2018

www.jmscr.igmpublication.org Impact Factor 5.84 Index Copernicus Value: 71.58 ISSN (e)-2347-176x ISSN (p) 2455-0450 crossref DOI: _https://dx.doi.org/10.18535/jmscr/v6i1.58



Journal Of Medical Science And Clinical Research An Official Publication Of IGM Publication

Grade – III ACL Tear with Conservative Physiotherapy –An Evidence Based Study

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Abstract

Introduction: Incidence of ACL injuries have become common conservative management with physiotherapy were recorded with good prognosis

Aims and Objectives: The aim of this study was to analyze core strengthening and kinematic exercises using WOMAC scale.

Materials and Methodology: 34 year male with ACL tear was treated with core and kinematic chain exercise from October to 10.12.17 with thrice a week frequency.

Results: *Results of pre and post WOMAC score were statistically analyzed showing P<.01.*

Conclusion: ACL conservatively treated with due physiotherapeutic means has shown good QOL on this study subject was the main outcome.

Keywords: ACL – Anterior Cruciate Ligament, Core strengthening, Kinematic exercises, WOMAC -Western Ontario and McMaster Universities Osteoarthritis Index, BMI – Body Mass Index, ROM – Range Of Motion.

Introduction

ACL is the anterior stabilizer of knee restricting anterior tibial translation & rotational forces at the tibio femoral joint. ACL is a band of fibrous tissue that connects the femur to tibia .Its function is to control the stability of knee when performing twisting or pivoting actions and stops from moving forward (Voss et al 2008)



Prevalence

ACL injury is the most common injuries of the knee joint and accounts for 50% of the total injuries occurring in the knee (Allan M. joesph, et al, 2013). In New Zealand 80% of all knee ligament injured was ACL injury (Chapman etal 2001), ACL reconstruction surgery is the most commonest occurring yearly in US (Gianotti 2009). Approximately 70% of injuries of ACL occur without contact sports, primarily affecting women athletes performing pivot movements, like abrupt slow down cuts and jumps (Prodromos, et al 2007)

Materials and Methodology

35 ears old male following on RTA suffered injury to Left knee

- ✓ NMRI revealed complete ACL torn on 04/07/17 with Hemarthrosis of left knee joint was treated RICE protocol for 2 months and advised for ACL reconstruction. He was getting treated conservatively at our college from Oct 12th 2017 till Dec 30th 2017 with weekly thrice frequency.
- ✓ His physical condition as on 12 /10/17 was BMI: 22 kg/m², Waist circumference: 93 cm

On Observation: Ambulant unaided with antalgic gait

Closed kinematic chain exercises



✓ Complaints of Pain over knee, feeling of giving way of knee, difficulty in walking and stair climbing

On Examination

Vastus Medialis Lag, Atrophy of quadriceps, hamstrings, gluteus maximus, Pre patellar joint effusion, Pain increased on knee movements, ACL Lachman positive, Increased laxity of knee joint, Restricted ROM of knee

Movement	Right	Left			
	Active	Active			
Flexion	0°-135°	0° - 40°			
Quadriceps Muscle	(Inch)	(Inch)			
6 inch from base of patella	38.5	37.5			
5 inch	39	36.5			
4 inch	42	37			
3 inch	45	38			
2 inch	47	40.5			
1 inch	49	42			

Table on Rom of Knee (in Supine Position) andQuadriceps Muscle Circumference

Provisional Diagnosis: ACL tear Grade III

Treatment: He was treated with conservative physiotherapy in Chennai with weekly thrice frequency. Each session lasts for 20- 25 minutes, a set of 15 exercises were used and progression was with repetition and physioball were used.

Open Kinematic Chain Exercises



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Core strengthening exercises



Strengthening of weak muscles



Results

With thrice a week frequency from 12/10/17 to 30/12/2017, Pre and Post WOMAC score were recorded and analyzed statistically. The patient



showed an Improved Gait Pattern. Clinically ROM has improved, pain has decreased and cadence has improved, and there was an increased daily functional activities.

Table of results on WOMAC score using student 't 'test

	Mean	SD	SE	Т	Р
Pre	68	22	12.7	3.07	<.01
Post	29				

Discussion

- ACL Tear patients have 13 % risk of developing Osteoarthritis of Knee in 10 years after injury (Scott et al 2000) and would need Total Knee Replacement (Wright 2012) and ACL injury needs long term rehabilitation (Hewett et al 2005), Hence further follow up with physiotherapy on this subject is highly recommended in view of the above research reports
- Smith etal 2014 in a Cochrane review , having analyzed ACL injury subjects treated conservatively and ACL – reconstruction, recorded no difference with regard to knee function, health status and return to pre injury

level, this study subject conservatively treated with Post ACL injury had similar benefit of improved knee function as per the above reports

- Manske et al 2012 have reported 120 knee flexion post ACL – reconstruction to be the goal of therapy, where as this study subject has a range 120 in 2 months treated conservatively further evidences positively with therapeutic means
- Closed kinematic chain exercise were widely used in ACL rehabilitation as they simulate functional activities (Heijne et al 2004) and helps to correct neuromuscular imbalances for optimal biomechanics and reduction of knee

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injuries (Ford et al 2003). This study subject was treated mainly with close kinematic exercises hence an improved knee functioning was noted

Critical Analysis of this Study Findings

- Only subjective scoring was analyzed as therapy outcome measures and no qualitative investigation was used.
- Duration of this study was shorter and no control group or other physiotherapy variable therapy means were studied.
- 3) Impact on girth of muscles with exercises were not stated
- No scale for proprioception was used to evaluate the impact of therapy

Conclusion

Physiotherapy modalities chosen to treat ACL with proprioception as discussed with evidence in this research presentation can further be extended on other orthopedic and neurologic conditions and further validation required with large sample size, including control groups and long term follow up.

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