International Journal of Research in Medical Sciences
Shanmugam S et al. Int J Res Med Sci. 2015 Jun;3(6):1529-1532
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: 10.18203/2320-6012.ijrms20150183

Case Report

Dry needling on tendons and myofascial trigger points in post-traumatic stiffness of elbow: a case report

Sukumar Shanmugam[1]*, Kavitha Shetty[1], Lawrence Mathias[2], Rebecca Santhumayor[3]

[1]Assistant Professor, Nitte Institute of Physiotherapy, Nitte University, Mangalore, Karnataka, India
[2]Department of Orthopaedics, K. S. Hegde Medical Academy, Nitte University, Mangalore, Karnataka, India
[3]Post Graduate Student, Nitte Institute of Physiotherapy, Nitte University, Mangalore, Karnataka, India

Received: 02 April 2015
Accepted: 07 May 2015

***Correspondence:**
Dr. Sukumar Shanmugam,
E-mail: suku729@gmail.com

ABSTRACT

A 42 years old female presented with the complaints of pain and stiffness of right elbow with limited elbow extension, since 8 months, due to fracture of head of the radius. She was receiving conventional physical therapy treatment for pain relief and functional improvement since eight months. The limitation in Elbow extension caused difficulty in carrying household works. Later the patient was treated with dry needling to myofascial trigger points in brachioradiallis, common flexor, and extensor muscles of elbow and upper trapezius of shoulder, dry needling for tendons were added for further muscle relaxation. The interventions were carried out for three sessions, alternatively for one week. Pain (VAS score from 8/10 to 1/10), elbow extension range of motion (from 120º-35º to 120º-05º) and the patient's upper limb functions (Quick DASH score from 63.36 to 13.63) were improved after one week of intervention. This case report results suggest that overall neuro-musculoskeletal function was improved due to dry needle induced myofascial trigger points deactivation and further muscle relaxation caused by tendon needling. This case report may helpful in formulating further treatment tool for better and faster recovery from pain and joint dysfunction in post immobilization pain and stiffness of elbow and other joints.

Keywords: Elbow stiffness, Dry needling, Myofascial trigger points, Tendon dry needling

INTRODUCTION

Post traumatic and post immobilization pain and stiffness are common in any form of fracture or dislocation of elbow joint. Shortening of elbow flexors will be a major constraints for the elbow extension Range Of Motion (ROM) after fracture immobilization.[1] Physical therapy interventions are used to improve ROM and reducing pain by using mobilization techniques and heat or cold therapies. The recent studies claim that the myofascial trigger point formation also a possible cause for further bio-mechanical changes which leads to pain and neuro-musculoskeletal dysfunction.[2]

A case study report on cyberchondria has stating that myofascial trigger points over brachioradiallis muscle developed due to prolonged usage of flexed elbow. The author also suggested that dry needling over the brachioradiallis muscle have shown better improvement in elbow pain and dysfunction.[3] There are few studies on dry needling for tendinopathies of patellar tendon and Achilles tendon, suggests needling may helpful in recovering from pain and movement dysfunction.[4-6] A systemic review on tendon needling concluded that it may improve the patient rated outcomes in tendinopathies of rotator cuff muscles and Achilles tendon.[7]

Myofascial trigger points in the muscles of forearm and shoulder may develop due to sustained muscle shortening of elbow flexors following immobilization. The ability of the elbow flexors to relax while doing the elbow extension was also reduced because of the nature of immobilization in the semi flexed elbow. These altered mechanical inputs to central nervous system from the affected elbow joint and upper limb may lead to central sensitization and altered sensory motor control.[8]

Dry needling in the myofascial trigger points is considered to be a one of the effective intervention in reducing pain and inflammation,[9] improving subcutaneous fibroblast activity,[10] Myofascial flexibility, and increase joint range of motion.[11] This novel technique is effectively used for trigger points deactivation and normalize the sensory motor control in the different level of nervous system.[12] Addition to the dry needling over the myofascial trigger points, tendon needling over muscle origin and insertion may produce widespread muscle relaxation and movement control in post immobilization stiffness of elbow joint.

CASE REPORT

Case discussion

42 years female who was working in a Beedi factory for several years had a history of outstretched fall on elbow nine months back. She was diagnosed with fracture of radial head and it was treated with closed reduction on the same day by orthopedic surgeon. Active finger exercises were performed by the patient as per the advice of surgeon. Later, the patient was referred to the physical therapy department following 23 days of immobilization; treatment was concentrated on improving ROM and reducing pain.

Active range of motion exercises, hold relax technique, along with cold therapy were used to improve the joint range and therapeutic ultrasound was used to reduce pain over the medial and lateral portion of elbow.

