Case Report
IASR Journal of Medical and Pharmaceutical Science
Website: https://iasrpublication.com/ijmps

Conservative Management of Femoroacetabular Impingement In Kickboxing Player: A Case Report

Alagappan Thiyagarajan[1*] Jaya Dharshini Elago[2] Hari Babu.L[3] Mohamed Nainar[4] Senthil P[5] Sugumar .M[6]
[1]Senior Sports Physiotherapist, Department Of Sports Medicine, Chettinad Academy Of Research And Education, Kelambakkam, Chennai, Tamilnadu, India
[2]Student- Final Year Physiotherapy- Acs College Of Physiotherapy Chennai
[3,4]Senior Physiotherapist, Department Of Physical Medicine And Rehablitation, Chettinad Academy Of Research And Education, Chennai
[5]Dean And Principal- Chettinad School Of Physiotherapy, Chettinad Academy Of Research And Education, Chennai
[6]Consultant Physiotherapist, Department Of Physical Medicine And Rehablitation, Chettinad Academy Of Research And Education, Chennai

A B S T R A C T

Femoroacetabular impingement is an unrecognized hip disorder ,if its left untreated, leads to premature hip osteoarthritis in young adults and decreases performance in sport activities. The purpose of this case report is to present a kickboxing player with pincer type femoroacetabular impingement (FAI) with acetabular labrum tear followed by repetitive overuse and its conservative managements.

CLINICAL PRESENTATION

A 22 years old male , recreational kickboxing player complains of onset of sharp pain in the anterior right hip, groin and gluteal region for the past 2 months, when at rest and also during activities like prolonged sitting ,climbing stairs and running . Pain gets provoked after sport activities ,and restricted flexion ROM with a click sound .

DIAGNOSIS AND INTERVENTIONS:

After investigation with clinical features ,history and physical examination the patient is diagnosed with pincer type femoroacetabular impingement in the right hip,and the patient is conservatively treated with manual therapy like mobilization technique and rehabilitation. Focused on Outcome measure ihot33

OUTCOME

Clinically important improvements were seen on all self-reported outcome measures International Hip Outcome Tool – 33, Numeric Pain Rating Scale, Patient Specific Functional Scale, and Global Rating of Change and visual analog scale to measure the intensity of pain.

CONCLUSION

In femoroacetabular impingement altered hip joint mechanics and repeated over use can exacerbate or contribute to acquired and congenital forms of symptomatic FAI and can be conservatively managed. So, practitioners managing this population should address sport-specific demands in manual therapy, rehabilitation and physical training, to enhance practical outcomes and therefore can prevent future injury..

Keywords: *Femoroacetabular impingement , sports injuries , hip pain , acetabular labral tear , kickboxing ,Manual therapy*

Corresponding Author
Alagappan Thiyagarajan
Senior Sports Physiotherapist, Department Of Sports Medicine, Chettinad Academy Of Research And Education, Kelambakkam, Chennai, Tamilnadu, India

INTRODUCTION

Femoroacetabular impingement (FAI) is a condition which occurs due to abnormal contact between the acetabular rim and proximal head of the femur ,which produces symptoms like hip and groin pain during mobility and causes intra-articular damages. Abnormal anatomy at the hip leads to altered mechanics and abnormal loading of the hip joint. The etiology of FAI is mostly idiopathic, but several factors contribute to the etiology of FAI [1] and some of the causes are due to repeated sporting activities causes recurrent impingement by the abnormal structure which leads to acetabular labral tears and damage to particular cartilage, resulting in osteoarthritis of the hip joint. [2] [3] FAI is more common in sports which involves the end range of movements of hip flexion, adduction, and internal rotation. Other causes such as

