

HOFFA'S SYNDROME OR FAT PAD IMPINGEMENT SYNDROME – A CASE SERIES

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Abstract The fat pad provides extra cushioning for your tendon and knee cap from pressure or direct impact. Hoffa's syndrome (HS) is a condition that is characterized by traumatic and inflammatory changes occurring in the infrapatellar fat pad in Young Athletes, which may lead to Pain, swelling, and Restricted motion of the knee. In this case series, we have presented three cases of HS which were treated integrated by the orthopaedical, physical therapist, and clinical psychologist successfully.

1. Introduction

Infrapatellar Fat Pad (IFP) is a common anatomical source of Anterior Knee Pain, particularly in a rare condition called Hoffa's syndrome (HS) or fat pad syndrome shortly known as Hoffitis. This condition was first reported by Albert Hoffa in 1904 and hence named after him. (Larbi et al, 2014). The fat pad is a small amount of fat located beneath and to the sides of your patella tendon. When you straighten your knee, you will squeeze the fat pad and you will see two small (or sometimes large) mounds just below your kneecap. The fat pad provides extra cushioning for your tendon and knee cap from pressure or direct impact. This condition is characterized by traumatic and inflammatory changes occurring in the infrapatellar fat pad in Young Athletes, which may lead to Pain, swelling, and Restricted motion of the knee. It thus impacts many aspects of daily life. Hypertrophy of the fat pad may cause it to become trapped between the tibia and femur when the flexed knee is extended suddenly. Eventually, fibrosis may ensue. On MR images, acute findings indicate the presence of fluid and chronic findings resembles those of scarring after knee Arthroscopy. Physical therapy plays an important role in the conservative management of Infrapatellar fat pad syndrome, with treatment frequently advocated for pain control and muscle strengthening. Here we have

presented three cases of HS and the specific treatment strategy. (Maurel et al, 2010, Wickham et al, 2003 and Jacobson et al, 1997)



Figure 1 MRI of the knee joint showing HS (Adopted from A. et al, 2014)

2. Case description

Case 1

A 30-year-old male car mechanic consulted for anterior knee pain lasting for many months. He reported that the pain was induced onset during palpation of the medial and lateral edges of the patellar ligament during extension (Hoffa's test). Hoffa's test carried out with the patient in the supine position with hip and knee flexed to 90° consists of eliciting pain on palpation of the lateral and medial edges of the patellar ligament during knee extension. Plain radiographs revealed no particular abnormality and hence he went for a higher resolution MRI, which revealed a diffuse edema signal (hyposignal on T1-weighted images and hyper signal on PD fat sat sequences) within the Hoffa fat. The diagnosis of Hoffa disease was made from this MRI. The pain regressed after conservative treatment with physiotherapy and oral nonsteroidal anti-inflammatory drugs (NSAIDs).

Case 2

A 34-year-old female former through ball player presented with chronic anterior knee pain. Radiography detected enthesopathy of the extensor apparatus. MRI showed an edematous signal abnormality (hyposignal on T1-WIs and hyper signal on DPFS-WIs) in Hoffa's fat pad indicating inflammation of the latter. Symptoms were improved by stopping sport jumping, symptomatic treatment based on NSAIDs, and physical therapy to strengthen the quadriceps.

Case 3

A 42-year-old maid consulted an orthopedic specialist for bilateral anterior knee pain lasting for several weeks. This knee pain was worsened by climbing or descending stairs. MRI found edematous infiltration of the Hoffa fat pad. The pain was relieved by symptomatic treatment predominantly through physiotherapy.

