Clinical Policy Title: Temporomandibular joint disorder

Effective Date: September 1, 2013
Initial Review Date: May 13, 2013
Most Recent Review Date: May 1, 2018
Next Review Date: May 2019

Coverage policy

Select Health of South Carolina considers the following diagnostic tests and treatments to be clinically proven and, therefore, medically necessary for temporomandibular joint disorder:

- Diagnostic imaging, to include X-rays, along with computed tomography (CT) or magnetic resonance imaging (MRI) scans prior to surgery, provided pain and/or other symptoms are documented.
- Nonsurgical treatments (after failure of conservative therapies) including, but not limited to:
  - Intra-oral reversible prosthetic devices and appliances.
  - Pharmacological treatments, such as anti-inflammatories, muscle relaxants, and analgesic medicines.
  - Removal of precipitating activities, such as gum and hard candy chewing.
  - Short-term physical therapy.
  - Relaxation and cognitive behavioral therapy.
- Surgical treatments (after failure of conservative therapies), including:
  - Arthrocentesis (withdrawal and injection of fluid into the joint).
  - Manipulation for reduction of fracture or dislocation of the joint.
Arthroscopy for demonstrated internal derangements or degenerative joint disease after failed conservative therapy.

Open surgical procedures, including, but not limited to, arthroplasty, condylectomy, meniscus, and disc pliation and removal when temporomandibular joint disorder results from congenital anomaly or trauma and the patient has failed conservative therapy.

Orthognathic surgery.

Autogenous grafts (AAOMS, 2017).

Limitations:

All other diagnostic tests or therapies for temporomandibular joint disorder are considered investigational or experimental and, therefore, not medically necessary.

Alternative covered services:

None.

Background

Temporomandibular joint disorder, or TMJ disorder, is characterized by discomfort, sounds, or dysfunction (limited movement or locking of the jaw) in the temporomandibular joint and surrounding muscles or by occlusion of the teeth (grinding or bruxism). The disorder is multifactorial, including psychogenic contributors, with symptoms varying over time and apparently spontaneous remissions. It is also common, with as many as one-third of adults experiencing symptoms (Buescher, 2007). The disease can also affect children and adolescents; a meta-analysis of 11 articles (n = 17,051) found prevalence of clinical signs of intra-articular joint disorders to be 16 percent. The most prevalent sign was clicking (10.0 percent) followed by jaw locking (2.3 percent) (da Silva, 2015).

Diagnosis of the disorder can be initiated by dentists, especially those who have had special temporomandibular joint disorder training (Wright, 2009). Temporomandibular joint disorder has proven difficult to diagnose accurately; a meta-analysis of seven articles that compared tests of joint sounds, joint movements, or clinically oriented pain measures failed to determine the relative ability of each to distinguish between patients with or without temporomandibular joint disorder (Reneker, 2011). Many patients suffering from temporomandibular joint disorder are not treated; a meta-analysis of 17 articles (n = 9,454) estimated the temporomandibular joint disorder treatment need in adults to be 15.6 percent, a figure that was especially high in younger adults (Al-Jundi, 2008).

Attempts to treat this complex condition have included conservative and reversible modalities (reassurance, education, nonsteroidal anti-inflammatory drugs, removable appliances such as night guards, behavioral and psychosocial interventions, biofeedback, and exposure to certain kinds of light) and irreversible modalities (arthrocentesis, occlusal adjustments orthodontics, joint replacement, injection of hyaluronate or botulinum toxin into the joint, and orthognathic or corrective jaw surgery).
Searches

Select Health of South Carolina searched PubMed and the databases of:

- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality guideline clearinghouse and evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on March 20, 2018. Search terms were: “temporomandibular joint” and “temporomandibular joint disorder.”

We included:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews**.
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

Findings

A number of professional guidelines govern accepted practices in temporomandibular joint disorder diagnosis and treatment. The American Association of Oral and Maxillofacial Surgeons guideline lists recommendations for:

- Diagnostic procedures, including imaging studies and diagnostic blocks of local anesthetics.
- Findings of unilateral or bilateral pain that is usually continuous and localized to the joint.
- Laboratory testing to include rheumatoid panel.
- Nonsurgical approaches, including medication, orthotic appliance, and physical therapy.
- Surgical approaches, including manipulation under anesthesia, arthrocentesis, and various arthroscopic surgeries and open arthroplasties (AAOMS, 2017).

