



Effect of Advanced kinesiotaping in ankle sprain with anterior cruciate ligament tear- A case report

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Abstract

Ankle sprain and anterior cruciate ligament tear is the most common injury during sports. During basketball playing widely injured joint were found to be ankle and knee joint. 20-year basketball player had a fall which caused injury to ligaments of ankle and knee joint for which he visited orthopedician and had plaster cast for 21 days. After that his complaint of pain, swelling and reduced range of motion, he was then advised for physiotherapy treatment. In this patient kinesiotaping effect on ankle sprain and anterior cruciate ligament tear were seen which was effective in maintaining joint position, increasing functional performance and balance. Kinesiotaping shows significant improvement in patient with reduced rehabilitation timing.

Keywords: KinesioTaping, ankle sprain, anterior cruciate ligament tear

INTRODUCTION

Ankle sprain has wide spread prevalence in athletic, physically active and general population which shows more prevalence of lateral ankle sprain¹. Sprain is an injury in which ligament gets torn or stretched during running or landing after jump but mechanism of damage not understood which occur due to excessive movements at ankle joint or either with over inversion or eversion². The most common sporting injury is anterior cruciate ligament tear which is associated with instability in joints that limits mobility and exercise capacity³.

Normal treatment which are given traditionally were given like range of motion exercises, strengthening, stretching and proprioceptive training. In this report we focus on intervention of taping technique on ankle sprain and anterior cruciate ligament tear which is rareas both conditions present in one case. Kinesio tape is an elastic tape which can be stretch to 140% of its length and recoils back after application on skin

which microscopically lift the skin, alleviate discomfort, facilitate lymphatic drainage and also provide support to injured joint and muscles⁴.

Case presentation

A 20-year-old male studying in college got injury while playing basketball. During playing he got his right leg twisted and felt on knee which gave him immediate symptoms like pain, unable to move leg and swelling developed. Immediately after injury his friends took him to orthopedician where investigations were done, where MRI report suggested partial tear in anterior talofibular, calcaneofibular and anterior cruciate ligaments. Plaster cast applied on leg for 21 days from distal 1/3rd of thigh till foot not covering fingers. After removal of plaster cast he had difficulty and pain in moving leg associated with impairment in balance and proprioception for same complaint he visited physiotherapy clinic.

Patient had difficulty in various activities like walking, running, stair climbing and maintaining balance. The onset of pain was sudden and intermittent in nature. He rated his pain 7 on NPRS during activity and 4 on NPRS during rest. He had dull aching type of pain which was over lateral aspect of ankle and knee. Moderate severity was seen and 24 hour behavior absent.

Clinical evaluation

After patient came to physiotherapy clinic he had following findings. On postural evaluation he had flexed right knee and reduced lumbar lordosis. Antalgic gait was seen. On inspection patient had swelling, redness over right ankle and knee joint. Grade 1 Tenderness over lateral aspect of ankle and

medial aspect of knee was present. Tendoachilles and hamstring tightness was present. Active and passive ranges of ankle dorsiflexion, plantarflexion, inversion, eversion and knee flexion, extension was painful and limited. End feel was empty.

Muscle strength of hamstring and quadriceps was grade 4 and of ankle muscles was grade 4. Resisted isometrics were strong and painful. Antalgic gait was present and reduced step and stride length was seen. Angle of toe out was increased. Balance on affected leg was impaired. Dynamic balance was also impaired. Weight bearing on affected leg seen reduced.

Anterior drawer test of knee and ankle were positive which suggested involvement of ligaments.

Table 1- Pre-treatment and post treatment evaluation of active and passive range of motion and manual muscle testing.

	Right(pretreatment)	Left(pretreatment)	Right(posttreatment)	Left(posttreatment)
Knee AROM				
Flexion	80	135	120	135
Extension	80-20	0	15	0
Ankle AROM				
Dorsiflexion	10	20	20	20
Plantarflexion	20	40	40	40
Inversion	10	20	20	20
Eversion	10	30	30	30
Knee PROM				
Flexion	90	135	130	135
Extension	90-20	0	10	0
Ankle PROM				
Dorsiflexion	15	20	20	20
Plantarflexion	30	40	40	40
Inversion	20	20	20	20
Eversion	20	30	30	30
MMT				
Knee flexors	Grade 4	Grade 5	Grade5	Grade5

