



## Case Report

# Radial head fracture associated with posterior interosseous nerve injury<sup>☆</sup>



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### ABSTRACT

Fractures of the radial head and radial neck correspond to 1.7–5.4% of all fractures and approximately 30% may present associated injuries. In the literature, there are few reports of radial head fracture with posterior interosseous nerve injury. This study aimed to report a case of radial head fracture associated with posterior interosseous nerve injury.

*Case report:* A male patient, aged 42 years, sought medical care after falling from a skateboard. The patient related pain and limitation of movement in the right elbow and difficulty to extend the fingers of the right hand. During physical examination, thumb and fingers extension deficit was observed. The wrist extension showed a slight radial deviation. After imaging, it became evident that the patient had a fracture of the radial head that was classified as grade III in the Mason classification. The patient underwent fracture fixation; at the first postoperative day, thumb and fingers extension was observed. Although rare, posterior interosseous nerve branch injury may be associated with radial head fractures. In the present case, the authors believe that neuropraxia occurred as a result of the fracture hematoma and edema.

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### Fratura da cabeça do rádio associada a lesão do nervo interósseo posterior

#### RESUMO

As fraturas da cabeça e do colo do rádio correspondem a 1,7% a 5,4% de todas as fraturas e 30% podem apresentar lesões associadas. Na literatura existem poucos casos descritos de fratura da cabeça do rádio com lesão do nervo interósseo posterior. O objetivo deste trabalho é relatar um caso de fratura da cabeça do rádio associada a lesão do nervo interósseo posterior (NIP).

#### Palavras-chave:

Fraturas do rádio

Nervo radial

Hematoma

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*Relato de caso:* Paciente masculino, 42 anos, procurou atendimento médico após queda de skate. Relatava dor e limitação de movimento do cotovelo direito, bem como dificuldade de estender os dedos da mão ipsilateral. Durante o exame físico, evidenciou-se déficit de extensão do polegar e dos dedos da mão. A extensão do punho apresentava um leve desvio radial. Após exames de imagem, ficou evidenciado que o paciente apresentava uma fratura da cabeça do rádio tipo grau III de Mason. O paciente foi submetido à fixação da fratura; no primeiro dia do pós-operatório notou-se o retorno da extensão do polegar e dos dedos da mão. Apesar de rara, a lesão do ramo interósseo posterior pode estar associada a fraturas da cabeça do rádio. No presente caso, acredita-se que a neuropraxia se deu em decorrência do hematoma e do edema fraturário.

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## Introduction

Fractures of the radial head and neck correspond to 1.7–5.4% of all fractures and around 33% of all elbow fractures; almost 30% have associated injuries.<sup>1</sup>

The incidence of associated injuries increases with the severity of the fracture, ranging from 20% in cases of fractures without deviation to 80% in multifragmentary fractures.<sup>1,2</sup>

The association with neurologic injury is rare, and it may occur mainly in fractures with anterior deviation, Monteggia fracture-dislocations, and open gun shot fractures. In the literature, there are few reports of radial head fracture with posterior interosseous nerve injury.<sup>2-4</sup>

This study aimed to report a case of radial head fracture associated with posterior interosseous nerve (PIN) injury.

## Case report

Male patient, aged 42 years, without comorbidities, sought medical care after a skateboard fall. He reported pain and range of motion impairment in the right elbow, as well as difficulty in extending the fingers of the ipsilateral hand.

On physical examination, edema of the lateral aspect of the elbow was observed, without pain or ecchymosis on the medial region; limited range of motion (ROM) was observed for both flexion-extension and pronosupination. The neurovascular examination showed extension deficit of fingers at the metacarpophalangeal joint level, as well as abduction and extension deficit of the thumb (Fig. 1). The patient also presented radial deviation during wrist extension. He did not have sensitive alterations; the neurological examination of median and ulnar nerves was normal. Peripheral pulses and perfusion were unaltered.

Elbow radiographs were initially requested and a Mason type III radial head fracture was observed, with an anteriorly deflected fragment consisting of 40% of the radial head area (Fig. 2). To better understand and visualize the fracture, a CT scan of the elbow was performed and associated fractures were observed (Figs. 3 and 4). Given the fracture pattern and neurological deficit, surgical treatment was chosen.



**Fig. 1 – Photograph of the patient showing extension of the fingers at the level of the metacarpophalangeal joints disability.**

## Surgical technique

A lateral Kocher approach was used, whereby the elbow joint is exposed between the anconeus and the extensor carpi ulnaris muscles.<sup>5</sup> The joint capsule was opened with the forearm in pronation, through which a large amount of the hematoma was drained. No injury or instability signs were observed in the lateral ligament complex. After irrigating the joint, it was observed that there was no avulsion of the anterior capsule, but a chondral injury was observed in the capitellum, and the radial head fragment was in anterior position. Anatomical reduction of the radial head fracture was performed, with temporary fixation with Kirschner wires to aid permanent fixation with two 2.7-mm screws using interfragmentary compression technique. The joint capsule and the muscle interval were sutured. The authors chose not to explore the nerve, as the literature reports that the posterior interosseous nerve injuries are usually due to indirect nerve compression by the anterior fragment of the radial head or by the joint hematoma.<sup>1</sup>

An axillary-palmar plaster splint was placed in the neutral position to prevent pronosupination for three weeks. After this period, assisted passive motion was initiated, followed by active movement; muscle strengthening was initiated two months after surgery.

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