2.1 Intervention strategy

All three patients were consulted by an orthopaedical who decided against surgical correction owing to less severity and better scope for conservative management. Conservative treatment is proposed as first-line therapy based on ice, physiotherapy (strengthening of the quadriceps and particularly the vastus medialis muscle) and oral NSAIDs associated with different degrees of immobilization (Z Duri et al, 1996) The main intervention was the use of non-steroidal anti-inflammatory drugs to reduce acute pain which resulted in a congenial mindset and physical condition to kick start the physical therapy sessions. The physical therapy session started with pain counseling based on the bio-psycho-social models focusing more on initial rest but followed by activity promotion and participation encouragement in social and familial events. The behavioral modification was emphasized as the primary tool to counter the pain which was mostly presented with central sensitization and pain catastrophizing. The initial goal of treatment was to reduce swelling, and pain, increase circulation and facilitate the healing process using cryotherapy and ultrasound. The patient is comfortably positioned in a supine lying and the painful area is massaged with an ice cube in a circular manner for 8 minutes prior to the exercise program. The patient is comfortably positioned in a supine lying and the painful area is insonated with therapeutic ultrasound using the aquaponic gel as the conducting medium. This phase of care lasted 2 weeks. After 2 weeks of treatment strengthening of the involved musculature was initiated. strength training consisted of closed kinetic chain floor and Swiss gym ball exercises designed to strengthen the thigh, buttock, and trunk muscles. The patient was started with bridging-type exercises on the floor and instructed to work up to 15 repetitions per exercise and perform 2 sets of each exercise. Halfway through the strength training phase stretching exercise was initiated. Stretching of the involved musculature was initiated, as well as a home stretching program. Emphasis was placed on stretching the hamstring, quadriceps, iliopsoas, gastrocnemius, and soleus. This phase of care lasted 2 weeks (from day 15-24). After 4 weeks of treatment, proprioceptive training was initiated to effect CNS activation in the lower extremity, especially in the quadriceps. The proprioceptive exercise included the use of a wobble board improves the proprioception (joint

position sense) in the lower extremity. This phase of care lasted 2 weeks. The patient was taught this exercise in the clinic and instructed daily to perform it at home. Patients undergoing treatment were advised to be on rest. Patient is instructed to apply cryotherapy for minutes once a day at home.

Not to do exerting activity using the affected knee during the study period. A self-stretching exercise program should be continued during the study period once a day at home. The patients upon completion of the 6 weeks rehabilitation program, were asymptomatic with the activities of daily living. The patients responded very well to the intervention and were extremely pleased with the outcome. At the end of the program, the patient indicated that they wanted to continue with a strength training program and was instructed to join a health club. The patients indicated that they still continue to work on strength, stretching, and proprioceptive training with an athletic trainer. More than likely this work has contributed to the long-term stability of their condition and through pain counseling and behavioral modification therapy they were confident to manage pain even if it occurs later on.

3. Discussion

The knee joint is an important structural and functional component in our body apart from being the largest joint in our body. Fat pad impingement syndrome has been reported as a common condition around the knee joint, which affects functional activity. Being the commonest condition affecting the lower extremity, it is being frequently neglected and treated as a common anterior knee pain syndrome without considering the significance that is closely related to the synovium of the knee joint and therefore the importance of proper and full rehabilitation program is widely ignored and the treatment is centered only in reducing the pain and ignoring the other component of rehabilitation programs such as stretching the muscles acting on the joint, strength training, proprioceptive training, and functional activity training. So the need for the study arises to focus on the complete rehabilitation program in reducing pain, improving the flexibility and the strength of the muscle acting on the joint, improving the proprioception of the knee joint and improving the functional activities involving the lower extremity by suitable physiotherapy modalities and exercise program. There is good evidence in the literature to suggest the use of closed kinetic chain strength training exercises in the rehabilitation of the infrapatellar fat pad syndrome. In comparing open and closed kinetic chain exercises, maximal VMO activation and greatest VMO muscle contraction intensity were

found at 60 degrees knee flexion in the closed kinetic chain exercise group. In addition, closed kinetic chain exercises stimulate normal physiological and biomechanical functions, create little shear stress across injured or healing joints and reproduce proprioceptive stimuli.

Strength training incorporated the use of floor and swiss gym ball exercise that emphasize bridge and squatting type exercise of all exercises, the squat, by far has the greatest effect on strength development in the lower extremities. Evidence suggests that there is greater muscle activity and knee force in the squat when compared with another similar exercise. This implies that the squat may be more effective in muscle development, but should be used cautiously with knee disorders, especially at greater knee flexion angles. Because all forces increased with knee flexion, training within the functional 0-50 degrees range may be efficacious for those whose goal is to minimize knee forces. The squat does not compromise knee stability and can enhance stability if performed correctly. The squat can be effective in developing hip, knee, and ankle musculature because moderate to high quadriceps, hamstring and gastrocnemius activity are produced during the squat. Still another study finds that there is more activation of the VMO than the VL at 40 degrees of semi-squat with the hip medially rotated by 30 degrees, and this has great implications for training the VMO in patients with infrapatellar fat pad syndrome.

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