Treatment of Temporomandibular Joint Disorders (for Ohio Only)

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Instructions for Use

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Application

This Medical Policy only applies to the state of Ohio. Any requests for services that are stated as unproven or services for which there is a coverage or quantity limit will be evaluated for medical necessity using Ohio Administrative Code 5160-1-01.

Coverage Rationale

The following nonsurgical services are proven and medically necessary for treating disorders of the temporomandibular joint (TMJ):

- Arthrocentesis
- Intra-articular injections of corticosteroids
- Trigger point injections
- Physical therapy
- Occlusal splint (stabilization and repositioning splints)

The following TMJ surgical services are proven and medically necessary in certain circumstances. For medical necessity clinical coverage criteria, refer to the InterQual® CP: Procedures:

- Arthroscopy, Temporomandibular Joint (TMJ)
- Arthroplasty, Temporomandibular Joint (TMJ)
- Discectomy, Temporomandibular Joint (TMJ)
- Reconstruction, Temporomandibular Joint (TMJ)

Click here to view the InterQual® criteria.

The following services are unproven and not medically necessary for treating disorders of the TMJ due to insufficient evidence of efficacy (this list is not all inclusive):

- Biofeedback
- Jaw mobility mechanical stretching devices (e.g., TheraBite Jaw Motion Rehabilitation System®, Jaw Dynasplint® System)
- Multiple occlusal splints (e.g., daytime and nighttime splints, maxillary and mandibular splints)

- Epigenetic appliances [e.g., Homeoblock™, DNA® (Daytime/Nighttime appliance), Advanced Lightwire Functional appliance]

For information regarding intra-articular injections of sodium hyaluronate for TMJ disorders, refer to the Medical Benefit Drug Policy titled Sodium Hyaluronate (for Ohio Only).

For information regarding botulinum toxin injections for TMJ disorders, refer to the Medical Benefit Drug Policy titled Botulinum Toxins A and B (for Ohio Only).

Medical Records Documentation Used for Reviews

Benefit coverage for health services is determined by the federal, state, or contractual requirements, and applicable laws that may require coverage for a specific service. Medical records documentation may be required to assess whether the member meets the clinical criteria for coverage but does not guarantee coverage of the services requested.

The patient's medical record must contain documentation that fully supports the medical necessity for the requested services. This documentation includes, but is not limited to, relevant medical history, physical examination, and results of pertinent diagnostic tests or procedures. Documentation supporting the medical necessity should be legible, maintained in the patient's medical record, and must be made available upon request.

Applicable Codes

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by federal, state, or contractual requirements and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Guidelines may apply.

CPT Code	Description
20552	Injection(s); single or multiple trigger point(s), 1 or 2 muscle(s)
20553	Injection(s); single or multiple trigger point(s), 3 or more muscles
20605	Arthrocentesis, aspiration and/or injection, intermediate joint, or bursa (e.g., temporomandibular, acromioclavicular, wrist, elbow or ankle, olecranon bursa); without ultrasound guidance
20606	Arthrocentesis, aspiration and/or injection, intermediate joint, or bursa (e.g., temporomandibular, acromioclavicular, wrist, elbow or ankle, olecranon bursa); with ultrasound guidance, with permanent recording and reporting
21010	Arthrotomy, temporomandibular joint
21050	Condylectomy, temporomandibular joint (separate procedure)
21060	Meniscectomy, partial or complete, temporomandibular joint (separate procedure)
21070	Coronoidectomy (separate procedure)
21085	Impression and custom preparation; oral surgical splint
21110	Application of interdental fixation device for conditions other than fracture or dislocation, includes removal
21240	Arthroplasty, temporomandibular joint, with or without autograft (includes obtaining graft)
21242	Arthroplasty, temporomandibular joint, with allograft
21243	Arthroplasty, temporomandibular joint, with prosthetic joint replacement
21247	Reconstruction of mandibular condyle with bone and cartilage autografts (includes obtaining grafts) (e.g., for hemifacial microsomia)
21299	Unlisted craniofacial and maxillofacial procedure
29800	Arthroscopy, temporomandibular joint, diagnostic, with or without synovial biopsy (separate procedure)
29804	Arthroscopy, temporomandibular joint, surgical
90901	Biofeedback training by any modality

CPT Code	Description
97039	Unlisted modality (specify type and time if constant attendance)
97139	Unlisted therapeutic procedure (specify)

CPT® is a registered trademark of the American Medical Association

HCPCS Code	Description
E0746	Electromyography (EMG), biofeedback device
E1399	Durable medical equipment, miscellaneous
E1700	Jaw motion rehabilitation system
E1701	Replacement cushions for jaw motion rehabilitation system, package of 6
E1702	Replacement measuring scales for jaw motion rehabilitation system, package of 200

Description of Services

Temporomandibular disorders are a diverse, complex set of conditions that affect the temporomandibular joint (TMJ) and/or the surrounding musculature. Symptoms include pain at rest and/or during jaw function, limited range of motion, and TMJ noises such as clicking, popping, and crepitus. Conditions may spontaneously resolve and reoccur or respond to conservative treatments such as nonsteroidal anti-inflammatory drugs, a soft diet, jaw rest, moist heat, steroids, physical therapy, splints, muscle relaxants, and/or antidepressants. Failure of conservative methods may require the addition of injection therapy or surgery, including joint replacement. Experts recommend using the most conservative, reversible treatments possible (NICDR, 2015).

Arthrocentesis (lavage) is a minimally invasive procedure in which irrigants are injected into the joint space to remove inflammatory mediators or increase mobility by removing intra-articular adhesions.

