CASE REPORT

Pure elbow dislocation in a child wrestler with underlying hyperlaxity: What is the optimal time to return to competition?

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ABSTRACT

Elbow dislocations are often considered serious injuries that can cause a child athlete to miss the entire season in wrestling. It was reported that the return to sports after the elbow dislocation was between 6 and 12 months in child wrestlers. In some cases, underlying hyperlaxity may have an essential role in the occurrence of pure elbow dislocation without any ligament injury. We report the case of a 10-year-old boy patient who had pure elbow dislocation following falling onto an outstretched hand in a wrestling match. Because the physical examination findings of the patient indicated the presence of hyperlaxity, the patient was treated by closed reduction, short-term immobilization, and early strengthening of the dynamic stabilizers. This case report's findings suggest that detecting the presence of hyperlaxity in this specific patient group is crucial since this patient group has the potential to return to competitions 6 weeks after injury, unlike patients without hyperlaxity.

Keywords: Child wrestler; hyperlaxity; pure elbow dislocation; return to competition; return to sports.

INTRODUCTION

Traumatic elbow dislocation has been reported as a rare injury that accounts for 3–6% of all elbow injuries in pediatric patients.[1,2] These injuries are often complex injuries accompanied by medial epicondyle avulsion fracture, ulnar nerve, and median nerve injury.[3,4] Pure elbow dislocations are quite rare.[1,5,6] The reason for this is the incomplete ossification of the cartilage structures around the elbow until the late stages of skeletal development, and thus its weaker tensile strength relative to the ligament and muscle tissues around the elbow.[7] However, if there is underlying hyperlaxity this can result in pure elbow dislocation that is not accompanied by a fracture. It has been stated in many studies that return to sports usually takes long in pediatric wrestlers with elbow dislocation without hyperlaxity.[8,9] In the case presented here, closed reduction, short-term immobilization, and early strengthening of the dynamic stabilizers of the elbow enabled an early return to competition. In this case report, it was emphasized that pediatric elbow dislocation accompanied by underlying hyperlaxity should be handled separately from other elbow dislocation cases and it was aimed to show that this specific group can return to sports in the early period.

CASE REPORT

A 10-year-old boy was referred to our emergency department with complaints of pain in the left elbow, which had abruptly occurred following falling onto the mat with the outstretched hand when the elbow is in extension and pronation in a wrestling match. Physical examination revealed extensive swelling around the left elbow. There was no ulnar nerve and median nerve injury, and radial pulse was present. A posterolateral elbow dislocation was detected in the radiographs (Fig. 1a and b). Although no osseous pathology was detected, computed tomography imaging was performed to exclude non-specific bone injuries (Fig. 1c), and pure elbow dislocation was detected.

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While the elbow was in 90° flexion and full pronation, an assistant stabilized the brachium. While gentle traction was performed with one hand, reduction was achieved by pushing the olecranon tip in the direction of traction with the thumb of the other hand. It was observed that the elbow was stable and smooth and gliding joint motion was obtained within the 30–130° joint range of motion (ROM). After reduction, long-arm splint was applied at 90° flexion and in neutral rotation. Radiographs showed that concentric reduction was achieved (Fig. 2). Ability to flex the thumb to touch the forearm, hyperextension in the knee and contralateral elbow were detected. We observed these findings following reduction.

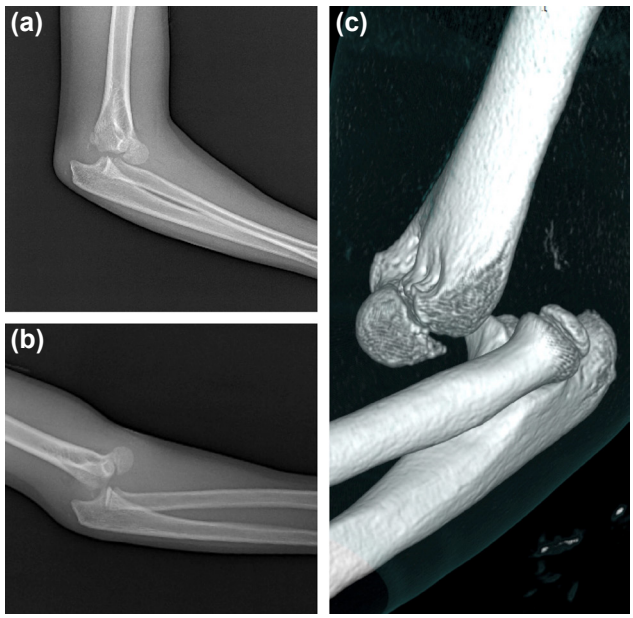

Figure 1. (a and b) Radiographs and **(c)** 3D computed tomographic scan of the left elbow revealed pure elbow dislocation.