Slipped capital femoral epiphysis, Legg-Calvé-Perthes disease, femoral neck fractures. Due to abnormal bony growth.[4] There are three main types of FAI are cam, pincer, and a combination of both. In cam type is characterized by an abnormal aspherical portion of the proximal femur at the head-neck junction, which results in compression and shear forces to the labrum and acetabular rim during mobility. In pincer type there is abnormal anatomy of the acetabular rim ,when the femoral neck comes into contact ROM is limited and causes damage to the acetabular labrum. Mixed type FAI present with both cam and pincer deformities.[5] Cam type FAI is more common in male young sports population. Pincer type FAI is common in middle aged females.[6][7] Athletes whose perform rigorous sporting movements are more likely to experience impingement, especially if internal rotation of the hip and axial loading are frequent. In kickboxing , there are four phases , Preparation Phase, The Chamber Phase, The Extension Phase and the Recoil Phase.[8] The mechanism of repeated flexion, adduction, internal rotation at hip joint in extension and recoil phase which leads to repeated impingement between the abnormal bony structures of the hip and also causes damage to the acetabular labrum and it's therefore important to understand the pathomechanics of sport and must be implemented for the patient's care . Lack of early diagnosis and treatment can lead to premature degenerative changes in the hip joints of young adults.[9]So it is important for the clinician to be aware of the sport-specific movements and injury patterns to optimize patient management and to delay secondary degenerative conditions. The purpose of this case report is to describe a male kickboxing player with symptomatic cam-type FAI and subsequent labral tears With clinical presentation, and management options and also understanding the importance of sport-specific biomechanics to employ a thorough, non-surgical approach to aid in the treatment in FAI cases.

CASE REPORT

Clinical Presentation

A 22 year old male with a past medical history of clavicular fracture, open reduction internal plate fixation is done . He is a recreational kickboxing player. The patient complains with onset of sharp pain in the anterior right hip, groin and gluteal region for the past 2 months and pain gets aggravated while kickboxing and while doing activities like climbing stairs, squatting , running or after prolonged sitting and also present with the symptom of stiffness and inability to flex the hip and experiencing clicking sound at hip joint. The patient was not ready to undergo surgery and he was not previously treated with physical therapy and now his hip pain started to complicate activities of daily living, he felt that physical therapy would be much needed to continue his normal functional activities .

Clinical Findings

On examination, characteristic of pain is local and dull aching pain in the anterior hip, sharp and catching pain that radiates into the groin and gluteal region . Pain was rated 8/10 on visual analog scale. Initial orthopedics assessment such as on observation there is no swelling present and on palpating bony prominences the patient had pain on the anterior region of the hip. On physical examination - restricted hip range of motion is measured with a universal goniometer in supine, lying position, limited hip flexion (90 degrees), especially with internal rotation is noted ,and restricted external rotation, hip adductors and abductors ROM is normal. The FABER test (flexion, abduction, external rotation) was positive and elicited symptomatic pain in the affected right hip . The FADIR test (flexion-adduction-internal rotation) was positive and the patient reproduces the symptom of pain in the groin and the hip region with click sound .Resisted straight leg raise provokes the pain in hip region. GAIT appears to be normal.

DIAGNOSIS

Patient has been clinically diagnosed with pincer type femoroacetabular impingement (FAI) with acetabular labral tear and the patient's goal is to relieve his hip pain and to improve his functional activities.

INTERVENTION

Rehabilitation interventions includes patient education, activity modification, limitation of aggravating factors, performance of an individualized physical therapy protocol, and performance of a home exercise program, have been shown to decrease pain and improve function in FAI. According to the patient's goal and clinical presentation, conservative approach has been performed with modification of provocative activities (ie, avoiding the combination of flexion, adduction, and internal rotation of the hip) , use of anti inflammatory drugs and do not perform excessive physical activity, safer range of movements are performed. Patient is advised to use icing at hip and groin region for the duration of 10 to 15 minutes for 2-3 times per day to reduce the pain. The treatment session is 1–2 times per alternative week over a 12-week duration. Soft tissue release technique has been performed. Hip capsule distraction and release was performed to the affected right hip using the Mulligan Mobilizations with Movement (MWM) concept. Rehabilitation exercises were taught to increase strength, muscle coordination ,balance and to maintain flexibility. After a week resistance exercises were performed using theraband .It has 4 phases for the duration 12 weeks, the following rehabilitation protocol are,

PHASE	EXERCISE	REPS
Phase 1 0-2 WEEKS	Stretches : ● Anterior hip capsule stretching / hip extension ● Butterfly stretching ● Eccentric hamstring stretch ● Cross leg stretch Strengthening: ● Pelvic bridging ● Clamshell ● Side lying abduction ● Knee flexion & extension ● Bird dog ● Prone knee curl ● Quadruped rocking for hip flexion ● Trunk rotation	15 SEC HOLD *3 REPS 15 REPS *2 SETS
Phase 2 2-4 weeks	● Strengthening using thera band ● Pelvic bridging: double, single ● Standing hip extension, abduction ● TA activation ● Equal weight bearing: forward/backward and side to side.	15 REPS *2 SETS 10 SEC HOLD *3 REPS
Phase 3 4-8weeks	● Single leg weight bearing ● Side plank hold and progress to dynamic plank ● Prone plank and progress to dynamic ● Crunches ● Mini Side lunge ¼ - ½ range ● Mini Forward lunge ¼ - ½ range ● Wall squat ● Side to side walk	10 SECS HOLD *3 REPS 15 REPS *2 SETS
Phase 4 8-12 weeks	● Strengthening using weights ● Squat ● Forward lunge ● Side lunge ● Step up and down ● Star balance exercise	15 REPS *2 SETS