Occlusal splints are used to treat myofascial pain dysfunction and TMJ disorders. Splint therapy consists of either a stabilization splint (also referred to as night guards or occlusal guards) or a mandibular repositioning splint/device. These are intended to reduce or eliminate clenching or bruxism (tooth grinding) and keep or reposition the jaw in a more relaxed position. Splints are made of a variety of materials and cover all or some teeth in an individual arch.

Myofascial trigger points are focal knots in a band of skeletal muscle that are caused by acute or repeated microtrauma which is common in disorders of the TMJ. Injections cause relaxation of the muscle fibers, allowing lengthening of the muscle fiber and removal of metabolite waste, which assists in breaking the pain-tension cycle. This can be done as dry needling alone or can be followed by an injection of a corticosteroid, dextrose, or saline.

Jaw mobility devices are used for passive rehabilitation and prolonged duration stretching for mandibular hypomobility. These include devices such as the TheraBite Jaw Motion Rehabilitation System, Jaw Dynasplint System, OraStretch® Press Jaw Motion Rehab System, and Therapacer™ Jaw Mobilizer.

Epigenetics is an area of science that examines how external factors affect gene activity without altering DNA sequence. Epigenetic appliances are intraoral devices that are similar to an orthodontic retainer in appearance. The premise is that when the appliance is worn overnight, pressure is applied to the jaws, resulting in expansion due to the stimulation of osteoblasts and osteoclasts. They are purported to help a wide variety of conditions, including but not limited to TMJ disorders, sleep apnea, and chronic headaches.

Clinical Evidence

Arthrocentesis

Corrêa-Silva et al. (2024) conducted a randomized, prospective clinical trial to compare the efficacy of arthrocentesis with that of occlusal splint therapy for the treatment of participants with anterior disc displacement with reduction and intermittent block and anterior disc displacement without reduction (ADDwoR) and limited mouth opening. Overall, 24 participants were included: 13 in group 1 (splint therapy) and 11 in group 2 (arthrocentesis). Participants were evaluated after 1, 2, 3, and 6 months for the clinical outcomes of pain, functionality, and psychosocial status. The results showed no statistically significant differences in pain outcomes between the two groups; however, group 2 had the maximum pain reduction at 1 month, which suggests that arthrocentesis results in faster relief of pain. For the results for mouth opening without pain, a statistically significant difference was observed between the groups; group 1 had a greater increase in

mouth opening at the end of 6 months. The authors concluded that both techniques used to treat anterior disc displacement with reduction and intermittent block or ADDwoR and limited mouth opening demonstrated similar results.

In a 2022 systematic review and network meta-analysis, Li et al. assessed the effectiveness of various treatments for disc displacement of the temporomandibular joint (TMJ). After the initial identification of 2,449 publications, 26 studies met the inclusion criteria. Posttherapeutic maximum mouth opening (MMO) and pain intensity were the outcomes of interest. Intervention groups were classified into seven grades and consisted of arthrocentesis, intra-articular injections with diverse drugs (sodium hyaluronate, opioids, nonsteroidal anti-inflammatory drugs, platelet-rich plasma, or corticosteroids), occlusal splints, and a combination of the interventions. In comparison, the control groups were oral analgesics, self-exercise, muscle and joint massage, and health instruction for behavioral changes. The authors concluded that most invasive treatments performed better than noninvasive treatments. Interventions of arthrocentesis plus platelet-rich plasma injection and platelet-rich plasma injection in grade I showed the most improvement in both mouth opening and pain alleviation in individuals with disc displacement. The findings are limited by the indirect nature of network analyses. (The study by Öhrnell et al., 2019, previously cited in this policy, is included in this systematic review.)

In a 2020 systematic review, Leung et al. assessed the evidence to determine if ultrasonography (US)-guided arthrocentesis provides better outcomes than conventional arthrocentesis in individuals with temporomandibular disorder (TMD). Four small randomized controlled trials (RCTs), with 144 individuals, were included in the final qualitative analysis. The articles that were selected were evaluated for study and individual characteristics, arthrocentesis procedure details, and treatment outcomes (postoperative pain, MMO, procedure time, and attempts of needle positioning). The authors found no significant differences in pain reduction and improved MMO between sample groups that were receiving conventional arthrocentesis and US-guided arthrocentesis, and both techniques were effective for treating individuals with TMD to reduce pain and improve MMO. However, they found conflicting data in the attempts of needle positioning and procedure time and concluded that standardized treatment protocols and data from well-designed US-guided arthrocentesis randomized clinical trials were lacking.

In a randomized clinical trial, Yilmaz et al. (2019) compared the effectiveness of hyaluronic acid (HA) injection and arthrocentesis plus HA injection for treating disc displacement with reduction and disc displacement without reduction. Overall, 90 participants aged 15 to 82 years were divided into two main groups: group I, which included participants with the disc displacement with reduction, and group II, which included disc displacement without reduction. The primary outcome variable was maximum pain on chewing, while the secondary outcomes included maximum pain at rest, maximum nonassisted and assisted mouth opening, chewing efficiency, TMJ sounds, quality of life (QOL), treatment tolerability, and treatment effectiveness. At the 6-month follow-up, improvements were recorded. Notably, arthrocentesis plus HA in group I showed superior improvement in chewing efficiency ($p = 0.041$) and QOL ($p = 0.047$) compared with single HA; in group II, arthrocentesis plus HA showed superior improvement in QOL ($p = 0.004$) compared with single HA. The authors concluded that both procedures successfully improved the symptoms in both groups of participants, but arthrocentesis plus HA injection seemed superior. Limitations of this study are the low number of participants and lack of participant masking to treatment assignment.

