

1 **DOI:** <https://doi.org/10.47391/JPMA.125>

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3 **Management of muscle trigger points causing subacromial pain using**  
4 **dry needling technique — a case report**

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11  
12 **Abstract**

13 We present a case of a 22-year-old university sportsman who presented at a private  
14 hospital in Lahore in December 2018 with complaint of severe pain in the  
15 anterolateral aspect of the right shoulder after playing cricket. On palpation, greater  
16 tubercle of the right shoulder was found to be tender along with the muscle belly of  
17 supraspinatus. A muscle trigger point was identified during palpation, while painful  
18 arc was also present on abduction. Physical tests, including Hawkins-Kennedy,  
19 Neers sign and empty can test, were found to be positive. The musculoskeletal  
20 ultrasound revealed that supraspinatus and bicep tendons were intact. The patient  
21 was managed by dry needling technique. The novelty of this clinical trial was the  
22 application of trigger point dry needling for the management of subacromial pain  
23 syndrome. Muscle trigger point symptoms can present as rotator cuff tears,  
24 supraspinatus tendonitis and bicipital tendonitis leading to misdiagnosis. Clinicians  
25 should look for muscle trigger points before making a differential diagnosis.

26 **Keywords:** Shoulder Impingement Syndrome, Athletes, Rotator Cuff, Physical  
27 Therapy

28

## 29 **Introduction**

30 Subacromial pain syndrome is a major cause of discomfort and affects the  
31 performance of athletes, particularly cricketers. It is a significant health problem  
32 with a prevalence rate of 25% in the general population.<sup>1</sup> The most common  
33 presentations are frozen shoulder (adhesive capsulitis), Rotator Cuff Tendinopathy  
34 and Muscle Trigger Points (MTrps). The complex pathomechanical situations and  
35 lack of sensitivity and specificity of special tests poses a very serious challenge in  
36 making a correct diagnosis. The rotator cuff is a key component in maintaining the  
37 dynamic and static stability of the glenohumeral joint. The pathology of rotator cuff  
38 typically presents with pain and weakness on external/internal rotation of the  
39 shoulder. Acute or traumatic tears are less common and are usually suspected when  
40 a young patient presents with pain and movement dysfunction after a traumatic  
41 event, though they are frequently misdiagnosed.<sup>2, 3</sup>

42 The diagnosis of subacromial pain syndrome is made by a combination of physical  
43 and radiological tests (MRI and ultrasound), as a combination of tests increases the  
44 post-test probability of a correct diagnosis. The sensitivity and specificity of  
45 ultrasound is equivalent to MRI for the diagnosis for subacromial pain syndrome,  
46 provided that high quality standardised equipment and expertise is available.<sup>4</sup>  
47 Physical tests performed in combination include Hawkins-Kennedy test, Neers sign,  
48 empty can test, drop arm test, infraspinatus test and lift-off test. Measures of Range  
49 of Motion (ROM) through goniometer and inclinometer is an important outcome  
50 measure for determining the effectiveness of the treatment.<sup>2</sup> The aim of this case  
51 study was to highlight the role of muscle trigger points causing false positive clinical  
52 findings.

### 53 **Case Study**

54 A 22-year-old amateur male university player presented to the physical therapy OPD  
55 of a private hospital in Lahore on December 2018 with complaint of severe pain in  
56 the anterolateral aspect of the right shoulder after playing cricket (batting) for one  
57 week. The intensity of the pain decreased after the patient stopped his sports activity  
58 but increased at night while sleeping. He had experienced shoulder pain a month  
59 ago as well but the intensity and duration of the pain was comparatively less. The  
60 pain was managed by a general physician using analgesics and the patient responded  
61 well to the treatment in the past.

62 On palpation, greater tubercle of the right shoulder was found to be tender along  
63 with the muscle belly of supraspinatus. A muscle trigger point was identified during  
64 palpation, while painful arc was also present on abduction. Physical tests (Hawkins-  
65 Kennedy, Neers Sign, empty can test, drop arm test and lift off test) were performed.  
66 Hawkins-Kennedy, Neers Sign and empty can test were found to be positive. (Test  
67 Cluster)

68 Supraspinatus tendonitis, bicipital tendonitis, partial rotator cuff tear and muscle  
69 trigger point were the differential diagnosis until further investigations was carried  
70 out. The musculoskeletal ultrasound revealed that supraspinatus and biceps tendons  
71 were intact, there was no tear or inflammation in rotator cuff muscles.

72 The patient was managed by dry needling technique using 50mm needles with  
73 0.25mm diameter, the trigger point was located via palpation method and an  
74 acupuncture needle was inserted into the trigger point. Once the first local twitch  
75 response was obtained, the needling was moved up and down (2 to 4 mm vertical  
76 motions); no more local twitch responses were elicited. Heating pads were applied  
77 after dry needling to enhance the blood supply of the area and for analgesic effect.<sup>5</sup>

78 Progressive resistance training exercise regimen was initiated with follow up after  
79 two days. Another session of dry needling was carried out followed by the

80 application of heating pads. Progressive resistance training programme for  
81 strengthening of the upper limb, along with aerobic training was prescribed for two  
82 weeks. Range of Motion (ROM) and Numeric Pain Rating Scale readings were taken  
83 after two weeks. There was significant improvement in both ROM and Numeric Pain  
84 Rating Scale values as stated in table 1. Written consent was taken from the patient  
85 prior to writing the case report for publication.

