Congenital dislocation of pisiform bone: A case report and review of literature.

Nadeem Khalid[1]

[1]Department of Trauma and Orthopaedics, Dallah Hospital, Riyadh, Saudi Arabia

Authorship and contribution Declaration:
Nadeem Khalid: Conception and design of the study, acquisition of data, Drafted the manuscript,
Revised the manuscript critically for important intellectual content, Final approval of the version for publication.

Correspondence Author:
Nadeem Khalid
Email:deem1970@gmail.com

ABSTRACT

Pisiform dislocation is very rare. Only few cases have been reported and all were post- traumatic. Due to its rarity, there is no optimum treatment. Literature suggest close reduction and open reduction or excision of pisiform with good results. We present a case of dislocated pisiform identified post traumatically in a 10-year-old female with ipsilateral greenstick radius and ulna fracture. She presented in emergency room(ER) after a simple fall over the outstretched hand. X-rays and CT scan confirmed the dislocated pisiform bone. The pisiform bone was surgically excised. The patient was given a below elbow back slab for 4 weeks. At 3 months, follow up she was completely pain free with full range of motion of wrist and no functional deficit. We suggest that excision of Pisiform bone after dislocation can be performed without the risk of any future consequences. Removal of the bone does not interfere with the normal wrist function.

Key Words: Dislocation, Flexor Carpi Ulnaris, Pisiform bone, Surgery.

This article may be cited as: Khalid N. Congenital dislocation of pisiform bone: A case report and review of literature .J Pak Orthop Assoc. 2020;32(1):

CASE PRESENTATION

A 10-year-old girl presented to Emergency room after a fall on her hand hours ago with complaints of pain and swelling in hand and forearm. No previous history of any injury was given. X rays revealed dislocated pisiform bone and greenstick fracture of ipsilateral distal Radius/ulna (Fig. I).

Fig. I: X-rays left wrist from ER showing dislocation of pisiform and buckle fracture distal radius.

Fig. II: CT scan of left wrist showing dislocation of pisiform bone.

The pisiform dislocation was missed in ER and patient was given a below elbow back slab. In follow up visit in the trauma clinic CT scan of the wrist was performed to confirm the dislocation of pisiform (Fig. II). X-ray of the contralateral wrist was done for comparison and double confirmation (Fig. III). Patient was advised for closed/ open reduction and K wiring. Informed consent from parents was taken for surgery and later on publication of this case report. Under GA, close reduction was attempted. The pisiform was pushed proximally while maintaining the

wrist in flexion and pronated position. Open reduction was attempted. Incision was given over the Guyon's canal. No soft tissue injury/ tear was seen and there was no space to reduce the pisiform back in the position. Pisiform bone was enclosed in a sheath at the insertion of Flexor Carpi Ulnaris.

Fig. III: X-rays right wrist for comparison.

Fig. IV: Post operative X-ray of left wrist after excision of pisiform.

Fig. V: 3 months post-operative range of motion.

DISCUSSION AND REVIEW OF LITERATURE

Dislocation of the pisiform bone is found rarely and very few cases have been reported up till today. Before 1901, many authors had reported cases of dislocated pisiform but all cases were reported without X-rays as X-rays were not discovered till than.[2] Van der Donck[3] reported the first case with x-ray in 1899 due to a fall. The bone was excised and patient had marked improvement of pain and function.

Cotton[4] reported a case of a painful mobile pisiform in 1910 with history of fall. This was associated with ulnar nerve symptoms. No X-rays were done. The case was lost for follow-up after several weeks of immobilization.

Ozenne[5] reported two cases in 1911. First case was after lifting heavy stuff. No x-rays were taken. Clinically a depression was felt at the site of pisiform. The wrist was immobilized for 2 weeks but remained unreduced. At 6 months there was limitation in adduction of the wrist. The second case was seen 10 years after injury and was also the result of lifting weight.

Mather[6] in 1924 reported a case in which the patient complained of giving way in the wrist after lifting weight. X-rays showed the pisiform located between the triquetral bone and the ulna. The wrist was immobilized in full flexion for 3 weeks. There was no documentation of manipulation to reduce the dislocation or post reduction x-rays. The pain in the wrist persisted and the pisiform was excised surgically. Full function was achieved after five weeks of surgery.

In 1930, Wagoner[7] reported a dislocation of the pisiform after a fall on the hand. There were associated fractures of the distal radius and ulnar styloid. The pisiform was found to have rotated downward and inward. Close reduction was performed under general anaesthesia and the wrist was placed in a cock-up splint with excellent results after five weeks.