Bouchard et al. (2017) performed a systematic review of the literature and a meta-analysis of RCTs that compared arthrocentesis with conservative measures in reducing pain and improving jaw motion. Two independent reviewers identified RCTs, and data that were extracted from the selected studies included population characteristics, interventions, outcomes, and funding sources. Risk of bias was assessed with the Cochrane Collaboration risk assessment tool for RCTs. Five studies, with a total of 308 individuals, were included, and results showed a reduction in pain in the intervention group at 6 months and 3 months but not at 1 month. No difference in mouth opening was observed at the same intervals. The authors concluded that given the relatively small number of individuals, high risk of bias in three studies, and statistical and clinical heterogeneity of the included studies, TMJ lavage for the treatment of TMDs should be recommended with caution because of the lack of strong evidence to support its use.

Şentürk et al. (2017) conducted a study to evaluate the long-term effects of the single-puncture arthrocentesis technique. Overall, 42 individuals with unilateral TMDs were treated by single-puncture arthrocentesis; 38 of them completed 1 to 24 months of follow-up (short-term group), and 21 completed 11 months or longer of follow-up (long-term group). The two groups were evaluated statistically for pain [visual analog scale (VAS)], MMO, lateral excursion, and protrusion. Both follow-up duration groups had significant improvements compared with baseline levels for almost all the outcome variables. The authors concluded that single puncture TMJ arthrocentesis is an effective treatment method in both the short and long term.

Arthroplasty

In a 2025 retrospective cohort study, Spallaccia et al. assessed the short-term (≥ 6 months) ability of functional arthroplasty to reduce pain and improve QOL in patients with ADDwoR of the TMJ. Overall, 105 patients were included

and were predominantly female. All patients met the following criteria: no previous TMJ pathologies, a diagnosis of unilateral ADDwoR, a maximum assisted opening movement of < 40 mm, a VAS and QOL score available before surgery and for at least 6 months following surgery, and nonresponse to other noninvasive or minimally invasive procedures. The results showed significant improvement in the VAS and QOL. Specific scores for activity, mood, and anxiety also improved. No differences were found in scores for chewing and speaking. The authors concluded that functional arthroplasty is effective in reducing pain and improving QOL in individuals with ADDwoR in the short term, and future research should focus on the longer-term outcomes. The findings are limited by the lack of a comparison group.

In a 2022 systematic review and meta-analysis, Mittal et al. evaluated the clinical outcomes with autogenous grafts for reconstruction arthroplasty (RA) in individuals with TMJ ankylosis. A total of 35 studies (700 individuals) were eligible and included in the analysis. Individuals received various autogenous grafts, which included costochondral grafts as well as coronoid, sternoclavicular joint, metatarsal, auricular, iliac crest, and remnant condylar mass grafts. The authors concluded that costochondral grafts and coronoid grafts were the most favored autogenous grafts, based on the reported outcomes of maximum incisor opening, with a clinically acceptable range (27.21-31.38 mm); recurrence rates were comparable for all types of grafts, except for coronoid grafts, which had the lowest recurrence rates of 2.98%. The researchers concluded that single-arm studies and a lack of comparative trials are limitations in this study.

In a prospective randomized clinical trial, Andrade et al. (2020) compared the effectiveness of interpositional arthroplasty using a dermis fat graft with gap arthroplasty (GA) in the management of TMJ ankylosis. A study of 22 participants who presented with ankylosis of the TMJ were treated with either plain GA or dermis fat arthroplasty. The reported outcome variables were mouth opening and pain on jaw exercises. The outcome variables were measured on days 5 and 14; at the end of 1 month and at 6 months, 1 year, 2 years, and 3 years. The results showed that a total of 20 participants reported outcomes, as two did not attend follow-up visits. The researchers found a significant difference between the two groups on postoperative day 5 and at 1 year. The mean mouth opening was higher in the dermis fat group at day 5 ($p = 0.013$) and again at 1 year ($p = 0.018$). However, over a 3-year period mouth opening in both groups did not differ significantly. The pain outcome variable, using the VAS, was lower in the dermis fat graft group, with a significant difference on day 14 ($p = 0.029$). The groups showed similar results at the end of 3 years' follow-up. The researchers concluded that the two techniques have similar outcomes in the management of ankylosis of the TMJ. However, the study is limited due to a comparatively short follow-up and small sample size.

Mittal et al. (2019) performed a systematic review and meta-analysis that compared the clinical outcomes with various treatments of GA, interpositional GA (IGA), RA, and distraction osteogenesis. After applying exclusion criteria, 26 articles (1,197 individuals) were used in the data extraction and analysis. The primary outcome variable was recurrence rate, while the secondary outcomes included MMO and recurrence and MMO with autogenous grafts and alloplastic prosthetic implants. The higher recurrence rate was observed with GA compared with both IGA and RA ($p < 0.05$). Comparable results were obtained with IGA, RA, and distraction osteogenesis ($p > 0.05$). Regarding types of materials, alloplastic materials showed a higher recurrence rate than autogenous materials ($p < 0.05$) when used for interpositioning. For reconstruction, both autogenous grafts and alloplastic prosthetic implants had similar results ($p > 0.05$). MMO's highest improvement occurred with IGA, but in postoperative changes in MMO, the differences were clinically similar in all other groups. The authors concluded that for the management of TMJ ankylosis, IGA with autogenous material and reconstruction using either autogenous grafts or total joint replacement by alloplastic prosthetic implants provides similar clinical outcomes. Limitations in the study include heterogeneous studies and a lack of randomization.

