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Olgu Sunumu/ Case Report

THE TREATMENT OF TEMPOROMANDIBULAR DYSFUNCTION BY SELECTIVE GRINDING IN AN OPEN-BITE PATIENT : A CASE REPORT

AÇIK KAPANIŞLI HASTADA TEMPOROMANDİBULAR DİSFONKSİYONUN SELEKTİF MÖLLEMEYLE TEDAVİSİ: OLGU SUNUMU

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ABSTRACT

The influence of occlusal condition at the onset of temporomandibular dysfunction (TMD) has been strongly debated for many years. Occlusal disharmony has often corrected by selective grinding in occlusally sensitive patients with pain or dysfunction of muscular origin. This procedure should be preceded by the splint therapy in order to test the occlusal changes. The objective of this case report was to evaluate specific conservative treatment of TMD by occlusal adjustment using selective grinding in an anterior open bite patient. A 39-year-old male patient presented for a TMD treatment consultation, with symptoms such as anterior open-bite and characterized by left and right temporomandibular joint (TMJ) pain during mouth opening, complained of difficulty in eating due to masticatory dysfunction, audible joint sounds and reciprocal clicking. The treatment plan involved selective grinding procedure of the mandibular posterior teeth. After the selective grinding approach, acceptable intercuspation of the posterior teeth were achieved. Occlusion remained stable with normal function.

Keywords: temporomandibular dysfunction, selective grinding, malocclusion

ÖZET

Okluzal koşulların temporomandibular disfonksiyonun (TMD) başlamasına etkisi yıllardır tartışılmaktadır. Kas kaynaklı disfonksiyonu ve ağrıları olan okluzal hassasiyetli hastalarda okluzal düzensizlikler, sıklıkla selektif möllemeyle düzeltilir. Bu prosedürün ardından genellikle okluzal değişiklikleri kontrol etmek için splint tedavisi yapılır. Bu olgu bildiriminin amacı; selektif mölleme prosedürü kullanılarak yapılan okluzal düzenleme ile, anterior açık kapanışlı bir hastada TMD'nin spesifik konservatif tedavisini değerlendirmektir. Bu olguda 39 yaşında erkek hasta; anterior açık kapanışla beraber, ağız açmada sağ ve sol temporomandibular eklem ağrısı, çiğneme ve beslenme güçlüğü, duyulabilir resiprokal klik sesi şikayetleriyle değerlendirilmiştir. Tedavisi, mandibular dişlerin selektif möllemesini içermektedir. Selektif mölleme yaklaşımının ardından; posterior dişlerde kabul edilebilir interküspasyon elde edilmiştir. Normal fonksiyonda okluzyon stabil konuma gelmiştir.

Anahtar Kelimeler: temporomandibular disfonksiyon, selektif mölleme, malokluzyon

INTRODUCTION

Many authors have discussed the aetiology of temporomandibular dysfunction (TMD) and also the impact of malocclusion on TMD.[1-3] They have shown that it is difficult to highlight one particular factor, and suggest a multifactorial cause with structure, general health, and stress being major factors.[2,4] However the occlusal factors such as the presence of uncured malocclusion, loss of posterior teeth, discrepancies between intercuspal position, retruded contact position greater than two millimeters, and nonworking

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side interferences were considered to be the primary causes of TMD.[5] Eriksson et al [6] stated that functional malocclusion (occlusal interference) is more important than morphological malocclusion is explaining the existance of mandibular dysfunction. Wanman and Agerberg [7] reported that the number of masticator muscles tender to palpation was significantly related to mediotrusion interferences. TMD treatments divided into two categories: conservative and surgical procedures. Conservative procedures consists in medication therapy, physical therapy, occlusal splint therapy, and occlusal adjustments. Surgical procedures are less invasive methods such as arthrocentesis, arthroscopy or open temporomandibular joint (TMJ) surgery. Conservative reversible methods are often accepted first choice for TMD.[8] However, in malocclusion patients, selective grinding is an irreversible procedure by which the occlusal surfaces of the teeth are precisely altered to improve the overall contact pattern. This procedure can be used to assist in managing certain TMD, and treatment associated with major occlusal changes.[9] The purpose of this case report was to analyze the temporomandibular function after occlusal adjustment through selective grinding and occlusal stabilization appliance therapy in an anterior open-bite patient.

CASE REPORT

A 39-year-old male patient presented for a TMD treatment consultation, with symptoms such as anterior open-bite and characterized by left and right TMJ pain during mouth opening, complained of difficulty in eating due to masticatory dysfunction, audible joint sounds and reciprocal clicking. The patient had Angle Class II malocclusion with an anterior open-bite. It was observed posterior early contact due to the presence of the malpositioning mandibular third molar teeth (Figure 1). The diagnosis was determined from the clinical and radiological examination (MRI). The intraoral examination of the patient revealed that, the active opening range was 28 mm. between the upper and lower incisal edges, the initial click occured at the 8th mm. of the opening on the right TMJ. The patient had a normal range of lateral movement to the left and right side, initial measurement of the occlusal vertical dimension was 70 mm, interincisal distance was 4.5 mm. Therefore, the patient was diagnosed with anterior disc displacement with reduction due to the malocclusion.

