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Occlusal Diagnosis and Treatment for A Patient with Unconscious Mouth Opening Disability: A Case Report

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ABSTRACT

An occlusal analysis was performed on a patient with unconscious mouth opening disability, and abnormal occlusion was found. Occlusal splint therapy was performed; however, this was ineffective. After that, occlusal position correcting therapy was performed, and the opening disability disappeared. As a result of occlusal analysis, it was speculated that the patient's opening disability was due to contracture of the masticatory muscles.

Keywords: mouth opening disability, occlusal position correcting therapy, masticatory muscles, contracture.

INTRODUCTION

When a patient has no previous medical history, no trauma to the head, no inflammation or tumors in the oral cavity, and has difficulty opening the mouth, temporomandibular disorders (TMDs) are generally suspected. In TMDs, the patient is often accompanied by pain [1], but in rare cases, there is difficulty opening the mouth without pain or symptoms. It is also possible that muscle tone and muscle stiffness are involved [4]. The present case may be helpful in such cases.

CASE PRESENTATION

A 69-year-old man presented with complaint of detachment of filling from lower left first molar. However, because it was difficult to open the mouth, the opening was measured and it was only 37 mm (Fig. 1). The patient was unaware of the opening disability. The patient's medical history was unremarkable. No deviation of the opening path, and no noise of the temporomandibular joints (TMJs) was detected.

However, the patient reported pain in the right TMJ when moving the jaw. He didn't report any tenderness on palpation of both TMJs. He reported tenderness of the right lateral and medial pterygoid muscles on palpation. Twenty-six teeth existed. Both lower third molars were semi-impacted (Fig. 2 and 3). Occlusion was anatomically normal. The TMJs appeared normal on the TMJ computed tomography (CT) images (Fig. 4). However, the morphology of the right TMJ was unclear compared to the left, but the cause was unknown. With the patient's consent, an occlusal splint was fabricated and fitted to the patient (Fig. 5). The splint was worn by the patient for one week [2]. However, since this therapy had no effect, upper and lower jaw models were made and attached to an articulator using wax records of muscular occlusal position (MOP). The reproducibility of the wax record was confirmed by the split cast method [3]. A habitual occlusal position (HOP) record was obtained by voluntary jaw closing using a

vinylpolysiloxane bite registration material (GC, Tokyo, Japan). A muscular occlusal position record (MOP) was obtained from the models mounted on the articulator using the same material as in HOP. To examine the difference between HOP and MOP, two-dimensional measurements were performed on a modified articulator using previous records. The differences were not recorded (Fig. 6). As a result of occlusal analysis, premature contact was noted on the left second molars (Fig. 7). After removing the premature contact from the mouth, an impression was taken, the model was attached to an articulator, and the occlusion was adjusted on the model until the molars on both sides were in contact, and the occlusion was also adjusted in the oral cavity in the same way (Fig. 8) [3]. Immediately after this adjustment the opening increased to 43 mm. The patient reported that the stiffness on the right side of his face was gone and he could open his mouth with ease (Fig. 9). Additionally, minor adjustments were made to the occlusion (Fig. 10). After that, TMJ computed tomography images were taken (Fig. 11). The position of the right condyle was unchanged from before the occlusal treatment. Therefore, it was speculated that the opening disability was caused by factors other than the temporomandibular joint. The treatment was completed by checking the occlusion of the left and right molars on the model attached to the articulator (Fig.12).

DISCUSSION

Mouth opening disability in TMDs is often accompanied by pain. Torii reported cases of opening disability of disk displacement with reduction, myofascial pain, and disk displacement without reduction [1]. In the present case, X-ray images of the left and right TMJs showed that the mandibular condyle moved forward when opening the mouth, suggesting that there was no problem with the TMJ. As a result of occlusal analysis of this case, it was thought that when the mouth was closed, the left second molar made premature contact, and caused the right masticatory muscle to repeatedly contract in a stretched state beyond its natural length, resulting in a contracture [4]. It was thought that the contracture of the right-side masticatory muscles prevented the muscles from stretching when opening the mouth, resulting in opening disability.

