Case report

TURF TOE IN A TAEKWANDOO PLAYER: CASE REPORT

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ABSTRACT
Metatarsophalangeal joint injuries of great toe termed as ‘‘turf toe’’ can occur in many sportive activities. However, it has not been reported before in taekwondoo players. These injuries may result in significant morbidity. Turf toe injuries, which are mainly treated with conservative methods, occasionally require surgery. In this case report, we present a surgically treated turf toe in a taekwondoo player.

KEY WORDS: Turf toe, taekwondoo, treatment, surgery.

INTRODUCTION

Foot injuries occur in athletic population frequently and delay active participation in sporting events. They are ranked third among the sports injuries and reported to be 5 to 45% by Clanton et al. (1994) and Rodeo (1990). According to Bowers and Martin (1976) the definition of turf toe (TT) is: ‘injury of the great toe metatarsophalangeal (MTP) joint plantar capsuloligamentous complex’, which causes major morbidity by limiting physical activity and training in athletes. The term TT has been used for more specific diagnoses, such as first MTP joint sprain or strain, osteochondral fracture, sesamoiditis, sesamoid fracture, first metatarsal head contusion, first MTP joint dislocation, capsulitis and hallux limitus by physicians and trainers. TT has been divided into three grades by Clanton et al. (1986) in order to be useful as a guideline in planning the treatment and determining the time to be active again.

Major predisposing factors in the emergence of this injury are: hard and unyielding playing surfaces that lack the ability to absorb shock and flexible lightweight shoes that do not limit hyperextension of MTP joint. It has been reported that this type of injury occurs mostly in American football, tennis, gymnastic and wrestling (Coker et al., 1978; Jones and Rainer, 1999; Kubitz, 2003). To treat the TT, in general, conservative methods are used and on rare incidents surgery is indicated (Rodeo et al., 1990; Fahey, 1986; Mullis and Miller, 1980). Taekwondoo, which is defined as the philosophy of kicks and punches, is one of the leading Olympic sports in many countries. TT injury may occur in this sporting activity practiced with bare foot on artificial surfaces and where the MTP joint is forced into hyperextension. To date, TT injury has not been reported in taekwondoo players and in particular, it has rarely been treated with surgery in other cases.

CASE REPORT

A 19-year-old male taekwondoo player applied to our clinic in February 2002, complaining of pain and discomfort in the left foot great toe. The injury occurred as attempting to kick with the right foot in which the MTP joint was stressed in hyperextension and valgus position on left bare foot. The patient reported that he was subjected to different treatments for the last year, and the result was not satisfactory enough to resume sporting activities. After physical and radiological examinations, it was found that a
severe pain and noticeable posteromedial instability developed in great toe when MTP joint was forced into hyperextension under weight bearing (Figure 1 a-d). The patient was given conservative treatment with compressive bandage and non-steroid anti-inflammatory drugs and was asked not to participate in sporting activities. At the end of six months, there was no improvement. On the contrary, an edema was diagnosed around soft tissues of the first MTP joint by MRI, but no contusion in osseous structures (Figure 2). Since the pain and instability did not respond to conservative treatment, surgery was performed in November 2002. During surgery laxity in medial collateral ligament and in capsuloligamentous complex, and posteromedial instability in MTP joint were observed. During surgery T-shaped incision was performed on capsuloligamentous complex medially. Plantar part of capsuloligamentous complex was stitched to its superior part and the dorsal part on to the plantar part. In this way augmentation of capsule was achieved. Following the surgery compressive dressing was applied for three weeks, and the patient

Figure 1. Preop clinical and radiological appearance of the case. a, b) Radiological and clinical appearance of the foot without weight bearing. c, d) Radiological and clinical appearance of MTP joint instability formed by weight bearing.

