Temporomandibular Joint Disorder

Description

Temporomandibular joint disorder (TMJD) refers to a group of disorders characterized by pain in the temporomandibular joint and surrounding tissues. Initial conservative therapy is generally recommended; there are also a variety of nonsurgical and surgical treatment possibilities for patients whose symptoms persist.

OBJECTIVE

The objective of this evidence review is to evaluate diagnostic testing and therapeutic interventions for temporomandibular joint disorder and the effect on net health outcomes.

POLICY STATEMENT

Diagnostic Procedures

The following diagnostic procedures may be considered medically necessary in the diagnosis of temporomandibular joint disorder (TMJD):

- Diagnostic x-ray, tomograms, and arthrograms;

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Computed tomography (CT) scan or magnetic resonance imaging (MRI) (in general, CT scans and MRIs are reserved for presurgical evaluations);

Cephalograms (x-rays of jaws and skull);
Pantograms (x-rays of maxilla and mandible).

(Cephalograms and pantograms should be reviewed on an individual basis.)

The following diagnostic procedures are considered investigative in the diagnosis of TMJD:

- Electromyography (EMG), including surface EMG;
- Kinesiography;
- Thermography;
- Neuromuscular junction testing;
- Somatosensory testing;
- Transcranial or lateral skull x-rays; intraoral tracing or gnathic arch tracing (intended to demonstrate deviations in the positioning of the jaw that are associated with TMJD);
- Muscle testing;
- Standard dental radiographic procedures;
- Range-of-motion measurements;
- Computerized mandibular scan (measures and records muscle activity related to movement and positioning of the mandible and is intended to detect deviations in occlusion and muscle spasms related to TMJD);
- Ultrasound imaging/sonogram;
- Arthroscopy of the temporomandibular joint (TMJ) for purely diagnostic purposes;
- Joint vibration analysis.

**Nonsurgical Treatments**

The following nonsurgical treatments may be considered medically necessary in the treatment of TMJD:

- Intraoral removable prosthetic devices or appliances (encompassing fabrication, insertion, adjustment);
- Pharmacologic treatment (eg, anti-inflammatory, muscle relaxing, analgesic medications).

The following nonsurgical treatments are considered investigative in the treatment of TMJD:

- Electrogalvanic stimulation;
- Iontophoresis;
- Ultrasound;
- Devices promoted to maintain joint range of motion and to develop muscles involved in jaw function;
- Orthodontic services;
- Dental restorations/prostheses;
- Transcutaneous electrical nerve stimulation;
- Percutaneous electrical nerve stimulation;

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Surgical Treatments

The following surgical treatments may be considered **medically necessary** in the treatment of TMJD:

- Arthrocentesis;
- Manipulation for reduction of fracture or dislocation of the TMJ;
- Arthroscopic surgery in patients with objectively demonstrated (by physical examination or imaging) internal derangements (displaced discs) or degenerative joint disease who have failed conservative treatment;
- Open surgical procedures (when TMJD results from congenital anomalies, trauma, or disease in patients who have failed conservative treatment) including, but not limited to, arthroplasties; condylectomies; meniscus or disc plication, and disc removal.

**POLICY GUIDELINES**

No applicable information.

**BENEFIT APPLICATION**

Experimental or investigational procedures, treatments, drugs, or devices are not covered (See General Exclusion Section of brochure).

Claims may be received for psychiatric or psychological visits in relation to TMJD, because this condition may be psychosomatic in origin, resulting from tension or stress. Bruxism is a common symptom of tension, which may lead to symptoms suggestive of TMJD.

Prognathism (protruding jaw), micrognathism (small lower jaw), or apertognathism (open bite) may be associated with TMJD in some people.

Claims may be received for the treatment of TMJD with, but not limited to, the following diagnoses and symptoms:

- Cranial-cervical syndrome
- Myofascial pain/dysfunction syndrome
- Asymmetrical motor neuropathy
- Cervicalgia
- Localized myospasm
- Cephalgia
- Musculoskeletal dysfunction
- Neural entrapment
- Myalgia/myositis.

**FDA REGULATORY STATUS**

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Since 1981, several muscle-monitoring devices have been cleared for marketing by the U.S. Food and Drug Administration through the 510(k) process. Some examples are the K6-I Diagnostic System (Myotronics), the BioEMG III™ (Bio-Research Associates), M-Scan™ (Bio-Research Associates), and the GrindCare Measure (Medotech A/S). These devices aid clinicians in the analysis of joint sound, vibrations, and muscle contractions when diagnosing and evaluating TMJD. Food and Drug Administration product code: KZM.