Corticosteroid Injections

In a 2021 systematic review of RCTs, Liapaki et al. investigated and compared injection of HA, corticosteroids, and blood products and their abilities to improve MMO and decrease pain using the VAS in individuals with TMJ osteoarthritis. Nine studies (involving 434 individuals) were included, with a total of 32 receiving corticosteroid injections. All included studies used Ringer's lactate solution as the control. The results showed that for TMJ pain, corticosteroid injection alone as well as corticosteroid plus arthrocentesis led to significant improvement in VAS pain score at the 6- and 12-month follow-ups. Arthrocentesis with Ringer's lactate and normal saline also led to a significant improvement after 12 and 24 months. For MMO, arthrocentesis followed by corticosteroid injection significantly improved MMO after 12 months, while a corticosteroid alone did not affect MMO significantly. The authors concluded that injectables and flushing of the joint with Ringer's lactate solution through arthrocentesis were able to significantly improve MMO and TMJ pain over a minimum follow-up period of 6 months; however, it was not possible to show superiority of an injectable drug over Ringer's lactate. Based on these results, arthrocentesis contributes to improving MMO by removing abraded joint blocking and inflammatory cell and extracellular matrix detritus and perhaps may be a first step in the treatment of TMJ osteoarthritis when followed by an injectable. These conclusions are limited due to different protocols and follow-up periods; therefore, a meta-analysis was not possible. More RCTs that address these limitations, with a similar methodology, are needed.

Al-Moraissi et al. (2020a) conducted a systematic review and network meta-analysis of randomized clinical trials to identify the most effective treatment for pain reduction and improved mouth opening in arthrogenous TMDs. Overall, 36 studies compared pain, and 33 compared MMO. They were divided by length of follow-up: short term (≤ 5 months) and intermediate term (> 6 months to 4 years). The treatments that were compared included control/placebo, muscle exercises and occlusal splints, occlusal splint therapy alone, intra-articular injections of HA or corticosteroids arthrocentesis with or without HA, corticosteroids, and platelet-rich plasma arthroscopy with or without HA and platelet-rich plasma, open joint surgery, and physiotherapy. Regarding intra-articular injections, the results showed that in the short term (≤ 5 months), intra-articular injections of corticosteroids or HA achieved greater pain control than control/placebo; however, the evidence was of very low quality. The results for the intermediate term (≥ 6 months) also showed a statistically significant decrease in pain intensity, with very low-quality evidence. For MMO, the results showed that the most effective treatment for short- and intermediate-term improvement was arthroscopy procedures. The noninvasive procedures of occlusal splint therapy, physical therapy, conservative therapy, and placebo/control provided significantly lower-quality outcomes relative to pain and MMO. The authors concluded that these results support a paradigm shift in the treatment of arthrogenous TMD. There is new very low- to moderate-quality evidence that indicates that minimally invasive procedures, including corticosteroid injections, are significantly more effective than conservative treatments for both pain and improvement in MMO in the short and intermediate term and recommends implementation as a first-line treatment rather than the traditional concept of exhausting conservative treatment options. This study is limited by the inherent limitation of indirectness from network meta-analyses. (The publication by Gencer et al., 2014, previously cited in this policy, is included in this systematic review.)

In a 2020 comparative randomized study, De Sousa et al. sought to compare the outcome in participants with TMJ arthralgia who received four different treatment modalities. Overall, 80 participants were randomly distributed into four different treatment groups, which comprised 20 participants each, and were given a nocturnal bite splint. One group was treated with the bite splint only, and the other three groups were injected with betamethasone, sodium hyaluronate or platelet-rich plasma in addition to the splint. The authors assessed pain intensity and maximum pain-free mouth opening. Participants were evaluated at the start of treatment and again after 1 week, 1 month and 6 months. The results showed that maximum pain-free mouth opening improved in all the groups that made up the sample, with either a reduction in pain severity or with no pain. The group that was injected with betamethasone improved more than the group without injection, but the sample size was too small to show a statistically significant difference in pain between groups. The group that used the bite splint only had the least improvement compared with the other three treatment groups. The authors concluded that all the treatments that were used caused a reduction in pain and increased pain-free mouth opening.

Trigger Point Injections

Saglam et al. (2024) conducted an RCT to assess the effect of masticatory muscle trigger point injections and occlusal splint therapy in participants with myofascial pain that is related to TMJ disorders. Participants were equally randomized into three groups: group 1, which was treated with an occlusal splint alone; group 2, which was treated with an occlusal splint combined with masseter muscle lidocaine injections; and group 3, which was treated with masseter muscle lidocaine injection alone. Additionally, group 4, which was a control group, consisted of healthy volunteers. Prior to the initiation of treatment, pain and MMO were assessed and recorded, and masseter muscle stiffness was evaluated using shear-wave elastography. In groups 2 and 3, masseter muscle injections were repeated on days 7 and 14. All clinical parameters were measured at 1 and 3 months. The results showed that the VAS decreased in the three treatment groups from the first to the third month. Group 3 had a statistically significant decrease compared with group 1 and group 2 at the end of the first month. From the first to the third month, group 2 had superiority over group 3 and more in group 3 than group 1. Pain relief in group 3 was higher at the first month and at the end of the treatment than in all the other groups. All groups had a statistically significant increase in MMO, with group 2 having a significant increase in pain-free and unassisted MMO at the 3-month mark. Lateral and protrusive movements increased in all treatment groups. The authors concluded that all three treatments resulted in decreased pain, increased MMO, and decreased masseter muscle stiffness, with different protocols impacting different clinical conditions.

