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# Physiotherapy Interventions for a Fibromyalgia Patient with Predominant Temporomandibular Disorder: Case report

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***Abstract*—*Fibromyalgia is a chronic syndrome of unknown etiology characterized by generalized body pain and several associated symptoms such as fatigue, sleep, memory and mood issues. Temporomandibular disorder (TMD) is one of the less frequent symptoms reported among the patients with fibromyalgia. Both fibromyalgia syndrome (FMS) and TMD are treated with physiotherapy modalities. TMD without fibromyalgia is reported to be responding well to various physiotherapy modalities. However, limited number of studies has been conducted regarding the effectiveness of physiotherapy for the TMD with FMS. This article presents a case study of TMD in FMS with a brief literature review.*

***Keywords*—*Fibromyalgia syndrome (FMS),Temporomandibular disorder (TMD), Physiotherapy case report.***

## I. INTRODUCTION

Fibromyalgia is a complex disorder characterized by chronic pain, stiffness, and tenderness of muscles, tendons, and joints, without detectable inflammation. Other symptoms such as fatigue, sleeping disturbances and mood issues are prevailing among patients the patients with fibromyalgia [1, 2]. As there was no sign of a detectable inflammation or other abnormalities in muscles and connective tissues, new concept has emerged focusing on other similar syndromes which has related to the central driven pain rather nociceptive pain. This spectrum of syndromes is identified as central sensitivity syndrome (CCS) [3, 4]. Several associated conditions which can be included in this syndrome have identified. Temporomandibular disorder (TMD) is one of the less frequent conditions included in this syndrome [5].According to a previous study, when TMD present in patients with FMS, they frequently suffer from severe symptoms of TMD [6]. Onset of TMD in FMS is insidious. Some studies suggest that various biomechanical factors, neuroendocrine factors, central sensitization mechanisms play a role in the pathogenesis of TMD in FMS [7].TMD has been defined as presentation of pain in the preauricular region, the temporomandibular joint or masticatory muscles, limitation or deviation of mandibular movement, temporomandibular joint noise during the functioning of mandibular and palpation and abnormal relation of static and dynamic occlusal [8]. According to recent studies, behavioural and psychological factors other than the genetic and sensory processing are influence in pain of TMD [9]. Patients with FMS or TMD usually present with hyperalgisia (Increases pain sensitivity to painful stimuli) and allodynia (Pain perception to non painful stimuli) [10].Both pharmacologic and non-pharmacological treatments used in managing Fibromyalgia and TMD. Studies have shown that aerobic exercises [11], acupuncture and osteopathic manipulative therapy are effective in the management of patients with fibromyalgia [12, 13].

## II. CASE REPORT

39 years old male patient was presented in the department of physiotherapy of the faculty of Allied Health Sciences, university of Peradeniya, Sri Lanka with the symptoms of chronic widespread pain. His major complaint was the chronic severe facial pain which aggravate with movements of temporomandibular joint. Stiffness of neck, sleeping difficulties and fatigue were other issues complained by the patient. Symptoms have worsened through a time period of 7 years. Patient has been diagnosed to be suffering with fibromyalgia since a year ago. During initial physical therapy assessment following features were identified,

i. Tenderness over the facial and cervical musculature.
ii. Limited (27mm) and painful mouth opening.
iii. Stiffness of cervical and shoulder musculature.
iv. Posture- Rounded shoulders, exaggerated thoracic kyphosis, poked chin.

Following the initial physiotherapy assessment patient was treated with an eight week physiotherapy programme which included following physical therapy modalities,

i. Deep dry needling of lateral pterygoid muscle once a week for 8 weeks
ii. Mobilisation of TMJ Twice a week for 8 weeks
iii. Cervical osteopathic manipulation twice a week for 8 weeks
iv. Exercises to improve TMJ movements
v. Aerobic exercises were done 3 times a week more than 40 minutes a session with moderate intensity (swimming & jogging)

At the initial assessment and following the eight week physical therapy programme, patients were subjected to the following measures;

i. Jaw function scale-20,
ii. Quadruple visual analogue pain scale,
iii. Fibromyalgia impact questionnaire,

to find out the outcomes of the physiotherapy programme. Maximal mouth opening was measured using a modified verniercaliper at the initial visit and after 8 weeks of the treatment.



