Parameters of Care:
Clinical Practice Guidelines
for Oral and Maxillofacial Surgery
(AAOMS ParCare 2017)

TEMPOROMANDIBULAR JOINT SURGERY

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J Oral Maxillofac Surg

THIS SECTION IS 1 OF 11 CLINICAL SECTIONS INCLUDED IN AAOMS
PARCARE 2017, WHICH IS VIEWED AS A LIVING DOCUMENT APPLICABLE
TO THE PRACTICE OF ORAL AND MAXILLOFACIAL SURGERY. IT WILL BE UPDATED
AT DESIGNATED INTERVALS TO REFLECT NEW INFORMATION CONCERNING THE
PRACTICE OF ORAL AND MAXILLOFACIAL SURGERY.
INTRODUCTION

Temporomandibular joint (TMJ) surgery is indicated for the treatment of a wide range of pathologic conditions, including developmental and acquired deformities, internal derangements, arthritis, functional abnormalities, ankylosis, and infection. Parameters of care related to management of tumors of the TMJ are in the Diagnosis and Management of Pathological Conditions chapter, and those for fractures of the mandibular condyle are in the Trauma Surgery chapter.

It is recognized that many patients undergoing TMJ surgeries have unique pain control requirements. As such, it may be appropriate to discuss a specific plan for postoperative pain control management. Such therapy might include the surgeon managing the patient’s pain with narcotic prescriptions for a specified period, followed by referral to a pain control center. Some surgeons may wish to develop a contract with these patients that reviews the planning, timing and other specifics of such therapy.

The parameters for TMJ surgery are based on the descriptions of pathologic entities and modalities for their treatment that have appeared in peer-reviewed medical literature. This field has undergone a considerable evolution during the past 15 to 20 years. Basic and clinical research is continuing to increase the potential for successful surgical results.

GENERAL CRITERIA, PARAMETERS, AND CONSIDERATIONS FOR TEMPOROMANDIBULAR JOINT SURGERY

INFORMED CONSENT: All surgery must be preceded by the patient's or legal guardian’s consent, unless an emergent situation dictates otherwise. These circumstances should be documented in the patient’s record. Informed consent is obtained after the patient or the legal guardian has been informed of the indications for the procedure(s), the goals of treatment, the known benefits and risks of the procedure(s), the factors that may affect the risk, the treatment options, and the favorable outcomes.

PERIOPERATIVE ANTIBIOTIC THERAPY: In certain circumstances, the use of antimicrobial rinses and systemic antibiotics may be indicated to prevent infections related to surgery. The decision to employ prophylactic perioperative antibiotics is at the discretion of the treating surgeon and should be based on the patient’s clinical condition as well as other comorbidities which may be present.

DEALING WITH NEUROLOGIC DEFECITS: Injuries to the terminal branches of the trigeminal nerve (eg, lingual, inferior alveolar, long buccal nerves), as well as the facial nerve, are known risks of oral and maxillofacial surgery. It should be noted that the presence of a pathologic craniomaxillofacial condition, dentoskeletal or craniofacial abnormality, or traumatic craniomaxillofacial injury may result in nerve injury prior to surgical management. In addition, the use of local anesthesia (eg, mandibular block) may increase the risk of nerve injury. Most nerve injuries resolve spontaneously, but some do not, and these may require consideration for non-surgical and/or surgical intervention. Microneurosurgical repair should be considered when the disability is of concern to the patient, and there is clinical evidence of moderate, severe, or complete neurosensory impairment of various areas of the orofacial region (eg, lips, chin, tongue); paresis or paralysis of facial muscles; loss, decreased, or abnormal taste sensation; or neuropathic pain of peripheral origin. Surgical repair should incorporate specialized microsurgical techniques (eg, operating magnification, nerve grafting), when indicated. Also see the Reconstructive Surgery chapter.

