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Case Report / Приказ болесника

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Isolated dislocation of the pisiform bone in a 10-year-old boy

Изолована дислокација писиформне кости код дечака узраста 10 година

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SUMMARY

Introduction Isolated dislocation of the pisiform bone is a very rare condition due to robust ligamentous attachments that stabilize pisiform to the carpus. This type of injury is usually a result of direct trauma to the ulnar and volar aspect of the wrist.

Case outline We present an isolated dislocation of the pisiform, with no other carpal bone injuries, treated successfully with closed reduction. Diagnosis was based on clinical findings, plain radiographs, and computer tomography examination of the wrist. Elongation and partial rupture of pisometacarpal ligament was found on magnetic resonance imaging.

Conclusion Fracture and dislocation of the pisiform is an extremely rare injury in children, which could be easily neglected or misdiagnosed. Closed reduction with plaster cast immobilization should always be considered as the first method of treatment in the pediatric population as a conservative approach provides excellent results.

Keywords: dislocation; pisiform; children

САЖЕТАК

Увод Изолована дислокација писиформне кости је изузетно ретка имајући у виду робустност лигаментарног апарата који је стабилизује у ручју. Обично је овај тип повреде резултат директне трауме на улнарну и воларну страну ручја.

Приказ болесника Представљамо изоловану дислокацију писиформне кости, без повреда осталих костију ручја, која је успешно лечена затвореном репозицијом. Дијагноза је потврђена клиничким прегледом, радиографијом и налазом компјутеризоване томографије ручја. Елонгација и парцијална руптура писометакарпалног лигамента је утврђена помоћу магнетне резонанце.

Закључак Прелом и дислокација писиформне кости је изузетно ретка повреда код деце која се лако може превидети или дијагностички лоше протумачити. Затворену репозицију са гипсаном имобилизацијом треба увек сматрати методом избора у лечењу овог типа повреда код деце, имајући у виду да конзервативни третман даје одличне резултате.

Кључне речи: дислокација; писиформна кост; деца

INTRODUCTION

Pisiform bone dislocation is a rare injury reported mostly in young male adults [1] and there is a lack of reports in literature of this type of injury in children. Isolated dislocation of carpal bones is rare, except for the lunate and the perilunate bone. Dislocation of the pisiform bone is particularly rare [2, 3] because of the sturdiness of the ligamentous complex which stabilizes the pisiform to the carpus [4]. In this paper, we present a case of isolated pisiform dislocation in a young boy, successfully treated by closed reduction.

CASE REPORT

A 10-year-old boy injured his left wrist in a fall and was admitted to hospital due to a suspected fracture of the pisiform bone. Clinical examination revealed swelling around the ulnar aspect of the left wrist joint, with local tenderness and painful restriction of all wrist movements. The

neurovascular examination of ulnar artery and nerve was normal. The radiographs (anteroposterior and lateral view) of the left wrist showed an isolated dislocation of the pisiform bone (Figure 1) on the lateral radiographs. Further diagnostic tests followed. Computed tomography (CT) showed isolated anteroradial displacement of the pisiform for 7 mm. There were no other injuries of bones, soft tissues or blood vessels (Figure 2). Additionally, an Magnetic resonance imaging (MRI) scan confirmed a 7 mm anteroradial dislocation of the pisiform bone but also revealed an elongation and partial rupture of pisometacarpal ligament (Figure 3). Closed reduction of the pisiform was performed under an X-ray image intensifier, direct pressure was applied to relocate the bone with a slightly dorsiflexed position and a stable reduction was achieved. The wrist was immobilized with a long arm plaster cast in dorsiflexion for 4 weeks. Four weeks after procedure the cast was removed and radiographs revealed correct position of pisiform bone. At the 12 months follow-up, the patient was clinically well, without any pain or limitation of motion, and X-ray imaging showed normal results (Figure 4).

DISCUSSION

We searched the literature in English on PubMed for terms 'pisiform', 'fracture', 'dislocation' and 'children' and, to our knowledge, three pisiform dislocations associated with type I and II Salter–Harris fracture of the distal radius fracture in children have been reported [1, 5, 6]. As of yet, no isolated fracture and dislocation of pisiform bone in children has been reported.