Thereafter the patient was treated with regular rehabilitation program from last eight months. But, pain over medial elbow joint was remained same and she had difficulties in performing her usual work.

The patient's elbow was further examined and we found myofascial trigger points over the brachioradiallis, common flexors/extensors of forearm and upper trapezius muscles. Whereas, shortening of elbow flexors was identified, especially in biceps brachii muscle which caused difficulty in performing complete extension of elbow joint.

The maximum tender points were also found over the medial epicondyle, upper trapezius muscle and musculo-tendinous junction of biceps brachii muscle.

Outcome measures

Manual palpation tenderness grading (0-4) was used to assess the spot tenderness, elbow range of motion was measured using universal goniometer, pain intensity was assessed using Visual Analog Scale (VAS), and upper limb function was assessed with Quick DASH subjective questionnaire.

Intervention

Dry needling technique was selected based on the previous evidence which is suggesting its effectiveness on muscle relaxation and movement management. The patient consent was taken prior to the dry needling intervention after explained the possible improvement and adverse effects of dry needling over the soft tissues. The patient's upper limb was positioned on the pillow and maximum tender spots and myofascial trigger points were marked over the skin surface. A sterilized solid thin dry needle was inserted into the trigger points and it was moved in different directions to deactivate adjacent trigger points in the muscle.

Myofascial trigger points deactivation of common extensors and brachioradiallis muscle was performed on midprone position of forearm and upper trapezius myofascial triggers points were deactivated in side lying position. The needles were kept remain over the trigger points for 2-3 minutes to achieve maximum muscle relaxation. In supinated position of forearm a dry needle was inserted into the common flexor origin just few centimeters distal to the medial epicondyle and it was kept in the same point without moving in any direction.

Another dry needle was inserted into the biceps brachii tendon for entire thickness and it removed after the 5 minute of static positioning of the needle. These procedures were carried out for three days at every alternative day for one week. Baseline data were documented pre-intervention on first day and post-intervention data was taken on day one and at end of first week. A follow-up assessment was taken after one month post intervention to know sustainability of therapeutic effects of dry needling over myofascial trigger points and biceps brachii tendon.

Adverse effects

Dry needling procedure was performed over myofascial trigger points and biceps brachii tendon with precaution to minimize the adverse effects.[13] Post needling examination was performed after every session of treatment and we did not find external bleeding, excessive pain, or unpleasant sensation over the needle insertion areas. However, the patient experienced minimal discomfort while performing trigger point needle manipulation over upper trapezius and common extensors of forearm.

Figure 1: X-ray of elbow.

Table 1: Pre and post dry needling outcome measure scores.

Outcome measure		Pre-intervention	Day one-post	1st week-post	Follow-up
VAS		8/10	3/10	1/10	3/10
Quick DASH		61.36 (38/55)	-	13.63 (17/55)	25 (22/55)
Elbow extension		120º-35º	120º-10º	120º-5º	120º-5º
Spot tenderness	CFO	3/4	1/4	0/4	1/4
	CEO	2/4	1/4	0/4	1/4
	BRR	3/4	1/4	0/4	0/4
	UTZ	2/4	0/4	0/4	0/4

CFO - Common flexor origin, CEO - common extensors origin, BRR - Brachioradiallis, UTZ - Upper trapezius, DASH - Disability of arm, shoulder and hand

DISCUSSION

Pain over the medial epicondyle and posterior aspect of lateral elbow joint was reduced to 3 from 8 of VAS on day one. VAS score was further reduced to 1 after the one week of intervention by dry needling over the common flexor origin and brachioradiallis myofascial trigger points. The spot tenderness over the brachioradiallis muscle, common flexor origin, and upper trapezius muscle also reduced. Post intervention Elbow extension lack was reduced from 35 degree to 12 degree immediate after the dry needling to Myofascial trigger points in the brachioradiallis, common extensors and flexors of forearm.

Once again when a ROM was measured following dry needling to the upper trapezius of shoulder did not show any change in the elbow extension range of movement, perhaps patient was comfortable in moving the upper limb while performing overhead activities. Dry needling over the biceps muscle tendon for three days resulted in further increase in the elbow extension range of movement (120º-5º) at the end of week. Final 5 degree of elbow extension was not achieved while measuring with goniometer and this may be due to the slight displacement of head of radius into the articular space of elbow joint, which was evident in X-ray (Figure 1).