The cause of the malocclusion in this case seems to have been a gradual development of impaired eruption of the mandibular third molars on both sides, which would eventually have to be extracted.

ACKNOWLEDGEMENT

Written consent was obtained from the patient prior to the publication of this study.

References

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FIGURE LEGEND

Figure 1: Opening disability at first visit

Figure 2: Lower and upper dental arch at first visit

Figure 3: X-ray images of upper and lower dental arches

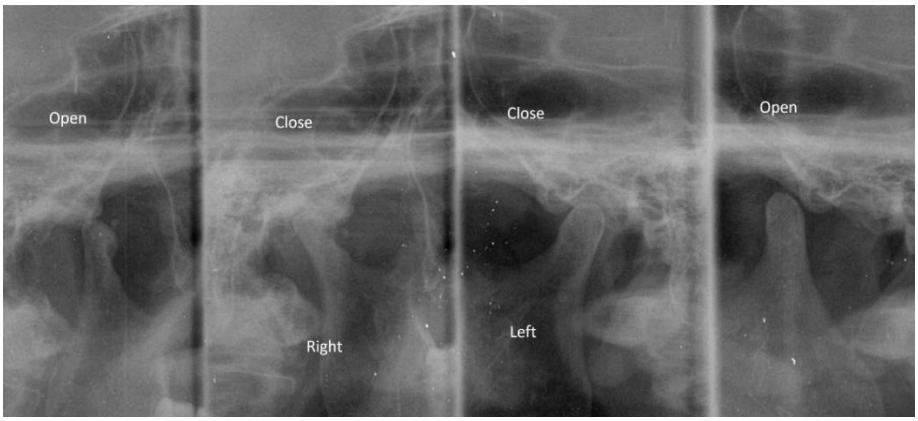

Figure 4: Bilateral tomographic images of temporomandibular joint (TMJ) in the open and closed positions

