Original Article

Comparison of patellar distraction with patellar glides in female patients with patellofemoral pain syndrome

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Objective: To analyse effectiveness of patellar glides and patellar distraction in the patients with patellofemoral pain syndrome (PFPS).

Methodology: This longitudinal interventional comparative study was conducted at Physiotherapy Department, Mayo Hospital Lahore, Pakistan from September 2015 to March 2016. A total of 70 patients were divided into 2 groups randomly; group A received hot pack, quadriceps strengthening exercises and patellar distraction whereas group B received hot pack, quadriceps strengthening exercises and patellar glides. Age of the female patients was 18-40 years. Visual Analogue Scale (VAS) & Knee Injury & osteoarthritis outcome score (KOOS) questionnaire were used to compare the effectiveness of both treatments. The data were analysed using SPSS v. 21.0.

Results: There was reduction in pain at VAS and KOOS showed improvement in function as well as the range of motion also increased in both groups. Both treatment techniques were effective in reducing pain in PFPS ($P < 0.005$). Pre-treatment KOOS score in patellar glides group was 34.77 ± 10.84 and post-treatment KOOS score was 62.155 ± 15.75 and for patellar distraction group pre-treatment KOOS score was 35.42 ± 10.07 that increased to 55.77 ± 14.66 after treatment which showed that patellar glides had better effect on PFPS.

Conclusion: Both treatments were effective in managing PFPS in terms of decreasing pain and increasing ROM as there was no significant difference between two techniques, however patellar glides were superior as compared to patellar distraction in decreasing pain and increasing ROM. (Rawal Med J 201;43:48-51).

Key Words: Patellofemoral pain syndrome, patella, knee.

INTRODUCTION

Patellofemoral pain syndrome (PFPS) is described by pain in knee ranging from mild to severe distress initiating from the contact of femur with the posterior aspect of the patella.[1] In young patients with age less than 60 years with knee complaints, it is most commonly diagnosed condition. Every year on average a general medical practitioner examined 5-6 patients of PFPS, the occurrence in the overall public is still obscure. Men have a low incidence of PFPS than women, and frequency rates of 25% to 43% have been described in sports medicine. Many authors claimed that PFPS is one of the most common musculoskeletal disorders.[2] A number of factors have been described as causes of PFPS. For example, it has been suggested that PFPS results from abnormal length of the Iliopsoas, overuse of quadriceps due to a muscular imbalances, mal-alignment within the sulcus of the femur leading to slanting lateral tracking, incorrect seat height, new shoes, patella Alta, direct trauma to the knee.[3-5]

The onset of the condition is usually gradual although some cases may appear suddenly following trauma. Most common symptoms are crepitus, giving-way of the knee and knee pain.[6,7] Management include Non-Steroidal Anti-Inflammatory medications (NSAIDs) in conjunction with Physical Therapy to decrease inflammation and pain.[8] A well-structured program for rehabilitation is the mainstay of treatment. Flexibility exercises and soft tissue techniques may be helpful for these patients.[9,10] Various studies on the biomechanical factors that possibly contribute to

PFPS have shown conflicting results and lack in reproducibility.[11] The synovium, medial patellofemoral ligament, and Hoffa's fat pad and loss of tissue homeostasis have also been emphasized as potent sources of pain.[12] The aim of this study was to compare the effectiveness of patellar distraction technique and patellar glides in treating the patients with PFPS.

METHODOLOGY

This Interventional comparative study was carried out from September 2015 to March 2016 after approval of Ethical Committee of Physiotherapy Department, Mayo Hospital, Lahore, Pakistan. Sample was selected using non-probability purposive sampling technique. Sample size estimation was done by priori power analysis with effect size d= (0.80) by using G Power Analysis 3.0.10 software by (0.05 α) and β (0.95) and 70 patients were included in the study.