Al-Moraissi et al. (2020b) conducted a network meta-analysis of RCTs that compared treatment outcomes with dry needling, acupuncture, or wet needling using different substances (local anesthesia (LA), botulinum toxin-A (BTX-A), granisetron, platelet-rich plasma, or passive placebo vs active placebo) to manage myofascial pain of the masticatory muscles. RCTs that met the inclusion criteria were stratified according to follow-up time: immediate post treatment to 3 weeks and 1 to 6 months posttreatment. Outcome variables were post-treatment pain intensity, increased MMO and pressure threshold pain. The quality of evidence was rated according to Cochrane's tool for assessing risk of bias. Overall, 21 RCTs, involving 959 individuals, were included. The quality of evidence in the included studies was low or very low. There was a significant improvement in MMO after LA (mean difference, 3.65; CI, 1.18-6.1) and dry needling therapy (mean difference, 2.37; CI, 0.66-4) vs placebo. The three highest-ranked treatments for short-term posttreatment pain reduction in TMD-M (1-20 days) were platelet-rich plasma (95.8%), followed by LA (62.5%) and dry needling (57.1%), whereas the three highest ranked treatments at the intermediate-term follow-up (1-6 months) were LA (90.2%), dry

needling (66.1%), and BTX-A (52.1%) (all very low-quality evidence). LA (96.4%) was the most effective treatment regarding the increase in MMO, followed by dry needling (72.4%). The authors concluded that the effectiveness of needling therapy did not depend on needling type (dry or wet) or needling substance. The outcome of this network meta-analysis suggests that LA, BTX-A, granisetron and platelet-rich plasma hold some promise as injection therapies, but no definite conclusions can be drawn due to the low quality of evidence in the included studies. The findings are limited by the inherent indirectness of network meta-analyses.

Physical Therapy

Romeo et al. (2024) conducted an RCT to compare the efficacy of combining physical therapy with occlusal splint therapy (both included education) in 62 participants with myogenic TMDs. The primary outcome was subjective pain measured by the VAS at rest (VAS rest), MMO (VAS open), and pain while chewing gum (VAS chew). The secondary outcome was TMJ range of motion (ROM). Computer generation randomized 33 participants to the control group (occlusal splint and education) and 29 to the experimental group, which added physical therapy to the occlusal splint and education interventions. Physical therapy intervention included the TMJ as well as the cervical and thoracic spine and included mobilization with lateral and anterior glide traction, manipulation, soft tissue techniques, and self-treatment at home that included massage and exercises. Follow-up occurred at 3 and 6 months. The results showed that all measured outcomes were significantly improved when physical therapy was added to occlusal splint treatment, with follow-up time having a more significant impact on the VAS but not ROM. The authors concluded that the addition of physical therapy as part of multimodal treatment for myogenic TMD is effective. No adverse effects were reported in either group. A dropout rate of more than 20% due to the SARS-CoV-2 pandemic and short follow-up are limitations of this trial. Future research, with longer follow-up times, will be needed to validate these findings and the impact of the intervention for the longer term.

In a 2022 systematic review, Asquini et al. evaluated the effectiveness of craniomandibular manual therapy (CMMT) on pain and ROM in individuals with TMD. RCTs that examined CMMT alone vs other treatments were included in this study. After screening a total of 2,720 articles, six articles (293 individuals) met the inclusion criteria. Two independent reviewers screened articles for inclusion, extracted data, assessed risk of bias, and evaluated the overall quality of evidence. The results showed that all individuals had a significant improvement in pain and MMO following CMMT in the midterm, but two showed the superiority of CMMT compared with other interventions. The authors concluded that the quality of evidence was low, but clinicians who are planning to treat individuals with TMD may consider CMMT, in addition to other treatment modalities, to reduce pain and improve MMO in the midterm. Due to the limitations of bias, heterogeneity, and a small sample size, future studies are warranted.

In a 2021 systematic review and meta-analysis, Zhang et al. compared the effects of exercise therapy and occlusal splint therapy on pain and mobility in individuals with painful TMD. A total of 1,124 articles were initially identified, and six studies met the inclusion criteria. The six studies were RCTs and included 498 individuals (251 occlusal splint therapy and 247 exercise therapy). The effectiveness of exercise therapy was found to not be superior to that of occlusal splint therapy for pain reduction in individuals with painful TMD ($p = 0.08$; weighted standardized mean difference, -0.29; 95% CI, -0.62 to 0.04). In MMO, the results revealed that occlusal splint therapy and exercise therapy were equivalent ($p = 0.51$; weighted standardized mean difference, 0.12; 95% CI, -0.24 to 0.48) in individuals with painful TMD. The researchers concluded that there was no significant difference between occlusal splint therapy and exercise therapy in individuals with painful TMD. Further research with additional RCTs, is necessary to validate these findings due to a small sample size and small overall standardized mean.

In a 2020 systematic review and meta-analysis, Herrera-Valencia et al. sought to assess the medium-and long-term efficacy of manual therapy for TMD alone, or in combination with therapeutic exercises. Inclusion criteria were RCTs only, individuals with any kind of TMD (mouth-opening pain, mouth opening limitation, myofascial symptoms, nonreducing disc displacement, and chronic migraine), treatment that included manual therapy in at least one of the experimental groups, a minimum of 3 months of follow-up, and pain that must have been one of the primary or secondary outcomes. Six studies met the inclusion criteria, two were considered low quality, and four were considered high quality; the studies included 304 individuals. The results showed manual therapy to be an effective treatment in the medium term, but the effects decreased over time. However, when therapeutic exercise was added, the results could be maintained for a longer period.