USE OF IMAGING MODALITIES: Imaging modalities may include panoramic radiograph, periapical and/or occlusal radiographs, maxillary and/or mandibular radiographs, computed tomography, cone beam computed tomography, positron emission tomography, positron emission tomography/computed tomography, radionuclide imaging, and magnetic resonance imaging. In determining studies to be performed for imaging purposes, principles of ALARA (as low as reasonably achievable) should be followed.
USE OF ALLOPLASTIC MATERIALS: Partial or complete reconstruction of the temporomandibular joint may be accomplished using a wide variety of autogenous tissues, xenografts, or alloplastic implants. When alloplastic materials are used, they should be employed following the manufacturer’s instructions and consistent with indications approved by the U.S. Food and Drug Administration (FDA). When a treating surgeon elects to use an alloplastic material outside these approved indications, he/she should base the decision on applicable scientific principles and available medical knowledge, and should document these considerations in the patient’s record. Additionally, only the use of FDA approved devices is recommended.

DOCUMENTATION: The AAOMS ParCare 2017 includes documentation of objective findings, diagnoses, and patient management interventions. The ultimate judgment regarding the appropriateness of any specific procedure must be made by the individual surgeon in light of the circumstances presented by each patient. Understandably, there may be good clinical reasons to deviate from these parameters. When a surgeon chooses to deviate from an applicable parameter based on the circumstances of a particular patient, he/she is well advised to note in the patient's record the reason for the procedure followed. Moreover, it should be understood that adherence to the parameters does not guarantee a favorable outcome.

GENERAL THERAPEUTIC GOALS FOR TEMPOROMANDIBULAR JOINT SURGERY:

A. Improve function and form
B. Limited period of disability
C. Improved range of jaw motion and/or function
D. Appropriate understanding by patient (family) of treatment options and acceptance of treatment plan
E. Appropriate understanding and acceptance by patient (family) of favorable outcomes and known risks and complications
F. Reduction in pain
G. Improved Quality of Life

GENERAL FACTORS AFFECTING RELATIVE RISK DURING TEMPOROMANDIBULAR JOINT SURGERY:

A. Degree of patient and/or family understanding of the origin and natural course of the condition or disorder and therapeutic goals and acceptance of proposed treatment
B. Presence of coexisting major systemic disease (eg, disease that increases a patient's American Society of Anesthesiologists classification to II, III, or IV as detailed in the Patient Assessment chapter)
C. Age of patient
D. Presence of concomitant facial pain (eg, dental pain, earache, headache)
E. Presence of parafunctional habit
F. Existing drug or alcohol dependence
G. Issues of secondary gain (eg, pending litigation)
H. Chronic pain disorders (eg, pain in excess of 3 months duration)
I. Presence of malocclusion
J. Presence of deformity or pathology of the TMJ
K. Presence of concomitant skeletal deformity
L. History of previous orthodontics, orthognathic surgery, or TMJ surgery
M. History of sensory or motor nerve abnormality (eg, temporary or permanent)
N. History of infection of surgical site
O. Presence of local or systemic conditions that may interfere with the normal healing process and subsequent tissue homeostasis (eg, previously irradiated tissue, diabetes mellitus, chronic renal disease, liver disease, blood disorder, pregnancy, steroid therapy, contraceptive medication, immunosuppression, malnutrition, Ehlers-Danlos syndrome, fibromyalgia)
P. Prolonged period of TMJ disuse (eg, ankylosis)
Q. History of maxillofacial trauma

GENERAL FAVORABLE THERAPEUTIC OUTCOMES FOR TEMPOROMANDIBULAR JOINT SURGERY:
A. Improved masticatory function and facial form
B. A level of pain that is of little or no concern to the patient and preferably measured objectively (eg, visual analog scale)
C. Improved mandibular function that is compatible with mastication, deglution, speech, and oral hygiene
D. A stable occlusion
E. Limited period of disability
F. Limit further morbidity
G. Patient (family) acceptance of procedure and understanding of outcomes
H. Improved quality of life

GENERAL KNOWN RISKS AND COMPLICATIONS OF TEMPOROMANDIBULAR JOINT SURGERY:

