



Case Report

Dynamic ulnar impaction syndrome in tennis players: report of two cases[☆]



Edgard de Novaes França Bisneto

Universidade de São Paulo, Hospital das Clínicas, Instituto de Ortopedia e Traumatologia, São Paulo, SP, Brazil

ARTICLE INFO

Article history:

Received 5 August 2016

Accepted 22 August 2016

Available online 16 August 2017

Keywords:

Wrist injuries

Tennis/injuries

Fibrocartilage/injuries

Ulnocarpal impaction

Palavras-chave:

Traumatismos do punho

Tênis/lesões

Fibrocartilagem/lesões

Impacto ulnocarpal

ABSTRACT

In this report, two tennis players with symptoms of ulnar impaction syndrome are reviewed. Both players have neutral ulnar variance. These cases represent dynamic ulnar impaction syndrome, when the impact between ulna and carpus occurs during conditions of pronated grip. The literature and the treatment of these two cases are discussed.

© 2017 Sociedade Brasileira de Ortopedia e Traumatologia. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Síndrome do impacto ulnocarpal dinâmico em tenistas: relato de dois casos

RESUMO

O relato apresenta os casos de dois tenistas portadores de dor no bordo ulnar do carpo com sinais de impacto no semilunar. Ambos são portadores de ulna neutra. Esses casos representam uma entidade denominada síndrome do impacto ulnocarpal dinâmico na qual ocorre o impacto entre a cabeça da ulna e o carpo em situação de pronação com punho fechado durante a atividade física. A literatura e o tratamento dos dois casos são discutidos no artigo.

© 2017 Sociedade Brasileira de Ortopedia e Traumatologia. Publicado por Elsevier Editora Ltda. Este é um artigo Open Access sob uma licença CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

[☆] Paper developed at Universidade de São Paulo, Hospital das Clínicas, Instituto de Ortopedia e Traumatologia, São Paulo, SP, Brazil.
E-mail: edgard.bisneto@hc.fm.usp.br

<http://dx.doi.org/10.1016/j.rboe.2017.08.003>

2255-4971/© 2017 Sociedade Brasileira de Ortopedia e Traumatologia. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Ulnocarpal impaction syndrome (UCIS) is a degenerative lesion characterized by compression or impact of the ulna head against the semilunar bone and/or the pyramidal bone, with or without lesion of the triangular fibrocartilage complex.¹⁻³

Generally associated with the presence of ulna plus, UCIS may also occur in the presence of neutral or minus ulna.⁴ During pronation there is a relative shortening between the radius and the ulna, and in situations of neutral or minus ulna shorter than 2 mm an impact can occur between the carpus and the ulna head, this condition is called dynamic ulnocarpal impaction syndrome (UCIS).⁴

UCIS in the presence of neutral or minus ulna is described in pronation situations associated with grip strength, common in sports activities such as tennis or baseball.⁵

In this report, two cases of tennis players with UCIS will be presented, and treated arthroscopically. After the presentation of the cases, a discussion of the literature will be performed.

Case report 1

A 20-year-old female patient, who is a tennis player at an American university, with a right wrist triangular fibrocartilage lesion, diagnosed at the university.

When she underwent arthroscopy at that medical service with fibrocartilage debridement and wrist synovectomy, associated semilunar chondromalacia was diagnosed.

After seven months of surgery, and intense rehabilitation, the pain persisted preventing her from playing.

On physical examination, she showed pain at maximum supination; positive fovea sign (pain at ulnar volar palpation of the ulna head); absence of instability of the distal radioulnar joint (DRUJ); normal wrist ROM and low pain to ulnar deviation against resistance.

Imaging demonstrates triangular fibrocartilage lesion, intense synovitis and edema of the semilunar and pyramidal bones. Presence of neutral ulna (Fig. 1) was also noted.