Shousha et al. (2018) compared the effects of a short-term conservative physiotherapy program vs those of occlusive splinting on pain and ROM in cases of TMJ dysfunction. This single-blinded RCT included 112 male and female participants aged 15 to 27 years. Conservative physiotherapy was provided to one group for 15 minutes/three times a week by a physiotherapist, while the other group received standard occlusive splinting by a dentist, with adjustments as necessary; both groups were treated for 6 weeks. Pain outcome measures were assessed by the VAS and TMJ ROM was measured with the TMJ Opening Index. The significant improvements were in favor of the conservative physiotherapy group for both ROM and pain level. The authors concluded that conservative physiotherapy would be a better initial

treatment option than occlusal splints. Limitations of the study include the lack of a follow-up period and inability to blind the participant groups to treatment due to the nature of the study.

Occlusal Splints

There are no published studies that address the treatment of TMJ disorders with more than one splint at a time (i.e., am/pm appliances, maxillary/mandibular appliances); therefore, it is not possible to conclude if more than one device has a beneficial effect on health outcomes.

Al-Moraissi et al. (2020c) conducted a systematic review and network meta-analysis of 48 RCTs to assess the effectiveness of various types of occlusal splint therapy in the management of TMDs and rank them according to their effectiveness. The predictor variables were control, nonoccluding splint, hard stabilization splint (HSS), soft stabilization splint, prefabricated splint, mini-anterior splint, anterior repositioning splint, and counseling therapy (CT) with or without HSS. The outcome variables were pain improvement, posttreatment pain intensity, improvement in mouth opening, and disappearance of TMJ sounds. The results indicated that when compared with a control for arthrogenous disorders, very low to low-quality evidence showed that there was a significant decrease in pain after the use of an anterior repositioning splint, mini-anterior splints, and HSS alone. Moderate-quality evidence showed improvement with CT and HSS combined. For myogenous disorders, very low-quality evidence showed improvement with mini anterior splints or soft stabilization splints, with moderate evidence for CT alone, CT plus HSS, and HSS alone. The authors concluded that based on this network meta-analysis, there is moderate- to very low-quality evidence that confirms the effectiveness of occlusal splint therapy in the treatment of TMDs. Multimodal therapy that consists of CT plus HSS may produce the maximum improvement in individuals with TMD. This study is limited by the inherent limitation of indirectness from network meta-analyses.

Kuzmanovic et al. (2017, included in Al-Moraissi et al., 2020c, above) shared the results of a systematic review and meta-analysis of RCTs that showed the short-and long-term effects of stabilization splints in the treatment of TMDs and identified factors that influenced their efficacy. MEDLINE, Web of Science, and Embase were searched for RCTs that compared stabilization splints with nonoccluding splints, occlusal oral appliances, physiotherapy, behavioral therapy, counseling, and no treatment. The random-effects method was used to summarize outcomes. Subgroup analyses were carried out according to the use of the Research Diagnostic Criteria for Temporomandibular Disorders and the TMD's origin. Strength of evidence was assessed by GRADE (Grading of Recommendations Assessment, Development, and Evaluation). Meta-regression was applied. Overall, 33 eligible RCTs were included in this meta-analysis. In the short term, stabilization splints presented a positive overall effect on pain reduction and pain intensity. An important decrease in muscle tenderness and improvement in mouth opening were found. Stabilization splints, compared with oral appliances, showed no difference. Meta-regression identified continuous use of stabilization splints during the day as a factor that influenced efficacy. Long-term results showed no difference in observed outcomes between groups. Low quality of evidence was found for primary outcomes. The authors concluded that stabilization splints presented short term benefit for individuals with TMDs. In long-term follow-up, the effect is equalized with other therapeutic modalities. Further studies, based on the appropriate use of standardized criteria for the recruitment of individuals and outcomes under assessment, are needed to better define the effect persistence of stabilization splints in the long term. (The publication by Fricton et al., 2010, previously cited in this policy, is included in this systematic review.)

Biofeedback

There is insufficient quality evidence regarding biofeedback for the management of TMD, and the effect on health outcomes cannot be established. Existing studies are of low quality, with small sample sizes, short treatment and follow-up times, and a lack of protocol standardization.

González-González et al. (2025) conducted a systematic review and network meta-analysis to evaluate the effectiveness of biofeedback as an educational treatment in reducing pain and its effect on psychological well-being and the ability to better cope in individuals with TMDs. Nine studies, with a diverse range of individuals, intervention protocols, and methodology, were included. It was concluded that biofeedback may be beneficial regarding somatic awareness and decreased parafunctional habits, when combined with established treatment for TMDs, when behavioral and self-regulation is needed. The studies combined biofeedback with other treatment modalities, and the effects as an isolated treatment cannot be established. Future research that focuses on the development of standardized biofeedback protocols and has longer-term follow-up may strengthen the evidence base. The findings are also limited by the indirectness of network meta-analyses.

In a 2019 systematic review, Florjanski et al. evaluated the efficiency of biofeedback in masticatory muscle activity management. This review included 10 study designs: crossover, single-blinded, and randomized clinical trials. Individuals had TMD-related muscle pain, myofascial pain sleep bruxism, or awake bruxism; in one case, the type of bruxism was not

defined. The studies were divided into two groups, depending on the type of biofeedback intervention used: biofeedback training and contingent electrical stimulation. For biofeedback training, individuals received audio, visual, and vibratory signals, making them aware of mastication muscle activity and encouraging them to perform certain actions to disrupt the activity. The authors concluded that while this systematic review presents research over the past 21 years, the quality of the evidence in the majority of the studies is generally low quality due to small sample sizes, short treatment and follow up times, and a lack of protocol standardization; however, the studies show a significant correlation between biofeedback usage and reduction of muscle activity and that biofeedback can be useful in decreasing masticatory muscle activity.

