

PROSTHODONTIC TREATMENT OF A PATIENT WITH RHEUMATOID ARTHRITIS WITH SEVERE CONDYLAR RESORPTION: 4-YEAR FOLLOW-UP

Aşırı Kondiler Rezorpsiyonu Olan Romatoid Artritli Bir Hastanın Protetik Tedavisi: 4 Yıllık Takip

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ABSTRACT

In this study, dental management and 4 years follow up of a 45 years old patient with a 6 years medical history of rheumatoid arthritis with limited mouth opening and masticatory muscles tenderness was evaluated. The clinical examination revealed an anterior open bite thought to be a result of condylar resorption due to TMJ involved rheumatoid arthritis. In this case prosthodontic management was planned to be the treatment choice rather than advanced TMJ surgical rehabilitation. Prosthodontic management was decided according to clinical, radiographic examinations and patient's demands were considered. The prosthodontic management optimized the inter-occlusal relationship to maintain both functional and esthetic integrity. As a result the traumatic effect to the TMJ was reduced and 4 years follow up reveals that condylar resorption remained stable and no open bite occurred.

Keywords: *TMJ, rheumatoid arthritis, condylar resorption*

ÖZ

Bu yazıda 6 yıllık romatoid artrit tedavisi sonrası ağız açıklığında kısıtlılık, çiğneme kaslarında ağrı, yemek yeme ve çiğneme problemleri ile kliniğimize gelen 45 yaşındaki bir hastanın dental tedavileri ve 4 yıllık takibi sunulmuştur. Klinik muayenede, romatoid artrit TME tutulumu nedeniyle oluşan kondiler rezorpsiyona bağlı ön açık kapanış gözlenmiştir. Bu vakada ileri TME cerrahisi yerine alternatif olarak protetik tedavi planlandı. Yapılan klinik, radyolojik incelemeler ile hastanın istek ve beklentileri değerlendirilerek protetik tedavi planlanmıştır. Protetik tedavi ile uygun çeneler arası kapanış sağlanarak hastanın çiğneme fonksiyonu ve estetik görünümü düzeltilmiştir. Sonuç olarak TME'ye gelen travmatik etki azaltılmış ve hastanın 4 yıllık takibinde ön açık kapanışın tekrar oluşmadığı ve kondiler rezorpsiyonun durduğu gözlenmiştir.

Anahtar kelimeler: *TME, romatoid artrit, kondiler rezorpsiyon*

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Introduction

Rheumatoid arthritis is a chronic inflammatory disease that is presumed to be an autoimmune disorder, but it can be modulated by other factors such as genetics, microbes, hormones, and the environment (1). It affects 1% of the population, and is most commonly in women, and usually begins in the third and fourth decades of life (2). The pathogenesis involves synovial proliferation over the surface of the cartilage, which produces a tumour-like mass (pannus) that destroys the articular cartilage and underlying bone, and causes erosions. The disease is polyarticular, and most commonly affects the hands, feet, wrists, elbows, shoulders, cervical spine, knees, and feet causing pain, stiffness, and swelling which is worst in the morning and which improves during the day (3).

TMJ involvement correlates with the severity and duration of the systemic disease (2, 4) and a patient who experiences pain on palpation of peripheral joints is likely to have tenderness on palpation of the TMJ (2). Clinical findings include sounds, pain, stiffness in the joint, and limited movement (2, 5). The most common radiographic findings are erosion and flattening of the head of the mandible and articular fossa and reduction of the joint spaces, usually noticed 5 to 10 years after the onset of symptoms (6). Ankylosis is an uncommon late finding, and if found it affects both joints (7, 8).

Patients suffer from rheumatoid arthritis and severe condylar resorption are mainly treated with surgical procedures. Many reports have revealed that surgical correction of rheumatoid-associated TMJ disease and the resulting dentofacial deformity can successfully be treated by a surgical TMJ reconstruction with mandibular advancement surgery with or without maxillary orthog-

nathic surgery and genioplasty (9, 10). However, some patients do not prefer surgical correction and in such cases, conservative treatment are performed for reconstructing the occlusion worsened by the condylar resorption (11,12). Although, there are few reports of long term observation of prosthetic treatment in the patients with severe condylar resorption caused by rheumatoid arthritis (12). The aim of this article is to report the long-term outcome of prosthetic treatment in a patient with rheumatoid arthritis with an open bite malocclusion caused by severe condylar resorption.

Case Report

A 45-years old male patient presented to Department of Prosthodontics Faculty of Dentistry Istanbul University with a chief complaint of restricted mouth opening with masticatory muscle tenderness and functional problems.

According to the patient's medical records, the patient was diagnosed with rheumatoid arthritis at age of 39. He started receiving medication including antirheumatoid and a nonsteroidal anti-inflammatory agents. Due to long term use of corticosteroids, diabetes Type 1 and osteoporosis had developed. Although dull arthritic pain was present as he applied for dental treatment, there was a reduction in the symptoms of the rheumatoid arthritis, without functional disturbances of life quality.

