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A CASE OF TEMPOROMANDIBULAR JOINT OSTEOARTHRITIS TREATED WITH SPLINT THERAPY AND OCCLUSAL EQUILIBRATION

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Abstract: Temporomandibular disorders (TMD) are a collection of clinical disorders which involve the temporomandibular joints (TMJs), the muscles of mastication, and associated structures. TMD is considered to be the major cause of nondental pain of orofacial region. Arthritis refers to inflammation of the articular surfaces of a joint. Osteoarthritis is considered a degenerative joint disease. Degenerative bone changes include various changes in soft and hard tissues of TMJ. The patient usually presents with joint pain and limited mouth opening. This case report describes the effective management of a case with osteoarthritis of the TMJ with occlusal appliance therapy and occlusal equilibration.

Keywords: Open Bite, TMJ, Selective Grinding, Osteoarthritis, Occlusal Appliance.



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INTRODUCTION

TMJ osteoarthritis (OA) is a local low-inflammatory condition which occurs when the dynamic equilibrium between the breakdown and the repair of joint tissue is compromised ^[1, 2]. OA is the most common disease affecting the temporomandibular joint (TMJ). Different terms in addition to osteoarthritis such as, degenerative joint disease, degenerative arthritis, osteoarthrosis, arthrosis and arthritis deformans are used in different literature and reflect both the non-inflammatory and inflammatory changes that may take place in the TMJ ^[3, 4].

The most common complaints are pain and tenderness of the joint and masticatory muscles, muscle fatigue, stiffness, difficulty in opening the mouth and diminished range of movements. Remodeling of the condyle sometimes causes an open bite because of the subsequent decrease in ramus height ^[5, 6, 7, 8, 9].

The clinical manifestations of condylar resorption are facial imbalance, airway size reduction, and bite disturbances, such as anterior open bite ^[8, 9].

Over the years, many authors used various methods for the diagnosis of various groups TMD such as muscle palpation, manual functional analysis, masticatory muscles electromyography, evaluation of the mandibular range of motion, different questionnaires and indexes ^[4, 9, 12, 13, 14].

Various imaging modalities like orthopantomogram, transcranial, transpharyngeal, conventional tomography, computed tomography are considered to view the various changes in TMJ and diagnosis of osteoarthritis / osteoarthrosis ^[15, 16].

The diagnosis of OA may be difficult because of other TMJ pathologies that can have similar clinical aspects. Diagnosis of osteoarthritis most commonly depends on radiographic findings ^[17, 18].

Management options for TMJ OA include reassurance, occlusal appliances, occlusal equilibration, physical therapy, medication in addition to several surgical modalities ^[19, 20, 4, 21].

OA, as the other temporomandibular disorders, seems to affect women more often than men, and are more prevalent in older age groups ^[3, 22, 23, 10, 24].

The purpose of this article is to present a case report on a patient who acquired an open bite due to temporomandibular joint osteoarthritis (TMJ-OA).

Case report

A 42 years old female patient reported with a chief complaint of pain in the ear region and difficulty in chewing food for last one year. No history of pain in other joints. During intra oral examination the posterior teeth were no missing.

She had a dysfunctional pain, and the pain was aggravated by chewing and eating. Clinical examination revealed that she had tenderness in relation to preauricular region. She had limited mouth opening, TMJ sounds, and pain. Maximum mouth opening was 36 mm with pain in both TMJs. Lateral movement was 5 mm and protrusive movement was 5 mm. The palpation of the masticators muscles showed moderate pain of muscles. Severe pain was determined by palpation of the joints.

Based on the age, history and the clinical findings a provisional diagnosis of Degenerative joint disease of TMJ was considered. Condylar resorption was observed in both TMJs by Cone Beam CT.

The initial splint therapy gave a significant reduction of reported symptoms after 1 month of treatment and then occlusal equilibration was initiated. Palpation of masticator muscles and TMJ showed no pain. After medical (NSAIDS, pain killers and muscle relaxants) and splint therapy, the complaints disappeared, but the patient had an anterior open bite as a new complaint (Figures 1 and 2).