The pisiform bone lies in the proximal row of the carpal bones and forms a synovial joint by articulating with the triquetrum. Its stability is ensured by a complex structure composed of 10 soft tissue attachments [7]. This may be the reason why injuries of the pisiform are generally rare. When pisiform dislocations occur, it is usually due to direct trauma to the ulnar and volar aspect of the wrist or as a consequence of an indirect force such as a forceful muscular contraction in a minority of cases [4]. As the centre of ossification of pisiform bone appears between 7.5 and 10 years of age and pisiform is not always clearly visualised, diagnosing pisiform fracture and dislocation in children could be very challenging [6].

Different modalities of treatment in adults have been reported in literature, such as closed reduction and immobilization, open reduction with internal fixation and excision of the pisiform [5, 6, 8]. With regards to pediatric population, all reported pisiform dislocations were managed conservatively. Mancini et al. performed closed reduction of the pisiform in both of their cases [6]. Hurni et al. also reported a closed reduction with immobilisation as the method of choice in a pediatric patient same as Ashkan et al. [1, 5]. They suggest that this type of injury in children should be primarily treated with closed reduction and immobilization and more aggressive approach as

pisiform bone resection should be used in case the conservative treatment fails [1]. Furthermore, Sharma et al. and Kwon et al. also support conservative treatment unless recurrent dislocations occur or the disability remains after conservative treatment, in which case resection of the pisiform is recommended [4, 8]. Sharma et al. [4] reported an ulnar nerve compression as a consequence of isolated pisiform dislocation in an adult male. No ulnar injuries have been reported in children with pisiform dislocations. In such a case, emergency reduction of the pisiform is required.

Taking everything into consideration, fracture and dislocation of the pisiform is an extremely rare injury in children, which could be easily neglected or misdiagnosed, firstly because physicians do not usually consider this condition, and secondly due to unspecific clinical signs and challenging interpretation of radiographs. Closed reduction with plaster cast immobilization should always be considered as the first method of treatment, as it is a conservative approach that provides excellent result in the pediatric population.

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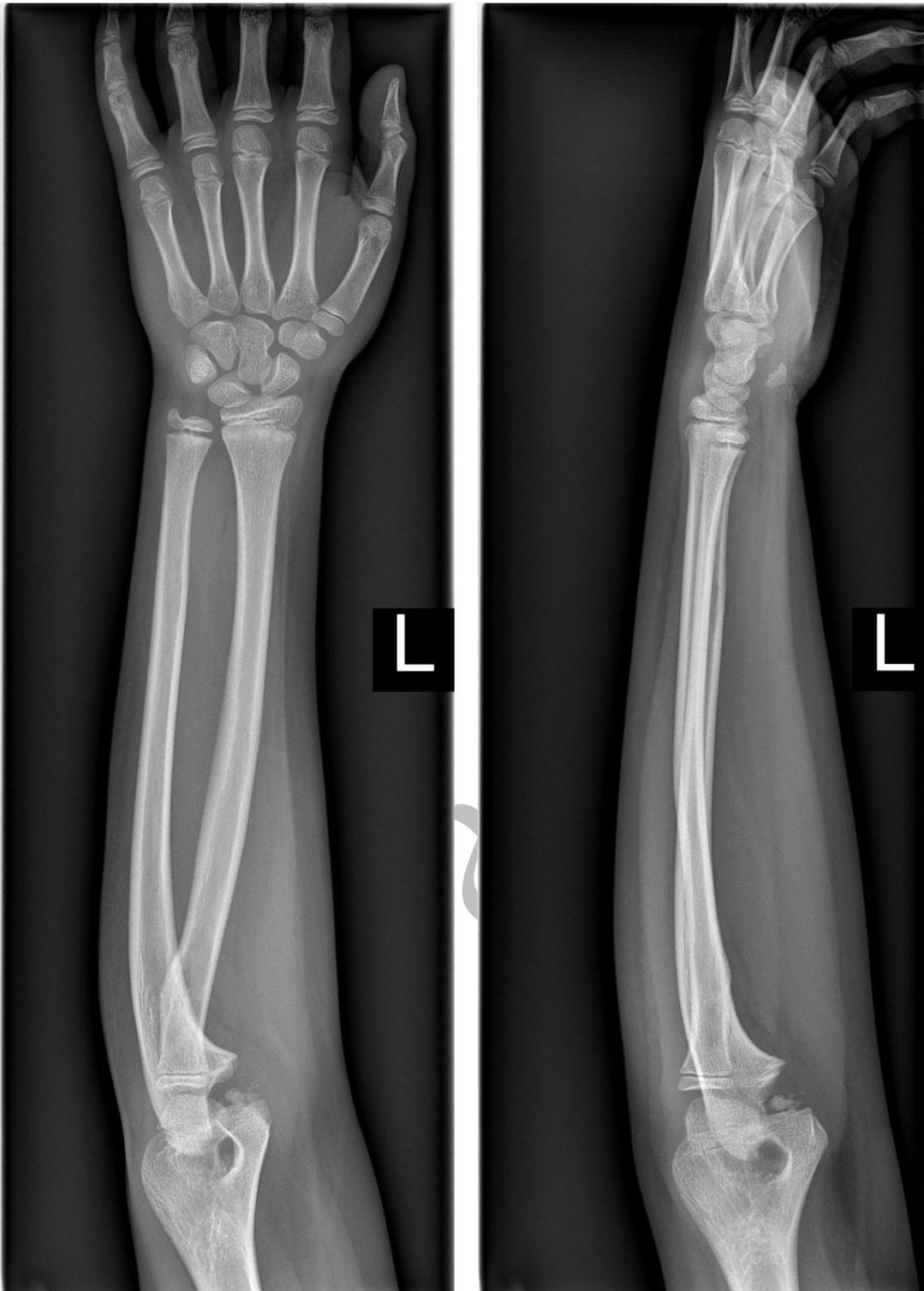


