



Osteoarthritis of Temporomandibular Joints in a Female Patient: Diagnosis and Treatment: Case Report

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Case Study

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ABSTRACT

The human body has been susceptible to microorganisms, pathogens, and many diseases, since the evolution of mankind. Various factors influence changes in the body including age, sex, immunity, nutritional factors, etc. Any disease can affect any part of the body or the whole body. One such disease is osteoarthritis. It causes degenerative changes in joints of the body leading to a decrease in flexibility and movement of the joints. This article reviews a case of osteoarthritis of the temporomandibular joint, which was unforeseen diagnosed in a female patient during a routine examination.

Keywords: Condylar Flattening, Joint Mice, Osteoarthritis, Temporomandibular Joint (TMJ).

Introduction

The temporomandibular joint (TMJ), which performs important roles in dental occlusion and the neuromuscular system, is one of the most complex joints of the human body.¹ The temporomandibular articulation is a synovial joint. The anatomy of the temporomandibular joint (TMJ) varies considerably among mammals depending on the masticatory requirement so a single all-embracing descriptive classification is not possible (Nanci 2008). In humans, a different situation exists. The masticatory process demands that the mandible should be capable of opening and closing movements and also protrusive/retrusive and lateral movements. To achieve these complex movements, the mandible undertakes translatory and rotational movements. Therefore, the human TMJ is described as a

ginglymoarthrodial type of diarthrotic joint (Moffett 1966).² It is one of the most commonly used joints and is used during talking and eating. Many patients use their TMJ during sleep in the process of teeth grinding. Osteoarthritis of the joint is a very likely outcome.³ This article reviews a case of bilateral osteoarthritis of the temporomandibular joint which was diagnosed in a female patient during routine clinical examination.

Case Report

A 24-year female patient reported to the Department of oral medicine and Radiology with the chief complaint of pain in opening and closing of mouth for six to eight months. She also complained of a clicking sound in both temporomandibular joints while opening and closing both jaws. Initially, the pain was dull in

nature; later on, it increased gradually and became intolerable. The pain was more severe on the left side than on the right side. The patient had no history of any systemic disease. Her gait, body build, and facial profile were normal.

On examination of the oral cavity, there was no evidence of any pathology or lesion. Extra oral

examination of TMJ revealed bilateral clicking sounds on the opening and closing of jaws. The sounds were heard on auscultation of TMJ. Furthermore, the deviation of the mandible was seen towards the right side on the opening of the jaws and towards the left side on the closing of the jaws, respectively. A panoramic radiograph was done for further investigation.



Occlusion of the patient



Panoramic radiograph of the patient

Panoramic radiograph revealed severe condylar flattening in the lateral and medial pole of the left condyle, giving it a 'pencil shape condylar head'.

Cortical erosions were also seen in the left condyle. The right condylar head revealed mild condylar flattening with mild sclerosis. Joint mice and

osteophytes were absent in both TMJs. On palpation, medial and lateral pterygoid muscles were tender in nature. Clicking sounds were present in both TMJs, during the opening and closing of jaws. Based on clinical and radiographic findings, diagnosis of osteoarthritis (Degenerative joint disease) was made.

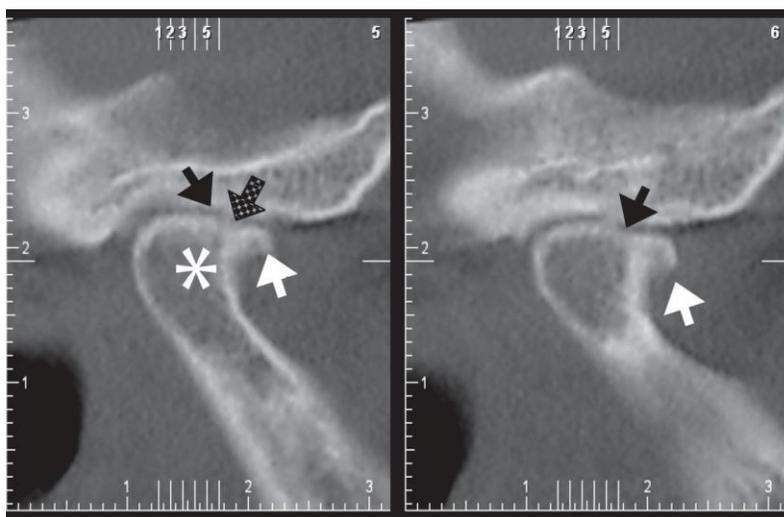
As the patient was young, surgical treatment was not included in her treatment planning. Non-steroidal anti-inflammatory drugs oral and topical ointments were given for pain relief. Hot and cold fermentation was advised for relief from the tenderness of TMJ muscles. Calcium supplements were given for bone remodelling. The patient was kept on follow-up.

