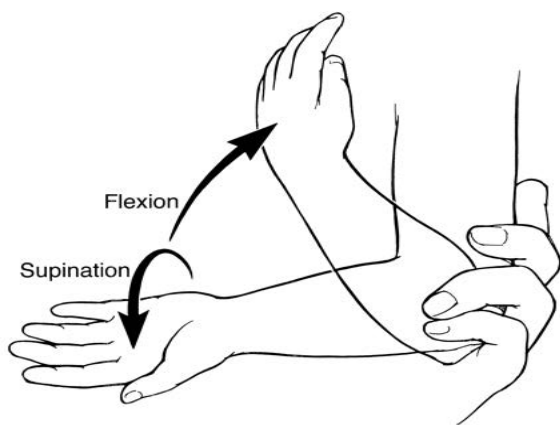


**Figure 3.** Imaging of nursemaid’s elbow injury.

Ultrasonography / MRI may be used to assess annular ligamentous injury and displacement of the radial head from the capitellum. It has also been used to assess progress of treatment for patients with recurrent subluxations [6-7].

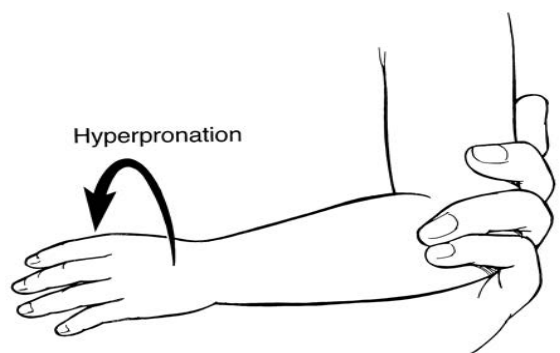
Closed reduction of radial head subluxation consists of manipulating the child’s forearm supination and elbow flexion; so that the annular ligament and radial head return to their normal anatomic positions (figure 4). First immobilized the elbow and palpating the region of the radial head with one hand. Second applied axial compression at the wrist while supinating the forearm and flexing the elbow [8]; feel a click or snap at the radial head. A click has a positive predictive value of more than 90% [9] and a negative predictive value of 76% [3].

If manipulating the elbow produces a click, then child report immediate return of function, but often the child will not use the arm normally after 15-30 minutes, parents can be counseled to minimize axial traction to prevent subluxation recurrence, also they can be reassured that no permanent injury results from subluxation. For toddlers who have had one occurrence, the chance of recurrence is approximately 20-25% [3,14,17]



**Figure 4.** Closed reduction of nursemaid's elbow injury showing forearm supination/elbow flexion technique [15].

Studies conclude that pronation may be more effective and/or less painful than supination manipulation (figure 5) [10-14].



**Figure 5.** Closed reduction of nursemaid's elbow injury showing forearm pronation/elbow flexion technique [14,16].

Refer toddler to AE; if radiographic findings demonstrate no fracture, or repeated attempts at reduction are unsuccessful, and the child does not regain normal function after 30-40 minutes. Persistent pain is inconsistent with nursemaid elbow and should lead one to reconsider the diagnosis [1,17].

## Conclusion

Nursemaid's elbow typically occurs with a sudden pull on a child's arm. Reserve radiography for uncertain cases in which you need to exclude more severe injuries. Consider reducing nursemaid's elbow by rapid pronation of the forearm, which has been shown to be less painful and more effective than supination.

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