86

### 87 **Discussion**

88 The novelty of this clinical trial was the application of TrP-DN for the management  
89 of subacromial pain syndrome. Physical examination tests pointed towards partial  
90 tear of supraspinatus, as the Test Item Cluster (TIC) of the Hawkins-Kennedy test,  
91 the infraspinatus muscle test, and the painful arc sign together have the best  
92 statistical utility data that met the proposed post-test probability parameters. Post-  
93 Test probability for the TIC of the three above-mentioned tests is 95.5% if all three  
94 are positive.<sup>4</sup> While ultrasound was done to confirm the diagnosis, it did not show  
95 any abnormality in the shoulder joint that led to the diagnosis of muscle trigger  
96 points in supraspinatus and resolution of the patient's symptoms. Due to financial  
97 limitations, the diagnosis couldn't be confirmed via MRI.

98 Literature suggests that there is a high prevalence of active and latent MTrPs in  
99 patients with neck or shoulder disorders. Trigger points are focal, hyper-irritable and  
100 discrete points in the taught band of a skeletal muscle.<sup>6</sup> Acute trauma or repetitive  
101 micro-trauma may lead to the development of stress on the muscle and formation of  
102 trigger points. The patient in our study had a history of repetitive trauma that was  
103 probably the cause of the formation of trigger point.<sup>7</sup>

104 There is no gold standard diagnostic imaging test for muscle trigger points,  
105 and clinicians must rely on the history and physical examination findings for the  
106 diagnosis of myofascial pain. Because of the reliance on physical examination,

107 adequate intra-rater and interrater palpation reliability for the identification of  
108 MTrPs is important in construct validity.<sup>8</sup>

109 The inclusion of trigger point dry needling in the treatment resulted in clinical  
110 improvement in shoulder pain-related disorders in patients with subacromial pain  
111 syndrome.<sup>9, 10</sup> So, there is a chance that the shoulder pain can have a different  
112 pathophysiology than usually predicted by clinical tests.

113

### 114 **Conclusion**

115 Muscle trigger point symptoms can present as rotator cuff tears, supraspinatus  
116 tendonitis and bicipital tendonitis leading to misdiagnosis. Clinicians should look  
117 for muscle trigger points before making a differential diagnosis during physical  
118 exams as most of the musculoskeletal diagnosis are solely based on physical exams.

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120 **Disclaimer:** None

121 **Conflict of Interest:** None

122 **Funding Sources:** None

123

### 124 **References**

125 1. Arias-Buria, J. L. Fernandez-de-Las-Penas, C. Palacios-Cena, M.  
126 Koppenhaver, S. L. Salom-Moreno, J. Exercises and Dry Needling for Subacromial  
127 Pain Syndrome: A Randomised Parallel-Group Trial. *J Pain* 2017; 18: 11-18.  
128 2016/10/11. DOI: 10.1016/j.jpain.2016.08.013.

129 2. Biederwolf NE. A proposed evidence-based shoulder special testing  
130 examination algorithm: clinical utility based on a systematic review of the literature.

131 *Int J Sports Phys Ther* 2013; 8: 427-440. 2013/11/01.

- 132 3. M. Mustafa Gomberawalla MD JKSM. Rotator Cuff Tear and Glenohumeral  
133 Instability Clin Orthop Relat Res 2013; 472: 2448-2456.
- 134 4. Diercks, R. Bron, C. Dorrestijn, O. Meskers, C. Naber, R. de Ruitter, T. et al.  
135 Guideline for diagnosis and treatment of subacromial pain syndrome: a  
136 multidisciplinary review by the Dutch Orthopaedic Association. Acta Orthop 2014;  
137 85: 314-322. 2014/05/23. DOI: 10.3109/17453674.2014.920991.
- 138 5. Hong, C. Z. Treatment of myofascial pain syndrome.  
139 Curr Pain Headache Rep 2006; 10: 345-349.
- 140 6. Jafri MS. Mechanisms of Myofascial Pain. Int Sch Res Notices 2014; 2014:  
141 523924. DOI: 10.1155/2014/523924.
- 142 7. Ribeiro, D. C. Belgrave, A. Naden, A. Fang, H. Matthews, P. Parshottam, S.  
143 The prevalence of myofascial trigger points in neck and shoulder-related disorders:  
144 a systematic review of the literature. BMC Musculoskelet Disord 2018; 19: 252.
- 145 8. Michelle Louise Halla ACM, Daniel Cury Ribeiro. Effects of dry needling  
146 trigger point therapy in the shoulder region on patients with upper extremity pain  
147 and dysfunction:a systematic review with meta-analysis physiotherapy 2018; 104:  
148 167-177.
- 149 9. Liu, L. Huang, Q. M. Liu, Q. G. Ye, G. Bo, C. Z. Chen, M. J. et al.  
150 Effectiveness of dry needling for myofascial trigger points associated with neck and  
151 shoulder pain: a systematic review and meta-analysis. Arch Phys Med Rehabil 2015;  
152 96: 944-955. 2015/01/13.
- 153 10. Dunning J, Butts R, Mourad F, et al. Dry needling: a literature review with  
154 implications for clinical practice guidelines. Phys Ther Rev 2014; 19: 252-265.

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161 **Figure 1: Musculoskeletal Ultrasound Showing Intact Rotator Cuff Muscles**

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165 **Table 1: Improvements in Range of Motion and Pain Intensity**

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	Pre-Treatment	After 1 <sup>st</sup> Session	After 2 <sup>nd</sup> Session	After 2 Weeks
Range of Motion	Flexion: 50 Degree Abduction: 45 Degree	Flexion: 85 Degree Abduction: 90 Degree	Flexion: 135 Degree Abduction: 150 Degree	Flexion: 160 Degree Abduction: 175 Degree
Pain Intensity (VAS)	8/10	6/10	4/10	2/10

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