Patient underwent new arthroscopy of the wrist with evident situation of impaction seen in the intraoperative period during pronosupination of the wrist. Arthroscopic *wافر* procedure, as well as debridement of triangular fibrocartilage and loose cartilage of the semilunar (Fig. 2), was performed.

The patient remained immobilized with an antebrachio-palmar orthosis with epicondylar block during three weeks. She was referred to rehabilitation, and returned to her sports activities with no pain four months after surgery.

Case report 2

A 49-year-old male patient, amateur tennis player, who played every weekend, presented with chronic, progressive pain, mainly when performing *forehand technique* while playing tennis.

On physical examination, he presented with pain at maximum supination; positive fovea sign, absence of instability of the distal radioulnar joint (DRUJ); normal wrist ROM and no pain at ulnar deviation against resistance. This patient also presented pain on palpation of the projection of the interosseous scaphosemilar ligament (SLL), but the Watson test was negative.

Magnetic resonance imaging showed semilunar and pyramidal bone edema, triangular fibrocartilage lesion and suspicion of partial lesion on the scaphosemilar interosseous ligament, confirmed intraoperatively (Geissler III type lesion). Neutral ulna (Fig. 3) was also noted.

The patient underwent wrist arthroscopy, and ulnocarpal impaction was also observed during pronosupination of the wrist (Fig. 4). Arthroscopic *wافر* and debridement of triangular fibrocartilage, there was no loose lunar cartilage. In this case, SLL debridement was performed, along with scaphosemilar and scaphocapitate percutaneous fixation with Kirschner wires. In this case, due to SLL treatment, immobilization was maintained for 6 weeks.

Discussion

When considering painful syndromes in athletes wrists, several affections can be mentioned⁴⁻⁷:

- Fractures of the distal extremity of the radius, scaphoid, hamate, pisiform.
- Temporary or permanent traumatic epiphysiodesis.
- Synovitis (dorsal wrist impaction syndrome).
- Ligament lesions, scaphosemilar ligament, triangular fibrocartilage complex.
- Pseudoarthrosis of the hamate hook.
- Tendinopathy or carpal ulnar extensor tendon dislocations.
- Degeneration, due to impact, of the triangular fibrocartilage complex.

Regarding the dynamic ulnar-carpal impact, this should be considered when there is pain at the ulnar edge of the carpus, in the presence of neutral or minus ulna, in situations of forearm pronation grip. On physical examination the signal of the fovea may be positive, associated with ulnar pain at maximum pronation. Wrist range of motion is generally preserved and there may be no pain for daily activities with no load.

Magnetic resonance imaging (MRI) or radiographs on pronation with palmar grip (pronated grip views) can help with diagnosis⁸ (Fig. 5).

Jang et al.⁹ state that UCIS is one of the most common causes of arthroscopy review of the wrist due to persistence of pain.

The dynamic visualization of the insinuation of the ulna head above the radius joint observed by the portals 3-4, 4-5 and 6 R was fundamental in the diagnosis in these two cases, especially in case 1, in which the magnetic resonance imaging showed no clear signs of ulnocarpal impaction. The chondral lesion in the semilunar is also a significant finding of the UCIS.

In both cases the technique chosen was the radiocarpal arthroscopic procedure, since in both cases the fibrocartilage