The intra-oral and extra-oral examinations were performed. Extraoral examination did not demonstrate any asymmetry of the face. The functional examination was based on Research Diagnostic Criteria for Temporomandibular Disorder (RDC/TMD). Masseter muscles (in middle and upper bundles on both sides) and temporal muscles (anterior

and middle lobes for the both sides) palpations revealed tenderness. The patient demonstrated muscle and TMJ pain and coarse crepitus in both TMJs, accompanied with limited unassisted and assisted maximum mouth opening (35 mm). Furthermore, the patient had an anterior open bite of 9 mm. At

the maximum intercuspitation, the occlusal contacts were present only at the third molar teeth on both sides (Figure 1). The computed tomography images showed severe condylar resorption and condylar flattening had occurred on the both sides (Figure 2).



Figure 1. Pretreatment intraoral photographs.

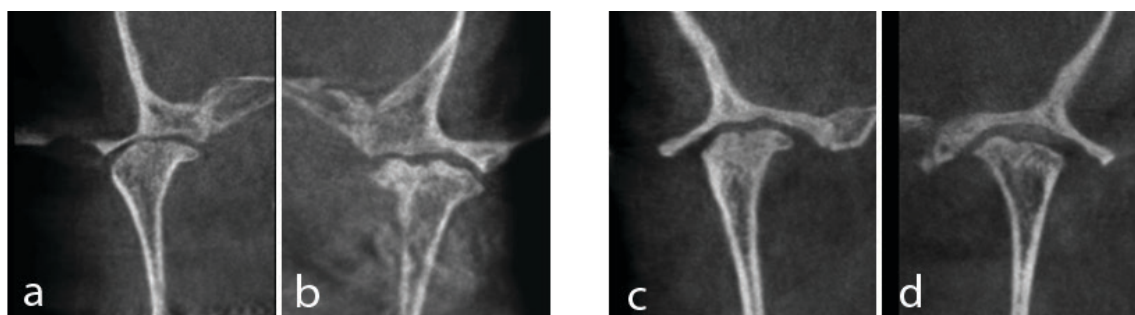


Figure 2. Pretreatment Computed Tomography in coronal sections of the TMJ; open mouth: right (a), left (b), closed mouth: right (c), left (d).

The aims of treatment were (a) to correct the anterior open bite and to establish an optimum overjet and overbite, (b) to achieve an acceptable occlusion with a good function.

A comprehensive treatment plan based on clinical and radiographic findings, and specialty consultations with the physiotherapist was suggested to the patient. Mandibular advancement surgeries with or without surgical condylar reconstruction, orthodontic treatment and/or prosthodontic therapy were among suggested the treatment alternatives and the potential risks of each method were explained to the patient. Because of the history of long term medical therapy for rheumatoid arthritis extended for several years, patient preferred prosthodontic rehabilitation

rather than invasive surgical or orthodontic treatment. A written consent form was taken from the patient.

The first step of the treatment was to manage the myofacial pain and to reduce the signs and symptoms, so the patient was referred to Department of Physical Medicine and Rehabilitation Faculty of Medicine Istanbul University

Following physiotherapy, the prosthodontic management started with the extraction of all third molar teeth and occlusal adjustment by selective grinding. The selective grinding method was described somewhere else (13). As a result of occlusal grinding, the 9 mm anterior open bite was reduced to 4 mm. The second step of the treatment

was the use of a stabilization occlusal appliance made from hard transparent resin material (Fortex; Lucite Intl, Durham, UK), without altering the obtained vertical dimension. Stabilization splint was fabricated as described by Okeson (14) and the patient was instructed to wear the occlusal splint 24 h/day for six months. He was called back for follow-up visits at seven days, 30 days and 90 days, 3 months and 6 months after splint insertion. When necessary, additional adjustments were performed. After a period of 4 weeks, it was observed that there was a notable reduction in the patient's pain score

level. The appliance was worn for 6 months in order to obtain the occlusal adaptation of the patient. At the end of this period the pain scores were at 0-1 levels.

The next step was the fabrication of fixed porcelain-fused to metal partial dentures without altering the vertical and horizontal relation that has been obtained. In order to preserve the already recorded relations, the stabilization occlusal appliance was used as a bite registration. The plane of the reconstructed mandible was parallel to the maxilla. Unilateral balanced occlusion with canine guidance was applied (Figure 3).



Figure 3. Posttreatment intraoral photographs.

Results

A clinical and radiographic examination was performed at the four-years follow-up. The occlusion was still stable; the overjet and overbite were maintained. There was not any change in vertical and horizontal relations (Figure 4). The recorded RDC/TMD pain scores were zero for both joint and muscle

palpations. The unassisted maximum mouth opening measure was 52 mm. There was still a fine crepitus in both joints during mouth opening, closing and laterotrusive movements. The tomography findings showed no morphologic changes in the TMJs after 4 years (Figure 5).

