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Ankle Impingement In Athletes

Essay

Submitted For Partial Fulfillment

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بناء على موافقة الجامعة بتاريخ / / ٢٠٠ تم تشكيل لجنة الفحص والمناقشة للرسالة المذكورة أعلاه على النحو التالي :

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List of abbreviations

ATFL	anterior talo-fibular ligament
CFL	calcaneo-fibular ligament
ED	emergency department
M/F	male/ female
MCL	medial collateral ligament
LCL	lateral collateral ligament
US	ultrasonography
MR	magnetic resonance
PTFL	posterior talo-fibular ligament
CT	computed tomography
LTCL	lateral talo-calcaneal ligament
IL	interosseous ligament
CL	cervical ligament
IER	inferior extensor retinaculum
SER	superior extensor retinaculum
ROM	range of motion
MROM	maximal range of motion
FROM	free (or functional) range of motion
TCJ	talo-crural joint
STJ	sub-talar joint
AJC	ankle joint complex
OA	osteo-arthritis
PRT	peroneal reaction time
ATFC	anterior tibio-talar fascicles
AITFL	antero-inferior tibio-fibular ligament
AMI view	antero-medial impingement view
PAI	posterior ankle impingement
FHL	flexor hallucis longus
PTTL	posterior tibio-talar ligament
AP	antero-posterior
OCD	osteo-chondral defect
VAS	Visual analogue scale
RICE	rest, ice, compression, elevation
HA	Hyaluronic acid
PRP	platelet-rich plasma
NWB	non weight bearing
PWB	partial weight bearing
FWB	full weight bearing

Abstract

Persistent ankle pain in athletes is a common problem in this group of population whether on the professional or the amateur basis. It often follows ankle sprains or repetitive trauma and is often a manifestation of impingement. Impingement that echoes underlying pathologies as intra-articular fibrous bands, scars or bony spurs, can occur at many sites of preference. While anterolateral and posterior impingement represent the commonest of all, still medial, anteromedial and calcaneofibular impingements do occur. Impingement runs a somehow long course, however, unless adequately timed suspicion and well planned prevention are performed, the resultant pain and disability shall not be sufficiently relieved except via surgery. Recently, after the vast steps achieved in the field of arthroscopy, it's become the mainstay of operative intervention for such a morbidity, reinforced by evidence-based medicine.

Key word: Ankle- impingement- athletes- arthroscopy- rehabilitation- ankle pain- ankle sprain

Introduction

Impingement has been recently a more frequently identified cause of the so widely encountered complaint of ankle pain in the athletic group. It is due to chronic opposition and friction of intra-articular soft tissue that gradually gets inflamed. In the athletic population overuse and trauma are the responsible cause of ankle impingement.

Recent studies estimate that about 25% of athletic injuries are related to the ankle joint [1] and about 3% of ankle sprains are followed by the antero-lateral type impingement of the ankle. [2] Both ankle sprains and overuse injuries are frequently encountered in a wide spectrum of sports, specially football, basketball, ballet dancing, downhill running, professional diving, skiing and ice hockey. Several sites are identified, namely: antero-lateral, anterior, antero-medial, medial and posterior impingement.

In general, impingement incorporates a soft tissue component with or without a bony component (a spur). In football for example, a spur may form at the distal tibia or the talus due to either capsule stretching or more probably due to repetitive direct trauma [3].The soft tissue component may be in the form of intra-articular fibrous scars, cords or folds that can result from chronic hypertrophic synovitis or the dislocation of the anterior part of the tibio-fibular ligament [4]. Repetitive micro-trauma in the form of recurrent ankle sprains and instability or excessive hyper-plantar-flexion or dorsi-flexion (characteristic of certain sports as mentioned above) are always precipitating factors for the disease and the resultant pain. [3]

Various ligaments of the ankle joint are specifically involved during the development of the condition. Such ligaments have a major role in the stability of

the joint due to their mechanical and proprioceptive function and when checked, a vicious circle of instability, recurrent micro-trauma and impingement is established, and it proceeds towards a serious impairment of the athletic ankle and foot function. [5, 6, 7]

Therefore, adequate management of ankle sprains in the acute setting and the proper planned physiotherapy program are clearly becoming essential steps towards the prevention of further sprains, instability (that may reach up to 20%) and impingement [8]. However, when the situation of ankle impingement is fully established, the room for conservation is getting narrower as surgical management (in the form of arthroscopic debridement and spur resection) has recently become the primary treatment modality due to non-optimum results of conservative management in most cases. [9]

Following is a concise discussion of the various dimensions of the problem of impingement, its classical presentation in clinical practice, and the recent treatment modalities whether non-operative or surgical.

Epidemiology

All around the world, medical doctors and sports scientists were actively promoting regular physical exercises to gain health benefits and to prevent cardiovascular related disease. People nowadays are more eager in participating in sports and exercises for personal interest, leisure, relaxation, health and fitness purposes. However, in contrary to the promotion of the health benefits from sports participation, sports often cause injuries. [8]

A study in Sweden [8] reported that 17% of the 3,341 acute visits to a clinic due to accidents in a one-year prospective study were from sports. It was comparable to home accident (26%), work accident (19%) and was much higher than traffic accident (7%). In United Kingdom, there were 7.1% of the 2,432 new patients attending accident and emergency department in a 10-day period sustained trauma from sports. In North Ireland, for adolescent of age 11–18 who actively participated in sports, as much as 51% of the attendees sustained sports injuries. As the sports participation rate is becoming higher, the exposure to potential injury increased and thus the high incidence of sport injury. [8]

Impingement lesions are frequently seen in active people and are among the most commonly observed injuries in athletics with a reported incidence rate of 16% [10], and they follow 3% of ankle sprains [2]. Injuries to the ankle joint and foot were the most common injuries during the Olympics. Radiographs of the foot and ankle were the most frequently requested imaging examination, whereas MRI of the ankle was the second most requested MR examination [11]. Ankle was the most common injured body site in 24 of 70 included sports and is also the most common single type of sport-related trauma among all body sites and types. [8] Twenty-five

percent of athletic injuries are related to the ankle joint, and estimates indicate that about 7-37/1000 people seek emergent medical care for this injury. [1]

Acute ankle sprain accounts for approximately 300 000 patient attendances to UK emergency departments (EDs) every year [12], of which 42000 are severe [6], whereas in the USA they occur with an estimated frequency of one injury per 10 000 people per day, amounting to approximately 27 000 injuries each day. [12] In ballet dancers, the total injury incidence rate is 0.8/1000 dancing hours in both male and female dancers, with 76% affecting the lower extremities mostly ankle sprains. [13] In soccer players, the incidence rate of ankle sprains among overall injuries is 17-20 %. [14] The residual problems following a sprain included pain (30.2%), instability (20.4%), crepitus (18.3%), weakness (16.5%), stiffness (14.6%) and swelling (13.9%) [8]

All these figures reflect the likelihood of ankle impingement in most sports participants, and thus the great impact it causes on the performance of players and level of the game and eventually on the national income, specially when considering the expenses of the investigations and the operative management and the time spent away from the fields.