Discussion

The temporomandibular joint (TMJ) is a synovial joint that performs the most complicated movement in the human body. Osteoarthritis (OA) is a degenerative disease that is characterized by progressive cartilage degradation, subchondral bone remodelling, synovitis, and chronic pain (Zarb and Carlsson 1999). However, the etiology of the majority of TMJ osteoarthritis (TMJOA) is complex and multifactorial or unknown. TMJOA is also an important subtype of temporomandibular disorders (TMDs) (Zarb and Carlsson 1999). It is secondary to disc displacement, trauma, functional

overload, and development abnormalities, such as secondary TMJOA (Tanaka et al. 2008).⁴ Osteoarthritis (OA) is the most common joint disease⁵, hence frequently found in the temporomandibular joint (TMJ). It is a complex, gender- and age-related disease with inflammatory mediators released by cartilage, bone, and synovium.⁶ Computed tomography (CT) and magnetic resonance (MRI) are widely useful tools for imaging the TMJ region of TMD patients, in particular for assessing degenerative bony changes, disc position and configuration, inflammatory pathological changes in the posterior disc attachment, the presence of effusion in joint spaces, and bone marrow edematous involvement.⁷ The TMJ imaging by CBCT also allows the evaluation of the integrity of the bony structures when a degenerative disease is suspected, and to confirm the extent and progression of any bony changes.⁸

The degenerative changes of bone in DJD are more frequent in the mandibular condyle than in the mandibular fossa or the articular eminence, and the characteristic pathological bony changes are erosion, osteophytes, and deformity; and adaptive bony changes are marginal proliferation, flattening, concavity, sclerosis, and subchondral cyst.⁹



A CBCT (Cone Beam Computed Tomography) image showing condylar flattening, cortical erosions, bone sclerosis, and osteophytes formation in the mandibular condyle.¹⁰

An important consideration was the low sensitivity of the diagnostic algorithms for disc displacement (DD) and degenerative joint disease (DJD) (osteoarthritis and osteoarthrosis) in temporomandibular disorder (TMD) that can provide only provisional diagnoses.¹¹

This is due to the fact that some disc displacement with reduction does not have clinically detectable noise, and the disorder will not be diagnosed using the clinical criteria (positive history of noise and the presence of clicking noises).¹² So, a radiographic diagnosis is needed for a detailed analysis of the disease. In this article, we discussed a case of degenerative joint disease which was diagnosed unforeseen during the patient's radiographic examination.

Conclusion

A patient's detailed case history can only give an idea to the dentist about the patient's underlying disease. For a detailed analysis of the disease or the pathology, a radiographic examination or pathologic examination should be done. Correct diagnosis of the disease will lead to correct treatment.

Conflict of Interest: None declared.

References

1. Granados JI. The influence of the loss of teeth and attrition on the articular eminence. *J Prosthet Dent* 1979; 42:78e85. doi: [https://doi.org/10.1016/0022-3913\(79\)90333-0](https://doi.org/10.1016/0022-3913(79)90333-0)
2. Henry A. Gremillion, Gary D. Klasser: Textbook of Temporomandibular disorders; A Translational Approach From Basic Science to Clinical Applicability; Springer Publication; page no.11; doi:

- <http://dx.doi.org/10.1007/978-3-319-57247-5>
3. Karantanas AH. Magnetic resonance imaging findings in early osteoarthritis of the knee. *Eur Musculoskelet Rev.* 2007; 1:37e40.
4. X.D. Wang, J.N. Zhang et. al.; Current Understanding of Pathogenesis and Treatment of TMJ Osteoarthritis; *Journal of Dental Research*, 2015, Vol. 94(5) 666-673. doi: <https://doi.org/10.1177/0022034515574770>
5. World Health Organization. Background Paper 6.12. Osteoarthritis: World Health Organization; 2013. http://www.Who.int/medicines/areas/priority_medicines/BP6_12Osteo.Pdf
6. Berenbaum F. Osteoarthritis as an inflammatory disease (osteoarthritis not osteoarthrosis!) *Osteoarthritis Cartilage* 2013; 21:16-21. doi: <https://doi.org/10.1016/j.joca.2012.11.012>
7. Suenaga S, Nagayama K, Nagasawa T, Indo H, Majima HJ. The usefulness of diagnostic imaging for the assessment of pain symptoms in temporomandibular disorders. *Japanese Dental Science Review.* 2016; 52(4):93-106. doi: <https://doi.org/10.1016/j.jdsr.2016.04.004>
8. Wiese M, Wenzel A, Hintze H, Petersson A, Knutsson K, Bakke M, et al. Influence of cross-sectional temporomandibular joint tomography on diagnosis and management decisions of patients with temporomandibular joint disorders. *Journal of Orofacial Pain.* 2011;25(3):223-231; <https://pubmed.ncbi.nlm.nih.gov/21837289/>
9. Koyama J, Nishiyama H, Hayashi T. Follow-up study of condylar bony changes using helical computed tomography in patients with temporomandibular disorder. *Dento*

- Maxillo Facial Radiology. 2007; 36(8):472-477. doi: <https://doi.org/10.1259/dmfr/28078357>
10. Osteoarthritis of the Temporomandibular Joint: Clinical and Imagenological Diagnosis, Pathogenic Role of the Immuno-Inflammatory Response, and Immunotherapeutic Strategies Based on T Regulatory Lymphocytes. doi: <https://doi.org/10.5772/intechopen.72496>
 11. Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic criteria for temporomandibular disorders (DC/TMD) for clinical and research applications: Recommendations of the international RDC/TMD consortium network and Orofacial pain special interest Group†. Journal of Oral & Facial Pain and Headache. 2014; 28(1):6-27. doi: <https://doi.org/10.11607/jop.1151>
 12. Okeson JP. Critical commentary 1: Evaluation of the research diagnostic criteria for temporomandibular disorders for the recognition of an anterior disc displacement with reduction. Journal of Orofacial Pain. 2009; 23(4):312-315; <https://pubmed.ncbi.nlm.nih.gov/19888479/>

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