

Temporomandibular Joint

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Millions of people suffer daily by Temporomandibular Joint disorder alone in the US. This disorder creates an annoyance by causing the jaw to have slight to mild discomfort, clicking and even cause the jaw to lock up. There is no definite cure but possible reconstruction by using partial or total joint prosthesis is into consideration. A more comprehensive analysis is predicted to investigate the kinetics and kinematics of TMD. Such understanding may provide better insights into how TMD is structured and functions.

The Temporomandibular Joint (TMJ) connects to the mandibular of the lower jaw to the skull. The TMJ is the most complex and most used joint in the human body. It is used for talking, yawning, biting and chewing. The TMJ is composed of six main components. These components are Mandibular condyles, articular surface of the temporal bone, capsule, articular disc, ligaments and lateral pterygoid.

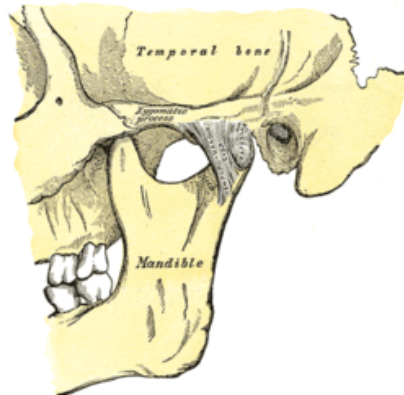
TMJ is known as a ginglymoarthrodial joint which relates to its dual compartment structure and function. This joint further consists of two bones which are the mandibular fossa and the temporal bone. The two bones are separated by an articular disc. This disc divides the TMJ into its two compartments. The first one is inferior compartment which deals with rotation. This rotation corresponds to the first 20mm of opening the mouth. After that the second compartment, the superior compartment becomes active where the mouth still continues to open. As the mouth continues to open the condylar head and articular disc slides

There are several known problems that could lead to TMD. Teeth grinding and clenching are commonly known reasons. This causes a wear on the cartilage lining of the TMJ. Evidence of grinding and clenching is shown by telltale signs of wear and tear on the teeth. Another is misalignment of the teeth. Having trouble finding a comfortable bite in a way a patients tooth fits together. If not the patient may chew to one side which also has an effect. Other common problems are habitual gum chewing and even stress

TMD is known to cause several symptoms other than “clicking and popping” noises of the jaw. The causes of the phenomena’s occur because of unbalanced activities, spasm, or over exertion of the jaw muscles. Headache is the most common symptom where 80% of patients complain and 40% report some sort of facial pain. Cold weather doesn’t help since it increases muscle contraction. Dizziness or a type of imbalance is reported by some 40%. The reasoning behind this is not known.

There are some treatments for TMD but nothing is permanent to eliminate disorder. Some of these treatments would be simple everyday procedures such as; heat and ice therapy, physical therapy, medications. Some other treatments include correction of bite abnormalities where corrective dental surgery may adjust bridges and crowns to create proper teeth alignment. Surgery is the final hope if all medical

therapies failed. The surgery consists of ligament tightening, joint restructuring, and joint replacement. Surgery is for the most severe cases. Even then the procedure is extremely difficult and is not performed often. It has a low turn out rate and the reconstruction doesn’t last too long



In May 25th-27th 2006 the first TMJ Biomedical conference was held in Broomfield Colorado. This gave the chance for surgeons, engineers, doctors, and scientist to gather about the lacking research of TMJ. The goal of this conference is to establish multidisciplinary interactions of being able to identify some common

goals, strengths and capabilities. An example of these different groups pooling to together is researchers with element modeling expertise can create a list of clinically significant problems. Suggestions for TMJ research from Surgeons and patients were identified in a series of group discussions. What it boiled down to was the groups who endeavor to engage TMJ research were those of tissue and engineering and biomechanics. This gives a new hope for teams across the world with new approaches to diagnose, prevent and treat TMD.

In conclusion TMD should be closely more looked in to. The exact causes of TMD are still unexplained. With 20%-25% exhibit world population exhibit some sort of Temporomandibular disorder, and of that 3%-4% of patients seek treatment. The better understanding will prevent the occurrence of TMD and will hopefully lead to types of treatments and preventions.

Sources:

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