Shedden et al. (2013) conducted an RCT to evaluate the efficacy of biofeedback-based cognitive-behavior treatment (BFB-CBT) vs that of dental treatment with occlusal splint and to investigate changes in nocturnal masseter muscle activity (NMMA). Overall, 58 participants with chronic TMD were randomly assigned to receive either eight weekly sessions of BFB-CBT or 8 weeks of occlusal splint treatment. Diagnoses were established using the Research Diagnostic Criteria for Temporomandibular Disorders. Pain intensity and disability were defined as primary outcomes. The secondary outcomes included emotional functioning, pain coping, somatoform symptoms, treatment satisfaction, and adverse events. NMMA was assessed for three nights with portable devices prior to and post treatment. Follow-up assessment occurred 6 months after the treatment. The results showed that both treatments resulted in significant reductions in pain intensity and disability, with similar amounts of clinically meaningful improvement (45% with BFB-CBT and 48% with occlusal splint). Participants who received BFB-CBT had significantly larger improvements in pain coping skills. Satisfaction with treatment and ratings of improvement were higher with BFB-CBT. Effects were stable over 6 months and tended to be larger in the BFB-CBT group for all outcomes. No significant changes were observed in NMMA. The authors concluded that BFB-CBT resulted in larger improvements in pain coping skills and was well accepted, which highlights the importance and feasibility of psychological treatments in the clinical management of TMD. Further research, with RCTs, is needed to validate these findings.

Jaw Mobility Mechanical Stretching Devices

Jaw mobility mechanical stretching devices for TMDs are considered unproven due to insufficient quality evidence of efficacy and safety. The published literature is limited to studies with small numbers of participants, short-term follow-up, or large loss to follow-up. Furthermore, the findings of most studies are inconclusive or unfavorable. Adherence to these devices is limited, and the impact on clinical outcomes cannot be established.

Lee et al. (2018) conducted a randomized, open-label, controlled, three-center feasibility study to compare the efficacy of the TheraBite Jaw Motion Rehabilitation System (Atos Medical) with that of wooden spatulas to relieve and prevent trismus in participants who have had radiotherapy for stage 3 or 4 oral and oropharyngeal cancer. The secondary aims were to assess the feasibility and impact of exercise on health-related QOL, and the use of health services after treatment. The authors studied adherence to exercises and health-related QOL and conducted semistructured interviews with participants. Participants were randomized into two groups: the TheraBite group (n = 37) and wooden spatula group (n = 34). All participants had some sense of jaw tightening before the study started. Mean mouth opening after 6 months increased in both groups, but the difference between the groups was not significant (p = 0.39). The authors concluded that there was no significant difference between the two groups in frequency of contact with care services or in QOL. Exercises during and after radiotherapy can ameliorate trismus in individuals with stage 3 or 4 oral and oropharyngeal cancers; however, differences between groups in efficacy, adherence, QOL, and use of hospital or community health services were not significant. Furthermore, the findings from this specific population may not apply to all individuals with TMJ.

Zatarain et al. (2018) conducted a study to assess the feasibility of incorporating the Jaw Dynasplint into a standard program of self-care for the prevention of trismus in participants with head and neck cancer undergoing primary or adjuvant radiation. Study participants (n = 40) were randomized using a permuted block design to conventional stretching or stretching plus the use of the Jaw Dynasplint three times per day for 30 minutes. Participants were instructed to record maximum interincisal opening each day as well as to log the use of the Jaw Dynasplint. The results showed that 6 months after initiation of the preventative regimen, 50% of participants in the Dynasplint arm and 75% in the conventional stretching arm remained on their assigned therapy. Trismus was diagnosed in two participants in the control arm and in four participants in the Dynasplint arm. Only 25% (95% CI, 11.1%-46.9%) of participants in the Dynasplint arm used the device as prescribed. The authors concluded that the addition of the Jaw Dynasplint therapy decreased adherence compared with conventional stretching, and it is unlikely that the regimen will prove efficacious as a preventative measure due to low adherence.

Kraaijenga et al. (2014) conducted an RCT to compare the application of the TheraBite Jaw Motion Rehabilitation System with a standard physical therapy exercise regimen for the treatment of myogenic TMD. Participants with myogenic TMD were randomized for the use of the TheraBite device or for standard physical therapy. Mandibular function was assessed with the Mandibular Function Impairment Questionnaire. Pain was evaluated using the VAS, and maximum interincisor

(mouth) opening was measured using the disposable TheraBite ROM scale. Of the 96 participants randomized (46 TheraBite and 50 standard physical therapy exercises), 38 started with the TheraBite device and 41 with the standard physical therapy exercises. After the 6-week follow-up, participants using the TheraBite device reported a significantly greater functional improvement (Mandibular Function Impairment Questionnaire score) than the participants who received regular physical therapy exercises. At 6 weeks, no significant differences in pain and active or passive maximum interincisor opening were found between the two groups. At 3 months, participants in both treatment groups did equally well and had a significant improvement in all parameters that were assessed. The authors concluded that this RCT on myogenic TMD treatment, comparing standard physical therapy with passive jaw mobilization using the TheraBite Jaw Motion Rehabilitation System, showed that both treatment modalities are equally effective in relieving myogenic TMD symptoms but that the TheraBite device has the benefit of achieving a significantly greater functional improvement in the first week of treatment. Further research, with RCTs, is needed to validate these findings.