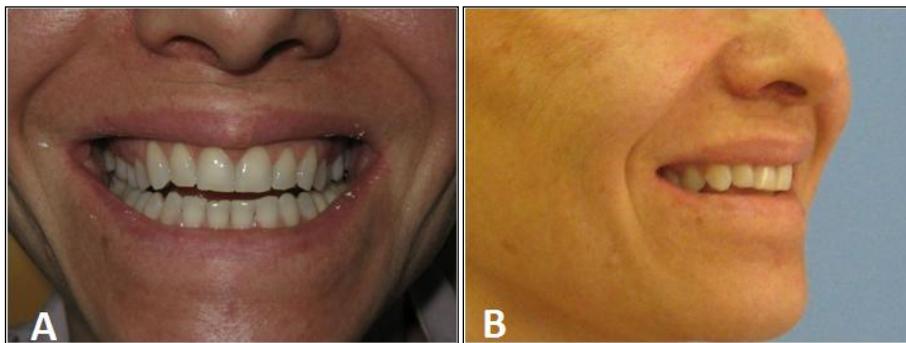


Figure 1 Extra oral photograph before treatment a) frontal view; b) lateral view

Diagnosis was confirmed by TMJ radiographs which may reveal the evidence of structural changes in the subarticular bone of the condyle and fossa (flattening, osteophytes and erosions).



**Figure 2 Intraoral photograph of open bite from condylar bone loss
a) Frontal view; b) Lateral view**

Although a surgical option was considered, a decision was made after careful evaluation to treat the case by selective grinding alone. Splint therapy was performed to stabilize condylar position. The splint surface was adjusted to obtain a balanced muscular activity, and checked with conventional clinical control of the occlusal contacts.

After initial medical and splint therapy (Figure 3a), prosthetic treatment was the choice of our patient.

Splint therapy was followed by selective grinding and occlusal improvements. We made trial equilibration on mounted models to see if the desired occlusion can be obtained with just equilibration – and to evaluate the amount of alterations necessary to the posterior teeth. (Figure 3b).

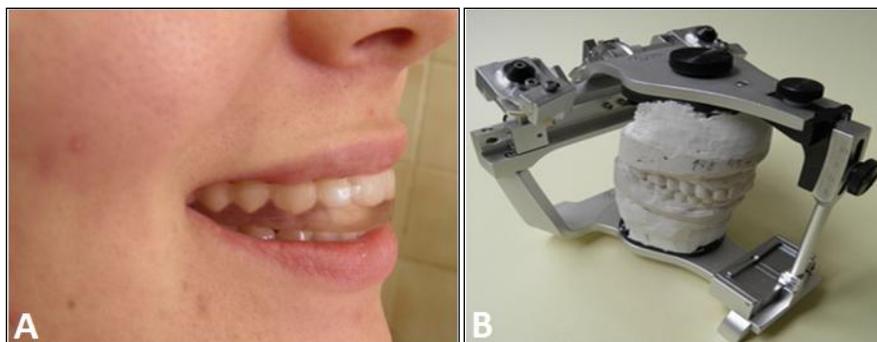


Figure 3 A) Occlusal splint; B) Mounted models in articulator

Thirty days later, we conducted an occlusal adjustment by selective grinding to reduce the anterior open bite and increase the occlusal stability (Figure 4a) as been simulated in the casts.

With these procedures, the coupling of the anterior teeth was possible, which provided anterior guidance and stability in the centric occlusal relation in the patient (Figure 4a).