An analysis of 12 systematic reviews provides evidence that acupuncture; occlusal appliances; behavioral therapy; physical therapies; some pharmacological therapies (selective serotonin reuptake inhibitors, tricyclic antidepressants, and naproxen); low- and mid-level laser therapy; electromyography; and biofeedback (alone or in combination) may be effective treatments for patients with temporomandibular joint disorder. Occlusal adjustment and arthrocentesis and lavage were reported as likely not effective. Many systematic reviews lack long-term effectiveness, have low methodological quality, vary in methodology, and have small study samples as limitations (CADTH, 2010).
Because hundreds of systematic reviews on temporomandibular joint disorder have been published, this clinical policy will select meta-analyses, which are homogenous and more comparable, to assess efficacy of methods used to diagnose and treat the disorder. These meta-analyses include the following:

**Diagnostic**

- MRI was found to be a superior than clinical examination protocols, which had sensitivity and specificity of 44 and 51 percent, for diagnosing temporomandibular joint disk displacement disorder (Pupo, 2016).

**Non-surgical treatment**

- **Musculoskeletal manual techniques (eight articles).** This approach was linked with a significant reduction (p<.0001) on active mouth opening and on pain during active mouth opening, when compared with other conservative treatments for temporomandibular joint disorder (Martins, 2016).
- **Interpositional and reconstruction arthroplasty (eight articles, n = 234).** Both of these approaches produced significant decreases in reankylosis, with no significant differences (p<.42) between the two (Ma, 2015).
- **Cognitive behavioral therapy and self-care management (eight articles).** For persistent temporomandibular joint disorder, both approaches led to similar improvements in pain and disability; cognitive behavioral therapy is more effective for activity interference and depressive symptoms, and is more helpful when combined with usual treatment; self-care management is more effective than usual treatment (Randhawa, 2016).
- **Psychosocial interventions and usual (splint) therapy.** Psychosocial intervention resulted in significantly greater reductions in long-term self-reported pain (p<.005), along with long-term depression (p<.05), compared to usual treatments and psychosocial interventions (Roldan-Barraza, 2014).
- **Intraoral orthopedic appliances and non-occluding devices (10 articles).** Two meta-analyses (n=601) found hard stabilization appliances significantly improved temporomandibular joint disorder pain compared to non-occluding appliances (p<.001), and compared to controls with no treatment, with the difference not significant (Fricton, 2010).
- **Orthognathic treatment (53 articles, n = 8,028).** Patients reported reductions in temporomandibular joint pain on palpation after surgery in 14 of 18 studies; reductions in muscle pain on palpation in nine of 11 studies; a decrease in joint clicking in 22 of 24 studies; and mixed results for crepitus after surgery (Al-Riyami, 2009).
- **Acupuncture therapy (eight articles, n = 231).** Acupuncture for temporomandibular joint disorder significantly reduces pain compared to a sham control group (p=.003), but there was no difference when acupuncture was compared with splint (p=.76) (Wu, 2017).
- **Low-level laser therapy (six articles).** The effect of low-level laser therapy on pain in temporomandibular joint disorder was not statistically significant from placebo (Petrucci, 2011).
- **Splint therapy (13 articles, n = 538).** Splint therapy reduced frequency of painful episodes for patients with temporomandibular joint disorder clicking (Zhang, 2016).

- **Physiotherapy (seven articles).** Compared to controls, persons with physiotherapy had a significantly greater pain reduction, and an insignificantly greater improvement in range of motion (Paco, 2016).

**Surgical treatment**

- **Surgery to improve maximal mouth opening (38 articles, n=1215).** Reconstruction arthroplasty had the greatest improvement in maximal mouth opening (30.6 mm), ahead of interposition arthroplasty (26.7) and gap arthroplasty (26.2) (De Roo, 2016).

- **Arthroscopy versus arthrocentesis (six articles).** Arthrocentesis resulted in significantly improved maximal inter-incisal opening and pain reduction versus arthroscopy; no difference was observed for postoperative complications. (Al-Moraissi, 2015c).

- **Open surgery, arthroscopic surgery, arthroscopic lysis, and lavage (seven articles).** Open surgery is superior to arthroscopic surgery in pain reduction (p=.05), with comparable maximal inter-incisal opening, jaw function, and clinical findings. Arthroscopic lysis and lavage produces greater improvement in maximal inter-incisal opening with similar pain reduction compared with arthroscopic surgery (Al-Moraissi, 2015a).