A. Unplanned admission to intensive care unit after elective surgery
B. Unplanned intubation for longer than 12 hours after surgery
C. Reintubation or tracheostomy after surgery
D. Emergency tracheostomy (eg, ankylosis, trismus, unable to maintain airway)
E. Use of parenteral drugs and/or fluids for longer than 72 hours after elective surgery
F. Failure to ambulate within 48 hours of elective surgery
G. Facial and/or trigeminal nerve dysfunction after surgery (eg, temporary or permanent facial muscle weakness resulting from surgery). The most common resulting problems are an inability to wrinkle the brow, raise the eyebrow, or gain tight closure of the eyelids and numbness (temporary or permanent) of certain areas of the skin in the region of the joint and sometimes in more remote areas of the face and scalp
H. Facial fracture during or after surgery
I. Unplanned exploratory procedures associated with surgery
J. Dental injury during surgery
K. Ocular injury during surgery and postoperative sequelae (eg, corneal abrasion, keratoconjunctivitis, blindness)
L. Repeat oral and/or maxillofacial surgery
M. Core temperature of greater than 101°F 72 hours after elective surgery
N. Postsurgical radiograph indicating presence of foreign body
O. Unplanned transfusion(s) of blood or blood components during or after surgery
P. Readmission for complications or incomplete management of problems on previous hospitalization
Q. Development of chronic pain disorder
R. Increased and/or persistent pain
S. Postoperative development of adhesions, heterotopic bone (reactive bone), or ankylosis within the joint space, which may cause continued jaw dysfunction, decreased range of jaw movement, difficulty chewing, and pain requiring further treatment
T. Development of TMJ internal derangement
U. New or worsened malocclusion
V. Imaging evidence of further degenerative joint changes and development of adhesions (scar tissue), joint arthritis (contralateral joint in unilateral cases), or osteomyelitis of the jaw (bone infection)
W. Significant joint noise with or without increased pain and/or dysfunction
X. Ear pain and/or dysfunction
Y. Development or worsening of a parafunctional habit
Z. Abnormal mandibular growth (eg, excessive, restricted)
AA. Prolonged period of disability
BB. Infection
CC. Development of complex regional pain syndrome
DD. Foreign body reaction or allergic reaction and rejection of the implant, wear, displacement, breakage, or loosening of alloplastic device components
EE. Ear problems, including inflammation of the canal, middle or inner ear infections, perforation of the ear drum, temporary or permanent hearing loss, ringing in the ears, or equilibrium problems
FF. Postoperative and/or future treatments are not limited to but may include the following: physical therapy,
SPECIAL CONSIDERATIONS FOR PEDIATRIC TEMPOROMANDIBULAR JOINT SURGERY

Orofacial pains due to TMJ conditions are less common in young children compared with teenagers and adults. Internal derangements are uncommon. TMJ conditions other than congenital deformities (e.g., hemifacial microsomia) or acquired anatomical abnormalities (e.g., fractures, bony ankylosis, idiopathic condylar resorption) are very uncommon in children. When painful TMJ conditions do occur, underlying psychopathologic factors are more frequent.

Informed consent issues specific to children as discussed in the Patient Assessment chapter are applicable for TMJ surgery.

Imaging is frequently required to assess and treat pediatric patients. Every effort to minimize the frequency and complexity of imaging studies should be employed to reduce radiation exposure in this patient population. Whenever possible contrast should be avoided unless clinically indicated to further reduce the radiation dose and risks associated with the use of contrast.

Masticatory muscle hyperactivity in children may present as nighttime grinding or bruxism, and this is common in the deciduous or mixed dentition stages of dental development. Children may complain of headaches, earaches, or jaw stiffness in the morning on awakening. Usually this can be managed with a night guard or biofeedback and appropriate medications, when indicated. Symptomatic clicking generally can be eliminated or diminished with midline hinge axis opening exercises to overcome an abnormal opening pattern. The origin of headache in the pediatric patient is primarily related to the sinus, eye, vascular system or cervicalgia.

Any operative procedure on the TMJ of a growing child must consider the ultimate effect of the treatment on growth and development of the mandible and face. Management of ankylosis, juvenile idiopathic arthritis, degenerative joint disease (very rare in children), infectious arthritis, mandibular dislocation, and condylar resorption is similar in children and adults. Juvenile idiopathic arthritis involvement of the TMJs is not uncommon. These children require frequent monitoring and occasional imaging (MRI with gadolinium contrast) to manage their disease. Medical management can include systemic such as NSAIDs, disease-modifying anti-rheumatoid drugs (e.g., methotrexate), and biologics (e.g., adalimumab [Humira®]). Steroid injections may be required as a primary treatment, or for periodic management of exacerbations of disease activity to augment their medical management. Occasionally surgery is required to debride or reconstruct joints destroyed by this disease.

