

Meniscus Injuries of Knee Joints and Conservative Therapeutic Approach

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Abstract

Background: Meniscus injuries of knee joint can severely affect functional aspects of knee joint as it functions to preserve stability, shock absorption, load transmission, and motion control of knee joint. There are number of surgical reconstruction options which are not without risk. Conservative rehabilitation in the form of physiotherapy provides hope in such situations. Hence the present study was conducted to find out the effect of rehabilitation program on meniscal injuries. **Materials & Methods:** In this prospective study, a total of 75 patients suffering from meniscus injuries included. Assessment was done using Lysholm Scoring scale. Various physiotherapy exercises were given to experiment group. **Results:** Study subjects achieved pain free functional activities of knee joint but symptoms were recurred when they were involved in vigorous activities. **Conclusion:** Properly executed conservative rehabilitation programs are very useful for the management of meniscus injuries of knee joint.

Keywords: Meniscus, meniscus injury, physiotherapy

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Introduction

The Knee is a modified hinge joint which plays an important role in stabilizing the body in erect posture. The osseous portions of the knee include femur, tibia, patella and fibula. The function of knee joint primarily depends upon its static and dynamic stability. The knee derives its static stability from the ligaments, whereas the dynamic stability is attained through the musculotendinous units and their aponeuroses (Mc Cluskey et al, 1980)¹. Meniscus functions to preserve stability, to preserve shock absorption, to preserve load transmission, to preserve nutrition and to preserve motion control^{2,3}.

Injuries to menisci are commonly produced by the twisting strains in a slightly in a slightly flexed knee as in kicking a football. Most frequently injured is the medial meniscus. The medial meniscus is more vulnerable to injury than the lateral because of its fixity to the tibial collateral ligaments and because of greater excursion during rotator movements. The lateral

meniscus is protected by the popliteus which pulls it backwards so that it is not crushed between the articular surfaces⁴. Injury may occur when the foot is fixed on the ground and the femur is rotated internally, as when pivoting, getting out of a car, or receiving a clipping injury. An anterior cruciate ligament injury often accompanies a medial meniscus tear. Lateral rotation of the femur on the fixed tibia may tear the lateral meniscus. Simple squatting or trauma may also cause a tear.

There are number of surgical reconstruction options are available for the management of meniscus problems but is not without risk and has demonstrated variable results^{5,6}. Conservative rehabilitation in the form of physiotherapy provides hope in such situations. Hence the present study was conducted to find out the effect of rehabilitation program on meniscal injuries of the knee joint.

Materials and Methods

Present study was conducted in the department of Physiotherapy Government Medical College

and Hospital Nagpur (GMCH) in between the period of April 2003 to April 2005. It was a prospective and conservative study. Patients suffering from knee joint problems such as pain, painful mobility etc diagnosed for Meniscus injury and referred to physiotherapy department of GMCH were included in the study. During the two years period of study, a total of 82 patients including 60 males and 22 females were referred to the department. Seven patients were dropped out because of failure to complete the management hence finally 75 patients were part of the study. They were explained the nature of injury they had sustained and the nature of treatment designed for study group and written informed consent was taken from them. Among 75 patients, 76% (57 patients) were males and 25% (18 patients) were females in the study. Signs of acute injury were not seen among the patients hence rehabilitation program selected was suitable for moderate protection phase (controlled motion) through return to activity. Patients with injured knee joints were examined as per proforma using various tests to confirm the diagnosis and evaluation done as per Lysholm score on 3rd, 5th, 8th week (Lysholm scoring scale). 75 patients divided into 2 groups. The Lysholm score was used to rate the subjective complaints of the patients, the score consists of eight items related to knee function. Each item as well as the total score, was analyzed separately. A total score of 95- 100 points was considered normal function, a score of 84-94 points indicated symptoms in vigorous activities & score below 84 points indicated symptoms in daily activities.^{7,8}

Both the control and experiment group were advised hot fomentation whenever required for knee injury. In control group in Moderate protection phase, exercise advised were Isometric Quadriceps exercise (Position- Long sitting Repetition-20, 3 times or more if no pain is precipitated), Active knee extension (Position- sitting, Repetition-20, 3 times per day) and Strengthening exercises to quadriceps and hamstrings (Repetition- 30, 10 RM multiply 3 times per day). In minimum protection phase, along with exercises included in the moderate protection phase strengthening exercises progression were done according to patients ability like Partial squats, Lunges, Squatting, Cycling and Jogging. While in return to activity

phase, continued all the above mentioned exercises in moderate and minimum protection phase and precautions to be taken while doing daily routine activities were explained^{9,10}.