Figure 5: Wearing the occlusal splint

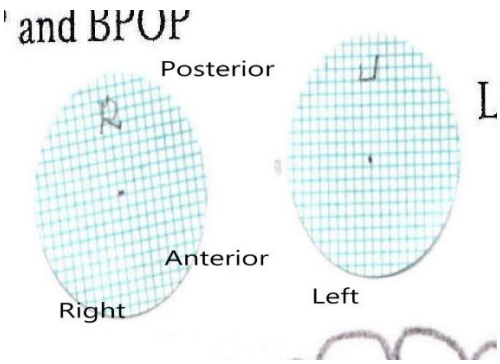

Figure 6: Two-dimensional records of habitual and muscular occlusal positions

Figure 7: Left premature contact and right occlusal gap

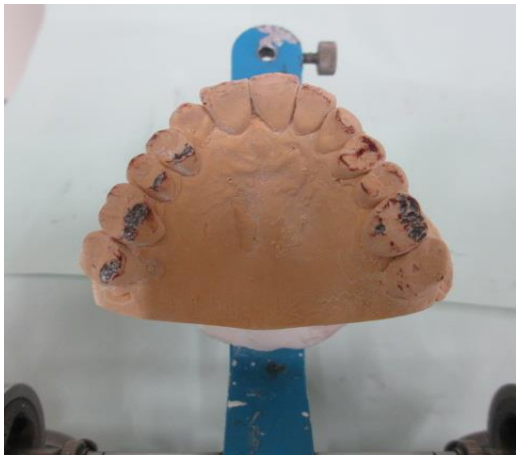

Figure 8: Pencil markings of occlusal adjustment areas

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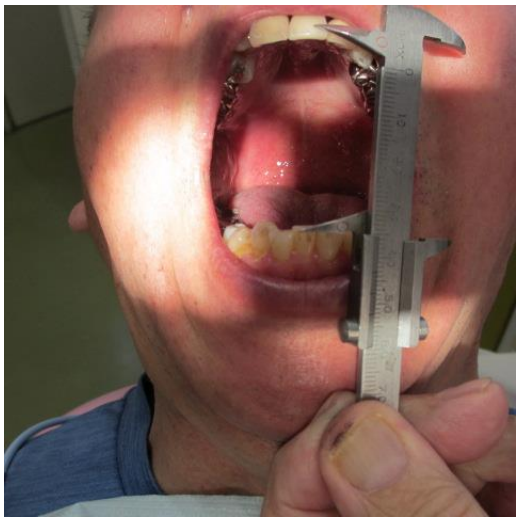

Figure 9: Improved opening

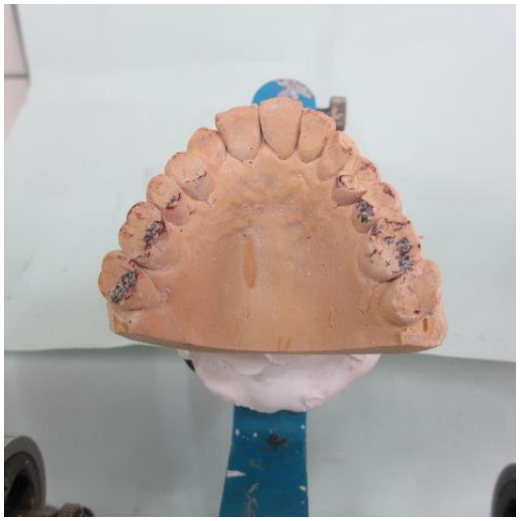

Figure 10: Additional occlusal adjustment marked with pencil

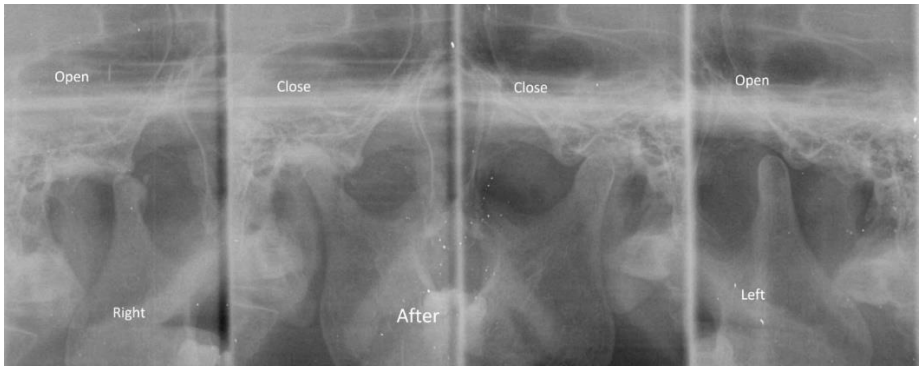

Figure 11: Tomographic images of TMJ after improved opening

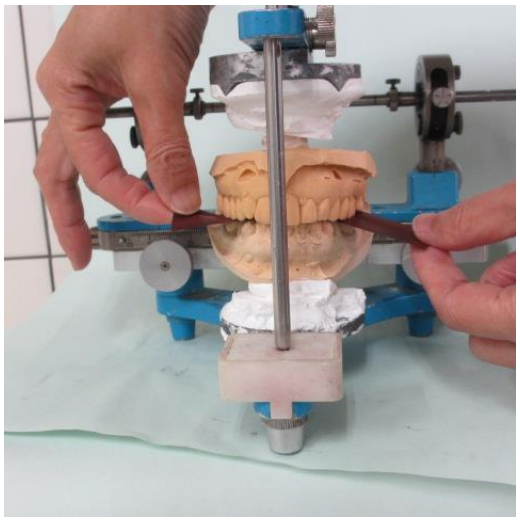

Figure 12: Confirmation of occlusal contacts on both sides in the muscular occlusal position

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