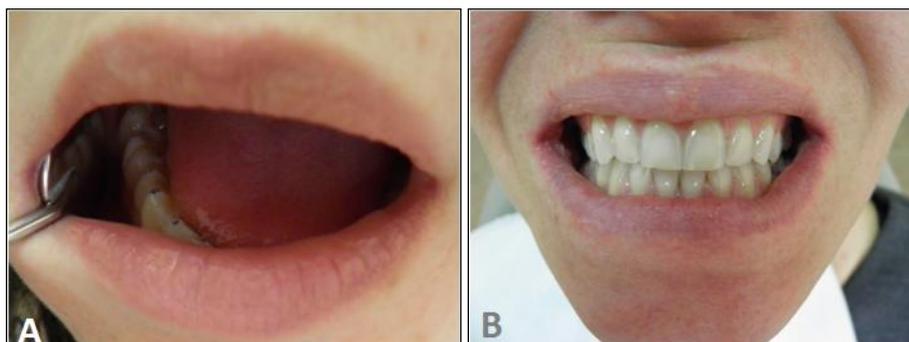


Figure 4 A) Intraoral view after equilibration

B) Frontal view of achieved occlusion after treatment

After treatment, an acceptable occlusion was achieved without any TMD symptoms (Figure 4b).

DISCUSSION

Since the disorder is self limiting there is no routine indication of aggressive treatment. Conservative treatment is surely indicated for osteoarthritic patients because this will reduce the symptoms and speed up the adaptive process.

Stabilization splints are preferred for decreasing the loading force to the condyle and to protect from resorption. They have no effect to reposition the disc on condyle, but allow the retrodiscal tissue to produce a pseudodisc where the condyle can function without any limitation and pain.

Some patients with an anterior open bite can be retreated with occlusal adjustment. This case report explains the successful management of a patient having osteoarthritis with occlusal appliance therapy, supportive therapy and occlusal equilibration. Functional occlusion, healthy periodontium and pleasing facial profile were achieved in this case.

With the advent of conservative therapy, the OA patients typically need surgical treatment in only 3 percent of the cases. The conservative therapy can last up to 4 months for the different specialties to provide the symptomatic care and prophylactic care.

CONCLUSION

In conclusion, a some patient with OA and a progressive condyle resorption can be treated with noninvasive approach. The available evidence suggests that certain nonsurgical and minimally invasive interventions might be equally effective, but any case should be interpreted with caution ^[25, 26, 27].

REFERENCES

1. Cevidanes, L. H. S., A.-K. Hajati A.K, Paniagua B., MS, Lim P.F., Walker D. G., Palconet G, Nackley A. G., Styner M., Ludlow J. B., Zhu H. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2010;110:110-117.
2. Tanaka, E., Detamore M.S., Mercuri L.G. Degenerative Disorders of the Temporomandibular Joint: Etiology, Diagnosis, and Treatment. J Dent Res 2008; 87(4):296-307.
3. Bjornland, T., Gjerum A.A., Moystad A. Osteoarthritis of the temporomandibular joint: an evaluation of the effects and complications of corticosteroid injection compared with injection with sodium hyaluronate. Journal of Oral Rehabilitation 2007; 34; 583–589.
4. Okeson, J.P. Management of Temporomandibular Disorders and Occlusion, 6th ed. St. Louis: CV Mosby, 2008.
5. Kuroda, S, Kuroda Y, Tomita Y, Tanaka E. Long-term stability of conservative orthodontic treatment in a patient with rheumatoid arthritis and severe condylar resorption. Am J Orthod Dentofacial Orthop. 2012; 141(3):352-62.