Figure 1. Initial radiographic presentation in a 10-year-old boy with hand injury: X-ray clearly shows pisiform bone dislocation



Figure 2. Three-dimensional volume rendering of spiral computed tomography scan shows dislocation of the pisiform bone in a 10-year-old boy with hand injury

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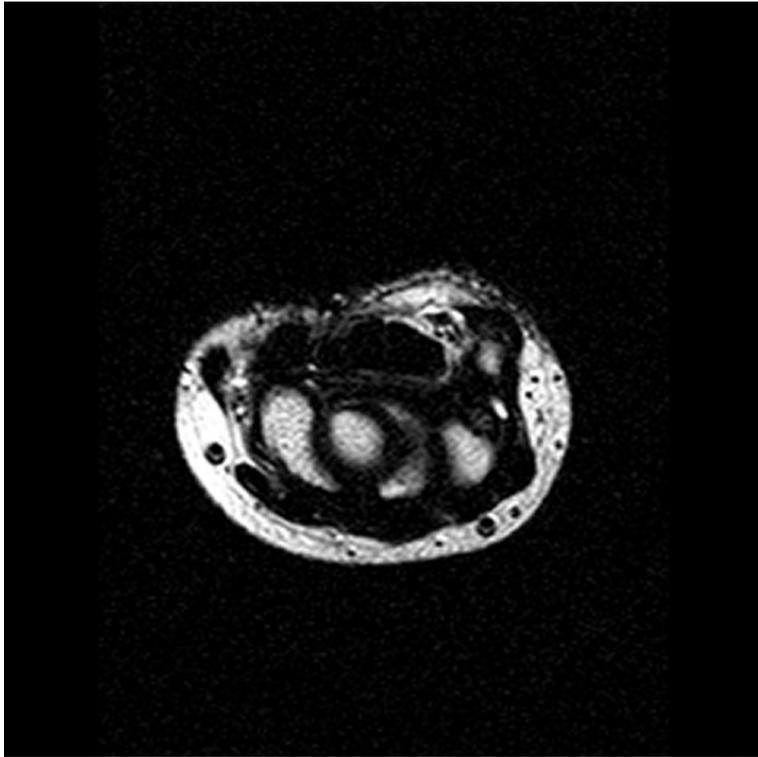