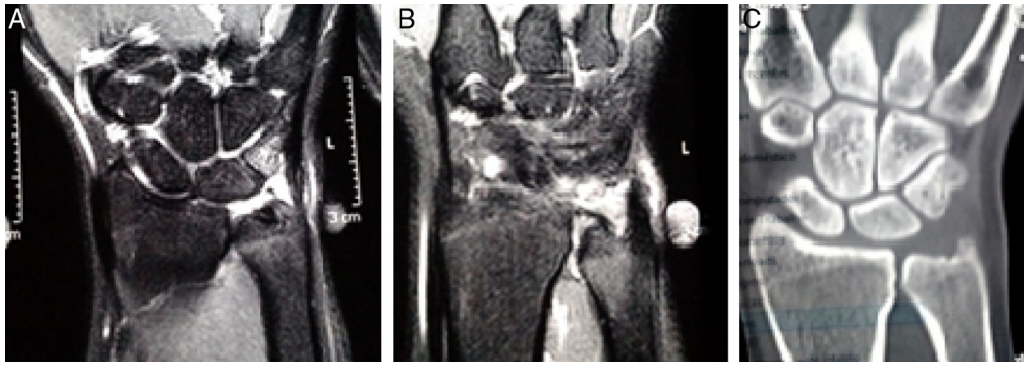


Fig. 1 – Images of case 1. (A) MRI evidencing synovitis and semilunar and pyramidal edema; (B) lesion of the triangular fibrocartilage in the distal portion only; and (C) tomography demonstrating neutral ulna.

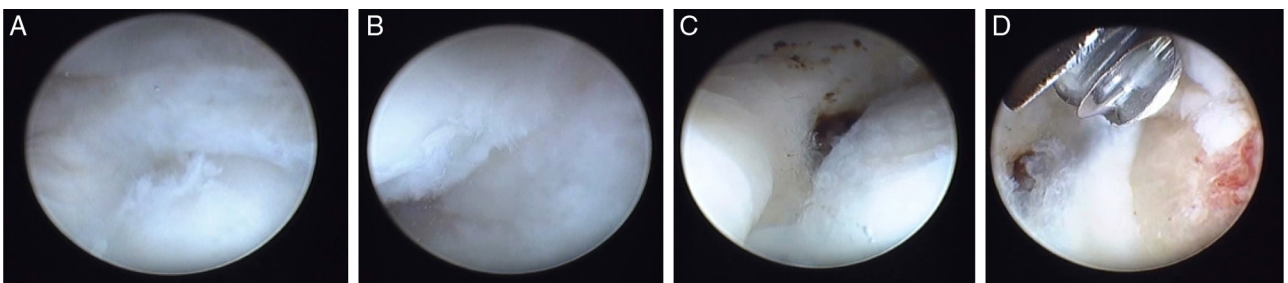


Fig. 2 – Arthroscopic *wafer* procedure. (A) lesion of fibrocartilage with ulna head exposure; (B) semilunar condral lesion; (C) insinuation of the ulna head during pronation above the radius joint line; and (D) arthroscopic *wafer*.

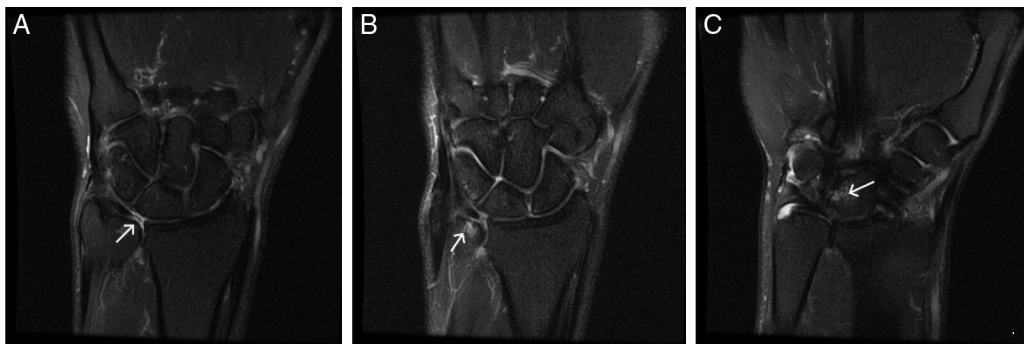


Fig. 3 – (A) MRI evidences triangular fibrocartilage lesion; (B) edema on the ulna head; and (C) semilunar edema.