- **Outcomes of various surgical modalities for temporomandibular joint disorder (16 articles).** Significant differences occurred between gap arthroplasty and interpositional gap arthroplasty in maximal inter-incisal opening and recurrence rate (p = 0.04 and p = 0.02); a between interpositional gap arthroplasty and costochondral graft reconstruction opening (p = 0.01), but not recurrence (p = 0.71); and between costochondral joint and alloplastic joint reconstruction for opening and pain (p = 0.04 and p = 0.03) (Al-Moraissi, 2015b).

- **Reduction versus creation of symptoms after orthognathic surgery (29 articles, n=5,029).** Orthognathic surgery caused a decrease in temporomandibular disorder symptoms for many patients who had symptoms before surgery, but it created symptoms in a smaller group of patients who were asymptomatic before surgery (Al-Moraissi, 2017).

Total prosthetic replacement of the joint can be performed for temporomandibular joint disorder, but not until all other options are exhausted, and professional guidelines are followed (NICE, 2014).

**Policy updates:**

A total of six peer-reviewed references were added to, and three guidelines/other and three peer-reviewed references removed from, this policy in March 2018.

**Summary of clinical evidence:**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
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<tbody>
<tr>
<td>Pupo (2016)</td>
<td>Key points:</td>
</tr>
<tr>
<td>Citation</td>
<td>Content, Methods, Recommendations</td>
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</table>
| Comparison of effectiveness of diagnosing temporomandibular joint disorder | - Meta-analysis of seven studies comparing accuracy of modes of diagnosing TMD.  
- Compared with MRI, clinical protocols evaluating disk replacement with reduction cases reported sensitivity and specificity of 44% and 51%.  
- Compared with MRI, clinical protocols evaluating only disk replacement without reduction, reported sensitivity and specificity of 22% and 93%.  
- MRI is a more accurate means of diagnosing TMD than clinical protocols. |
| Randhawa (2016) Effectiveness of non-invasive TMD interventions | **Key points:**  
- Systematic review of eight articles.  
- Cognitive behavioral therapy and self-care management had similar improvements in pain and disability.  
- Cognitive behavioral therapy combined with usual treatment provided short-term benefits in pain versus usual treatment alone.  
- Intraoral myofascial therapy may reduce pain and improve jaw opening.  
- Structured self-management is more effective than usual treatment. |
| Zhang (2016) Splint therapy effect on TMD management | **Key points:**  
- Meta-analysis of 13 studies (n = 538).  
- Splint therapy reduced maximal mouth opening (for patients < 45 mm), reduced pain intensity using visual analog scale, and reduced frequency of painful episodes from TMJ clicking. |
| Petrucci (2011) Efficacy of low-level laser therapy in TMD | **Key points:**  
- Meta-analysis of six randomized controlled trials.  
- Effect of laser therapy on pain did not differ from placebo, using a Visual Analog Scale.  
- No evidence exists to support use of laser therapy in TMD. |
| Al Riyami (2009) Orthognathic treatment and TMD | **Key points:**  
- Meta-analysis of 53 studies (n = 8,028)  
- TMD pain decreases reported after surgery in 14 of 18 trials.  
- Muscle pain on palpation decreases reported after surgery in nine of 11 trials.  
- Joint clicking decreases reported after surgery in 22 of 24 trials. |

**References**

**Professional society guidelines/other:**

American Association of Oral and Maxillofacial Surgeons (AAOMS). Statement by the American Association of Oral and Maxillofacial Surgeons Concerning the Management of Selected Clinical Conditions and Associated Clinical Procedures: Temporomandibular Disorders. Rosemont IL: AAOMS,


**Peer-reviewed references**


**CMS National Coverage Determinations (NCDs):**

No NCDs identified as of the writing of this policy.

**Local Coverage Determinations (LCDs):**

No LCDs identified as of the writing of this policy.

**Commonly submitted codes**

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and
bill accordingly.

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<td>20650</td>
<td>Arthrocentesis, aspiration and/or injection of temporomandibular joint or bursa</td>
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<td>21050</td>
<td>Condylectomy, temporomandibular joint</td>
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<tr>
<td>21060</td>
<td>Meniscectomy, partial or complete, temporomandibular joint</td>
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<td>21070</td>
<td>Coronoidectomy</td>
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