The goal of reconstructing the TMJ and ramus-condyle unit in children includes the restoration of normal functioning anatomy. This is true regardless of the underlying condition (e.g., tumor, traumatic defect, developmental defect). Therefore, autogenous donor sites with growth potential (e.g., costochondral grafts) are recommended although alloplastic reconstruction may be considered in some children where the benefit of improving hypomobility outweighs the risk of asymmetric growth with the knowledge that additional surgical procedures may be necessary.

Masticatory Muscle Disorders

Masticatory muscle disorders can result in myofascial pain and/or muscle splinting. These disorders are the most common expression of temporomandibular disorders and may occur in combination with joint abnormalities or other pathologic conditions. Management of these disorders is nonsurgical, especially in children. When masticatory muscle disorders occur in combination with joint abnormalities or other pathologic conditions, the management of these disorders must be incorporated into the overall treatment plan. Pretreatment therapeutic goals are determined individually for each patient.

1. Indications for Therapy for Masticatory Muscle Disorders
May include one or more of the following:

A. Extra-articular pain related to muscles of the head and neck region
B. Earaches, headaches, masticatory or facial myalgias
C. Restricted masticatory function
D. Restricted range of jaw motion
E. Associated TMJ abnormalities or pathology
F. Presence of sleep bruxism

II. Specific Therapeutic Goals for Masticatory Muscle Disorders

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Improved range of jaw motion and/or function
C. Adequate control of pain in muscles of the head and neck region

III. Specific Factors Affecting Risk for Masticatory Muscle Disorders

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. History of previous maxillofacial trauma

IV. Indicated Therapeutic Parameters for Masticatory Muscle Disorders

Some reduction in symptoms is expected within 3 months. If the symptoms persist or escalate during this period, further assessment of contributing etiologic and risk factors should be considered.

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. A focused history and physical examination of the TMJ region to determine if pathology is present
   3. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: screening panoramic radiography, cephalometric radiography, conventional tomography, computed tomography (CT), cone beam computed tomography, radionuclide scanning, and magnetic resonance imaging (MRI).

The following procedures for the management of masticatory muscle disorders are not listed in order of preference:

B. Nonsurgical Management
   1. Patient education (eg, stress reduction, dietary recommendations, jaw rest, control of parafunctional jaw habits)
   2. Medication (eg, nonsteroidal anti-inflammatory drugs [NSAIDs], analgesics, muscle relaxants, tricyclic antidepressants, anticonvulsants)
   3. Physical medicine (eg, physical therapy, massage, heat, cold, ultrasonography, trigger point injections, neuromuscular blocking agents, dry needling, low level laser therapy)
   4. Behavioral modification (eg, stress reduction, work modification, counseling, biofeedback, psychotherapy)
   5. Orthopedic appliances (eg, splints)
   6. Management of dental abnormalities
   7. Surgery, other than manipulative treatment therapy, is not indicated for these disorders.
   8. Instructions for posttreatment care and follow-up
   9. Treatment of referred pain (eg cervical pain)
V. Outcome Assessment Indices for Masticatory Muscle Disorders

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
   General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Known risks and complications associated with therapy
   Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

INTERNAL DERANGEMENT

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.

I. Indications for Therapy for Internal Derangement

May include one or more of the following:

A. Moderate-to-severe pain
   1. Temporomandibular pain
   2. Preauricular pain
   3. Referred pain (eg, earaches)
   4. Masticatory muscle pain (see Masticatory Muscle Disorders section)

B. Dysfunction that is disabling and characterized by any of the following:
   1. Restricted range of jaw motion (eg, locking of the joint: acute, chronic, intermittent, persistent)
   2. Excessive range of jaw motion (eg, hypermobility; chronic dislocation: acute, chronic, intermittent, persistent)
   3. Joint noises (eg, clicking, popping, crepitation) associated with pain
   4. Abnormal masticatory function (eg, painful chewing)

C. Imaging evidence of internal derangement
D. Arthroscopic evidence of internal derangement
E. Need for orthognathic surgery

II. Specific Therapeutic Goals for Internal Derangement

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Improved function
C. Limited pain in the joint
D. Elimination or reduction of noise in the joint

III. Specific Factors Affecting Risk for Internal Derangement

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Presence of alloplast or autograft
C. History of previous temporomandibular operative procedures
D. History of previous maxillofacial trauma
E. History of orthognathic surgery

IV. Indicated Therapeutic Parameters for Internal Derangement

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. A focused history and physical examination of the TMJ region to determine the presence of indications for care for internal derangement and to identify factors affecting risks
   3. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI.