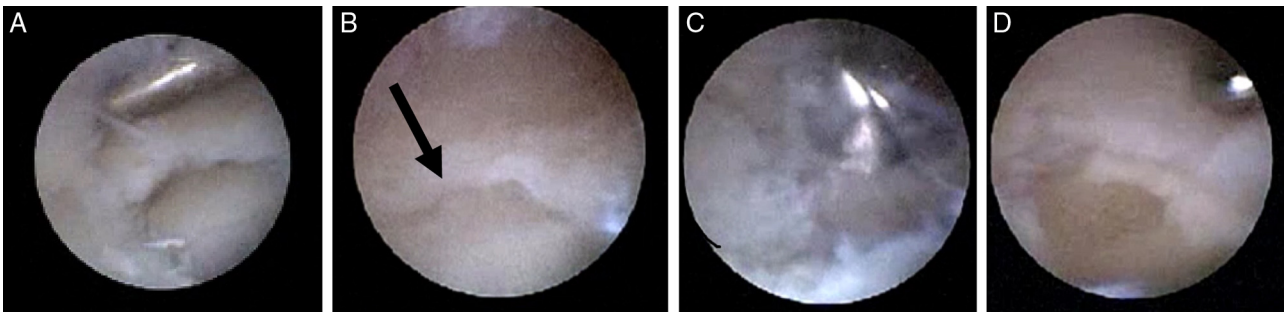


Fig. 4 – *Wafer*-like procedure. (A) Fibrocartilage lesion with ulna head exposure; (B) fibrocartilage bulging (arrow) on wrist pronation; (C) arthroscopic *wafer*; and (D) result after *wafer*.



Fig. 5 – Radiograph in pronation with palmar grip (*pronated grip views*).⁸ (A) With no pronation; and (B) pronation with palmar grip that alters the ulna-radius relation. Source: Tomaino and Elfar (2005).

had a degenerative lesion and there was no need to use distal radioulnar portals. None of the patients presented instability of the distal radioulnar joint.

This author considers the postoperative immobilization important after any arthroscopic procedure of the wrist, for pain control and stabilization of the inflammatory process. Immobilization with a wrist orthotics with or without epicondyle block is generally used for three to six weeks, depending on concomitant procedures. The patient referred to functional limb rehabilitation for four to eight weeks.

The importance of UCIS is in the possibility of being much more prevalent than is imagined due to the immense number of people who practise sports that use palmar grip associated with forearm pronation, such as tennis, golf, baseball, bowling, canoeing, etc. The recognition and early treatment of this syndrome is fundamental for the reintroduction of the athlete to his/her sports practice.

Conflicts of interest

The author declares no conflicts of interest.

REFERENCES

1. Iwasaki N, Ishikawa J, Kato H, Minami M, Minami A. Factors affecting results of ulnar shortening for ulnar impaction syndrome. *Clin Orthop Relat Res.* 2007;465:215-9.
2. Loh YC, Van Den Abbeele K, Stanley JK, Trail IA. The results of ulnar shortening for ulnar impaction syndrome. *J Hand Surg Br.* 1999;24(3):316-20.
3. Coggins CA. Imaging of ulnar-sided wrist pain. *Clin Sports Med.* 2006;25(3):505-26.
4. Tomaino MM. Ulnar impaction syndrome in the ulnar negative and neutral wrist. Diagnosis and pathoanatomy. *J Hand Surg Br.* 1998;23(6):754-7.
5. Baer DJ. Dynamic ulnar impaction syndrome in a collegiate baseball player. *IJATT.* 2014;19(3):15-9.
6. Fufa DT, Goldfarb CA. Sports injuries of the wrist. *Curr Rev Musculoskelet Med.* 2013;6(1):35-40.
7. Cornwall R. The painful wrist in the pediatric athlete. *J Pediatr Orthop.* 2010;30 2 Suppl.:S13-6.
8. Tomaino MM, Elfar J. Ulnar impaction syndrome. *Hand Clin.* 2005;21(4):567-75.
9. Jang E, Danoff JR, Rajfer RA, Rosenwasser MP. Revision wrist arthroscopy after failed primary arthroscopic treatment. *J Wrist Surg.* 2014;3(1):30-6.