The reduction in the post intervention upper limb disability score measured using quick DASH questionnaire (13.63) was suggesting that myofascial trigger points deactivation and muscle relaxation induced by tendon needling were effective in improving upper limb function. Therefore, this case report findings correlate with previous study of Anandkumar who used the dry needling for brachioradiallis muscle in cyberchondria[3] and correlates with evidences from studies of Christian RA et.al, and Nagraba L, et al., on the usefulness of tendon needling to improve the functional outcomes in patellar[5] and rotator cuff tendinopathies.[6]

Meantime, one month post intervention follow-up assessment had shown recurrence of pain (VAS score 3/10 from 1/10) and increase in the upper limb disability (Quick DASH score 25.00) compared to 1st week post intervention disability score (13.63). Whereas, spot tenderness and elbow extension range of motion remained same. This indicates intraarticular changes of elbow joint due to the radial head displacement may be another source for pain recurrence apart from myofascial trigger points over elbow musculature (Table 1).

CONCLUSION

Dry needling over myofascial trigger points and muscle tendon may produce widespread relaxation of muscles and other soft tissue structures around the elbow joint. This case report outcome suggest that dry needling for myofascial trigger points on biceps brachii tendon, shoulder and elbow complex musculatures has shown a better result over elbow extension ROM, pain and upper limb function.

Suggestion

To support this evidence, further larger sample study and long term follow up is required to evaluate the effects of tendon and myofascial trigger point dry needling in patients with post trumatic/immobilisation pain and stiffness.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: No-objection certificate was obtained from the head of the department of physiotherapy and orthopedic surgery, Justice K. S. Hegde charitable hospital, Deralakatte, Mangalore, and Karnataka. India

REFERENCES

1. Bruno RJ, Lee ML, Strauch RJ, Rosenwasser MP. Post traumatic elbow stiffness: evaluation and management. J Am Acad Orthop Surg. 2002;10(2):106-16.
2. Treaster D, Marras WS, Burr D, Sheedy JE, Hart D. Myofascial trigger point development from visual and postural stressors during computer work. J Electromyogr Kinesiol. 2006 Apr;16(2):115-24.
3. Anandkumar S. Effect of pain neuroscience education and dry needling on chronic elbow pain as a result of cyberchondria: a case report. Physiother Theory Pract. 2014 Dec 9:1-7
4. Yeo A, Kendall N, Jayaraman S. Ultrasound-guided dryneedling with percutaneous paratenon decompression for chronic Achilles tendinopathy. Knee Surg Sports Traumatol Arthrosc. 2014 Dec 2. [Epub ahead of print].
5. Christian RA, Rosy WH, Sherman OH. Patellar tendinopathy - recent developments toward treatment. Bull Hosp Jt Dis. 2014;72(3):217-2.
6. Nagraba L, Tuchalska J, Mitek T, Stolarczyk A, Deszczynski J. Dry needling as a method of tendinopathy treatment. Orthop Traumatol Rehabil. 2013 Mar-Apr;15(2):109-16.
7. Krey D, Borchers J, McCamey K. Tendon needling for treatment of tendinopathy: a systematic review. Phys Sportsmed. 2015 Feb;43(1):80-6.
8. Jan Dommerholt. Dry needling-peripheral and central Considerations. J Man Manipul Ther. 2011;19(4):223-37.
9. Shah JP, Danoff JV, Desai MJ, Parikh S, Nakamura LY, Phillips TM, et al. Biochemicals associated with pain and inflammation are elevated in sites near to and remote from active myofascial trigger points. Arch Phys Med Rehabil. Jan 2008;89(1):16-23.
10. Langevin HM, Bouffard NA, Badger GJ, Churchill DL, Howe AK. Subcutaneous tissue fibroblast cytoskeletal remodeling induced by acupuncture: Evidence for a mechanotransduction-based mechanism. J Cell Physiol. 2006 May;207(3):767-74.
11. Leonid Kalichman, Simon Vulfsons. Dry needling in the management of musculoskeletal pain. JABFM. 2010 Sep-Oct;23(5):640-6.
12. Mayoral O, De Felipe JA, Martínez JM. Changes in tenderness and tissue compliance in myofascial trigger points with a new technique of electroacupuncture. Three preliminary cases report. J Muscoskel Pain. 2004;12(Suppl):33.
13. Gerwin RD, Dommerholt J. Treatment of myofascial pain syndromes. In: Boswell MV, Cole BE, eds. Weiner's Pain Management; a Practical Guide for Clinicians. 7th ed. Boca Raton: CRC Press; 2006: 477-492.

DOI: 10.18203/2320-6012.ijrms20150183
Cite this article as: Shanmugam S, Shetty K, Mathias L, Santhumayor R. Dry needling on tendons and myofascial trigger points in post-traumatic stiffness of elbow: a case report. Int J Res Med Sci 2015;3:1529-32.