



Impact of Physical therapy in a Classical Case of ACL Tear Along with Meniscal Tear: A Case Report

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Abstract

ACL injury is the commonest injury in the sports players. Most common cause of ACL injury is twisting of knee or sudden stopping in the bend knee position this causes the anterior sliding of the femur on tibia. The injury to ACL alter the weight bearing pattern in the on the normal side and can lead to side to side asymmetry in the knee joint. The injury to ACL or tear can have negative long term physical and psychological effect. Ligament injury is accompanied with pain, popping sound, joint instability and swelling. Patients develop peculiar strategies of neuromuscular activation to prevent joint instability according to the motor task performed. Although being standardized in most of the clinical settings, the rehabilitation protocol should be susceptible to changes and adapted to the needs of the single patient at different timings over the entire recovery process. A 26 year old male patient came to OPD with pain and instability while climbing down the stairs and squatting after investigation he was diagnosed with grade 3 ACL tear with grade 3 medial meniscal tear for that he underwent a surgery. The graft was taken from semitendinosis muscle. The patient was started with ACL rehabilitation protocol and showed a good recovery and improved ROM and reduction in pain.

Keyword: ACL tear, Meniscal tear, Rehabilitation.



Introduction

Anterior Cruciate ligament tear is one of the most common type of injury seen in football, rugby players due to continuous twisting and sudden stopping movement. ACL connects tibia to the femur it presents anterior excessive anterior sliding of tibia. The incidence of ACL injury is 0.7-2.5 tears per 100 athletes the most frequent being injured of all knee ligaments (1). ACL injury is most commonly seen in young population and is associated with medial meniscal tear which alters the biomechanics of the knee. The diagnosis is made clinically by performing special tests like anterior drawer and lachman's test. And can be confirmed by magnetic resonance imaging (2).

The injury to ACL or tear can have negative long term physical and psychological effect. Ligament injury is accompanied with pain, popping sound, joint instability and swelling. Post operative rehabilitation is considered an important modality to reduce swelling, pain, edema, protection of healing graft, restoration of full range of motion same as the sound lower limb (3). While in certain cases due to improper care leads to quadriceps atrophy (4). Persistent Quadriceps weakness may be due to improper activation of motor units (5).

Case Presentation:

A 26 year old male came to OPD with pain and instability on the right sided knee while climbing down the stairs and squatting down as described by patient he was alright one year back while playing football he twisted his right knee and heard a popping sound for which he went to a local clinic where he was assessed and advice rest. After that he was having trouble while climbing stairs and squatting. When the symptoms got bad he came to hospital on 1st December where MRI was done which revealed high grade chronic ACL tear and G3 medial meniscal tear (Fig 1). For which arthroscopic repair was done and meniscectomy was done since then he is on medical and physiotherapy management.