B. Nonsurgical management
   1. Patient education (eg, stress reduction, dietary recommendations, jaw rest)
   2. Medication (eg, NSAIDs, analgesics, muscle relaxants)
   3. Physical medicine (eg, physical therapy, massage, heat, cold, ultrasonography, trigger point injections)
   4. Intracapsular diagnostic and therapeutic injections
   5. Behavioral modification (eg, stress reduction, work modification, counseling, biofeedback, psychotherapy)
   6. Orthopedic appliances (eg, splints)
   7. Management of dental abnormalities
   8. Diagnostic records to determine progression of the disease (eg, serial bite registration and models, imaging studies in selected cases)

C. Surgical management
   1. Examination and observation under anesthesia
   2. Manipulation
   3. Arthrocentesis
   4. Arthroscopic surgery
   5. Arthrotomy or arthroplasty
      a. Disk repair procedures
      b. Diskectomy without replacement
      c. Diskectomy with replacement
      d. Articular surface recontouring (condyle/eminence)
   6. Mandibular condylotomy may be considered in some situations such as chronic closed lock with or without pain and intra-articular pain secondary to internal derangement
   7. Orthognathic surgery as an adjunct to the management of temporomandibular joint disorders
   8. Correction of skeletal jaw deformities may be indicated before or after definitive joint treatment

D. Posttreatment management
   1. Wound care
   2. Physical therapy
   3. Pain management
   4. Diet and oral hygiene management
   5. Orthotic appliance
   6. Patient reassessment
   7. Instructions for posttreatment care and follow-up

V. Outcome Assessment Indices for Internal Derangement

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.
A. Favorable therapeutic outcomes
   1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Improved mandibular function
   3. Acceptable clinical appearance (eg, absence of motor deficits, absence of hypertrophic scar formation, absence of facial asymmetry or deformity)

B. Known risks and complications associated with therapy
   1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Removal of autograft or alloplast
   3. Ankylosis
   4. Need for additional surgical intervention

DEGENERATIVE JOINT DISEASE

Surgical intervention 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.

I. Indications for Therapy for Degenerative Joint Disease

May include one or more of the following:

A. Moderate-to-severe pain
   1. Temporomandibular pain
   2. Preauricular pain
   3. Referred pain (eg, earaches)
   4. Masticatory muscle pain (see Masticatory Muscle Disorders section)

B. Dysfunction that is disabling and characterized by any of the following:
   1. Restricted range of jaw motion (eg, locking of the joint: acute, chronic, intermittent, persistent)
   2. Excessive range of jaw motion (eg, hypermobility; chronic dislocation: acute, chronic, intermittent, and persistent)
   3. Joint noises (eg, clicking, popping, crepitation)
   4. Abnormal masticatory function (eg, painful chewing)

C. Imaging evidence of arthritic condition
D. Arthroscopic evidence of arthritic condition
E. Failed alloplastic implants
F. Failed prior TMJ surgery
G. Need for orthognathic surgery

II. Specific Therapeutic Goals for Degenerative Joint Disease

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Improved function
C. Improved pain in the joint
D. Improved maxillomandibular relationship
E. Limited progression of the disease

III. Specific Factors Affecting Risk for Degenerative Joint Disease
Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Presence of an alloplast or autograft
C. History of previous maxillofacial trauma
D. Degenerative disease affecting other joints
E. Prior temporomandibular joint surgery
F. History of prior orthognathic surgery (PCR)

IV. Indicated Therapeutic Parameters for Degenerative Joint Disease

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Focused history and physical examination of the TMJ region to determine the presence of indications for care for degenerative joint disease and to identify factors affecting risks
   3. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI.