In Experiment Group, patients were advised to use elastic knee support and in moderate protection phase, Multiple angle isometric, Close chain strengthening, LE flexibility exercises, Endurance training, Proprioceptive training, Stabilization exercises, Walk/ jog program at the end of this phase were implemented¹¹. In minimum protection phase, LE flexibility continued, Advance PRE strengthening, Advance closed chain exercise, Advance endurance training, progress running program, full speed jog, and figure eight running and cutting sprints were implemented¹¹. In return to activity phase, Flexibility and strengthening continued; advanced as appropriate. Advance agility drills, Advance running drills and drills specific to sport or occupation were implemented and need for protective bracing prior to return work was also determined¹¹.

Results

A total of 75 patients participated in the study among them 37 were included into control and 38 into study groups (Table- 1). Out of 75 patients, 40 patients were diagnosed as medial meniscus injury (MMI), 20 patients had lateral meniscus injury (LMI), 2 patients with partial anterior cruciate ligament (ACL) + LMI, 6 patients with ACL + MMI, 5 patients with ACL + Medial Collateral ligament (MCL) + MMI (Table- 1).

Table- 1: Group distribution

| Type of Injury | Control | Study | Total |
|----------------|-----------|-----------|-----------|
| MMI | 20 | 20 | 40 |
| LMI | 10 | 10 | 20 |
| ACL +LMI | 1 | 1 | 2 |
| ACL + MMI | 3 | 3 | 6 |
| ACL+ MCL + MMI | 2 | 3 | 5 |
| Total | 37 | 38 | 75 |

The effect on limp (5 points) was graded as under according to lysholm scoring scale. 5- None, 3-Slight or periodic, 0-severe and constant. The effect on pain (during walking, running and jumping) was graded as under according to lysholm scoring scale. 30 – none, 25- inconstant and slight during severe

exertion, 20- marked on giving way, 15- marked during severe exertion, 10- marked on or after walking more than 2km, 5- marked on or after walking less than 2km, 0-constant and severe. The effect on swelling (during walking, running and jumping) was graded as under according to Lysholm scoring scale. 10 – none, 7- with giving way, 5- on severe exertion, 2- on ordinary exertion, 0- constant. Along with these points Lysholm Scoring Scale included Scores related to Support, Stair climbing, squatting, Instability (during walking, running, jumping), & Atrophy of thigh. When control and experimental groups were compared in after calculating the mean score according to Lysholm scoring scale, proportion of patients in control group had symptoms in daily activities while in experimental group patients had symptoms in vigorous activities.

Discussion

Result of present study showed that the patients had no pain in daily activities but had symptoms when they were involved in vigorous activities. Hence it can be inferred from the study that the study patients achieved the pre-injury status after rehabilitative program. Somehow symptoms observed in vigorous activities justify the need of long term continuation of rehabilitation exercise program by the patient. Result of the present study is consistent with previous studies. In 1987, Sanderberg et al¹² conducted a study. They divided cases into two groups of operative and non-operative treatment for the injury which they suffered recently to the ligaments and other parts of the knee joint. They used primary repair followed by rehabilitative conservative management in the study. They showed good results after conservative treatment. Their patients returned back to competitive levels. They concluded from the study that there is no significant difference after primary repair of the injury and conservative or rehabilitative programs. Symptoms after vigorous activities in the present study subjects can be explained with the fact that most of the study subjects were not involved in athletic activities and hence vigorous activities were never a part of their regime. Hence the study subjects were instructed to avoid activities which could lead to recurrence of their injury which can progress

and may need surgical repair. The present study findings are also consistent with those of Robert Barrack et al¹³.

Conclusion

Present study indicates that properly executed conservative rehabilitation programs are very useful for the management of meniscus injuries of knee joint. Our study subjects achieved pain free functional activities of knee joint but symptoms were recurred when they were involved in vigorous activities. Hence it is concluded from the study that conservative programs are very helpful in the treatment of meniscus injuries but long term continuations of such programs like exercises are needed. Moreover, precautions to prevent recurrence of injury must be taken as vigorous activities are responsible symptoms.

Conflict of Interest: None declared

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Ethical Permission: Obtained

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