

Radial nerve compression following volar plate fixation: A case for ultrasound diagnosis

Compressão do nervo radial após fixação de placa volar: um caso para diagnóstico pela ultrassonografia

Compresión del nervio radial tras fijación con placa volar: un caso de diagnóstico por ecografía

LUIGI DE BONIS CAMILOTTI⁽¹⁾, GUILHERME MACHADO FULLY⁽¹⁾, MÁRCIO LUÍS DUARTE⁽²⁾

(1) Universidade de Ribeirão Preto – Campus Guarujá, Guarujá (SP), Brasil.

Correio eletrônico:

lgdebonis@gmail.com,

gui_fully@hotmail.com

ORCID: 0009-0009-3445-7432

ORCID: 0000-0002-7652-4121

(2) Universidade de Ribeirão Preto – Campus Guarujá, Guarujá (SP), Brasil. Diagnósticos da América S.A. - DASA, São Paulo (SP), Brasil.

Correio eletrônico:

marcioluisduarte@gmail.com

ORCID: 0000-0002-7874-9332

RESUMO

Fraturas do rádio distal são comuns, especialmente em idosos, e geralmente apresentam excelentes resultados com fixação de placa volar. No entanto, complicações como inflamação, ruptura do tendão e compressão do nervo podem ocorrer. O ultrassom é a melhor ferramenta de diagnóstico para identificar danos ao tendão e ao nervo relacionados ao parafuso. Apresentamos o caso de uma mulher de 56 anos reporta estar a quatro meses com dor no punho direito acompanhada de “choques” que passou por cirurgia há três anos para uma fratura do rádio distal.

Palavras-chave: Fratura de rádio distal; Ultrassonografia; Neuropatia Radial

ABSTRACT

Distal radius fractures are common, especially in the elderly, and typically have excellent outcomes with volar plate fixation. However, complications such as inflammation, tendon rupture, and nerve compression can occur. Ultrasound is the best diagnostic tool for identifying screw-related tendon and nerve damage. We present a case of a 56-year-old woman who presents with four months of right wrist pain accompanied by “shocks” which underwent surgery three years ago for a distal radius fracture.

Key words: Wrist Fractures; Ultrasonography; Radial Neuropathy

RESUMEN

Las fracturas del radio distal son frecuentes, especialmente en ancianos, y suelen tener excelentes resultados con la fijación con placa volar. Sin embargo, pueden producirse complicaciones como inflamación, rotura de tendones y compresión nerviosa. La ecografía es la mejor herramienta diagnóstica para identificar daños en los tendones y nervios relacionados con los tornillos. Presentamos el caso de una mujer de 56 años que presenta dolor en la muñeca derecha de cuatro meses de evolución acompañado de “shocks” y que fue operada hace tres años por una fractura del radio distal.

Palabras clave: Fracturas de la Muñeca; Ultrasonografía; Neuropatía Radial

A 56-year-old woman presents with four months of right wrist pain accompanied by “shocks.” She underwent surgery three years ago for a distal radius fracture following a fall and has since experienced thumb movement difficulties. She reports being unable to grasp objects with her right hand. On examination, she cannot extend her thumb and has a positive Tinel sign on the lateral wrist. X-rays of the wrist show a volar metal plate with screws affecting the dorsal radial cortex (**Figure**). Ultrasound reveals a screw impacting the extensor pollicis brevis tendon and compressing the radial nerve. She has been referred for removal of the plate and screws.

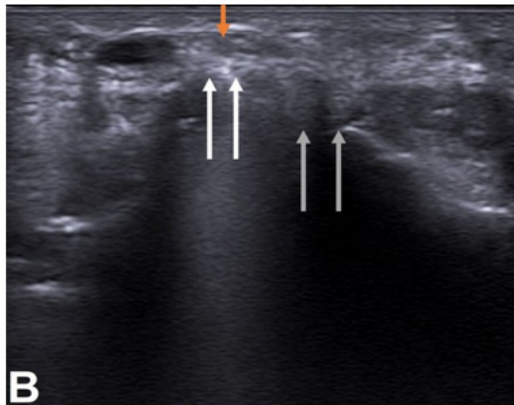


Figura. Right wrist lateral radiograph (A) showing volar plate and metal screws with involvement of the dorsal cortex by the metal screws (white arrows). Right wrist axial (B) and sagittal (C) ultrasound detecting the metal screw compromising the dorsal cortex of the radius (white arrow), compressing the radial nerve (orange arrows) and impacting the extensor pollicis brevis tendon (gray arrows).

Distal radius fractures are common and have excellent outcomes with volar plate fixation⁽¹⁾. The most frequently reported complications associated with this technique can be grouped into three categories: those involving nerves (5,7% - radial nerve neuropathy represents 0,2%), tendons (3,5%), and hardware (1,6%)⁽²⁾. Ultrasound is the best diagnostic tool for identifying screw-related tendon and nerve damage (sensitivity Ultrasound:MRI – 93%:86%), as x-ray and CT do not adequately visualize these structures⁽¹⁾. Metallic structures cause artifacts on MRI – sequences that reduce such artifacts are not available on all machines due to their high cost⁽¹⁾. Surgical removal of the hardware typically improves motor and sensory function^(2, 3).

REFERENCIAS BIBLIOGRÁFICAS:

1. Bianchi S, van Aaken J, Glauser T, Martinoli C, Beaulieu JY, Della Santa D. Screw impingement on the extensor tendons in distal radius fractures treated by volar plating: sonographic appearance. *AJR Am J Roentgenol.* 2008 Nov;191(5):W199-203. doi: 10.2214/AJR.08.1057.
2. Alter TH, Sandrowski K, Gallant G, Kwok M, Ilyas AM. Complications of Volar Plating of Distal Radius Fractures: A Systematic Review. *J Wrist Surg.* 2019 Jun;8(3):255-262. doi: 10.1055/s-0038-1667304.
3. Wijntjes J, Borchert A, van Alfen N. Nerve Ultrasound in Traumatic and Iatrogenic Peripheral Nerve Injury. *Diagnostics (Basel).* 2020 Dec 26;11(1):30. doi: 10.3390/diagnostics11010030.

Editor’s note: The editor responsible for the publication of this work is Liliana Servente.

Author contribution note:

Luigi De Bonis Camilotti: conceptualization (same), data curation (same), formal analysis (same), investigation (same), methodology (same), project management (same), validation (same), visualization (same), original writing-draft (same), writing-revision and editing (same);

Guilherme Machado Fully: conceptualization (same), data curation (same), formal analysis (same), investigation (same), methodology (same), project management (same), validation (same), visualization (same), original writing-draft (same), writing-revision and editing (same);

Márcio Luís Duarte: data curation (same), formal analysis (same), funding acquisition (same), research (same), methodology (same), validation (same), visualization (same), original draft writing (same), writing - proofreading and editing (equal);

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: There’s no funding.

This article does not contain any studies with animals performed by any of the authors.

The data set supporting the results of this study are not available.