The following procedures for the management of degenerative joint disease are not listed in order of preference:

B. Nonsurgical management
   1. Patient education (eg, stress reduction, dietary recommendations, jaw rest)
   2. Medication (eg, NSAIDs, analgesics, muscle relaxants, antiarthritics, steroids)
   3. Physical medicine (eg, physical therapy, massage, heat, cold, ultrasonography, trigger point injections)
   4. Intracapsular diagnostic and therapeutic injections
   5. Behavioral modification (eg, stress reduction, work modification, counseling, biofeedback, psychotherapy)
   6. Orthopedic appliances (eg, splints)
   7. Management of dental abnormalities
   8. Appropriate diagnostic records to determine progression of the disease (eg, serial bite registration and models, imaging studies in selected cases)

C. Surgical management
   1. Manipulation
   2. Arthrocentesis
   3. Arthroscopic surgery
   4. Arthrotomy or arthroplasty
      a. Disk repair procedures
      b. Discectomy without replacement
      c. Discectomy with replacement
      d. Arthroplasty
      e. Removal of failed alloplastic implant
   5. Condyllectomy (partial or total, with or without replacement)
   6. Orthognathic surgery (the correction of skeletal jaw deformities may be indicated before or after definitive joint treatment as an adjunct to the management of temporomandibular disorders)
   7. Total alloplastic or autogenous joint replacement

D. Posttreatment management
   1. Wound care
   2. Pain management
   3. Diet and oral hygiene management
   4. Physical therapy
V. Outcome Assessment Indices for Degenerative Joint Disease

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
   1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Acceptable clinical appearance (e.g., absence of motor deficits, absence of hypertrophic scar formation, absence of facial asymmetry or deformity)
   3. Improved mandibular function (e.g., maximum incisal opening, lateral and protrusive excursions)

B. Known risks and complications associated with therapy
   1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Removal of autograft or alloplast
   3. Ankylosis

RHEUMATOID ARTHRITIS

Rheumatoid arthritis is one of a constellation of systemic autoimmune diseases that may affect the TMJ. In many cases, these conditions should be managed with the close cooperation of the patient’s physician and/or rheumatologist.

It is important to distinguish whether the condylar resorption is active (progressive) or stable (nonprogressive). In its most severe form, rheumatoid arthritis may result in ankylosis and/or condylar destruction with resultant mandibular retrognathism, anterior skeletal open bite, and painful limitation of function.

Surgical intervention for arthritic conditions 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.

I. Indications for Therapy for Rheumatoid Arthritis

May include one or more of the following:

A. Moderate-to-severe pain
   1. Temporomandibular pain
   2. Preauricular pain
   3. Referred pain (e.g., earaches)
   4. Masticatory muscle pain (see Masticatory Muscle Disorders section)

B. Dysfunction that is disabling and characterized by any of the following:
   1. Restricted range of jaw motion (e.g., locking of the joint: acute, chronic, intermittent, persistent)
   2. Excessive range of jaw motion (e.g., hypermobility, chronic dislocation: acute, chronic, intermittent, persistent)
   3. Joint noises (e.g., clicking, popping, crepitation)
   4. Abnormal masticatory function (e.g., painful chewing, malocclusion)
   5. Joint swelling and/or effusion

C. Imaging evidence of arthritic process

D. Maxillofacial deformity
II. Specific Therapeutic Goals for Rheumatoid Arthritis

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Limited pain in the joint
C. Improved maxillomandibular function
D. Corrected or improved associated maxillofacial relationship
E. Limited progression of the disease

III. Specific Factors Affecting Risk for Rheumatoid Arthritis

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Active process of resorption
C. Ankylosis
D. Presence of alloplast or autograft
E. Rheumatoid disease affecting other joints

IV. Indicated Therapeutic Parameters for Rheumatoid Arthritis

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Focused history and physical examination of the TMJ region to determine the presence of indications for care for rheumatoid arthritis and to identify factors affecting risks
   3. Appropriate laboratory studies to confirm the diagnosis of rheumatoid arthritis (eg, antinuclear antibody, sedimentation rate, rheumatoid factor)
   4. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI
   5. Appropriate diagnostic records to determine progression of the disease (eg, serial bite registration and models, imaging studies, laboratory studies)

The following procedures for the management of rheumatoid arthritis are not listed in order of preference:

B. Nonsurgical management
   1. Patient education (eg, stress reduction, dietary recommendations, jaw rest)
   2. Medication (eg, NSAIDs, analgesics, muscle relaxants, antiarthritics, steroids)
   3. Physical medicine (eg, physical therapy, massage, heat, cold, ultrasonography, trigger point injections)
   4. Intracapsular diagnostic and therapeutic injections
   5. Behavioral modification (eg, stress reduction, work modification, counseling, biofeedback, psychotherapy)
   6. Orthopedic appliances (eg, splints)
   7. Management of dental abnormalities
   8. Appropriate diagnostic records to determine progression of the disease (eg, serial bite registration and models, imaging studies in selected cases)

C. Surgical management

The activity of the systemic disease must be considered prior to surgical management of the TMJ.