Figure 2. (a) Anteroposterior and **(b)** lateral radiographs of the left elbow taken after closed reduction.

At the follow-up examination performed on the 10th day after the injury, it was recorded that the ROM was 40–110° in the flexion-extension arch, and the splint was removed to start strengthening the dynamic stabilizers of the elbow. In the second follow-up examination performed on the 6th week, the ROM was recorded as 10–130° in the flexion-extension arc and there was no complaint of pain. The patient was hence allowed to participate in sports competitions. In the 6th month follow-up examination, the ROM was 0–140° in the flexion-extension arch, supination 90° and pronation

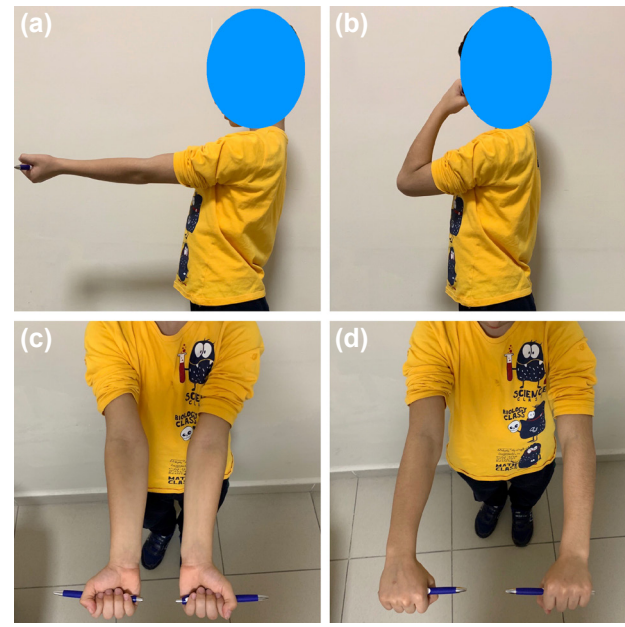

Figure 3. In the 6th month follow-up examination, photographs of the left elbow demonstrate that **(a and b)** range of motion was 0–140° in the flexion-extension arch, **(c)** supination 90° and **(d)** pronation 85°

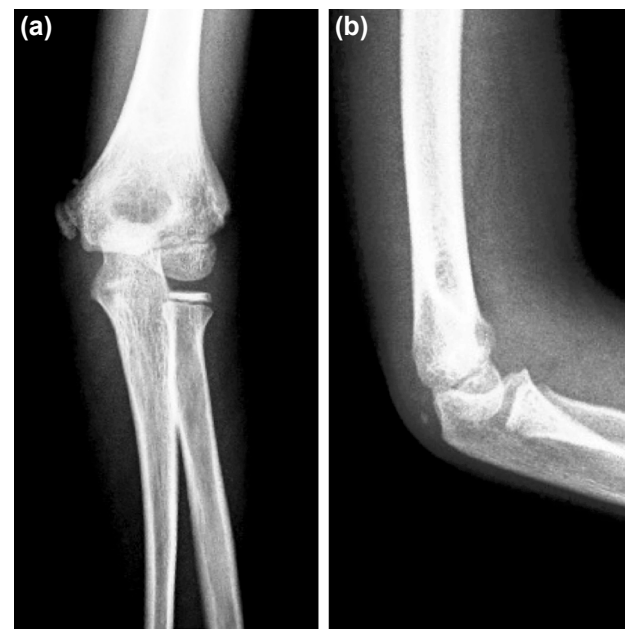

Figure 4. (a) Anteroposterior and **(b)** lateral radiographs at 6th month follow-up after closed reduction.