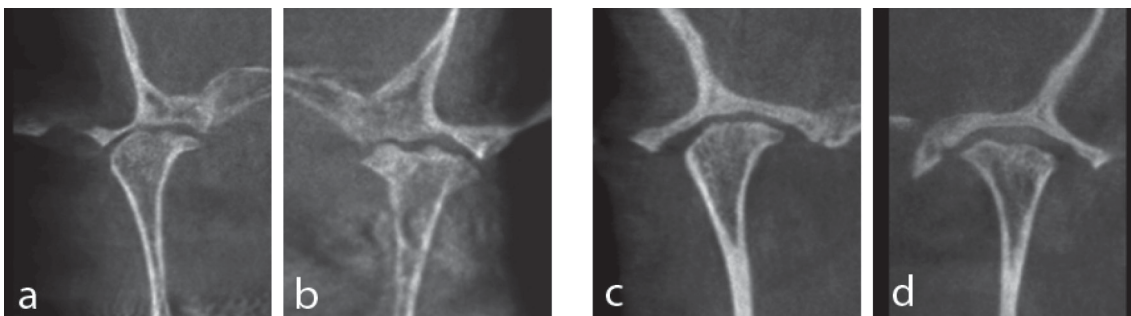


Figure 4. Posttreatment intraoral photographs after 4 years.



Figure 5. Posttreatment computed tomography in coronal sections of the TMJ after 4 years; open mouth: right (a), left (b), closed mouth: right (c), left (d).

Discussion

The current study reports the prosthodontic therapy result of a patient diagnosed with TMJ involved rheumatoid arthritis. The anterior open-bite of the patient was corrected with means of selective grinding and occlusion was restored with fixed partial dentures. A new vertical and horizontal relation was given to the patient and it was maintained during the follow-up of four-years. Such a procedure did not lead to any TMD symptoms or worsen the current situation.

Patients with RA often have TMJ involvement. However, TMJ symptoms are not as severe as those in other joints. In some cases, patients may develop progressive TMJ arthritis, which might have manifestations of distracted condylar surface-induced pain, dysfunction of mandibular movement, and the development of an anterior open bite (15, 16). In this case the presence of muscle and TMJ pain were present. Furthermore in RA patients, radiographic imaging reveals cortical erosions, subcortical cysts, flattening of the condylar head and articular eminence, subcortical sclerosis, and narrowing of the joint space (5, 17, 18). The patient in this case demonstrated cortical erosion and flattening of the condylar head, too.

Researches indicated the presence of a correlation between the limitation of mouth opening and the severity of RA (6). Such a

limitation might be the result of muscle pain or due to the presence of fibrous adhesions, and more severe degeneration of the TMJ (6, 19). In this case, the patient demonstrated limited mouth opening too and it was due to muscle pain and more severe degeneration of the TMJ.

The first line of treatment is toward pain relief. Initial conservative management implicates patient education, physiotherapy, non-steroidal anti-inflammatory drugs (NSAIDs) administration (20) and muscle relaxant stabilization splints. About 80% of patients will have their symptoms resolved by conservative management alone (21). An occlusal splint might allow resolution of the TMD pain and muscle spasms which leads to improvement of jaw support and condylar-disc position (22). In this case, a full coverage stabilization occlusal splint was used for 6 months. By the end of this period, an increase in mouth opening and a decrease in pain levels were observed. The result supports the dental literature.

In general, TMJ replacement therapy or advancement surgery with or without surgical condylar reconstruction can provide a solution for such patients within 4–6 weeks. Orthodontic treatment is another approach for managing such cases. Tanaka et al. (23) reported that splint therapy together with an orthodontic treatment might be able to induce adaptive change of the condyle in an adult patient with severe osteoarthritis of

the TMJ accompanied by an anterior open bite. Sato et al. (11) also demonstrated that occlusal reconstruction using a prosthetic approach might be of considerable value for inducing the desirable remodeling of the condylar heads. In the present case, the patient was informed about the surgical and orthodontic benefits of each therapy, but he did not want to have neither surgical nor orthodontic treatments, but prosthodontic approach which improved the occlusal and articular condition, TMD symptoms were decreased. In rheumatoid patients with TMJ dysfunctions, the importance of restoration and maintenance of a functional occlusion has been stressed also by Ogus (24) and Sato et al. (11).

Conclusion

In conclusion, this case suggests that prosthodontic approach is alternative in reconstruction of a stable functional occlusion associated with functional remodeling of destroyed condyles. This occurred by reducing the mechanical loads, obtaining a proper occlusal relation and managing the anterior open bite. These changes remained stable in the follow up periods. Further clinical and basic researches are needed regarding this treatment approach.

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