Table 1. Muscle-Monitoring Devices Cleared by the U.S. Food and Drug Administration

<table>
<thead>
<tr>
<th>Devices</th>
<th>Manufacturer</th>
<th>Date Cleared</th>
<th>510(k) No.</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>K6-I Diagnostic System</td>
<td>Myotronics, Inc</td>
<td>Jun 1994</td>
<td>K922456</td>
<td>Electromyography</td>
</tr>
<tr>
<td>M-ScanTM</td>
<td>Bio-Research Associates</td>
<td>Jul 2013</td>
<td>K130158</td>
<td>Electromyography</td>
</tr>
<tr>
<td>GrindCare Measure</td>
<td>Medotech A/S</td>
<td>Apr 2012</td>
<td>K113677</td>
<td>Electromyography, Nocturnal Bruxism</td>
</tr>
</tbody>
</table>

**RATIONALE**

**Summary of Evidence**

For individuals who have suspected TMJD who receive ultrasound, surface electromyography, or joint vibration analysis, the evidence includes systematic reviews of diagnostic test studies. The relevant outcomes are test validity, and other performance measures. None of the systematic reviews found that these diagnostic techniques accurately identified patients with TMJD and many of the studies had methodologic limitations. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have a confirmed diagnosis of TMJD who receive intraoral devices or appliances or pharmacologic treatment, the evidence includes RCTs and systematic reviews of the RCTs. The relevant outcomes are symptoms, functional outcomes, QOL, and treatment-related morbidity. A systematic review of intraoral appliances (44 studies) and meta-analyses of subsets of these studies found a significant benefit of intraoral appliances compared with control interventions. Other systematic reviews have found a significant benefit of several pharmacologic treatments (e.g., analgesics, muscle relaxants, and anti-inflammatory medications [vs placebo]). The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have a confirmed diagnosis of TMJD who receive acupuncture, biofeedback, transcutaneous electrical nerve stimulation, orthodontic services, or hyaluronic acid, the evidence includes RCTs, systematic reviews of these RCTs, and observational studies. The relevant outcomes are symptoms, functional outcomes, QOL, and treatment-related morbidity. The systematic reviews did not find that these technologies reduced pain or improved functional outcomes significantly more than control treatments. Moreover, many individual studies were small and/or had methodologic limitations. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have a confirmed diagnosis of TMJD, who receive arthrocentesis or arthroscopy, the evidence includes RCTs and systematic reviews of the RCTs. The relevant outcomes are symptoms, functional outcomes, QOL, and treatment-related morbidity. Only one review, which included three RCTs, compared arthrocentesis or arthroscopy with nonsurgical interventions for TMJD. Pooled analyses of the RCTs found that arthrocentesis and arthroscopy resulted in superior pain reduction compared with control interventions. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.
SUPPLEMENTAL INFORMATION

Practice Guidelines and Position Statements

American Association for Dental Research

A 2010 policy statement, reaffirmed in 2015, by the American Association for Dental Research recommended the following for the diagnosis and treatment of temporomandibular joint disorders (TMJDs):  

"It is recommended that the differential diagnosis of TMDs [temporomandibular disorders] or related orofacial pain conditions should be based primarily on information obtained from the patient's history, clinical examination, and when indicated, TMJ [temporomandibular joint] radiology or other imaging procedures. The choice of adjunctive diagnostic procedures should be based upon published, peer-reviewed data showing diagnostic efficacy and safety. However, the consensus of recent scientific literature about currently available technological diagnostic devices for TMDs is that except for various imaging modalities, none of them shows the sensitivity and specificity required to separate normal subjects from TMD patients or to distinguish among TMD subgroups...."

"It is strongly recommended that, unless there are specific and justifiable indications to the contrary, treatment of TMD patients initially should be based on the use of conservative, reversible and evidence-based therapeutic modalities. Studies of the natural history of many TMDs suggest that they tend to improve or resolve over time. While no specific therapies have been proven to be uniformly effective, many of the conservative modalities have proven to be at least as effective in providing symptomatic relief as most forms of invasive treatment...."

American Society of Temporomandibular Joint Surgeons

Consensus clinical guidelines by the American Society of Temporomandibular Joint Surgeons (2001) focused on TMJDs associated with internal derangement and osteoarthritis. For diagnosis of this type of TMJD, a detailed history and, when indicated, a general physical examination was recommended. Imaging of the temporomandibular and associated structures is also recommended. Options for basic radiography to provide information on temporal bone and condylar morphology included the use of plain films, panoramic films, and tomograms. Also recommended was imaging of the disc and associated soft tissue with magnetic resonance imaging or arthrography. Other diagnostic procedures indicated included computed tomography, magnetic resonance imaging, arthrography (for selected cases) and isotope bone scans.

