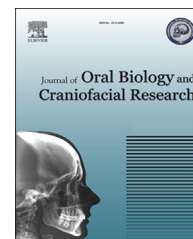




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## Editorial

# TMJ osteoarthritis and early diagnosis



This issue of the Journal coincides with the Conference on TMJ. The TMJ is a synovial joint comprising of an articulation between two bones (mandibular condyle and squamous temporal bone) and there is a cartilaginous disc in between the two articulating surfaces. This fibrocartilaginous biconcave disc (meniscus) divides the joint into superior and inferior compart-

ments making the joint a compound joint. The movements at the joint are both a hinge type of movement and a gliding movement, which makes it into a very complicated joint. The disc has thick anterior and posterior bands, and a thinner intermediate zone. The disc is flexible and is attached posteriorly through a loose, densely vascular and innervated connective tissue superiorly to tympanic plate and inferiorly to the Condyle. Anteriorly, medially and laterally the disc is attached to the joint capsule. The disc itself is avascular but possibly innervated at the margins. The collagen of the disc is almost exclusively type I and primarily runs anteroposteriorly through the centre and in a ring like fashion around the periphery. The GAG content is significantly less than that of hyaline cartilage, and chondroitin and dermatan sulphate appear to be the primary GAGs. The cells of the disc are not chondrocytes, but resemble fibrocytes and fibrochondrocytes. The joint is surrounded by a capsule.

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. In fact, disc displacement is the commonest pathology followed by osteoarthritis. Osteoarthritis is present in 10–17% of patients with TMJ pain whereas in one study disc displacement with or without reduction was present in 89% of patients with TMJ pain. Benhardt et al,<sup>1</sup> found prevalence of OA of the TMJ joint on clinical and MRI examination to be 25% in 20–49 year age group. Schmitter et al,<sup>2</sup> 2010 found a prevalence of TMJ OA in 70% persons of 73–75 year age group, though in most patients there was a mild pain and clinical signs of OA were not common. It is interesting to note that osteoarthritis of the TMJ is supposed to be painful in the early stages only but

becomes painless as time passes. Also the signs of osteoarthritis and radiological signs may increase while the pain is decreasing.

Osteoarthritis, in general, is a perplexing disorder as the symptoms do not correlate with radiological signs in OA knee. A quarter of our patients present to us with acute inflammation in the knee joint and over 85% patients have features of inflammation in the knee joint. It has been my personal observation that in many patients, who present to us with acute inflammation in one knee joint, the symptoms subside after some time and then they develop pain and acute inflammation in the other knee. This too subsides with treatment and patients become relatively pain free, though signs and radiological changes of OA increase. However OA knee follows a relentless course often resulting in incapacitation and requirement for Total Knee Replacement. Whereas in OA of TMJ though overall prevalence of TMJ OA increases with age, severe disease is not common. It has been suggested that TMJ OA is a self limiting disorder and needs no active treatment; rather attempts at treatment extend the period of patients' symptoms. Most doctors would conservatively manage TMJ OA and possibly give an Intraarticular Steroid injection if the patient does not respond to conservative management. A distinction has been attempted between, on one hand, active symptomatic disease which has been called osteoarthritis and on the other hand, chronic deforming process resulting from this process and which has been called osteoarthrosis. It appears that the disability due to this chronic deforming process is not high. In contrast, the disability in OA knee can be significant requiring joint replacement therapy.

Any substantial progress in the management of TMJ osteoarthritis is likely to come about by early diagnosis. Early diagnosis is not easy. Despite the differences in TMJ and knee joint that the articular cartilage of TMJ has more fibrocollagenous content than knee joint, and the articular cartilage is composed of hyaline cartilage, TMJ as a joint has similarities with knee joint in as much that both joints have a disc or Meniscus. In OA of the knee, Meniscal lesions are considered important, similarly disc lesions may be important for diagnosis of TMJ osteoarthritis. Thus, recent advances in Knee OA could be translated into development of new strategies for study, diagnosis and management of TMJ OA.

Skiagraphy has been the standard of evaluation for osteoarthritis and has been used to study presence of Osteophytes, eburnation, joint space reduction, and cystic changes in periarticular bone. However, presence of Osteophytes, the most consistent anomaly, is considered to be a late feature. MRI is complex investigation, which can be done in a variety of ways and a standardized method is slowly emerging. Depending on what is desired to be seen the sequences acquired need to be configured. For example, the Osteophytes are best seen in T1 weighted images, Cartilage defects in Intermediate weighted FSE Fat suppressed sequences; Bone Marrow lesions (BML) in Proton Density weighted, FSE, Fat suppressed sequences; Meniscal tears in Intermediate weighted Fat suppressed; and Synovitis in T1 weighted Gadolinium contrast with Fat suppression.

Bone Marrow lesions, Cartilage defects, Osteophytes and Meniscal tears in the knee joint are considered as hall mark of diagnosis of OA and have been shown to predate the development of clinical symptoms in some patients. In some patients BMLs have been shown to be associated with clinical symptoms and change with treatment. These changes have been considered to be features of 'Early Osteoarthritis' and may appear before the classical radiological features of osteoarthritis.<sup>3</sup> Though MRI is being used quite commonly in TMJ studies yet none of the studies have tried to look for Bone Marrow lesions in TMJ. It would be interesting to see for the presence of BMLs in patients with TMJ pain.

Treatment of TMJ osteoarthritis with Chondroitin sulphate, Glucosamine Sulphate, I/A Hyaluronan, Corticosteroids, and other supportive measures have revealed varying

results. Making an early diagnosis and evaluating a response based on MRI findings may make a difference to such studies.

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Siddharth Kumar Das  
Professor and Head, Department of Rheumatology,  
King George Medical University, RALC Campus Lucknow,  
Uttar Pradesh 226018, India  
E-mail addresses: [rheumatologykgmu@gmail.com](mailto:rheumatologykgmu@gmail.com),  
[daslko@gmail.com](mailto:daslko@gmail.com)

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