Case Report on the Treatment of Temporomandibular Disorders
Utilizing Counseling Methods and Soft Laser Beams

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INTRODUCTION

The number of patients complaining of dysfunction of the temporomandibular joints (the so-called temporomandibular disorders) has been increasing recently\textsuperscript{1-7}. The major symptoms of this syndrome are pain around the TMJs and related muscles, difficulty in opening the mouth and mandibular dysfunction. In addition to the above, patients may complain of many symptoms such as headaches, stiff shoulders, dizziness, tinnitus, tachysystole and depression. It is often difficult to treat these symptoms effectively because so many causal factors are involved with the temporomandibular function, including the teeth, occlusion, periodontal tissue, muscles of mastication and the TMJs. Furthermore, these factors operate in connection with each other. In this paper, we propose a therapeutic approach for the temporomandibular disorders with reference to one such case as an example.

THE CASE

Profile: Female company employee, 29 years and 4 months, unmarried.
Main complaint: Difficulty in opening the mouth.

Reason for attendance: The patient was referred to the orthodontic clinic of Iwate Medical University by the plastic surgery clinic of the same university.

History of current onset: The patient first noticed a clicking noise on her right TMJ when she was in senior high school but left the noise untreated. One morning, three weeks prior to her first visit to our hospital, she felt a severe pain emanating from her right TMJ region while brushing her teeth and was unable to open her mouth. The pain subsided somewhat a few days later but did not disappear and mouth-opening remained difficult. She initially visited the plastic surgery clinic but she was immediately referred to the orthodontic clinic because of her concern about her malocclusion.

Dental history: She received crown prosthesis some six years ago. She occasionally experienced headaches affecting the right side of her head which simultaneously generated a feeling of general illness. Personal circumstances: Adverse. She had experienced the death of her elder sister three years earlier and her father had been hospitalized since the preceding year. Also, she was under constant pressure at her workplace huddling numerous year-end fiscal tasks.

Conditions: From the frontal view, her mandible was slightly displaced to her right-hand side. From the median line, her maxilla had shifted 3.5 mm to her left-hand side and her mandible 2.0 mm to her right. The overjet was 7.8 mm and overbite, 2.5 mm. Her upper and lower incisors were crowded (Fig. 1). She was able to reduce the pain if she opened her mouth by shifting her mandible to her right-hand side. Although it was not so difficult for her to move the lower jaw to her right-hand side, she was almost completely unable to move it to the left.

Diagnosis:

TMJs: Dysfunction featuring a complication of type I myospasmus and type III closed lock of the articular disk with reduction.

Occlusion: Angle class II division 1 with discrepancy.

Treatment plane: It was understood that no examination which would generate stress on her TMJs should be performed as she was complaining of difficulty in opening her mouth as a result of pain. Our treatment, therefore, was aimed at easing the TMJ symptoms first and only then, if necessary, at providing additional orthodontic treatment. It was planned that soft laser beams would be applied to reduce the TMJ pain and that a splint would be employed where required.

Process: On the first day of treatment, during counseling we provided her with some advice and information concerning her lifestyle. We then irradiated the affected area for 5 minutes with a Gao-As semiconductor stomalaser, made by Sedatelec. Her condition had improved by the next morning; the pain receded and she could open her mouth by 30.5 mm. The same treatment was given for three consecutive days. On the 4th day, she was able to open her mouth by 31.5 mm. This represented only a slight improvement and the clicking noise was still audible, emanating from her right TMJ. After another two days, however, the clicking noise had disappeared and the pain had almost entirely vanished. She received further laser irradiation about once a week for three weeks. Four weeks from her first visit, we planned to extract all of her 4 third molars and, if this did not provoke any onset of TMJ dysfunction, to initiate orthodontia. Prior to extraction, her maximum mouth-opening was 40.0 mm. This fell to 28.0 mm, and the clicking noise was audible, emanating from her left TMJ, during the period in which extraction surgery was concluded. The clicking noise receded, however as the extraction wounds healed.

Two and a half months after extraction, she was able to open her mouth by 39.0 mm without any clicking noise nor pain. Accordingly, we then proceeded to remove her upper first premolars and applied a multi-bracket appliance (Fig. 2).