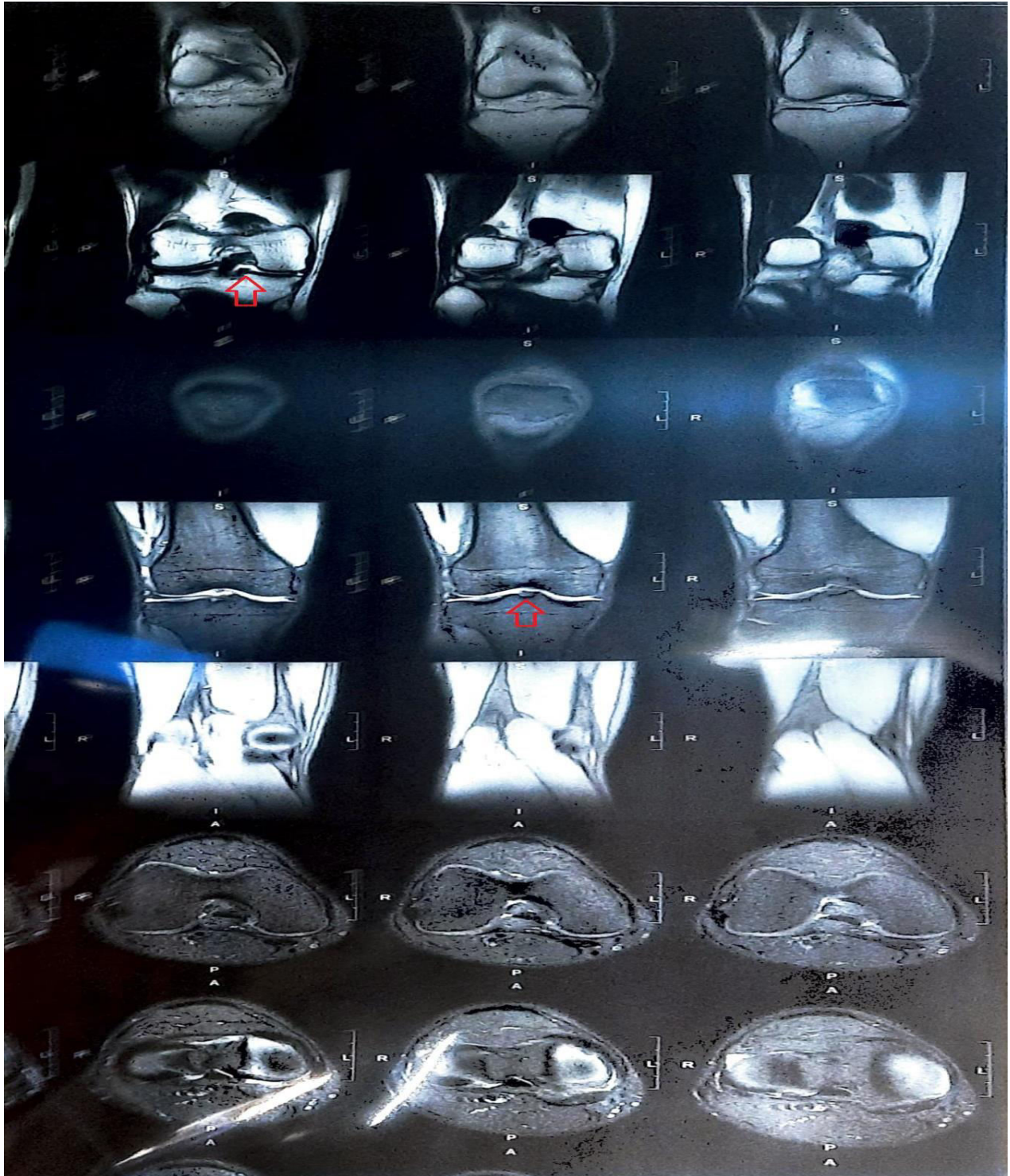




Fig 1- MRI Report.

Pain History- NRS- 5/10, after surgery 2/10, location of pain on right knee onset was sudden, movements aggravates pain, rest and medication reduces pain.

Drug History- Diclofenac, Ceftriaxone and pentaprazole.

Environmental History- House is on ground floor with mild threshold at entrance, adequately furnished with Indian style toilet.

Occupational History- patient is currently working as a home guard which includes standing for minimum 8 hours.

Personal history-

-Diet- A balanced diet with adequate intake of all essential components.

-Appetite- normal.

-Bowel and Bladder- Intact.

-Sleep- Minimal disturbance due to pain.

On Observation

-A crepe bandage was applied on right leg extending from mid thigh to ankle(Fig 2.)

-No atrophy seen.

-Posture in BSS- protracted shoulders.

-Gait- ambulatory with walker.

On palpation

-Tenderness- Grade 1 at the site of operation.

-warmth, oedema, limb girth and scar cannot be assessed due to bandage.

-Free ROM- Right LL knee ROM is reduced because of surgery.

-Left LL and bilateral UL Rang is full and functional (Table 1).



Fig 2- patient leg covered with creep bandage

ROM	Movement	Left	Right
Hip	Flexion	0-80	0-90
	Extensors	0-15	0-10
	Adbuction	0-45	0-45
Knee	Flexion	0-120	0-15
	Extension	120-0	15-0
Ankle	Planter flexion	0-50	0-40
	Dorsi Flexion	0-25	0-20

Table 1 – Range of Motion of bilateral Lower Limb.

Tightness

-Bilateral mild tightness of hamstrings.

-No other tightness.



Manual Muscle Testing

-Bilateral upper limb strength G5.

-Left lower limb strength G5.

-lower limb MMT in Table 2.

Joint	Muscle	Right	Left
Hip	Flexors	2	5
	Extensors	N/A	5
	Abductors	3	5
Knee	Flexors	N/A	5
	Extensors	N/A	5
Ankle	Planter Flexors	4	5
	Dorsi Flexors	4	5

Table 2 – Manual muscle testing of bilateral Lower limb.

Management:

1. On day one of treatment we evaluated the patient for strength, range of motion, tightness and pain.
2. Before starting the treatment education regarding the operative procedure and graft was explained to the patient.
3. Patient was explained the importance of exercise for his better rehabilitation and early return to sports.
4. Patient was taught how to safely mobilize using walker.
5. Donning and doffing of the brace and use of brace was explained to the patient.
6. Further management is in Table 3.



Intervention	Dosage	Rationale
Statics	5 sec hold 10 repetition	To maintain muscle contractility and maintain strength
Active assisted ROM for knee	10 repetition as much as possible	To maintain mobility of the joint
Pre-crutch training	To help patient in walking in initial phase	To strengthen upper limb muscle.
Toe touch ambulation	2 times a day	To train proprioceptors.
Breathing Exercise	10 repetition every hourly	To maintain lung compliance and avoid accumulation of secretions.
Strengthening	Strengthening of sound lower limb and bilateral Upper extremity.	To prevent weakening due to bed rest

Table 3 – Rehabilitation Protocol.

Discussion:

Shady alshewaier et. Al. conducted a study on patient with ACL injury they started pre operative Rehabilitation in patient who are planned to undergo ACL reconstruction this study shows a Significant positive results, this study suggest that pre-operative physical therapy is beneficial in patient with ACL injury(6). Uria moran et. Al. conducted study on post operative ACL Reconstruction patient with functional electrical stimulation and conventional physiotherapy and Other group with only conventional physical therapy they found out that Functional Electrical Stimulation with conventional physical therapy showed better results and compared to the patient who received only conventional physical therapy(7).

Braden C. Fleming et. Al. conducted a Study on AC injury one group was given open chain exercises and other group was given closed Kinematic exercises which depicts both showed equally good results in patients with ACL injury(8). Ana Ferri-Caruana conducted a study on female soccer player he divided 29 females into two groups one group was given conventional



knee training program while the experimental group was started with conventional program along with additional core strengthening exercises they found out the core training have positive effect and reduced risk factors as compared to conventional group(9).

Conclusion:

We conclude that ACL tear along with meniscal tear showed a significant improvement in the patient's condition with significant reduction in pain increase in range of motion and reduction in swelling with tailored rehabilitation program. Along with this proper education regarding the condition and prognosis and education regarding importance of exercise is given to the patient and family. Ergonomic advice was given like proper rest to the operated knee and advice regarding weight bearing was given.

Competing interests

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Author's contribution

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