Female patients of 18-40 years of age with anterior knee pain and pain with movement patellar glides were included in the study. Patients with previous history of knee pain, red flag signs (swelling, redness, heat, infection), Rheumatoid arthritis, acute trauma, mentally and physically challengedand patients who were using more than two analgesics for pain were excluded from the study. Patients were randomly allocated to two groups using coin tossing method. There were two groups Group 1(patellar distraction) and Group 2 (patellar glides) with 35 patients in each group.

After initial assessment, patients were allocated to treatment groups. Allocation was concealed from the assessor. Treatment was given by two different physiotherapists who were unaware of the treatment given to the other group. **Group 1 (Patellar Distraction Group):** Receiving hot pack, quadriceps strengthening exercises and patellar distraction. **Group 2 (Patellar Glide Group):** Receiving hot pack, quadriceps strengthening exercises and patellar glides.

All patients were given a follow up on alternate days and six sessions were given in 2 weeks. Post treatment assessment was done by same assessor by calculating ROM, VAS, KOOS and observations were made ensuring that the desired goals, aims and objectives were met or not.[13]

RESULTS

The groups were very much comparable at the baseline and there was no significant difference before starting intervention.

A significant difference was seen in pain, ROM and KOOS with (P<0.05). After two weeks both groups improved significantly. Mean pre-treatment KOOS score in patellar glides group was 34.77±10.84 and post-treatment KOOS was 62.1551±15.75 and for patellar distraction group pre-treatment KOOS was 35.42±10.07, which after treatment increased to 55.77±14.66 (Table 1).

Table 1. Mean change after completion of treatment.

	Pretreatment		Post Treatment		
	Patellar Distraction	Patellar Glides	Patellar Distraction	Patellar Glides	P-value
Knee flexion	111.140± 12.52	104.57± 12.80	124.51± 6.8	121.03 ± 6.57	.662
Knee Extension	8.14 ± 6.90	8.31± 6.091	1.74± 2.52	2.51 ± 2.68	.484
Pain at VAS	7.20± 0.797	6.23± 1.239	3.60± 1.19	2.60 ± 1.006	.085
KOOS	35.42± 10.07	34.77± 10.844	55.77± 14.66	62.15 ± 15.75	.393

Fig. 1. Mean KOOS.

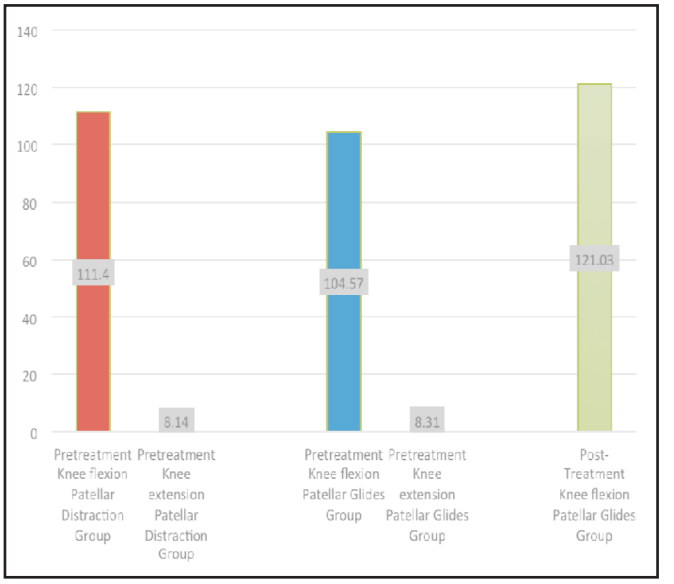
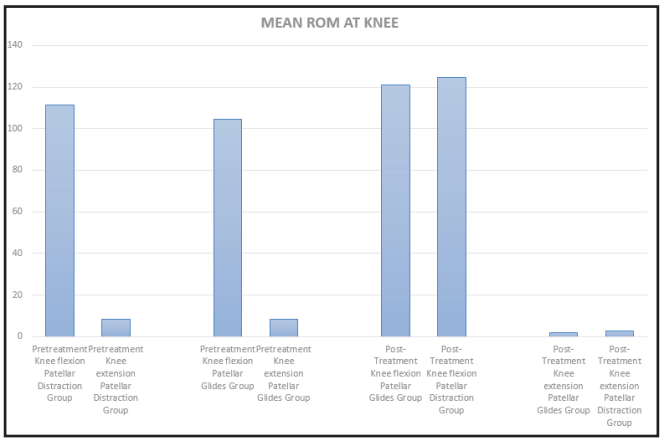