During the 24-month orthodontic treatment (active treatment) period, no TMJ symptoms were observed and the mandibular movement was smooth with no observation of articular disk dislocation. At this point, her overjet was 1.8 mm and her overbite was 1.5 mm (Fig. 3). TMJ symptoms have remained absent in the patient during the six-year
observation period since active treatment to date (Fig. 4).

DISCUSSION

Temporomandibular disorders cases are classified into 4 types: those with symptoms localized to masticatory muscles, those with soft tissues around the TMJs, those where hard TMJ tissues are also affected and those triggered by psychological factors. At the beginning of a temporomandibular dysfunction, the symptoms are detected in the masticatory muscles, caused by such factors as malocclusion and mental stress (abnormal muscle tension). If these symptoms continue over an extended period or recur repeatedly, they result in muscle fatigue due
Fig. 3 Photographs of facial and intraoral views at the finishing of active treatment.
(32 years old)

Fig. 4 Photographs of facial and intraoral views at 6 years later after the finishing of active treatment.
(37 years and 2 months old)
to the increased metabolism and ATP consumption. This condition may lead to unusually increased muscle tension (myospasmus) accompanied by muscular pain, oxygen deficiency, accumulated metabolites and muscle acidosis. Mandibular dysfunction caused thereby is known to be a cause of organic change in the soft and hard TMJ tissues.

Since a reduced mandibular opening was noticed in the current case during her first visit to our clinic, she was treated with a soft laser and counseling for about 4 weeks. This relatively short period of therapy, resulted in the disappearance of both the mouth-opening difficulty and the TMJ pain.

On the other hand, the clicking noise, which had been unnoticed at her first visit, appeared during treatment. This may have occurred because of the increased latitude of mouth opening, which allowed her mandible to open to a position where clicking was generated. The easing of pain and elimination of mental stress are the first priorities in such cases, where TMJ symptoms may be due to psychological causes. It is well-established that pain and anxiety produce abnormal tensions in the human body. Such tensions may spread through the systemic muscle system, including to the head and neck muscles. To reduce pain, it is therefore necessary to ease muscle tension, improve the blood circulation and provide plenty of rest. Other effective therapies include muscle massage, the application of hot packs, low-frequency stimulation, biofeedback, soft lasers and medication.

Mental stress is thought to be one cause of abnormal tension in the human body. A person under mental stress can reduce the tension to some degree by clenching the teeth because the clenching pressure upon the periodontal membrane can be transferred as a stimulus to the brain. The clenching of teeth, however, also causes associated muscles to experience unnecessary tension. According to R.A. Moss et al., activity of the masticatory muscles increases when people are exposed to a stressful stimulus. This makes it necessary to provide patients with some means to relieve their mental stress.

Counseling is regarded as the best way to treat patients with abnormal muscle tension generated by mental stress. The counseling theory of Rogers states that when providing counseling services to a patient, the therapist must maintain a purely and unconditionally affirmative attitude toward, and sympathetic understanding of, him/her. C.S. Greene likewise takes the position that the priority in counseling is to help the patient resolve his/her worries, concerns and problems.

Put differently, dialogue with patients in a relaxed atmosphere provides them with opportunities for genuine informed consent and access to proper information concerning the therapy together with practical advice concerning their lifestyle. Such advice might include warnings not to take big bites, out of food, and to avoid hard foods, wide yawning and long periods of talking, in order to preserve their mental calm and secure physical rest. Such advice must be given in a concrete form. The patients in turn, will place more trust in doctors as a result of the counseling services they receive. It is important to make the patients to understand that malocclusion may be the cause of their symptoms and that mental stress is related to their symptoms, including muscle fatigue. At the same time, a proper approach concerning orthodontic treatment is also necessary. Even if premature contact or occlusal interference is suspected as being the cause of abnormal muscular tension or mandibular displacement, it may be wise to defer occlusal adjustment. Instead, priority should be given to treatment using stabilizing splints to restore a physiologically superior jaw position and/or movement. If the patient's condition shows improvement under the above procedure, the same therapy or observation should be continued for a few more weeks prior to proceeding with occlusal reconstruction.

As discussed above, the treatment using a soft laser and counseling therapy successfully eliminated the TMJ pain and clicking noise, as well as the mouth-opening difficulties, of the patient in question. Following these procedures, it became possible for her to move her teeth for better occlusion. It should be emphasized that a combination of pain reduction and counseling is the clinical priority for the treatment of temporomandibular disorders like this one.
REFERENCES