85° (Fig. 3). There was no recurrence at the end of the 6th month, and no residual instability or heterotopic ossification was observed (Fig. 4).

DISCUSSION

Because the patient is a licensed pediatric wrester, it was proper to evaluate the case within the context of current pediatric wrestling injuries literature. However, there was insufficient information in the literature on the incidence of pediatric wrestling injuries. Hoffman and Powell[10] reported that the incidence of sports injuries in high school wrestlers was 7.6 injuries/1,000 athletic exposures, whereas this incidence was similarly reported by Pasque and Hewett[11] as 6 injuries/1,000 athletic exposures. In a systematic review evaluating the epidemiology of pediatric wrestling injuries between 1950 and 2005 and covering eight prospective or retrospective studies, the incidence of injury was also evaluated by region.[12] According to this review, elbow injuries accounted for 1.0–7.9% of all wrestling injuries. When ranked from most common to least, these injuries were listed as anterior capsule stretching, ulnar collateral ligament damage, and avulsion fractures; however, no pure elbow dislocation cases were reported.[12,13]

In the case series by Estwanik and Rovere[8] it was reported that elbow dislocations were serious injuries to wrestlers. The authors reported that four out of eight cases failed to return to sports during that season. Similarly, in their study in which injuries in wrestling were evaluated, Kiningham and Monseau[9] reported that elbow dislocation was a serious injury to wrestlers and they stated that it often led to the athlete missing the entire season. It was considered that impairment of the ligament integrity may be responsible for this situation. In the case with underlying hyperlaxity presented here, it was thought that the elbow dislocation might develop even if the ligaments are intact due to the ability of the ligaments to stretch above the physiological limits. The fact that there is no difference compared to the contralateral side in varus-valgus stress tests at 30° flexion after reduction also supports this assertion. Therefore, strengthening the dynamic stabilizers of the elbow was applied early as recommended by Morrey for the patient with generalized ligamentous laxity.[7] The athlete was able to return to the competitions in the 6th week.

Conclusion

To the best of our knowledge, pure elbow dislocation seen in a pediatric wrestler with hyperlaxity has not been previously reported in the literature. If this particular group is handled in conjunction with other cases of elbow dislocation without hyperlaxity, this may result in the athlete missing the entire season. Considering the excellent treatment result obtained in this case report, we believe that short-term splint immobilization and early strengthening of the dynamic stabilizers of the elbow can make it possible to return to sports 6 weeks after injury in pediatric wrestlers with hyperlaxity who sustain pure elbow dislocations.

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Informed Consent: Written informed consent was obtained from the patient's family for the publication of the case report and the accompanying images.

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OLGU SUNUMU - *ÖZ*

Altta yatan hiperlaksite varlığında çocuk güreşçide izole dirsek çıkığı: Müsabakalara dönüş için ideal süre nedir?

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Dirsek çıkığı yaralanmaları güreş sporunda çocuk sporcunun genellikle tüm sezonu kaçırmasına neden olabilecek düzeyde ciddi yaralanmalar olarak kabul edilir. Çocuk güreşçilerde dirsek çıkığı sonrası spora dönüşün 6–12 ay arasında olduğu bildirilmiştir. Bazı durumlarda, altta yatan hiperlaksitenin, herhangi bir ligament hasarı olmadan izole dirsek çıkığı oluşumunda önemli bir rolü olabilir. Bu yazıda, güreş müsabakası sırasında uzanmış elinin üzerine düştükten sonra izole dirsek çıkığı gelişen 10 yaşında erkek hasta sunuldu. Hastanın fizik muayene bulguları hiperlaksitenin varlığını göstermediğinden hasta kapalı redüksiyon, kısa süreli immobilizasyon ve dinamik stabilizatörlerin erken güçlendirilmesi ile tedavi edildi. Bu olgu sunumunun bulguları, bu spesifik hasta grubunda hiperlaksite varlığının saptanmasının çok önemli olduğunu, çünkü bu hasta grubunun hiperlaksitesi olmayan hastaların aksine yaralanmadan altı hafta sonra müsabakalara dönme potansiyeline sahip olduklarını göstermektedir.

Anahtar sözcükler: Çocuk güreşçi; hiperlaksite; izole dirsek çıkığı; müsabakalara dönüş; spora dönüş.

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