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Spiral Fracture Of The Humerus During Arm Wrestling

Bilek Güreşi Sırasında Humerusun Spiral Kırığı

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ABSTRACT: Arm wrestling contests have become a common pub and even professional sport. Although arm-wrestling injuries are not common, several have been reported in the medical literature. In this case, spiral fracture of the humerus with large free fragments which had occurred during arm wrestling and occurring mechanism of injury was attracted attention. It is concluded that arm wrestling should not be considered a completely harmless sport and it appears appropriate to warn public and arm wrestler against arm wrestling.
Key Words: arm wrestling, humerus, spiral fracture, sport

ÖZET: Bilek güreşi müsabakaları halk arasında ve hatta profesyonel sporcular arasında yaygın bir şekilde yapılmaktadır. Bilek güreşi yaralanmaları çok sık olmamasına rağmen, tıbbi literatürde bir kaç yayın rapor edilmiştir. Bu vakada bilek güreşi sırasında meydana gelen, serbest kemik parçası olan humerusun spiral cisim kırığına ve travmanın oluş mekanizmasına dikkat çekildi. Bilek güreşinin tamamiyle zarasız bir spor olarak düşünülmemesi gerektiği ve bilek güreşine karşı bu sporla uğraşan profesyonel sporcuların ve halkın uyarılmasının uygun olduğu sonucuna varıldı.
Anahtar Kelimeler: bilek güreşi, humerus, spiral kırık, spor

INTRODUCTION

Arm wrestling contests have become a common pub and even professional sport (1). Arm wrestling should not be considered a totally benign sport (2). Although arm-wrestling injuries are not common, several have been reported in the medical literature (3). A fracture of the humerus due to arm wrestling was first reported in 1975 (4) but hasn't been reported since 2000.

Several cases of fractures of the medial epicondyle (5, 6) and the humeral shaft (7-10) sustained during arm wrestling were described. Nevertheless, spiral fractures of the humerus from arm wrestling are rare and may be confused with pathologic fractures (8). In this case, spiral fracture of the humerus with large free fragments which had occurred during arm wrestling and occurring mechanism of injury were attracted attention.

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CASE PRESENTATION

A 19-year-old right-hand-dominant man presented to our emergency department complaining of right arm pain and he heard a sudden crack during an arm wrestling. His medical history showed no previous injuries, fractures or other diseases. There was no history of his medication, weight loss, fever, night sweats, fatigue, insomnia, or bone pain. Because of the unusual mechanism of his injury and our unfamiliarity with it, the patient underwent an extensive workup to rule out metabolic bone disease and benign or malignant bone lesions. Levels of serum electrolytes, calcium, magnesium, phosphorus, calcitonin, parathyroid hormone, and thyroid function were all within normal limits.

Clinical examination revealed a localized swelling at the distal arm, a slightly asymmetric contour and severe pain on palpation. Active and passive motions of the right elbow joint were absent. There were no signs of any vascular or neural injury.

Radiological assessment (In anteroposterior and lateral projection) showed that he had sustained a displaced spiral fracture of the distal third of the humerus with large free fragments (Figure 1, 2). There was no radiographic evidence of pathologic bone.

Since the patient's arm had bulky muscles it was difficult to stabilize the fracture using a brace and we performed open reduction and internal fixa-

tion. The patient was followed up for one year. Now, motions of shoulder-elbow of patient are adequate and painless. (Figure 3).

Figure 1. Displaced spiral fracture of the distal third of the humerus with a large butterfly fragment (AP view)

Figure 2. Displaced spiral fracture of the distal third of the humerus (lateral view)

Figure 3. X-ray at postoperative one year follow-up.

DISCUSSION

Fractures of the humeral shaft in various throwing sports and wrestling have become a well-established clinical entity (11) and may occur at any age in anyone engaging in this type of sport (9). Fracture of the humerus following an arm wrestling in a young fit man is a rare occurrence (12).

This type of arm wrestling injury tends to occur when one arm wrestler tries to force the match in an effort to win or to change the tide of the contest. These results in the defending arm wrestler taking or being forced to take a posture in which his centre of gravity and therefore his body weight has shifted. As the offensive wrestler continues with the attack, the defender's internal rotator shoulder muscles suddenly and pas-

sively stretch and change from their maximally concentric contraction to an eccentric compensatory contraction, resulting in an intense rotational force with subsequent humeral fracture (12). These fractures have been attributed to a strong internal rotation force at the shoulder created by the subscapularis, pectoralis, and latissimus dorsi muscles and resisted by the external rotation force of an opponent or other counterforce. This results in transmission of stress through the distal arm and elbow sufficient to cause a fracture of the humerus (7).

The most illustrious injuries are those of the humeral shaft fracture, fracture-separation of the medial humeral epicondyle in teenagers, (9) and subscapularis tendon rupture (13). Among these, the most frequent is the humeral shaft fracture (9). But this case has been shown that spiral fracture of the humerus with large free fragments may occur during arm wrestling.

Fractures of the humerus caused by arm wrestling are often successfully treated with conservative treatment but rarely operative treatment may be required (2). A sharp fragment of the humerus can damage related structures such as the brachial artery (causing late development of ischemia) and the median or radial nerve (1). A displaced fracture should be managed by open reduction and internal fixation if there is a vascular or neural injury (3). In our case, there were no signs of any vascular or neural injury. But the patient's arm had bulky muscles it was difficult to stabilize the fracture using a brace and we performed open reduction and internal fixation and got excellent radiological and functional results.

Arm wrestling should not be considered a completely harmless sport. Participants and physicians should always be aware of possible musculoskeletal sprains and ruptures and even a spiral or comminuted humeral fracture with neural or vascular injury. It is concluded that it appears appropriate to warn public and arm wrestler against arm wrestling.

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