Fig. 2. Mean ROM of knees



The mean value of active knee flexion was 111.40±12.52 before treatment in patellar distraction group patients. After treatment, the mean value was increased to 124.51±6.81. The mean value of active knee flexion before treatment in patellar glides group was 104.57±12.80. After treatment, the mean value was increased to 121.03±6.57 (Fig. 2).

DISCUSSION

There was significant decrease in patient reported pain scores when pre and post intervention scores were compared in both groups, however, the improvement in patellar glides group was more as compared to patellar distraction group.

The main findings of this recent study included a significant reduction in pain, improvement in ROM and KOOS with P<0.05 in both groups. The pre-treatment mean value of pain intensity on VAS in patellar distraction group was improved from 7.20±0.797 to 3.60±1.193 after treatment. Before treatment, mean value of pain intensity on VAS in patellar glide group was 6.23±1.239 and decreased to 2.60±1.006 after treatment. Mean KOOS score in patellar glides group was 34.77±10.844 after treatment that improved to 62.1551±15.75 and for patellar distraction group pre-treatment KOOS was 35.42±10.07 and post-treatment KOOS was 55.77±14.669.

Crossley et al demonstrated that combinations of interventions such as quadriceps retraining, patellofemoral joint mobilizations, and patellar taping were effective in decreasing pain and disability in people with anterior knee pain compared to placebo.[14] Whereas our study investigated the comparison of effectiveness of patellar distraction with patellar glides in managing patellofemoral pain syndrome.

Lowry et al in their recent RCT showed that transverse friction massage and sustained medial patellar non thrust manipulation were more effective in minimizing pain than no treatment in a control group. Function increased from 34 to 93 on a scale of 100 (anterior knee pain scale) due to decreased pain.[15] While in our study, we compared improvement of function on KOOS scale which showed more improvement in patellar glides group as compared to patellar distraction group.

In a randomized controlled trial, van den Dolder and Roberts, showed that six sessions of manual therapy including cross-friction massage, stretching directed at the lateral retinaculum and medial patellar glides improved knee ?exion and stair climbing. Knee flexion improved by 10° but no change in knee extension was noticed (p=0.78) as compare to control group.[16] Contrary to above research, there was improvement in extension as well. Our research was unique because its outcome measures provide comparison among KOOS, VAS and ROM while previous researches provide no such comparison.

Study was limited to physiotherapy department, Mayo Hospital Lahore and sports and spine professionals (within Lahore) so study might not give a larger perspective on which technique is more effective. Difficulties were seen in gathering data from female patients. Difficulties were seen in convincing the patients for the follow up of treatment. Difficulties were faced in establishing the diagnosis of the disease as this disease can be misdiagnosed as conditions other than patellofemoral pain syndrome.

Further researches with greater sample size are recommended. Future research is required to determine long lasting effects of the treatment by taking follow up assessments for longer duration. Giving intervention to other muscles around the knee joint might give more beneficial results. Further research should be more globalized to produce more scientific and authentic results.

CONCLUSION

This study concluded that both the treatment techniques, patellar distraction and patellar glides were effective in managing PFPS in terms of decreasing pain and increasing ROM. However, patellar glides were superior as compared to patellar distraction in decreasing pain and increasing ROM.

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Conception and design: Sidra Syed
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