Figure 1. Pre-operative intraoral view

The impression (Reprosil, Dentsply, Australia) was taken from the patient and a face bow record (Artex Facebow, Northaven, CT, USA) was made to transfer the cranio-maxillary and maxillo-mandibular centric relationship. Cast models were mounted on semi-adjustable articulator (Artex Type CT, Non-Arcon, Northaven, CT, USA) for treatment planning at the first visit. It was determined to reduce the vertical interincisal distance and obtain the maximum intercuspation. Among the several treatment options available to the clinician are the multidisciplinary approach with ortodontic and prosthodontic team, occlusal splint therapy or selective tooth grinding to provide the occlusal harmony. In the present case, patient's choice were considered, it was decided to combination therapy of selective grinding of the mandibular and maxillary posterior teeth and occlusal stabilization splint. Malpositioning mandibular third molar teeth were extracted first because of premature occlusal contact in the centric occlusion. After the healing period, selective grinding was performed during three appointment over six weeks until occlusal contacts of the posterior teeth were achieved on both sides. Occlusion was registered on an articulating paper and the grinding procedure was applied at any point of premature contact observed, limited on enamel, in intercuspal positon, laterality and protrusion, as recommended by Okeson.[9] High-speed water and air cooloed diamond burs (Finzler, Shrock&Kimmel GmbH, Bad Ems, Germany) were used.

After the completion of selective grinding treatment, topical fluoride procedure was applied to the patient to prevent post-grinding sensitivity. Final assessment was made immediately upon completion of occlusal adjustment, occlusal vertical dimension was 65 mm and interincisal distance was 2.5 mm. Clinical examination and comparison of the initial (Figure 1) and final intraoral photographs (Figure 2,3)

were showed that treatment was considered to be succesful when the patient presented an optimum occlusion with good masticatory function and esthetics. An acceptable occlusion was achieved, the masticatory deficiencies were compensated. Maxillary full-arch stabilization appliance was then fabricated using clear self-curing acyrlic resin (GC, Tokyo, Japan) which the patient wore every night for six months to stabilize the actual musculosqueletal position after selective grinding (Figure 4). The patient was periodically controlled at three times a year and TMJ symptoms of the patient were resolved. There has been no recurrence to date after a two-year follow up period, additionally, the patient was wearing the stabilization splint at night time.

Figure 2. Intraoral view after the first stage of the grinding procedure

Figure 3. Post-operative intraoral view after the last stage of the grinding procedure

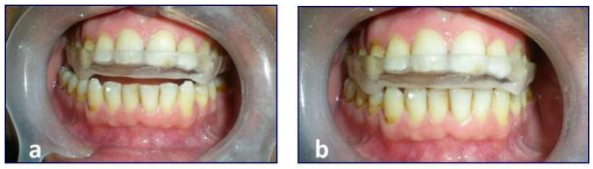

Figure 4. Maxillary full-arch stabilization appliance

DISCUSSION

The relationship between occlusal condition and TMD has not been confirmed. Although recent studies and literature reviews of TMD do not strongly support the role of occlusal etiologic factors,[1,3,10] many studies demonstrated that occlusal relationships have often been considered as contributing factors of TMD.[11-13]

Selective grinding is indicated when sufficent evidence exists that permanent alteration of an occlusal condition will reduce or eliminate the symptoms associated with TMD. This procedure cannot be determined by the severity of the malocclusion. Malocclusion does not correlate well with symptoms, partly because of the great variation in patients' physologic tolerances and also because the malocclusion may not reflect orthopedic instability. The procedure for the need to permanently change the occlusal condition is obtained through reversible occlusal therapy.[9] Present case indicated that occlusal adjustment by selective grinding have made the treatment more effective than the single use of the occlusal splint in the case of malocclusion.

Abrahamsson [14] reported that the number of occlusal contacts and severity of overall symptoms of TMD influenced both the masticatory ability and performance. It was also emphasized that open-bite had a negative effect on masticatory performance.[14] Aghabeigi et al [15] concluded that the prevalence of TMD in anterior open bite patients increases with age, is significantly higher in females, and is not influenced by other occlusal variables. Furthermore, orthognathic surgery does not significantly influence TMD in patients with anterior open bite. In the present case, at completion of selective grinding and occlusal appliance treatment procedure, interincisal distance was reduced, masticatory dysfunction related with open-bite was partially eliminated.

Selective grinding is appropriate only when alterations of the tooth surfaces are minimal so that all corrections can be made within the enamel structure. If the procedure penetrate the enamel, it must be accompanied by proper restorative procedures. Exposure of dentin poses problems such as increased sensitivity, caries and wear. It is important that the treatment outcome of selective grinding be accurately predicted before treatment begins.[9] Both the clinician and the patient must know and be prepared in advance for the results of this procedure.

According to the symptoms, the treatment modalities of TMD have been changed. Conservative treatments such as personal modification and self-care, physical therapy, pharmacotherapy, and interocclusal appliances should be the first choice, and treatments that lead to several changes of occlusion are recommended if necessary. Occlusal adjustment

with selective grinding is an operative procedure that must be diagnosed and well planned before making in the patient clinical steps. In this case, TMD symptoms was eliminated and the functional occlusal plane was reconstructed with selective grinding treatment. It has shown that selective grinding procedure was found to be a predictable approach for the treatment of TMD in malocclusion patients.

CONCLUSION

The results of the present case indicate that in the treatment of the TMD with an anterior open bite, selective grinding technique could preferred as a non-surgical conservative treatment option.

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