Case Report:

A case of Chronic Achilles tendinopathy

– incorporating a patient self management approach.

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ABSTRACT

A case of Chronic Achilles tendinopathy – incorporating a patient self management approach.

Achilles tendon is a well known anatomical site prone to disabling injury with chronic, debilitating impact on daily functioning and quality of life. Tendon ends are commonly retracted over time. A rehabilitation regime enabling consistent elongation by the patients is fundamental. This case highlights the importance of incorporating the Calf, Achilles Tendon Stretcher (a simple therapeutic aid), and a collaboration care approach to impact an early patient self-management care and consequently, improve the efficacy of the rehabilitation regime.

Achilles tendinopathy, Calf-Achilles Tendon Stretcher, Home device, Patient self-management
INTRODUCTION

Achilles tendon, at approximately two to six centimeters proximal to its insertion in the calcaneus, has long been known as an anatomical site which is prone to disabling injury. It is the site for common tendinous lesion occurring in 18 per 100,000 persons \(^{(1)}\), and occurs in active individuals regardless of age. It is estimated that Achilles tendinitis accounts for 6-17 percent of all walking and sport-related injuries \(^{(2)}\). Besides sports injuries, other accidental injuries like cuts via sharp household tools, penetrating injuries and road traffic accidents are contributing causes. The most common clinical diagnosis of Achilles overuse injuries is tendinopathy, where its basic etiology is multi-factorial \(^{(3)}\). The term tendinitis is used if degenerative tendinopathic changes are seen. These include an unorganized matrix, more fibroblasts and inflammatory cells, as well as increased vascularity \(^{(4)}\). Tendinosis refers to a chronic noninflammatory degenerative condition associated with overuse, and is characterized by a diffuse thickening of the tendon \(^{(5)}\). All these pathologies cause pain and disability, with the associated disruption of the normal gliding motion and loading characteristics of the Achilles tendon.

The Cochrane review for Achilles tendinitis (i.e. when tendon, associated paratendon or bursa are inflamed without degenerative changes), between the year 1966-2000, found nine trials (n= 697 patients) providing some evidence to support the role for oral nonsteroidal anti-inflammatory drugs (NSAIDs), with weak evidence for heel pads, heparin injection, and peritendinous steroid injections. Evidence showed that early functional therapy protocols showed promising outcomes \(^{(6,7)}\). Achilles tendinopathy have been reported as a condition which may be resistant to both conservative and surgical intervention, along with persistent symptoms \(^{(8)}\). In chronic cases of tendinopathy, we advocate the importance of a self-management approach involving a gentle continuous stretching within a functional rehabilitation regime incorporated
CASE REPORT

The patient is a 50 year old Chinese man presented with a painful right heel over time. He is an avid golf player and plays 18 holes once a week. His BMI is about 25 kg/m². In early 2009 he experienced pain over his right Achilles tendon when he walked into a hole (uneven ground) during a game of golf. He reported that the pain was sharp around the heel. He tried to continue the golf game but realized the injury was severe, and he limped to finish the last part of the game. Two weeks before that incident, he reported switching to two pairs of newly bought shoes - a walking shoe and the golf shoe which he wore during the accident. He stated that both shoes were rather tights and he did experience some degree of soreness over his ankle region after a week of usage. After the accident at the golf range, the pain gradually increased especially with uphill walks. He also complained of stiffness especially in the morning and after prolonged rest. He continues with his new shoes and reported he started to use a shoe horn as the shoes were tight.

When pain became unbearable and consistent, he consulted an orthopedic surgeon. His clinical examination showed tenderness on palpation, swelling and thickening over the Achilles tendon, and mild erythema along the lower one third of the right Achilles tendon. There was a limited range of ankle movement – he could plantar flex his foot without resistance but was not able to perform a toe rise. There was no crepitus when the tendon was pressed or when the affected ankle was moved. Pain was experienced when his tendon was pinched with the index and thumb, and pain was strongest at two cm from insertion of tendon. Thomson test (when patient was prone and the calf muscle was squeezed, plantar flexion was noted) was however not
positive\(^{(10)}\). Radiographs were taken at that time. Patient reported he was informed he may have a calcaneal spur observed from the radiographs. Patient was diagnosed with Achilles tendinopathy, prescribed NSAID and was referred for conservative therapy. He was prescribed relative rest and to stop playing golf for the time being. A night posterior splint with the foot at 90° was prescribed for the first 3 weeks, and a heel lift for his walking shoes was also provided to him by the occupational therapist. He attended outpatient physiotherapy once a week for over six months. However, pain persisted and especially after prolonged sitting or lying down, and he had to take frequent break during his walks. After almost six months of unrelieved symptoms with poor functional outcomes, the occupational therapist designed the Calf Achilles Tendon Stretcher (CATS) and introduced it into his daily activities. His night posterior splint was also adjusted (from 90 degree angle) to 20 degree plantar flexion. The aim of the CATS was to ensure that a constant stretching and regular exercise can be implemented and incorporated into patient’s daily routine for effective rehabilitation. The regime of continuous stretch was thought necessary since, the tendon ends normally would have retracted over time and thus needs to be elongated consistently. The patient was also provided with an understanding of the multifactorial causes and contributors of Achilles tendinopathy and assisted towards the goal setting for rehabilitation of his ankle problems. As the differential diagnoses was retrocalcaneal bursitis (possibly due to exertion from both pair of tight shoes, patient was persuaded to get a new ‘one-size’ larger walking shoe. He also started his 50 single-leg toes rises every morning before he gets out of bed, to build-up his Achilles tendon.

