



ELSEVIER

ELBOW

Prevalence of posterior elbow problems in Japanese high school baseball players



Yoshikazu Kida, MD^{a,b,1}, Toru Morihara, MD^{b,1}, Ryuhei Furukawa, MD^b,
Tsuyoshi Sukenari, MD^b, Yoshihiro Kotoura, MD^b, Naoki Yoshioka, MD^b,
Tatsuya Hojo, MD^c, Ryo Oda, MD^b, Yuji Arai, MD^b, Koshiro Sawada, MD^d,
Hiroyoshi Fujiwara, MD^{b,*}, Toshikazu Kubo, MD^b

^aDepartment of Orthopaedic Surgery, Fukuchiyama City Hospital, Kyoto, Japan

^bDepartment of Orthopaedics, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Kyoto, Japan

^cFaculty of Health and Sports Science, Doshisha University, Kyoto, Japan

^dDepartment of Rehabilitation Medicine, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Kyoto, Japan

Background: Various posterior elbow problems cause posterior elbow pain among baseball players. We aimed to determine the prevalence and diagnoses associated with posterior elbow problems and post-treatment recovery time for returning to sports in Japanese high school baseball players when treated in the off-season.

Methods: A total of 576 Japanese high school baseball players who participated in baseball skill training camp during the off-season were enrolled in the study. The elbow of each player's throwing arm was assessed by use of a questionnaire and physical examination. Players with abnormal results were advised to visit the hospital. Players who visited the hospital were initially treated conservatively and underwent surgery if necessary. Retrospectively, players with positive physical examination results associated with posterior elbow pain, defined as olecranon tenderness and/or a positive elbow extension impingement test, were selected. Information about their position, elbow pain, physical examination results, diagnosis, treatment, and recovery time before returning to playing sports was assessed.

Results: Olecranon tenderness and/or positive elbow extension impingement test results were found in 76 players (13.2%). Of these, 33 agreed to visit the hospital for further diagnostic imaging and 25 players (75.8%) were diagnosed with posteromedial elbow impingement. By the next spring, 87.9% of players returned to sport, and 100% of players returned to sport before the next summer. The average recovery period was 77 ± 47 days.

Conclusion: Physical examinations related to posterior elbow injuries were positive in 13.2% of high school baseball players. The most common diagnosis for posterior elbow pain was posteromedial elbow impingement. All players returned to competitive sports activity levels within 77 ± 47 days.

Level of evidence: Level III; Cross-Sectional Design; Epidemiology Study

© 2016 Journal of Shoulder and Elbow Surgery Board of Trustees. All rights reserved.

Keywords: Baseball; elbow; posterior; posteromedial; impingement; sports; high school; throwing injury

This study was approved by the Ethical Review Board of Kyoto Prefectural University of Medicine (protocol No. C-1197).

*Reprint requests: Hiroyoshi Fujiwara, MD, Department of Orthopaedics, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Kawaramachi Hirokoji, Kamigyo-ku, Kyoto 602-8566, Japan.

E-mail address: fjwr@koto.kpu-m.ac.jp (H. Fujiwara).

¹These authors contributed equally to this work.

Pain in the posterior portion of the elbow could be caused by sports that require repetitive overhead motion such as baseball, tennis, football, and volleyball. Massive stress is applied on the posterior compartment of the elbow in these athletes. Pathologic conditions that cause posterior elbow pain have been documented by various authors; these include osteophyte formation, loose body formation, chondromalacia, and synovitis in the posterior ulnotrochlear articulation, which is comprehensively called *posteromedial elbow impingement* or *valgus extension overload*; triceps tendon pathology; olecranon stress fracture including delayed closure of the olecranon epiphyseal plate; and osteochondritis dissecans (OCD) of the humeral trochlea.^{7,14,15,21,25,27}

However, few studies have investigated the prevalence of posterior elbow injuries, and even fewer have targeted adolescent baseball players. Therefore, the prevalence of posterior elbow problems in high school baseball players is unknown.

High school baseball is one of the most popular sports in Japan, and the season continues from April to November. The National High School Baseball Championship is held in July and August, which determines the champion from over 4000 teams. Attending this annual summer tournament is critically important for Japanese high school baseball players, and no player wants to be on the disabled list, especially in this period. According to previous reports, posteromedial elbow impingement requires several weeks of conservative treatment or a 3- to 6-month period after surgical treatment for return to sports.^{5,9,27} Correspondingly, an olecranon stress fracture would require 3 to 8 months for conservative treatment and a 3- to 6-month postoperative period.^{6,15,20,23} Therefore, theoretically, it is better to start treatment in the early off-season for players with posterior elbow injury to return to play by the next baseball season. However, the actual rate and timing for returning to sports when they are treated in the off-season are unclear.

