

IRISH ASSOCIATION FOR
**EMERGENCY
MEDICINE**



IAEM Clinical Guideline

Management of Paediatric Pulled Elbow

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DISCLAIMER

IAEM recognises that patients, their situations, Emergency Departments and staff all vary. These guidelines cannot cover all clinical scenarios. The ultimate responsibility for the interpretation and application of these guidelines, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Revision History

Date	Version	Section	Summary of Changes	Author
June 2024	V1.0	All	Final version	JS/TM

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GLOSSARY OF TERMS

ANP	Advanced Nurse Practitioner
ED	Emergency Department
NAI	Non-accidental Injury

Management of Paediatric Pulled Elbow

INTRODUCTION

The “Pulled elbow” (Radial head subluxation) is a common injury suffered by children with a peak prevalence between the ages of 1 and 4.¹ This injury results from a sudden pull on the arm, usually by an adult or taller person, which pulls the radius through the annular ligament, resulting in subluxation (partial dislocation) of the radial head. The child experiences sudden acute pain and loss of function in the affected arm.² As the treatment for this condition is easily trainable and rapid to perform, early detection of this condition at triage is important. It can facilitate rapid assessment, management, and discharge of this patient cohort.

Early clinical suspicion is important as radiography is unhelpful in making the diagnosis with radiographs mostly appearing normal.³ There are two main techniques available to the clinician; hyperpronation or the supination/flexion manoeuvre, with the former considered to be more effective and less painful to perform.⁴ Following successful reduction, the child should have normal elbow function within 10-20 minutes.⁵

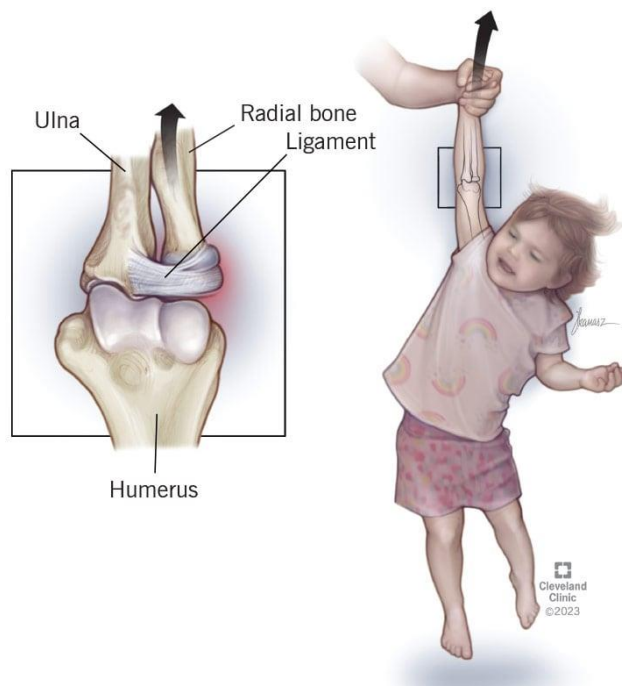


Image 1: Mechanism of Injury⁶

PARAMETERS

Target Audience	This guideline is intended for use by all doctors, nurses and advanced nurse practitioners (ANPs) who attend to injured children presenting to an Irish Emergency Department (ED) or Injury Unit.
Patient Population	Children presenting to Irish EDs or Injury Units with a painful or immobilised elbow, in the absence of obvious deformity, swelling or bruising.
Exclusion Criteria	Children presenting with obvious deformity of the elbow or clinical suspicion of a fracture or neurovascular injury to their elbow. Any child for whom there is a suspicion of non-accidental injury (NAI). History of witnessed direct trauma to the elbow.

AIMS

The aim of this document is to provide clinical guidance to clinical staff involved in the assessment and management of paediatric elbow injuries. This will ensure that the pulled elbow can be quickly identified and managed in a timely manner following the patient's presentation. While this guideline aids type 1 heuristic type style thinking around a common presentation, we must also be alert to unusual cases which require a more detailed type 2 analytical analysis⁷. A list of alternative differentials is included in [Table 1](#).