6. Minakuchi, H. Case Report of an Osteoarthritic Temporomandibular Joint Patient Whose Posterior Open Bite Was Successfully Restored by Occlusal Bonding Method. *Nihon Hotetsu Shika Gakkai Zasshi* Vol. 52 (2008) No. 4 P 574-577.
7. Tanaka, E., Yamano E, Inubushi T, Kuroda S. Management of acquired open bite associated with temporomandibular joint osteoarthritis using miniscrew anchorage. *Korean J Orthod.* 2012; 42(3):144-54.
8. Wright, E.F., North S.L. Management and Treatment of Temporomandibular Disorders: A Clinical Perspective. *J Man Manip Ther.* 2009; 17(4).
9. Mercuri, L.G. Osteoarthritis, Osteoarthrosis, and Idiopathic Condylar Resorption. *Oral and Maxillofacial Surgery Clinics*, Volume 20, Issue 2, Pages 2008; 169-183.
10. Bumann, A., Lotzmann U. *TMJ Disorders and Orofacial Pain: The Role of Dentistry in a Multidisciplinary Diagnostic Approach (Color Atlas of Dental Medicine)*, 2002.
11. Kirov, D.N., Krastev S.K. Diagnostic Value of Static Functional Tests in Patients with Temporomandibular Disorders. *International Journal of Science and Research*; ISSN (Online): 2319-7064; Volume 3 Issue 9, September 2014; 324-327.
12. Kirov, D.N., S. Kazakova. Electromyographic activity in patients with myogenous temporomandibular disorders. *Scientific journal*, ISSN (Online) 2367-4725, 2014; 27-32.
13. Kirov, D.N., Kazakova S, Kirilova J. Limitation of border movements of the mandible in subjects with temporomandibular disorders. *Scientific journal*, ISSN (Online) 2367-4725, 2014; 9-15.
14. Kirov, D. N. "Diagnostics and prevalence of temporomandibular disorders", [PhD Dissertation]. Medical University, Sofia 2014, (Bulgarian).
15. Badel, T., Marotti M., Sonja S.K., Keros J., Kern J., Krolo I. Radiological characteristics of osteoarthritis of temporomandibular joint without disc displacement. *Period biol*, Vol 111, No 2, 2009.
16. Kyung-Soo, Nah. Condylar bony changes in patients with temporomandibular disorders: a CBCT study. *Imaging Sci Dent* 42, 2012; 249-53.
17. Barghan, S., Tetradis S., Mallya S.M. Application of cone beam computed tomography for assessment of the temporomandibular joints *Australian Dental Journal* 57:(1 Suppl): 2012; 109–118.

18. Limchaichana, N., Petersson A, Rohlin .M. The efficacy of magnetic resonance imaging in the diagnosis of degenerative and inflammatory temporomandibular joint disorders: a systematic literature review. *Oral Surg Oral Med Oral Pat hol Oral Radiol Endod* 2006;102:521-36.
19. Turp, J.C., Komine F, Hugger A Efficacy of stabilization splints for the management of patients with masticatory muscle pain: a qualitative systematic review. *Clin Oral Investig* 8(4): 2004; 179-195.
20. Nicolakis, P., Erdogmus C.B, Kopf A, Nicolakis M, Piehslinger E, et al. Effectiveness of exercise therapy in patients with myofascial pain dysfunction syndrome. *J Oral Rehabil* 29(4): 2002; 362-368.
21. Yura, S., Totsuka Y, Yoshikawa T, Inoue N. Can arthrocentesis release intracapsular adhesions? Arthroscopic findings before and after irrigation under sufficient hydraulic pressure. *J Oral Maxillofac Surg* 61(11): 2003, 1253-1256.
22. Kirov, D.N., S. Kazakova, H. Papazyan. Prevalence of clinical diagnosis of temporomandibular disorders among Bulgarian patients *Health and science, (ISSN 2367-4725), year III, 4 (012), December 2013.*
23. Johansson, A., Unell L, Carlsson GE, So" derfeldt B, Halling A. Gender difference in symptoms related to temporomandibular disorders in a population of 50-year-old subjects. *J Orofac Pain.* 2003; 17:29–35.
24. Johansson, A., Unell L, Carlsson GE, So" derfeldt B, Halling A. Risk factors associated with symptoms of temporomandibular disorders in a population of 50- and 60-year-old subjects. *J Oral Rehabil.* 2006; 33:473–481.
25. de Leeuw, R., Boering G., Stegenga B., De Bont L. G. M. Clinical signs of TMJ osteoarthritis and internal derangement 30 years after non surgical treatment. *J. Orofacial Pain,* 1994,8: 18-24.
26. de Souza, R.F., Lovato da Silva CH, Nasser M, Fedorowicz Z, Al-Muharraqi MA. Interventions for the management of temporomandibular joint osteoarthritis. *Cochrane Database Syst Rev.* 2012 Apr 18;4:CD007261.
27. Yamada, K., Satou Y., Hanada K., Ito Jasuke. A case an anterior open bite developing during adolescence. *Journal of Ortodontics,* Vol. 28, 2001; 19-24.