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Maximal mouth opening of the patient was significantly improved with the treatments. Maximal mouth opening at the end of eight week treatments was 44mm, which was an improvement of 17mm.

In the Jaw Function Limitation scale -20, higher scores indicate more limitations. As presented in table I, statistically significant improvement of jaw functions could be seen following the eight weeks physiotherapy programme.

TABLE I. Jaw Functional Limitation Scale – 20.

| Jaw functions | Pre training | Post training |
|---|---|---|
| Chew tough food | 9 | 5 |
| Chew hard bread | 9 | 4 |
| Chew chicken (e.g., prepared in oven) | 5 | 1 |
| Chew crackers | 6 | 1 |
| Chew soft food | 1 | 1 |
| Eat soft food requiring no chewing | 1 | 0 |
| Open wide enough to bite from a whole apple | 9 | 2 |
| Open wide enough to bite into a sandwich | 7 | 1 |
| Open wide enough to talk | 9 | 1 |
| Open wide enough to drink from a cup | 5 | 0 |
| Swallow | 1 | 0 |
| Yawn | 9 | 2 |
| Talk | 9 | 1 |
| Sing | 9 | 1 |
| Putting on a happy face | 8 | 1 |
| Putting on an angry face | 5 | 1 |
| Frown | 7 | 1 |
| Kiss | 7 | 1 |
| Smile | 9 | 1 |
| Laugh | 9 | 2 |

Statistically significant improvement in the level of pain was evident after the eight week physiotherapy programme as shown in the quadruple visual analogue scale (TABLE II)

TABLE II.Quadruple visual analogue scale (VAS)

| Quadruple VAS | Pre training | Post training |
|---|---|---|
| At the moment | 10 | 1 |
| Average pain | 9 | 2 |
| At its best | 6 | 1 |
| At its worst | 10 | 4 |

In Fibromyalgia Impact Questionnaire, lower marks indicate better impacts of the condition related to each sub sections. All the sub sections of the Fibromyalgia Impact Questionnaire show significant improvements. Total Fibromyalgia Impact Questionnaire score prior to and following the treatment were 113 and 34 respectively. It was a 70% improvement of the original condition.

TABLE III. Fibromyalgia Impact Questionnaire (FIQR) total scores

| FIQR | Pre training subtotal scores | Post training subtotal scores |
|---|---|---|
| Difficulty in performing activities last 7 days | 19 | 3 |
| Overall impact for last 7 days | 7 | 3 |
| Common fibromyalgia symptoms over the last 7 days | 87 | 28 |

## III. DISCUSSION

According to the literature, muscular disorders in masticatory system have been frequently demonstrated. Fibromyalgia seems to be consisted of triggering factors of TMD. Some authors suggest patients with TMD can demonstrate widespread pain despite of having fibromyalgia syndrome. However, psychological distress and severity of other symptoms appear to be higher among FMS. Aerobic exercises and stress management have been reported to improve the psychological distress and pain among patients with fibromyalgia, and none of the intervention was superior to other [14]. However, another study has reported that pain was returned to the pre-intervention level with detraining [15]. Muscles are considered as a possible source of pain in FMS. Previous study has examined the muscular electrical activity associated with the tender muscles in FMS. Study demonstrated a higher electrical activity of the muscles which are tender among FMS subjects than control group. This electrical activity found to be stronger around proximal neck [16]. Myofascial trigger point dry needling reported to decrease spontaneous electrical activity in skeletal muscles of rat models [17].Pain and the mobility of the cervical spine are strongly correlated to the jaw dysfunction [18]. Previous studies have reported that the jaw and masticatory muscles functions are associated with the cervical spine dysfunctions [19]. Studies indicate that cervical and thoracic spine manipulationsare effective in improving TMD symptoms [20].Temporomandibular joint mobilization has reported as an effective treatment technique in improving the TMJ dysfunction. Pain inhibition, muscle spasm inhibition and range of movement improvement are assumed to be the underlying mechanism of the improvements of the symptoms. [21]. According to recent studies joint mobilization may modulate pain via descending pain modulation pathways [22].

## IV. CONCLUSION

Physiotherapy may be effective in improving both wide-spread pain and psychological distress among patients with fibromyalgia. Substantial level of improvements of the TMD symptoms has shown with the used treatment modalities. However, long term implications of the physiotherapy are not studied thoroughly.

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