

## Dental Methods in the Medical Treatment of Tension Headache

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### ABSTRACT

The tension headache is a common recurring affliction in the population with prevalence of 12%. Purpose is to vindicate the medico-dental approach in treatment of tension headache. Each of the 120 patients for this study underwent a screening process for the pathognostic symptoms that lead to diagnosing tension headache: strong temporal pulsating pain, nausea, photophobia, phonophobia, parasthesia and/or light flashing hallucinations. The patients were divided into 2 separate groups. The 1 group of 60 patients were treated with pharmaceuticals almotriptan 15mg/day and ibuprofen 800mg/day. The 2 group in addition to the prescribed pharmaceuticals was given dental splints and myofascial exercises. The check-ups for both groups were after 2, 6 and 12 months. Each patient was assigned to keep a journal of the pain episodes and pain level on a scale from 1 to 10. The average episode frequency for the 1 group of patients on each check-up was 3,78 episodes/monthly (2 months), 3,24 episodes/monthly (6 months) and 0,78 episodes/monthly (12 months) and pain level 8,7 (2 months); 7,9 (6 months); 2,1 (12 months) respectively. For the 2 group the average episode frequency for each check-up was 3,34 episodes/monthly (2 months), 2,68 episodes/monthly (6 months), 0,34 episodes/monthly (12 months) and pain level 8,6 (2 months); 5,4 (6 months); 0,5 (12 months) respectively. Medico-pharmaceutical treatment of the tension headache although substantially efficient could be improved in quality and reduced in duration by simultaneous dental treatment with dental splints and myofascial exercises.

**Keywords:** Migraine headache, Dental splints, Myofascial exercises, Medical treatment, Dental Treatment.

### INTRODUCTION

Tension headaches are dull pain, tightness, or pressure around the forehead or the back of the head and the neck. Some people say it feels like a clamp squeezing the skull. (1-5). It is pain or discomfort in the head, scalp, or neck, and is often associated with muscle tightness in these areas. Tension headaches occur when neck and scalp muscles become tense, or contract (5-11). The presence of the occlusal parafunction such as bruxism is an initiating factor for occurrence of tension headache in the early morning period (12). The painful stimuli from the TMD (temporo-mandibular dysfunction) often appear before the symptoms of tension headache (13). The successful treatment of the TMD leads to reduction of the tension headache attacks and episodes (14-18). Successful control of the tension headache affliction could be achieved by appropriate education of the patients, successful treatment of the tension headache as well as the underlining TMD which leads to reduced numbers of episodes as well as symptoms and lowered pain levels (18-23). Although the dental factor is not directly responsible for the development of tension headache, the traumatic occlusion, the

bruxism (both horizontal and vertical) and the lack of occlusal support in the lateral region of the teeth could be a relevant cause for tension headache episodes (23-27). The occlusal factors overload the masticatory muscles causing an increase in the masticatory muscle tension and masticatory muscle tonus (27-30). The muscular hypertension can cause dental damage by occlusal wear of the teeth and fracture spots on fixed partial dentures (FPD) (Fig. 1).

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The prolonged masticatory muscle contractions lead to hyperplastic masticatory muscles that produce

heightened occlusal force of mastication that causes inflammation in the TMJ and masticatory muscles and a condition known as TMD. The TMD is known to be one of the initiating factors for tension headache headache(30-37).

## MATERIAL AND METHODS

All of the patients were selected from the population that had sought treatment in our clinic and was usually referred to us by the general practitioner, maxillo-facial surgeon, or other dental specialist. Each of the patients that were used for this study underwent a screening process. The criteria for acceptance of the patients in this study were that the patients had the both afflicting conditions TMD and tension headache. The patients that had only one of these conditions TMD or tension headache were excluded from this study. The diagnosis of the conditions was performed by a specially designed questionnaire for this purpose. The questions in these questionnaire were about the symptoms belonging to both of the conditions TMD and tension headache. Mainly the patients were asked if they had experienced one or more of these symptoms: strong neck and frontal pain, tenderness on the scalp or pressure across the forehead that belong to – tension headache. The patients were also asked if they have ever noticed: prolonged pain in the jaw and in the area of the ear, limitation in the opening of the mouth, crepitations from the joint, subluxation of the joints and night grinding with the teeth.

The patients were also subjected to physical examinations in which the oral cavity was inspected for the signs of teeth attrition and the nature of the loss of teeth substance. The masticatory muscles of each of the patients were palpated to discover trigger points for myofascial pain and inflammation in the muscles common for patients with TMD. After the patients were carefully screened, two separate groups were formed for the purposes of this study. The first group was treated only with medically prescribed drugs aimed to treat the – tension headache, from the group of anti-inflammatory drugs was used ibuprofen 800mg/day, and from the group of serotonin agonist drugs was used almotriptan 15mg/day. The second group was not only treated medically with drugs for tension headache with the same medications as the first group, but was given dental treatment as well for the TMD with the restoration of the dental occlusion, fabrication of dental splint and giving instructions for doing myofascial exercises at home (Fig. 2). For the treatment of the patients we used a Michigan stabilization splint on the upper dental arch. The splint was developed to give an ideal anterior and canine guidance to the occlusion of the patients.