Figure 2. On the preop MR imaging of the case fluid collection and edema are seen in the surrounding MCL foot I, MTP joint level and osseous structure appear intact.
Figure 3. Postop clinical and radiological appearance of the case. a) Radiological appearance of the foot with weight bearing. b) Clinical appearance of the foot with weight bearing. Clinical and radiological appearance of the foot after instability has been restored.

was allowed to practice partial weight bearing during this time. Subsequently, he was able to perform full weight bearing and total range of motion exercises. At the end of third month, on his physical examination, no pain was observed and adequate stability in the joint was confirmed, which allowed the patient to resume his exercises. The physical examination at the end of tenth month revealed that the patient had neither complaints nor symptoms, and therefore he was recommended to continue his sporting activities as he sees appropriate (Figure 3 a, b).

DISCUSSION

Foot injuries are one of the important problems that delay to restart training, especially among professional elite athletes. TT, which was accepted as the injury of the plantar capsuloligamentous complex in the MTP joint of great toe by American Orthopedic Foot and Ankle Society in 1990, may at a later stage lead to decrease in push off power and the formation of hallux rigidus, hallux valgus, arthrofibrosis and intraarticular free fragment (Coker et al. 1978; Coughlin and Karpman, 1990; Clanton and Ford, 1994; Watson et al., 2000).

Incidentally, successful treatment protocol may provide faster return to sport. In addition to standard radiographic methods, MR imaging techniques could be beneficial in grading the injury. MR investigation revealed a marked soft tissue edema in plantar surfaces, edema in flexor hallucis longus tendon, tear in plantar capsule and increased signal intensity in oblique head of adductor hallucis and flexor hallucis brevis, intact osseous structure (Tewers et al., 1994; Ashman et al., 2001). In the present study MRI of the patient who failed to return to sport despite a long conservative treatment period, revealed fluid collection and edema in medial collateral ligament (MCL) and no contusion in osseous structure.

TT injuries, which are generally treated with conservative methods, rarely require surgery. Clanton et al. (1986) reported that in 50% of 20 athletes with TT whom they monitored over five years, the symptoms were persistent. Aggressive treatment may be given subsequent to conservative treatment when chronic pain, limitations of movements and discomfort with exercise has developed. Repairing the capsule and plantar plate surgically, sesamoidectomy and excision of loose bodies, if there is any, are the methods those are recommended (Coker et al., 1978; Mullis and Miller 1980; Coughlin and Karpman, 1990; Graves et al.1991; Rodeo et al., 1993; Watson 2000; Title and Katchis, 2002).

Graves et al. (1991) reported four cases with plantar plate injury to the first MTP joint and proximal retraction of the sesamoids by the flexor hallucis brevis. After being treated conservatively, two of the patients returned to preinjury activities. One patient required sesamoidectomy for persistent pain and the final patient is still unable to return to
his preinjury job requiring standing and lifting heavy objects.

Coker et al. (1978) stated that the capsular tear is the main pathology in this type of injury, suggesting the need for surgical repair in chronic cases. Rodeo et al. (1990) reported that TT cases, who were treated with distal sesamoid excision and capsule repair returned to sporting activities without problems. Mullis and Miller (1980) reported that they did not receive any respond to conservative treatment and observed the tear off adductor tendon, lateral capsule and lateral collateral ligament in a basketball player and subsequently performed a late stage surgical repair, as the result of which the symptoms disappeared.

In our case, since there was no receding in pain and posteromedial instability by conservative treatment, subsequently capsular plication and augmentation were performed in capsule-ligamentous complex on medial side and the athlete managed to return to sporting activities by the end of the third month.

CONCLUSION

In a taekwondoo player, great toe MTP joint injury may occur when the joint is forced into hyperextension repeatedly if the exercise is being performed bare foot on hard and artificial surfaces. We are of the opinion that in those cases who have not responded to conservative treatment, surgical repair focused on the reconstruction of primary pathology should be taken into consideration as a choice of treatment.

REFERENCES


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KEY POINTS

- MTP joint injury may occur when the joint is forced into hyperextension repeatedly if the exercise is being performed bare foot on hard and artificial surfaces.
- Surgery should be taken into consideration as a choice of treatment of Turf Toe.

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