Epigenetic Appliances

A review of the medical literature did not identify quality evidence to support the efficacy of epigenetic appliances for the treatment of TMJ disorders, and the effect on health outcomes cannot be established.

Clinical Practice Guidelines

American Association for Dental, Oral, and Craniofacial Research (AADOCR)

Based on evidence from clinical trials as well as experimental and epidemiological studies, the AADOCR (formerly known as the American Association for Dental Research) strongly recommends that, unless there are specific and justifiable indications to the contrary, treatment of patients with TMD 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. Because those modalities do not produce irreversible changes, they present much less of a risk of producing harm (AADOCR, 2015).

American Association of Oral and Maxillofacial Surgeons (AAOMS)

In a 2024 position paper titled *The Contemporary Management of Temporomandibular Joint Intra-Articular Pain and Dysfunction,* the AAOMS states that to optimize patient care, there must be a thorough, consistent, and standardized history, screening, and physical examination; appropriate diagnostic imaging; correct diagnosis; and initiation of the least invasive surgical or nonsurgical treatment. The position paper further states that arthroplasty and total joint replacement are surgical options that should be reserved for patients in whom minimally invasive procedures have not been successful.

In the most recent Parameters of Care, the AAOMS makes the following statement regarding surgical procedures of the TMJ: “Surgical intervention for internal derangement is indicated only when nonsurgical therapy has been ineffective, and pain and/or dysfunction are moderate to severe. Surgery is not indicated for asymptomatic or minimally symptomatic patients. Surgery also is not indicated for preventive reasons in patients without pain and with satisfactory function. Pretreatment therapeutic goals are determined individually for each patient” (AAOMS, 2017).

The AAOMS 2025 clinical paper *Indications for Orthognathic Surgery* subsection on Facial Skeletal Discrepancies Associated with Documented Temporomandibular Joint Pathology states the following: "In some patients, skeletal malocclusion and TMJ dysfunction may be correlated. While some types of malocclusion have been more commonly implicated, a variety of deformities have been reported to be associated with TMJ symptoms. The rationale for proceeding with surgery to correct skeletal-dental deformities is based on common reports of significant improvement in joint and muscle symptoms after a variety of orthognathic procedures. The literature reports that approximately 80% of patients show improvement of pre-operative symptoms after orthognathic surgery. Prior to performing an orthognathic procedure on such patients, non-surgical therapies should be attempted, including those procedures and treatments that mimic the effects of occlusal alteration.”

U.S. Food and Drug Administration (FDA)

This section is to be used for informational purposes only. FDA approval alone is not a basis for coverage.

The FDA regulates temporomandibular joint prostheses as Class III devices, which require premarket approval. For a complete list of approved products, refer to the following website (use product codes LZD and MPI): http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMA/pma.cfm. (Accessed September 22, 2025)

Continuous passive motion machines are approved as Class II devices by the FDA. Class II devices meet both the General Control requirements and Performance Standards established by the FDA. Additional information, under product code BXB, is available at: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm. (Accessed September 22, 2025)

In March 2023, the FDA issued a safety concern regarding jaw remodeling devices for adults. Further information can be found at the following website: https://www.fda.gov/medical-devices/safety-communications/evaluation-safety-concerns-certain-dental-devices-used-adults-fda-safety-communication. (Accessed September 22, 2025)

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Policy History/Revision Information

Date	Summary of Changes

06/01/2026	**Coverage Rationale**
	• Added language to indicate the Temporomandibular Joint (TMJ) services [referenced in the InterQual® criteria] are proven and medically necessary in certain circumstances
	Medical Records Documentation Used for Reviews
	• Added language to indicate:
	  ○ Benefit coverage for health services is determined by the federal, state, or contractual requirements, and applicable laws that may require coverage for a specific service
	  ○ Medical records documentation may be required to assess whether the member meets the clinical criteria for coverage but does not guarantee coverage of the service requested
	  ○ The patient's medical record must contain documentation that fully supports the medical necessity for the requested services
	  ○ This documentation includes but is not limited to relevant medical history, physical examination, and results of pertinent diagnostic tests or procedures
	  ○ Documentation supporting the medical necessity should be legible, maintained in the patient's medical record, and must be made available upon request
	Applicable Codes
	• Removed CPT codes 21089 and 21499
	Supporting Information
	• Updated *Description of Services*, *Clinical Evidence*, and *References* sections to reflect the most current information
	• Archived previous policy version CS195OH.C

Instructions for Use

This Medical Policy provides assistance in interpreting UnitedHealthcare standard benefit plans. When deciding coverage, the federal, state (Ohio Administrative Code [OAC]), or contractual requirements for benefit plan coverage must be referenced as the terms of the federal, state (OAC), or contractual requirements for benefit plan coverage may differ from the standard benefit plan. In the event of a conflict, the federal, state (OAC), or contractual requirements for benefit plan coverage govern. Before using this policy, please check the federal, state (OAC), or contractual requirements for benefit plan coverage. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Medical Policy is provided for informational purposes. It does not constitute medical advice.

UnitedHealthcare uses InterQual® for the primary medical/surgical criteria, and the American Society of Addiction Medicine (ASAM) for substance use, in administering health benefits. If InterQual® does not have applicable criteria, UnitedHealthcare may also use UnitedHealthcare Medical Policies, Coverage Determination Guidelines, and/or Utilization Review Guidelines that have been approved by the Ohio Department for Medicaid Services. The UnitedHealthcare Medical Policies, Coverage Determination Guidelines, and Utilization Review Guidelines are intended to be used in connection with the independent professional medical judgment of a qualified health care provider and do not constitute the practice of medicine or medical advice.