The CATS was designed with two features- i) a static version to enable the stretching regime to be incorporated into his daily routine - i) a dynamic version to allow ankle joint exercises. The CATS-dynamic allowed a graded eccentric and concentric phases of one-legged (partial to full weight bearing) ankle dorsal and plantar flexion exercises at home. The CATS-static provided rest to the affected foot at work. He continues using the heel lift (inserted into his
new, one-size bigger shoes). The CATS-static was then introduced to replace the standard stretches (performed by leaning against a wall with the heel on the floor) in a continuous approach by asking patient to rest his right foot during his activities of daily living like dining and reading, watching television and whilst working on the desk. The simple device designed by an occupational therapist with the patient, was aim at getting patients to self manage the gradual stretching of the Achilles tendon at work (with CATS static version) and at home (with CATS dynamic version). Patient performed three sets of 10 repetitions of eccentric exercise on the ankle boards. After three weeks of continuous use of CATS, he reported that he was 90 percent pain free with no joint limitations. The ultimate range of movement in his ankle was 55-70°. Two months after treatment, he reported marked improvement in his functional walking along with increased speed upon further reduction in pain. He has thus resumed his golf activities in full swing. With time, he gradually resumed his golf activities over the next few months. The patient reported qualitative progress in symptom management (pain, limited range, and swelling) and in his functional activities and was very satisfied with the use of CATS in his rehabilitation regime. The long term results in the form of performing previous activities were excellent. The patient still utilizes the CATS static at work occasionally and concurred that the preventive stretches can help reduce the probability of another injury at the golf range.

DISCUSSION

In this case study, the patient had to stop his golf games over several months, reported difficulty tailing his colleagues during lunch breaks, and the disruptions in many other activities had reduced his quality of living. Achilles tendinopathy have been showed to interfere markedly with patients daily activities. Research evidence showed 56 percent of competitive track and field athletes with Achilles tendonitis discontinued all sporting activities for a minimum of four weeks to promote healing. Untreated cases can turned into tendonosis and keep patients away from work and recreational activities. Complicating the poor recovery results is the fact that often the
differential diagnoses are possibly presence as well. In this case study, retro-calcaneal bursitis is a strong preceding condition to the tendon injury. Retro-calcaneal bursitis and associated Haglund deformity which typically are classified as more distal to mid-substance injury are often caused by stiff shoe\textsuperscript{(4)}. The effect is due to the inflammation from the compression (force from stiff shoe) of the Achilles tendon against the postero-superior calcaneal tuberosity. It is also not uncommon to see insertional Achilles tendinopathy within and around the bony attachment onto the calcaneus, and with degenerative and calcified changes\textsuperscript{(4)}. This is also possible in this patient as such pathology is commonly associated with aging processes. Furthermore, since recovery of injury to lower limb usually takes a long time, the typical and highly possible retraction of the tendon ends, warrants immediate and conscientious rehabilitation regimes.

This case study documented that recovery can be facilitated using a patient self-management approach\textsuperscript{(12)}. Our over-stretched health care services are struggling to cope with the demands of acute care. Thus, patients with longer term health conditions should be intervened with this care approach that encourages active participatory role from patients. In this case study, the poor outcome from rehabilitation over the lengthy nine months duration have aggravated towards a shortened and thickened Achilles tendon. A partnership care approach incorporating the simple device (the CATS) has resulted in maximum benefits for the patient. The goal of CATS was to reinforce a routine of graded, consistent and continuous stretching and self-initiated exercises. It allows lengthening of the Achilles tendon fibers gradually but consistently, as well as, strengthening the gastronemius and soleus muscles of the affected calf. Conservative treatment exercise, with a bias towards eccentric contractions has been shown to be promising\textsuperscript{(8, 13)}, and can be reinforced by incorporating the CATS into patients’ daily routine. Stretching the tissues
throughout the foot and calf helps to reduce strain and promote healing around the area. The range of motion obtained was similar to other reports in the literature (14). The equinus deformity (pronated ankle) improves with the gradual reduction of pain and the adapted shoe with a heel lift. Studies by Cook and colleagues (8) demonstrated that although tendon load is similar during the concentric and eccentric phase of ankle movement, the tendon vibrates at higher frequencies during the eccentric phase than during the concentric phases – which explain the mechanisms behind the effectiveness of eccentric exercises used in the treatment of Achilles tendinopathies. The incorporation of CATS into the patients’ activities of daily living increases the effectiveness of the rehabilitation phase. However, as the causes of Achilles tendinopathy can be multifactorial, the use of CATS with other modalities as well as shoe adaptation may be necessary and will vary from case to case.

This case-study demonstrates the need for a comprehensive round the clock rehabilitation regime using a patient self-management approach to manage a long standing problem of Achilles tendinopathy. The CATS- static provides regular stretching and the CATS dynamics provides the ankle exercises. The movement biomechanics between the eccentric and concentric phases of one-legged ankle dorsal and plantar flexion exercises, can be graded from partial to full weight bearing. The CATS provided a useful therapeutic rehabilitation aid for the management of Achilles tendinopathy/ tenodosis. It is also a useful aid for prevention of Achilles tendon injury, especially for ladies who are constantly in high heels leading to a higher risk for Achilles tendon injuries. Future comparative study using RCT is needed on the efficacy of CATS with Achilles tendinopathy to guide clinicians toward an evidence-based approach to patient self-management collaborative care.
REFERENCES


Re: APJLS Calls for Papers

Thursday, 5 August, 2010, 8:27 AM
From: "Bandit Chumworathayi" <bchumworathayi@gmail.com>
To: "Siew Yim Loh" siewyimloh@yahoo.com

Dear Dr Loh

Your manuscript has been formally accepted for publication in APJLS as only minor revisions were done. It is now in the publication process.

Best,

Bandit Chumworathayi, MD, PhD, FICS
Chief Editor Asia Pacific Journal of Life Sciences