Although the underlying hip morphology and acetabular labral tears are irreversible with conservative care, addressing these biomechanical limitations with a patient-centred approach will contribute to the integrity and performance of the hip and lumbopelvic joints.

OUTCOME MEASURES

Clinically used outcome measure to check the progression of the condition and effectiveness of conservative treatment, pre and post assess are done using visual analog scale which is use to measure the intensity of pain and The international Hip Outcome Tool-33 (iHOT-33) is a 33-item self administered outcome measure based on a Visual Analogue Scale response format designed for active and young population with hip pathology. It consists of four sections including: symptoms and functional limitations, sports function and recreational activities, job related concerns, and social, emotional and lifestyle concerns and 33 questions each use a visual analog scale to quantify the individuals function ,with 'significantly impaired' on the far left and 'no problems at all' on the far right where the highest score of 100 represents full function. Its validity is (correlation coefficient = 0.81) and reliability (ICC = 0.78, Cronbach α = .99).

OUTCOME MEASURE	PRE TEST	POST TEST
VAS	8/10	3/10
IHOT-33	38	80

DISCUSSION

The prevalence of FAI has vary according to age, gender, and the type of activities which they performs.[10] FAI is reported with an prevalence of 24% to 67% in asymptomatic athletes.[11][12] FAI has a higher incidence in athletic populations compared to non-athletic populations. Patients are usually physically active and are involved in sports activities which involve movements of extreme ROM, particularly repetitive hip hyper flexion, hyperextension, and internal and external rotation. [13] FAI could be a condition that has two distinctive biomechanical categories: cam and pincer impingement during which the cam-type deformity accounts for about two-thirds to three-quarters of all FAI cases, whereas the pincer-type deformity accounts for the remaining one-quarter of cases. [14] FAI induces cartilage or acetabular labrum lesion, and ultimately may lead to osteoarthritis. FAI results in acetabular cartilage and also the labrum; the pattern of injury depends upon the shape of the hip[15] Patients with FAI experience a gradual onset of intermittent groin pain and also refer to the lower back, gluteal region. [16] Kickboxing consists of four phases The Recoil phase (69%) constituted the majority of the kick followed by the Chamber (14%), Extension (11%) and Preparation (6%) phases. [8] When analysing the movement during kickboxing which requires forceful flexion, adduction and internal rotation due to this repeated pattern of movements which contribute to aggravated the impingement and the symptoms of the abnormally formed acetabulam . Physical examination and a detailed history are mostly helpful in the diagnosis of FAI but the examinations are poor to find the exact nature of the disorder.[17] According to Byrd, identifying a hip joint problem through clinical assessment can be 98% reliable [18]. Study shows that the anterior impingement test was positive in 99% of patients with radiographic confirmed FAI. FAI can be treated with both conservative and surgical methods, but it can be initially treated with conservative management approach. [19] Three recent publications have reported that conservative management is successful. [20] [21] [22] and also had positive results in patients with mild FAI[20] . Conservative treatment improves in function and symptoms of FAI. Conservative treatment is mainly palliative but the underlying actual morphology of bone cannot be corrected . Therefore patients should be managed by avoiding excessive repeated activities which trigger or provoke the symptoms . This study is unique as there are few case reports have been made in conservative management of femoroacetabular impingement condition and also progression has been seen with this rehabilitation.

CONCLUSION

Femoroacetabular impingement is an abnormal mechanism between the femoral head-neck junction and the acetabulum rim, which can lead to pain and intra-articular damage. Several factors may contribute to the etiology of FAI, recent evidence shows that acquired changes from sport demands over time may be a contributing factor. It's important to analyze the biomechanics of the sport to prevent FAI from significant long-term consequences. Early diagnosis of FAI is important to joint preservation, pain relief and restoration of function, and may improve quality of life in patient. so Conservative management must be multimodal approach and also a first line of treatment for the FAI cases

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