Nonsurgical treatment was recommended as first-line therapy for all symptomatic patients with this condition. Recommended treatment options include a change in diet, nonsteroidal anti-inflammatory drugs, maxillomandibular appliances, physical therapy, injections of corticosteroids or botulinum toxin, and behavior modification. If adequate symptom relief did not occur within two to three weeks, surgical consultation was advised. The guideline stated the following surgical procedures were considered accepted and effective for patients with TMJDs associated with internal derangement or osteoarthritis:

- Arthrocentesis
- Arthroscopy
- Condylotomy
- Arthrotenotomy (prosthetic joint replacement may be indicated in selected patients who have severe joint degeneration, destruction, or ankylosis)
- Coronoidotomy/coronoidectomy
- Styloidectionomy

American Dental Association

Selected statements from the American Dental Association's practice parameters for TMJDs, last revised in 1997, included:

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"Initially the dentist should select the least invasive and most reversible therapy that may ameliorate the patient's pain and/or functional impairment."

"The dentist should evaluate the effectiveness of initial therapy prior to considering more invasive and/or irreversible therapy."

"When articular derangement and/or condylar dislocation has been determined to be the etiology of the patient's pain and/or functional impairment, manual manipulation of the mandible may be performed by the dentist.

"Oral orthotics (guards/splints) may be used by the dentist to enhance diagnosis, facilitate treatment or reduce symptoms.

"Before restorative and/or occlusal therapy is performed, the dentist should attempt to reduce, through the use of reversible modalities, the neuromuscular, myofascial and temporomandibular joint symptoms.

"The dentist may replace teeth, alter tooth morphology and/or position by modifying occluding, articulating, adjacent or approximating surfaces, and by placing or replacing restorations (prostheses) to facilitate treatment.

"Transitional or provisional restorations (prostheses) may be utilized by the dentist to facilitate treatment.

"Intracapsular and/or intramuscular injection, and/or arthrocentesis may be performed for diagnostic and/or therapeutic purposes.

"Orthodontic therapy may be utilized to facilitate treatment.

"Orthognathic surgery may be performed to facilitate treatment.

"When internal derangement or pathosis has been determined to be the cause of the patient's pain and/or functional impairment, arthroscopic or open resective or reconstructive surgical procedures may be performed by the dentist."

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

REFERENCES


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POLICY HISTORY - THIS POLICY WAS APPROVED BY THE FEP® PHARMACY AND MEDICAL POLICY COMMITTEE ACCORDING TO THE HISTORY BELOW:

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Description</th>
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<tbody>
<tr>
<td>December 2012</td>
<td>New policy</td>
<td>Policy updated with literature review. References 4,7,13, and 18 added; others renumbered or removed. Joint vibration analysis added as not medically necessary diagnostic procedure. Low-level laser therapy removed from policy because of overlap with policy 2.01.56, low-level laser policy. In the statement on medically necessary treatments, intra-oral reversible prosthetic devices changed to intraoral removable prosthetic devices for clarification only.</td>
</tr>
<tr>
<td>September 2013</td>
<td>Replace policy</td>
<td>Policy updated with literature review; references 12 and 15-16 added. Policy statements unchanged.</td>
</tr>
<tr>
<td>September 2014</td>
<td>Replace policy</td>
<td>Policy updated with literature review through June 1, 2015; no references added. Bullet point on biofeedback removed from investigational statement on nonsurgical treatments.</td>
</tr>
<tr>
<td>September 2015</td>
<td>Replace policy</td>
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<th>Date</th>
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<th>Description</th>
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<tr>
<td>June 2016</td>
<td>Replace policy</td>
<td>Policy updated with literature review through December 18, 2015; no references added. Policy statements unchanged.</td>
</tr>
<tr>
<td>June 2018</td>
<td>Archive policy</td>
<td>Policy updated with literature review through December 11, 2017; references 15 and 24-25 added; reference 33 updated. “Dysfunction” changed to “Disorder” in the policy statement and title. Policy statements otherwise unchanged except use of joint vibration analysis for the purpose of diagnosis of TMJD corrected from “not medically necessary” to “investigational”.</td>
</tr>
<tr>
<td>June 2019</td>
<td>Reactivate policy</td>
<td>Policy reactivated to support prior approval requirement of FEP Blue Focus. Policy updated with literature review through December 6, 2018; reference 36 added. Policy statements unchanged.</td>
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