

# Open Reduction of the Dislocated Pisiform Bone

Maarten T. Letsch<sup>1</sup> H.L. (Luitzen) de Boer<sup>1</sup> Duy Thuan Nguyen<sup>1</sup>

<sup>1</sup>Department of Plastic, Reconstructive and Hand Surgery, Catharina Hospital, Eindhoven, The Netherlands

Address for correspondence Maarten T. Letsch, MD, Van Woustraat 78C, 1073 LP Amsterdam, The Netherlands (e-mail: maartenletsch@hotmail.com).

J Hand Microsurg 2016;8:183–184.

Dislocation of the pisiform bone is rare and hence its optimal management strategy has not been specified. We present a case of traumatic dislocation of the pisiform bone, which was treated with open reduction.

A 16-year-old right-handed male was referred to our department after he fell onto his outstretched right hand with maximal dorsiflexion during a soccer game. The main complaint was pain at the ulnar side of his right wrist. Physical examination showed tenderness and swelling of the ulnar border of the right wrist with limited range of motion, particularly flexion and radial deviation. Radiographs demonstrated a fracture of the triquetrum and a distal dislocation of the pisiform bone in the right wrist.

Additional computed tomography (CT) scan was performed to gain more information about the configuration of the fracture and dislocation (►Fig. 1A). The triquetrum bone only showed an avulsion fragment on the volar side with widening of the joint space between triquetrum and hamate bone, with diastasis to the avulsion fracture fragment.

As initial closed reduction of the pisiform bone under anesthesia was unsuccessful, an open approach was performed. To achieve this open approach, an incision over Guyon's canal was made. After opening Guyon's canal and retraction of the neurovascular bundle, a small tear on the radial side next to the pisiform bone was seen. By using a Howard Bone File (Hu-Friedy, Chicago, United States), open reduction of the pisiform bone was achieved through the small tear. The pisiform bone proved stable during provocation without crepitation. Anatomical realignment of the wrist and the avulsion fragments was evaluated by radiographs and a CT scan (►Fig. 1B), and the widening of the joint space was absent.

The wrist was immobilized with a cast for 6 weeks. Two months after the trauma, the patient had a full return of grip

strength and function of the wrist and was able to perform his daily activities as before.

Dislocation of the pisiform bone is a relatively rare injury associated with hyperextension traction of the flexor carpi ulnaris (FCU), tearing the pisohamate and/or pisometacarpal ligament. The FCU is the most powerful muscle in the wrist, and the pisiform acts as a sesamoid, mechanically enhancing the action of the FCU.<sup>1</sup> As a consequence, the pull of the FCU as well as the forced wrist hyperextension associated with a fall onto the outstretched hand cause a significant traction to displace the pisiform bone and associated ligament injury or avulsion fractures. Depending on the intensity of the trauma, the thin capsule of the pisotriquetral joint, as well as the FCU tendon's distal continuation or the pisohamate and pisometacarpal ligaments, can disrupt.<sup>2</sup> The direction of displacement of the pisiform bone is a result of the damaged structures.

Various treatment options have been described in the literature for dislocation of the pisiform bone, varying widely from conservative treatment without even splinting to excision of the pisiform bone.<sup>3</sup>

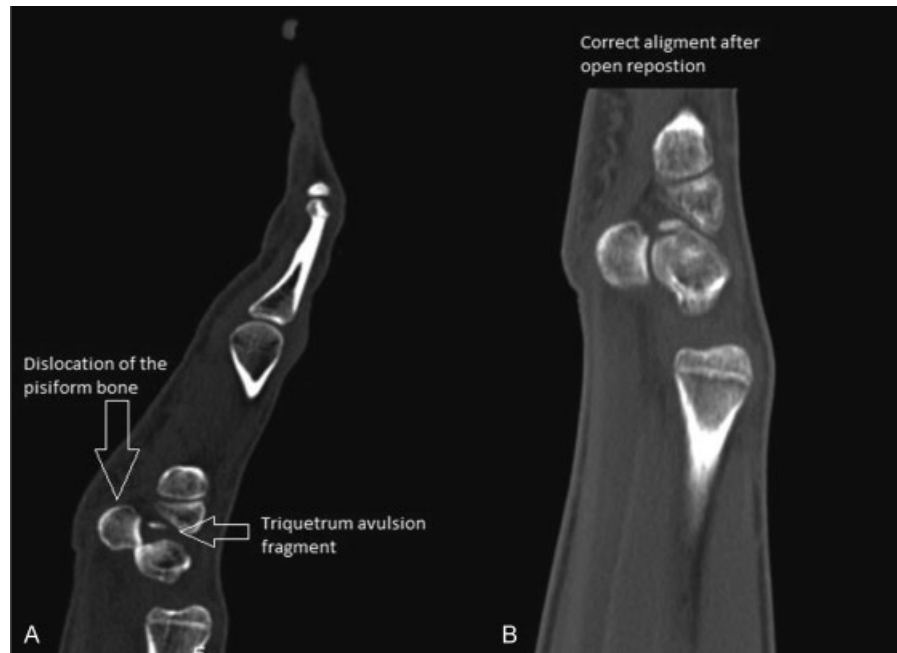
Immediate closed reduction of the pisiform bone, if possible, is the best treatment, especially in the presence of ulnar nerve neurapraxia. For optimal closed reduction of the pisiform, the wrist is flexed in combination with pronation of the forearm for relaxation of the FCU.<sup>4</sup>

In our case, the open reduction of the pisiform bone went quickly and smooth through the preexistent small tear, without dissection of surrounding ligaments. Because this was still a growing patient who will become a professional soccer player, our aim was to preserve the pisiform bone to maintain maximal wrist strength. If open reduction would not have resulted in a stable situation of the pisiform bone, even accompanied by ligamentous repair, the pisiform should be excised and the FCU repaired to restore function.

received  
June 11, 2016  
accepted  
July 20, 2016  
published online  
September 8, 2016

© 2016 Society of Indian Hand & Microsurgeons

DOI <http://dx.doi.org/10.1055/s-0036-1588022>.  
ISSN 0974-3227.



**Fig. 1** (A) Distal dislocation of the pisiform bone. Also widening of the joint space between triquetrum and hamate bone is seen with the presence of a triquetrum avulsion fragment associated with the traction injury of the pisiform dislocation. (B) Situation after reduction of the pisiform bone. The configuration between the triquetrum and hamate bone is restored. Also, the triquetrum avulsion fragment is in the correct alignment.

#### Note

The authors declare that they have no conflict of interest. This article does not contain any studies with human or animal subjects. Informed consent was obtained from all individual participants included in the study.

#### References

- 1 Bejjani FJ, Landsmeer JM. Biomechanics of the wrist and hand. In: Nordin M, Frankel VH, editors. *Basic Biomechanics of the Musculoskeletal System*. 3rd ed. Baltimore, MD: Lippincott Williams and Wilkins; 1989:359–387
- 2 Rayan GM, Jameson BH, Chung KW. The pisotriquetral joint: anatomic, biomechanical, and radiographic analysis. *J Hand Surg Am* 2005;30(3):596–602
- 3 Goriainov V, Bayne G, Warwick DJ. Traumatic dislocation of the pisiform: a case report. *J Orthop Surg (Hong Kong)* 2010;18(3):389–390
- 4 Saleh WR, Yajima H, Nakanishi A. Conservative treatment of the isolated dislocation of the pisiform bone. *J Plast Surg Hand Surg* 2014;48(4):283–284