The pisiform is an additional stabilizer of the wrist in flexed position.[8] It is attached to pisotriquetral joint capsule, pisometacarpal ligament, pisohamate ligament and transverse carpal ligament.Flexor carpi Ulnaris and Abductor Digiti Minimi muscles are also partially attached to pisiform bone.[9] The pisiform bone enhances the action of Flexor Carpi Ulnaris muscle.[10] The Flexor Carpi Ulnaris is stretched in hyperextension injuries like fall on outstretched hands and ligamentous attachments of Pisiform are stretched and the bone dislocated.[11]

Following the dislocation, the pisiform is displaced from its normal position. Flexion and adduction of the wrist may be painful, with or without abnormal mobility of the bone.[2] The diagnosis is confirmed with x-rays.

Various treatment options have been given in the literature varying from conservative treatment without splinting to excision of pisiform bone.[12] Sharara[13] is of the opinion that closed reduction and immobilization with hand in the pronated position is the optimum treatment as the flexor carpi ulnaris is fully relaxed in this position.Kubiak[14] proposed that isolated Pisiform dislocation should only be treated with simple immobilization.

However, no consensus has been achieved regarding the position of wrist immobilization.[11,13,15,16] Ishizuki[11] reported that Pisiform dislocation and reduction depends upon position of the wrist immobilization. Miniami[17] noted re-dislocation after three months of immobilization of wrist in 20° palmar flexion and forearm in neutral position. Sharara[13] advocated fully pronated forearm position to ensure stable Pisiform and avoids redislocation.

Patients in whom closed reduction is failed or other carpal injuries are suspected are usually treated with open reduction of Pisiform bone.[17,18] Many authors suggest excision of the pisiform bone in cases of persistent pain or if it re-dislocates[1,10,16]. Some authors have suggested primary excision.[15,16] Primary resection is also supported by Jenkins[19] who is of the opinion that pain and osteoarthritis of the Piso triquetral joint will persist if Pisiform remains unstable.

CONCLUSION

We performed primary excision of the pisiform bone, although it was most likely a congenital dislocation or an old chronic missed dislocation (no previous history of painful wrist or trauma), without any sequential functional deficit or pain. These injuries can be missed easily in patients with isolated or multiple injuries.The treating surgeon therefore, must have a high index of suspicion in post-traumatic patients in order to diagnose them promptly and treat them effectively.

Conflict of Interests: None

Grants/Funding: None

REFERENCES

1. Riley DS, Barber MS, Kienle GS, Aronson JK, Von Schoen-Angerer T, Tugwell P, *et al.* CARE guidelines for case reports: Explanation and elaboration document. Journal of Clinical Epidemiology.2017;89:218-235.
2. Immermann EW. Dislocation of the pisiform. J Bone Joint Surg.1948;30:489-492.
3. Cohen I. Dislocation of the pisiform. Ann Surg.1992;75:238-239.
4. Cotton FJ. Dislocation and joint fractures, Philadelphia, W B Saunders Co, p.373, 1910.
5. Ozenne E. Duex cas de luxation du pisiform. Paris Chir.1911;3:559-563.
6. Mather JH. Dislocation of the pisiform bone. British J Radiol.1924;29:17-18.
7. Wagoner G.Dislocation of the pisiform associated with fractures of the head of radius and the styloid process of the ulna. J Bone Joint Surg.1930;12:170-171.
8. Moojen TM, Snel JG, Ritt MJ, Venema HW, den Heeten GJ, Bos KE. Pisiform kinematics in vivo. J Hand Surg Am.2001;26: 901-907.
9. Earl AD, Enzio M.A dislocated pisiform: Case report. Can J Plast Surg.1999;7(2): 57-58.
10. 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.
11. Ishizuki M, Nakagawa T, Itoh S, Furuya K.Positional dislocation of the pisiform. J Hand Surg Am.1991;16:533-535.
12. Goriainov V, Bayne G, Warwick DJ. Traumatic dislocation of the pisiform: a case report. J Orthop Surg (Hong Kong).2010;18(3):389-390.
13. Sharara KH, Farrar M. Isolated dislocation of the pisiform bone. J Hand Surg Br.1993;18:195-196.
14. Kubiak R, Slongo T, Tschappeler H. Isolated dislocation of the pisiform: An unusual injury during a cartwheel manoeuvre. J Trauma.2001;51:788-789.
15. McCarron RF, Coleman W. Dislocation of the pisiform treated by primary resection. A case report. Clin Orthop Relat Res.1989;241:231-233.
16. Muniz AE. Unusual wrist pain: Pisiform dislocation and fracture. Am J Emerg Med.1999.17:78-79.
17. Minami M, Yamazaki J, Ishii S. Isolated dislocation of the pisiform: a case report and review of the literature. J Hand Surg Am.1984;9:125-127.
18. Schadel- Hopfner M, Bohringer G, Junge A. Dislocation of the pisiform bone after severe crush injury to the hand. Scand J Plast Reconstr Surg Hand Surg.2003;37:252-255.
19. Jenkins SA. Osteoarthritis of the pisiform-triquetral joint. Report of three cases. J Bone Joint Surg.1951;33:532-534.