A case study on patellar gliding decreases knee pain in osteoarthritic patient

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ABSTRACT:

Background: Age-related changes are linked to cartilage degradation. Lower limb, pelvic, and knee joint malalignment and instability are brought on by damage to the patellofemoral joint cartilage. Thus, patellofemoral pain syndrome [PFPS] is followed by patellar maltracking and muscle imbalances. The purpose of this study was to determine how patellar gliding affects the treatment of patellofemoral pain syndrome.

Method: This study includes a single instance. The patellar gliding technique was used to treat her. The patellar structures became much more flexible as a result, which improved the patient's pain relief.

Results: After receiving treatment, the female patient's condition improved more. The numerical pain rating scale's (NPRS) pain score was lowered to zero. Now patient can perform activities of daily living (ADLs) without pain.

In conclusion, this approach demonstrated greater efficacy in treating PFPS patients. Consequently, it may be examined throughout a sizable population in the future to enhance the functional status of individuals with osteoarthritis.

KEY WORDS: Knee osteoarthritis, optimal/ideal stress, patellar gliding, knee pain, patellofemoral pain syndrome [PFPS]

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INTRODUCTION:

The result of patellofemoral arthritis is deterioration to the cartilage in the trochlear and patellar grooves, which causes patellofemoral pain syndrome. Research has shown that cartilage degradation is never recoverable. Therefore, this idea combined with the patellofemoral joint's biomechanical intricacy makes the issue extremely difficult to address. [1] Patellofemoral and knee joint instability is brought on by a change in soft tissue texture, which results in painful joints. Further instability of the knee joint may lead to malalignment of the lower limbs. An excessive amount of compressive force across the joint is the cause of patellofemoral discomfort. A thorough treatment approach will therefore include biomechanical limitations and soft tissue flexibility. [2]

The main side effect of PFPS in younger girls who do not have any structural abnormalities is knee pain. In addition to knee joint stiffness, PFPS can cause patellar maltracking, quadriceps, hamstring, and iliotibial tightness.[3] The knee joint under consideration's surrounding muscles weaken as a result of pain. Therefore, PFPS is mostly caused by muscle imbalance. Clinical features include soreness behind and around the patella that worsens as one walks, squats, or climbs stairs. [4] Retro patellar pain syndromes and anterior knee discomfort are other names for PFPS. Patellar tilting, deviation in patellar

mobility, and stiff myofascial textures were all altered. Psychological aspects must be taken into account while evaluating the persistence of PFPS. [5]

Sports activities, the surroundings, and surfaces can all be considered external risk factors for pressure fractures. Conversely, internal risk factors include joint laxity, hypo mobility, patellar malalignment, and stiffness in the quadriceps and hamstrings. Clinical tests such as the Waldron's test, the patellofemoral grinding test, and the patellar apprehension test can be used to evaluate these. If these clinical tests are positive, there is a higher likelihood of PFPS. [6]As a result, PFPS has an impact on overloading-related functional performance and financial situation. Therefore, it is impossible to effectively minimize the excessive burden on society and the health care system if proper management of PFPS is not implemented. Therefore, the purpose of this study was to ascertain how patellar gliding affects the overcoming of patellofemoral pain in population with osteoarthritis.

METHODS:

Case description;

There was only one subject in this experimental investigation. The age of this female patient was 53. The patient, who was greatly embarrassed and concerned, went to the Rama Medical College physiotherapy department in an attempt to find comfort from her worst predicament. The female patient needed assistance to walk up to six steps. The client was having a lot of difficulty walking. She complained to me about how her two knee joints were getting worse. Despite taking medication and regularly attending physical therapy, the patient's excruciating pain did not go away. Even just walking up stairs requires the assistance of another person. She was now looking for a miraculous cure for her issue, which may be of beneficial to her condition caused by patellar cartilage destruction.

Clinical tests –

1. Clarke's test; or (Patellar grind test)

The patient underwent tests while lying supine. knee extended, and the tester applied pressure while positioning his web space slightly above the patella. The quadriceps muscle is should be softly contracted by the patient. The test was positive because the patient experienced pain during the operation.

2. **Moving patellar apprehension test**;

There had been two stages to its execution.

First phase: the patient underwent a provocation-oriented test while lying supine with their knee fully extended. The examiner's thumb exerted a lateral force to the patella. The examiner then moved the tested knee from full extension to a 90-degree flexion and back to full extension while continuing to provide laterally applied force to the patella.

2nd phase: this is concerned with alleviation of symptoms.

Phase 1 was performed again while the examiner's index finger was used to medially apply force to the patella and the knee was fully extended for testing. The knee was again extended to its maximum length, flexed to a 90-degree angle, and then returned to its maximum length. The patient verbally communicated their anxiety during the first phase, and during the second, they appeared at ease and had a normal range of motion. As a result, the test came out positive.

Clinical findings:

S.N.	Physical tests	Findings
1	Patellar grind test	Found positive
2	Moving patellar apprehension test	Found positive

If the test is positive, it indicates that the patient is dealing with PFPS difficulties. After taking a few steps, the patient's pain assessment scale (a numeric pain rating scale) gave her a

score of 7 out of 11. Additionally, she had a lower extremity functional scale [LEFS] score of 30% out of 100%. She is unable to carry out their everyday tasks.

