

Case Report

PHYSIOTHERAPY APPROACH FOR MANAGEMENT OF PATELLO-FEMORAL PAIN SYNDROME

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ABSTRACT

Atrophy of the vastus medialis obliquus (VMO) is a common clinical finding in PFPS patients. As it is believed that VMO helps to hold the patella in position by applying a medial force to counteract the lateral pull of the larger vastuslateralis (VL) muscle. The suggestion is that where muscular imbalance occurs, the supposedly stronger pull of the lateral structures will create the lateral tracking of the patella which is thought to play a key role in patellofemoral pain syndrome (PFPS).

This case report has shown that specifically targeted physiotherapy protocol has promising and encouraging role in management of PFPS and in correction of patellar maltracking.

Key words: PFPS, VMO, Patellar maltracking anterior knee pain.

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INTRODUCTION

The term anterior knee pain refers to pain within the anterior aspect of the knee including chondromalacia patellae, intra-articular patellar chondropathy, patellar arthralgia, runner's knee, jumper's knee and possible referred pain from the hip or the saphenous nerve. Patients with a clinical presentation of anterior knee pain could be diagnosed with PFPS (Patellofemoral Pain Syndrome), excluding those patients with anterior knee pain resulting from intra-articular pathologies, patellar tendinopathy, peripatellar bursitis, plica syndrome, Sindin Larsen Johanson's and OshgoodSchlatter's lesions, Hoffa's disease and other rare pathologies.

The term patellofemoral (PF) seems appropriate, as no distinction can be made as to which specific structure of the patella and femur is affected. Pain represents the symptom that the

majority of patients experiences, while a feeling of instability is another symptom. However, PFPS patients also report symptoms other than pain or instability. Therefore, it seems appropriate to use the word 'syndrome' [1].

The syndrome is associated with pain in the anterior aspect of the knee, including the patella and the surrounding retinaculum, but depending on the reference sources, does not typically involve tibial-femoral or peripatellar structures [2]. The most prevalent symptom in PFPS is a diffuse aching pain usually located retropat-ellarly [3]. Activities which increases the patellar compression forces, such as prolonged knee flexion while sitting, stair climbing or squatting often aggravate the pain [4,5].

Atrophy of the vastusmedialisobliquus (VMO) is a common clinical finding in PFPS patients. If this atrophy is massive, it can easily be observed

clinically and measured by thigh circumference measures 2–3 cm proximal to the patella. In some PFPS patients, the VMO atrophy is less visually detectable, and can only be observed during quadriceps contraction. Clinical examination will reveal that these patients are not able to generate a firm contraction of the VMO while contracting their quadriceps muscle. As it is believed that VMO helps to hold the patella in position by applying a medial force to counteract the lateral pull of the larger vastuslateralis (VL) muscle [4]. The suggestion is that where muscular imbalance occurs, the supposedly stronger pull of the lateral structures will create the lateral tracking of the patella which is thought to play a key role in patellofemoral pain syndrome (PFPS).

CASE HISTORY

A 32 year old female with complaint of pain over anterior aspect of knee since 3 month presented to our outpatient department. Specific complaint was severe pain while stair climbing, she had not reported any history of knee trauma or any significant medical history, further she reported that she is involved in desk job 6-8 hrs. daily. She had been taking pain relieving medication when her pain became worse.

Examination and evaluation: On examination there was tenderness over infrapatellar margin medial side of left knee. Knee ROM both active and passive were within normal limit, marked loss of quadriceps muscle bulk of left side were noted as compared to right side, palpation revealed marked atrophy of vastus medialis obliquus muscle bulk.

Specific test

Patellar Grind test: Patellar grind test was done to assess decreased space between patellofemoral compartment.



Fig. 1: Showing the patellar grind test.

(While the patient is in the supine position with the knee extended, the examiner displaces the patella inferiorly into the trochlear groove (pictured). The patient is then asked to contract the quadriceps while the examiner continues to palpate the patella and provides gentle resistance to superior movement of the patella. The test is positive if pain is produced, although comparison to the contralateral knee is needed to interpret the result.)

Fig. 2: Showing patient position while taking merchant's view radiograph.



Fig. 3: Showing patellar tilt angle on merchant's view radiograph.