Knee extensors	Grade 4	Grade 5	Grade 5	Grade5
Ankle				
Dorsiflexors	Grade 4	Grade 5	Grade 5	Grade5
Plantarflexors	Grade 4	Grade 5	Grade 5	Grade5
Invertors	Grade 4	Grade 5	Grade 5	Grade5
Evertors	Grade 4	Grade 5	Grade 5	Grade 5

Diagnosis

According to subjective and objective evaluation and considering MRI investigation which showed partial tear in anterior cruciate ligament, anterior talofibular ligament and calcaneofibular ligament. Thus diagnosis was grade 2 ankle sprain with grade 1 anterior cruciate ligament tear.

Intervention

Treatment protocol was given for 1 week on daily basis. Initially cryotherapy for 15 min, isometric exercises, active range of motion exercises and taping was applied at knee joint for 2 days. After 2 days gait training and proprioceptive training were added and continued for 5 days. Kinesio taping applied over ankle and knee for joint support, to reduce swelling and pain. Mulligan mobilization was started from 2nd day to reduce pain.

After application of kinesiotaping to ankle proprioceptive and balance training started. Initially proprioceptive training was given on bosu ball, wobble board and star excursion training which was progressively increased day by day.

Kinesio taping applied on knee with 75% stretch at the tibial tuberosity to the medial and lateral condyle of femur. At ankle joint kinesiotape was applied using 3 strips in which 1st tape applied from just above the medial malleolus by taking it under the foot to the above of lateral malleolus with 80% stretch, 2nd tape applied from lateral side of foot going from posterior aspect of foot then to plantar side to the dorsal aspect of foot with 50% stretch. 3rd tape is applied same like 2nd tape but starting from medial side of foot. Everyday tape was changed while patient came for follow up regularly.



Fig.1 Bosu ball training Fig.2 Wobble board training Fig.3 Star excursion training



Fig.4 kinesiotaping to knee and ankle joint

Outcome

On last visit of patient, his gait pattern was improved. Redness, swelling and tenderness were reduced. Tightness of tendoachilles and hamstring were reduced. Pain was reduced which was 2 on NPRS. Active and passive range of motion of ankle and knee was improved. Muscle strength, balance and patient's quality of life was improved therefore, he is able to perform his all-daily activities independently and pain free.

Discussion

Kinesiotaping on ankle and knee joint was affective in improving joint stability and functional performance of joint during rehabilitation training which was proved previously⁴. In one study it was given that ankle taping restricts ankle range of movement in rebound task and upstream effects on knee which reduces ranges in frontal plane thus its effective in reducing forces on knee and ankle joint after application of kinesiio taping⁵. In our study we applied taping over ankle and knee joint to improve performance and stability in patient. Immediate effect of kinesiotaping in ankle sprain was proven in another study, which shows that it improves instant walking ability and also effective in reducing further sprains². Kinesiotaping gives stability to joint which reduces chances for further injury. We applied kinesiotaping on ankle and knee joint to improve more stability of joints and to get early recovery as it was given that application of kinesiotaping on ankle sprain reduces peak internal rotation and varus moments on knee joint⁷. Other treatment methods like cryotherapy, taping and mulligan mobilization was effective in rehabilitation of patient which was already proven it also suggested that proprioceptive training improves functional performance and early return to sport activity⁶. Proprioceptive training after application of kinesiotope shows early effects and recovery. In our study we gave

proprioceptive training with all other traditional treatment modes to get early recovery. The current injury prevention programs suggested kinesiotaping was as effective as ankle bracing in ankle sprain in basketball players as given in a systemic review⁸. In one study kinesiotaping effect on ankle sprain were seen which concluded that it reduces pain, alters muscle function, improves circulation, enhance proprioception and helps in repositioning of subluxed joints⁹. In our study we get early recovery and reduction in pain after application of kinesiotope on knee and ankle joint.

Conclusion

Ankle sprain and anterior cruciate ligament tear are common injuries during sport which has to be treated properly to reduce chances of recurrence. Advance kinesiotaping was effective in maintaining joint position, improve functional performance and balance. Applying Kinesiotaping during rehabilitation had good results and early recovery.

Informed consent

Informed consent of patient was taken.

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