Figure 3. Transversal plane T2W MRI; the pisometacarpal ligament is elongated and heterointense, with partial interstitial rupture in a 10-year-old boy with hand injury

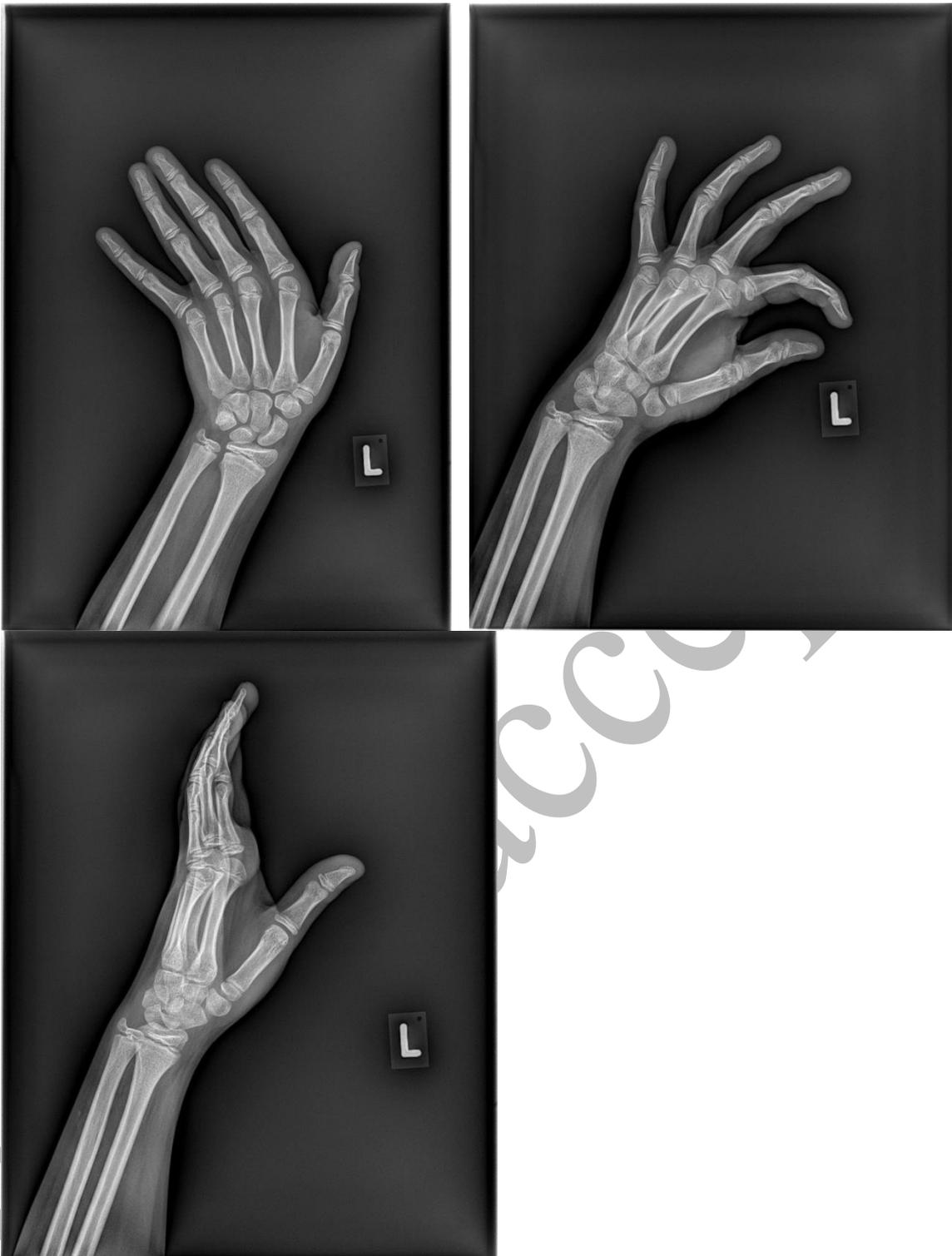


Figure 4. X-ray in a 11-year-old boy with hand injury one year following the procedure: correct position of the pisiform bone