CLINICAL HISTORY

Initial Presentation

- Clear history of a sudden pulling or jerking action on the child's hand or arm.
- A child who suddenly refuses to move their arm, in the absence of a visible deformity.
- Arm held at the patient's side.
- Pain on passive movement of the effected limb.
- Parent or carer may have found the child crying and unable to use the arm, in the absence of witnessed trauma.

Initial Clinical Assessment

- Ensure that there is no obvious bruising, swelling or deformity of the elbow, wrist or shoulder on clinical examination.
- Ensure that there is no bony tenderness to palpation, while ensuring to examine the clavicle.
- Distress noted on isolated elbow movement only (especially pronation and supination).
- Marked resistance and pain with supination of the elbow.

Red flags

- Acute flaccid paralysis
- Signs of infection
- Arm swelling
- Rest pain
- Reduced (or loss of) power
- Age outside of peak prevalence (while noting that 3.2% will present after age 4)

Alternative differentials from Table 1 should be considered prior to manipulation if red flags are present.

DIFFERENTIAL DIAGNOSIS

Fracture	Upper limb: distal humerus, radial neck, proximal humerus
Infective	Osteomyelitis: distal humerus, olecranon, radial (head/neck) Septic arthritis of the elbow joint

Table 1: Differential diagnosis for patients with a 'pulled elbow'⁷

INVESTIGATIONS

Plain Radiograph of the affected limb should only be performed to exclude a differential diagnosis such as a fracture, in the following circumstances:

- a) Prior to manipulation, in the presence of significant swelling, deformity, or tenderness suggestive of a fracture.
- b) Following a failed reduction, in patients who presented with a clinically apparent radial head subluxation.

MANAGEMENT

Step 1: Provide analgesia:

- Confirm drug allergy status
- Paracetamol (15mg/kg) and/or Ibuprofen (10mg/kg)
- Sedation can be considered as per local policy, however it is not typically required as the procedure can be performed within seconds⁸

Step 2: Perform a reduction manoeuvre:

A. Hyperpronation manoeuvre:

- Ensure the child is in a comfortable position and as relaxed as possible (consider sitting the child on parent's lap).
- Support the elbow with one hand while placing your thumb over the radial head, in order to palpate a "Click" on successful reduction (image 2).



Image 2: Hand positioning⁹

- Fully pronate the forearm (image 3)



Image 3: Reduction method⁹

B. Supination/Flexion manoeuvre:

- Ensure the child is in a comfortable position and as relaxed as possible (consider sitting the child on parent's lap)
- Support the elbow with one hand while placing your thumb over the radial head, in order to palpate a "Click" on successful reduction (image 2).



Image 2: Hand positioning⁹

- Supinate the forearm (image 4)



Image 4: Reduction method- supination of the forearm⁹

- Begin flexing the elbow (Image 5a)



Image 5a: Reduction method- gently begin flexing the elbow⁹

- Fully flex the elbow (Image 5b)



Image 5b: Reduction method- fully flex the elbow⁹

Step 3: The child can be safely discharged when they are moving the affected limb again and the reduction is considered successful.

SPECIAL CONSIDERATIONS

- In cases where the injury is over 12 hours old, the child may not use the affected limb for another 1-2 days despite a successful reduction. In this case, they should be placed in a broad arm sling and reviewed again in the ED or Injury Unit in 48 hours⁹ Parents can be advised that in the case of the child removing their arm from the sling and returning to full use, it is not necessary to return for review.
- If the pulled elbow is unable to be reduced within the ED, alternative diagnosis should be considered and additional investigations should be utilised where appropriate. Following this, the orthopaedic team on-call should be consulted to review the patient if difficulties reducing the pulled elbow persist
- In the presence of atypical signs or symptoms, a broader differential needs to be carefully considered, including rarer neurological conditions⁷ as mentioned in table 2 below.

Anatomical level	Disease
Spinal cord C5-T1	<ul style="list-style-type: none">• Mechanical: tumour, trauma• Demyelination: Transverse myelitis, acute demyelinating encephalomyelitis
Anterior horn C5-T1	<ul style="list-style-type: none">• Neurotropic viruses (e.g. Enterovirus, Herpes, Polio)
Brachial plexus	<ul style="list-style-type: none">• Trauma
Peripheral nerves	<ul style="list-style-type: none">• Guillain–Barre syndrome

Table 2: Neurological differential diagnoses of ‘pulled elbow’

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