This study aimed to determine the prevalence of posterior elbow problems and physical examination results related to posterior elbow injuries in high school baseball players. The study also aimed to clarify the diagnosis associated with posterior elbow pain and to determine the amount of post-treatment recovery time needed to return to sports activity levels when treated in the off-season.

Methods

Since 2008, the Kyoto Prefecture High School Baseball Federation has asked us to perform off-season checkups to identify players who need medical treatment.¹¹ Baseball skill training camp, organized by the Kyoto Prefectural High School Baseball Federation, is held annually for all high school baseball clubs in Kyoto Prefecture during November. In principle, 4 regular players (pitcher, catcher, infielder, and outfielder) were gathered as the representatives from each team, and they learned and practiced baseball techniques on the baseball field. These players were actively playing at a competitive level. None of them had severe injuries that prevented them from playing. Medical screening mainly focusing on

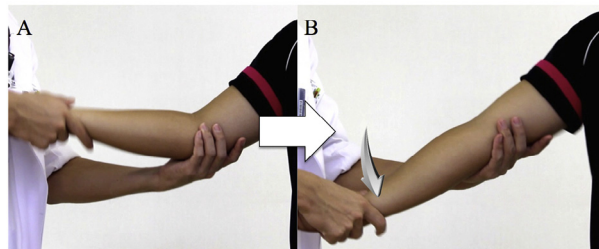


Figure 1 Elbow extension impingement test. (A) The elbow of the player's throwing arm was held in a relaxed and flexed position. (B) The elbow was forced into extension. When the pain evoked was significantly greater in the throwing arm than in the opposite arm, the test was interpreted as positive.

shoulder and elbow injuries was performed for all the players participating in this training camp.

The study participants were a total of 576 high school baseball players (mean age, 16.3 ± 1.2 years; age range, 15-17 years; all male players) participating in baseball skill training camp in 2011 and 2012. The Kyoto Prefectural High School Baseball Federation consists of 78 high school baseball teams. In 2011, 70 teams (89.7%) participated, and in 2012, 73 teams (93.6%) participated. The study population included 156 pitchers (27.1%), 134 catchers (23.3%), 143 infielders (24.8%), and 143 outfielders (24.8%).

First, a self-report questionnaire was used to obtain the player's age, position, and experience of present and past pain in the shoulder and elbow associated with throwing. When a player was aware of present elbow pain, he was further required to answer if the pain was felt on the medial side, lateral side, or posterior side of the elbow. Players were allowed to select multiple sites of pain if necessary.

Next, each player underwent a physical examination of the shoulder and elbow including the Neer test¹⁸; Hawkins test⁸; internal impingement test¹⁶; moving valgus stress test¹⁹; assessments of ulnar collateral ligament tenderness, radiohumeral joint tenderness, and olecranon tenderness; and elbow extension impingement test¹ (Fig. 1). The elbows of all players were evaluated by ultrasonography to detect osteochondral lesions in the humeral capitellum, medial epicondyle, and sublime tubercle. Two orthopedic surgeons experienced in sports medicine and sports-related elbow injuries confirmed these examination findings. Players in whom there was high clinical suspicion of shoulder or elbow injuries were advised to visit the hospital for further imaging studies and treatment. The criteria for this advice included problematic physical examination results associated with posterior elbow pain, defined as olecranon tenderness and/or a positive elbow extension impingement test.

When players visited our hospital, they underwent plain radiography as a routing imaging study and additionally underwent computed tomography (CT) and/or magnetic resonance imaging (MRI) when necessary to confirm the diagnosis. Patients were initially treated conservatively with rest, anti-inflammatory drugs, local steroid injections, and physical therapy. Physical therapists and athletic trainers treated not only the elbow but also the shoulder, scapulothoracic region, core, and hip to improve patients' mobility and stability and advised patients regarding correcting throwing motions if necessary. A gradual return to play was allowed after an interval throwing program. When the symptoms persisted despite conservative treatment, the players were treated surgically. No asymptomatic players received surgical treatment.

Download English Version:

<https://daneshyari.com/en/article/4072841>

Download Persian Version:

<https://daneshyari.com/article/4072841>

[Daneshyari.com](https://daneshyari.com)