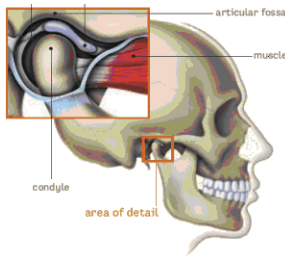


TMJ Total Joint Prosthesis University of Rhode Island – Chelsae Meier

The Temporomandibular Joint (TMJ) is one of the most complex and most used joints in the human body. The TMJ connects the mandible to the skull. It regulates the movement of the jaw and has important functions such as mastication and speech. The TMJ is comprised of two main components: the condyle and the articular fossa. Between the condyle and the fossa lies a fibrocartilage disc which acts much like a cushion to absorb the stress on the joint.



Temporomandibular disorder (TMD) is a common term used to describe any problem having to do with the jaw. This disorder is most commonly noted in patients between the ages of 20 and 40 years old and occurs more regularly in women than men. Recently some surveys have reported that 20-25% of people show signs of TMD and about one million new patients are diagnosed each year.

Treatments for TMJ disorders are initially conservative beginning with suggestions such as physical therapy and nonsurgical treatment. Treatment options for TMJ disorders include self-care, splints, arthrocentesis, arthroscopy, discectomy, and joint replacement.

While most TMJ prostheses are mainly stock devices, there exists one device that is custom-made for each patient. In 1989 Techmedica, Inc. (now known as TMJ Concepts) developed said device. The company created devices with a unique design giving very high success rates in comparison to those of other competitive companies. The Techmedica/TMJ Concepts total joint prosthesis is comprised of materials such as those used in joint reconstruction for hip and knee

replacements. The fossa component is made from pure titanium mesh and has an articular surface made of ultra-high-molecular-weight polyethylene. The body of the condylar component is made from medical grade titanium alloy while the condylar head is of cobalt-chromium-molybdenum alloy. The two components of the prosthesis are secured with titanium alloy screws.

Techmedica/TMJ Concepts created a specific protocol for their patients. The patient undergoes a CT scan of their jaws and this data is then processed through a rapid prototyping technology system in order to produce an anatomically accurate model of the jaws and joints of the patients. The total joint prosthesis is then conformed to the patient's specific needs using the plastic model as a guide.

The patient-fitted prosthesis is proven much better than the "off-the-shelf" implant devices. The Techmedica/TMJ Concepts prosthesis allows for a better fit and stabilization of the implanted components. These characteristics ensure that the components remain stationary. Little movement is necessary in order to maximize the opportunity for the jaw bone to fuse to the implanted device (this process is known as osseointegration).

References:

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