RADIOLOGICAL EVALUATION:

X- Ray showing PFPS condition

Physical therapy:

In order to provide the best possible stress distribution during the gliding motions, medial, lateral, and inferior patellar glides were performed during the surgery. Stretch passively for three minutes using your maximum force, as measured by each and every glide. For optimal pain alleviation, this passive stretch was continued at the conclusion of the glide. Throughout the course of the therapy, there was a set 2-minute break between each glide. Thus, each glide was attempted five times in a row. In this manner, a single treatment session involved a total of 15 repetitions. Up to six follow-ups per week were conducted using this therapy approach. And for a continuous four weeks, this was carried out.

OUTCOMES:

Patient was having a score of zero out of 11 on numerical pain rating scale. A score of 95% out of 100% was made on lower extremity functional scale. Following having received the full course of treatment patient was able to do her daily activities of life along with that she can go through the stairs as well with pain free status.

DISCUSSION:

The study's findings had supported our hypotheses connected with gliding strategy with optimal force. This implied that gliding for patellar issues could help mitigate the negative consequences of malfunctioning of the patellofemoral joint if done with the ideal amount of force. During the 3 minutes therapy session, gently stretching the myofascial structures could be quite beneficial. There will be less pain and compression forces on the patellofemoral joint as a result of myofascial release. [7]. they came to the conclusion that some trigger points in myofascial limitations may be responsible for patellofemoral compression and pain. Additionally, a passive stretch of the affected muscles may be beneficial to them. This was in line with recent research. To the best of my knowledge, this type of extended passive stretch has not been employed in previous research presented in the literature in this way.

However, stretch and hold of the tissues in lengthened position was the key concern for my study to be effective in the management of

patellofemoral pain syndrome associated with knee osteoarthritis. Moreover quick and miraculous results was the another factor which shows the effectiveness of this study's technique in terms of gliding with ideal force. According to other studies, people with patellofemoral pain syndrome typically have tight and stiff quadriceps muscles. This results in a changed patellar position and limited knee range of motion. Thus, extended passive stretching also assisted in increasing quadriceps flexibility as backed up by other study. [8] A research found a high correlation between patients' patellofemoral discomfort and increased medial and lateral retinecular thickness. Other research by Regined Wing Shan Sit et al. (2018) [9] was in favour of this one. They believed that basic patellar mobilisation performed in a clinic might greatly lessen patellofemoral pain and enhance function. [10], movement with mobilization [MWM] is a useful treatment for patellofemoral pain. They added that MWM has the capacity to regulate central physiological mechanisms in addition to initiating local ones. This may open up inhibitory circuits that could block more pain according to pain gait theory.

Another study added-on that soft tissue mobilisation had a potent anti-patellofemoral pain-reduction effect. They underlined that longer lengths of shorter structure, such as fascia, might result from particular and progressive processes. It was not possible to overlook further probable causes of the PFPS, such as overloading the joint [11]. As favored by Dyan V. Flores et al. (2018)0[12], because these activities poses compressive stresses, stair climbing, squatting, and jogging can all result in PFPS. As advocated by this experimental study, increased mobility and decreased patellofemoral discomfort may be the outcomes of passive repeated glides. [13]; they also said that PFPS is caused by misalignment of the patella and Additional research by Marikaine Van Middel Koop, PhD, and colleagues. According to (2018)[14], PFPS was caused by a greater lateral patellar displacement and a lateral patellar tilt angle. Furthermore, abnormal patellar tracking and alignment may be the cause of increased patellofemoral joint stress [15]. Longer passive stretches may help to improve these aberrant characteristics, according to the current study. And the reduction in pain following treatment helps to explain this. This could be the outcome of the tissue surrounding the patellofemoral joint becoming more flexible.

Overall, this current study cleared that its efficacy couldn't be underestimated since its technique has 3 key determinants at a time while applying in cases with PFPS. First one is extended holding time and second is effective passive stretch and last one is repeated movements. Therefore, this gliding with ideal force cause huge structural and physiological changes on body tissues leading to expected results could be achieved through this specific maneuver.

The results of this study suggest that the clinical use of repeated glides with passive stretch may be the reason for the improvement in related function and reduction in patellofemoral pain. The lower extremity functional score increased from 30% to 90%, and the numeric pain rating scale pain score was lowered to zero. The client was also pain-free when engaging in demanding activities. While it is impossible to ignore other possible causes, the results of the current study have unquestionably demonstrated how good this therapy approach is at managing the patient's condition.

CONCLUSION:

The current study says that patients with patellofemoral pain syndrome may benefit from lengthier passive stretched approach included with repeating gliding movements as part of comprehensive pain management strategy. This improves knee ROM and function as well as muscle flexibility as a result of applied ideal force. This approach has shown greater success in treating PFPS painful situations. To ascertain

this approach's long-term effectiveness, more analysis may be necessary.

LIMITATIONS:

There was not a larger sample size in the study. Additionally, conditions can be analyzed for this idea. To improve the effectiveness of the results, the measurement process may be modified.

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