Patellar tilt angle: The tilt angle is defined as the angle subtended by a line joining the medial and lateral edges of the patella and a horizontal line across. To measure this angle we should have a Merchant's view radiograph. The radiograph (Merchant's view) is taken with the foot pointing up, the lower edge of the film at right angle to the ground, and the knee at 30 degree of flexion [9]. (Fig. 2)

Pain was assessed using **VAS** while two functional context.

- a. Severity of pain after activity
- b. Severity of pain while stair climbing up

Intervention given: Treatment protocol was targeted to facilitate and strengthen inhibited VMO, and stretch tighten structure which probably contributes in lateral tilt of patella. Patient received therapy for 8 weeks 6 days a week.

- 1) Isolated Vastus Medialis Obliquus muscle (VMO) strengthening based on progressive resistance training principle. (Fig. 4)

- 2) Knee stabilization exercises using thera band. (Fig. 5)
- 3) IT band stretching (Fig. 6)
- 4) Lateral retinacula stretch (Fig. 7)

Fig. 4: Isolated VMO strengthening.



(Patient was made lie supine on bed, a small bolster was placed under knee and patient was asked to push bolster down and raise the head up. It was assured that there was no accessory trick contraction of gluteal and trunk muscle.)

Fig. 5: Knee stabilization exercises using theraband.



(Patient was made standing a theraband was placed at back of knee, therapist pushing anteriorly.)

Fig. 6: IT band stretching.



(Patient made side lying on the edge of bed right leg was flexed at knee and hip for stabilization, physiotherapist stabilized the pelvis with one hand, hold the left leg with other hand abduct the hip than extend followed by adduction at hip and extension of knee passively.)

Fig. 7: Showing lateral retinacula stretch.



(Patient was made supine quadriceps muscle relaxed, therapist palpated lateral aspect of patella and pushed medially with thumb to stretch the retinacula.)

5) Proprioceptive training on trampoline (Fig. 8)

Fig. 8: Proprioceptive training.



Follow-up and Results:

After 8 weeks of intervention patient was assessed for pain using VAS, patellar grind test was used to assess patellofemoral compartment space and patellar tilt angle was assessed on patients post intervention radiograph.

Pain after activity score on VAS was decreased from VAS-8 to VAS- 3, pain while stair climbing score was decreased from VAS-9 to VAS-0, patellar grind test was negative. Patellar tilt angle was decreased from 27 degree to 12 degree (see picture 9). The observation are summarized in table 1 (see below)

Fig. 9: Comparison of pre and post treatment radiography showing correction of patellar tilt angle.

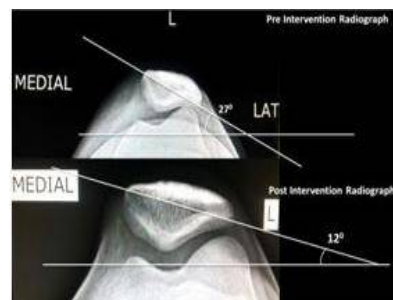


Table 1: Showing the score of pre & post intervention of assessment.

		At 0 Week	After 8 Weeks
VAS	After activity	8	0
	While stair climbing	9	3
Grind Test		Positive	Negative
Patellar Tilt Angle		27°	12°

DISCUSSION

PFPS or Anterior knee pain (pain in front of the knee) is the most common knee injury among people of adolescents and young adults, in both athletic and non-athletic population. Anterior knee pain usually develops gradually due to the repetitive motion of the patella (knee cap) sliding up and down, rather than due to a single, sudden injury. This occurs most often in sports requiring a great deal of running and jumping [6].

Wilk et al suggested that in excessive lateral pressure syndrome, “the most critical finding on physical examination is that the patella is tilted laterally, and there is excessive tightness of the lateral retinacular structures when compared with the medial side” [7] this research suggests us that if we stretch the tight structure and strengthen the weak structure can reverse patellar misalignment [8].

Limitation: Although this report has shown, promising results but has its own methodological limitations. This report gives us a strong background for vigorous research on this subject matter using appropriate.

CONCLUSION

This retrospective case report suggested that specifically targeted physiotherapy protocol will be beneficial in management of patellofemoral pain due to patellar maltracking.

Conflicts of interest: None

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