The patients were instructed to wear the stabilization splint each night when they go to sleep and at least 3 hours during the day. Form the myofascial exercises we recommended 5 repetitions in the first week, 3 times a day with addition of 5 more repetitions on each new week. The exercises we recommended were lateral, distal and mesial movements of the jaw with pressure from the hand in opposite direction. Each of the patients was given a notepad journal with printed schedule for

taking medications and doing myofascial exercises. The notepad also contained a table for recording the number of the tension headache episodes each day and the intensity of the level of pain on a scale from 1 to 10. The patients were asked to come on regular checkups after 2, 6 and 12 months from the beginning of the treatment. On each control checkups the journals kept by the patients were reviewed and the patients were examined for symptoms.

**Figure-1. Fracture spots caused by bruxing activity and muscular hypertension in patient with-tension headache**



**Figure-2. Application of stabilization splints in group 2 patients with-tension headache**



## RESULTS

From the extensive research and statistical analysis of the data obtained from the notepad journals kept by each patient for the progress of the treatment of tension headache we gathered different results from the both investigated groups. For each of the measured parameters, the monthly frequency of the tension headache episodes and the severity of the pain of each episode expressed by the subjective evaluation of the patients (on a scale from 1 to 10) we calculated an average value and placed the results in two [Table-1](#) and [Table-2](#).

Average values of episode frequency and pain level in group 1 patients with – tension headache and **Table 2** - Average values of episode frequency and pain level in group 2 patients with – tension headache.

As seen from **Table-1**, the episode frequency in the first group of patients treated only with pharmaceuticals, the episode frequency of the patients each month gradually diminished from 3,78 episodes/monthly on the first checkup (after 2months), to 3,24episodes/monthly on the second checkup (after 6months) and 0,78episodes/monthly on the last checkup (after 12months). The pain levels for the first group of patients also diminished in time, from 8,7 on the initial checkup (after 2months); to 7,9 on the second (after 6months) to 2,1 on the last checkup (after 12months)(**Table-1**).

**Table-1. Average values of episode frequency and**

Group 1	First group of patients		
	2 months	6 months	12 months
Episode frequency (episodes/monthly)	3,78	3,24	0,78
Pain level (No)	8,7	7,9	2,1

**pain level in group 1 patients with tension headache**

**Table-2. Average values of episode frequency**

Group 2.	Second group of patients		
	2 months	6 months	12 months
Episode frequency (episodes/monthly)	3,34	2,68	0,34
Pain level (No)	8,6	5,4	0,5

**and pain level in group 2 patients with tension headache**

As seen from **Table-2**, the episode frequency in the second group of patients, treated with both pharmaceuticals and dental restoration, occlusal splints and myofascial exercises, the initial frequency of the tension headache headache episodes was 3,34episodes/monthly on the first check-up (after 2months), then 2,68episodes/monthly on the second check-up (after 6months) and 0,34episodes/monthly(12months) on the last check-up. The average pain levels of the patients also diminished with treatment from 8,6 on the first check-up (after 2months); to 5,4 on the second check-up (after 6months) and 0,5 on the third visit (after 12months) (Table 2.).

## DISCUSSION

Multiple studies show the positive correlation between headache patient and TMD disorders. A study that was done Stuginski-Barbosa J et al shows the positive correlation between the patients that suffered from – tension headache and patients that were diagnosed with TMD<sup>(8)</sup>. Another study by Schiffman E. et al also confirms and acknowledges the findings of the previous study that patients with TMD have more frequent and more intense headaches<sup>(10)</sup>. A study by Anderson GC. et al shows that

the individual symptoms experienced by patients with tension headaches have more frequent episodes and are more pronounced in patients with tension headaches<sup>(25)</sup>. In a recent study done by Marklund S. et al indicates that the pain generated from anatomically adjacent areas innervated by n. trigeminus can be misinterpreted by the brain, so that the TMD symptoms may sometimes be a cause of a headache<sup>(18)</sup>. Furthermore, Ekberg EC et al show that some types of headaches such as tension headaches can be successfully treated with dental appliances such as occlusal splints<sup>(21)</sup>.

As it is shown from many of the previous studies there is a positive connection between - tension headache and TMD. The meaning of this is that the presence of TMD in the patients increases the risk of suffering from tension headache or causes the tension headache to be more frequent and more pronounced. Therefore the premise that the treatment of TMD reduces or alleviates the tension headache is easy to comprehend. As we have shown in this study, the patients treated in conservative fashion, by prescription of medical drugs such as ibuprofen and triptan have worse treatment outcome than the patients that apart from being treated with medical drugs had a dental treatment using dental splints and myofascial exercises. This correlation between the first group patients that were treated only medically and the patients from the second group that apart from being medically treated were given dental treatment continues on each scheduled regular check-up after 2, 6 and 12 months. The treatment outcome shows better results for the second group of patients compared to the first group of patients in the reduction of episode frequency as well as in the reported level of pain by the patients. By the first check-up the difference between the episode frequency and pain level between the both groups wasn't great, but was still in favor of the second group of patients. The episode frequency on the first check-up was higher for the first group by 0,44 and the pain level was also higher for the first group by 0,1. On the second visit the difference of treatment outcome between both groups was more pronounced. The episode frequency on the second visit was also higher for the first group by 0,56 and the pain level was higher by 2,5. The third visit revealed higher episode frequency of - tension headache in the first group patients compared to the second group of patients by 0,44 and the pain level by 1,1.

## CONCLUSION

The medico-dental approach in the treatment of tension headache has a better treatment outcome and it is substantially more beneficial to the patient in relation to the solitary medical treatment of tension headache. The combined medical and dental treatment of the – tension headache, accomplishes a greater reduction in episode frequency as well as pain level in the patient.

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## Conflicts of Interest

Authors declare that there is no conflict of interests regarding the publication of this paper.

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