1. Active (progressive) TMJ disease
a. Arthrocentesis
b. Arthroscopic surgery
c. Biopsy
d. Arthroplasty
e. Total alloplastic or autogenous graft joint replacement

2. Stable (nonprogressive) TMJ disease
a. Arthrocentesis
b. Arthroscopic surgery
c. Biopsy
d. Arthroplasty
e. Orthognathic surgery
f. Total alloplastic or autogenous graft joint replacement

D. Posttreatment management
1. Wound care
2. Pain management
3. Diet and oral hygiene management
4. Physical therapy
5. Ongoing rheumatologic management
6. Occlusal management
7. Patient reassessment
8. Instructions for posttreatment care and follow-up

V. Outcome Assessment Indices for Rheumatoid Arthritis

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
2. Acceptable clinical appearance (eg, absence of motor deficits, absence of hypertrophic scar formation, absence of facial asymmetry or deformity)
3. Improved mandibular function (eg, maximum incisal opening, lateral and protrusive excursions)

B. Known risks and complications associated with therapy
1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
2. Removal of autograft or alloplast
3. Ankylosis

INFECTIONOUS ARTHRITIS

The management of infectious arthritis depends on whether the condition is acute or chronic and primary or secondary. Treatment objectives are directed toward the elimination of causes.

Surgical intervention for infectious arthritis is indicated only when nonsurgical therapy has been ineffective and pain and/or dysfunction are moderate to severe. Pretreatment therapeutic goals are determined individually for each patient.

I. Indications for Therapy for Infectious Arthritis

May include one or more of the following:

A. Evidence of localized or systemic infection
B. Moderate-to-severe pain
1. Temporomandibular pain
2. Preauricular pain
3. Referred pain (eg, earaches)
4. Masticatory muscle pain (see Masticatory Muscle Disorders section)

C. Dysfunction that is disabling and characterized by any of the following:
   1. Restricted range of jaw motion (eg, hypomobility: acute, chronic, intermittent, persistent)
   2. Joint noises (eg, crepitation)
   3. Abnormal masticatory function (eg, painful chewing, malocclusion)
   4. Swelling, erythema, suppuration, and/or joint effusion

D. Imaging evidence of infectious process, failed prosthesis, or foreign body
E. Maxillofacial deformity

II. Specific Therapeutic Goals for Infectious Arthritis

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Elimination of infection
C. Removal of any foreign body
D. Alleviation or reduction in pain in the joint
E. Elimination or reduction in noise in the joint
F. Limited progression of disease
G. Corrected malocclusion
H. Corrected or improved associated maxillofacial deformity

III. Specific Factors Affecting Risk for Infectious Arthritis

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Virulence of microorganisms
C. Compromised host defenses
D. Presence of alloplast or autograft
E. Extent of infection

IV. Indicated Therapeutic Parameters for Infectious Arthritis

The source of the infection (eg, extension of an otologic infection), systemic manifestations of the infection (eg, septicemia), presence of systemic disease (eg, diabetes mellitus), and host response (eg, human immunodeficiency virus infection, immunosuppression) all must be considered before surgical management of the infected TMJ.

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Focused history and physical examination of the TMJ region to determine the presence of indications for care for infectious arthritis and to identify factors affecting risks
   3. Appropriate laboratory studies to confirm the diagnosis of infectious arthritis (eg, white blood cell count by serum or aspiration, Gram stain, bacterial culture, and sensitivity)
   4. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI

The following procedures for the management of infectious arthritis are not listed in order of preference:
B. Nonsurgical management
   1. Patient education (eg, dietary recommendations, jaw rest)
   2. Antibiotic therapy
   3. Pain management
   4. Physical therapy
   5. Supportive therapy (eg, hydration, antipyretics)

C. Surgical management
   1. Acute infection
      a. Aspiration and/or arthrocentesis
      b. Incision and drainage with culture and sensitivity studies
      c. Identification and elimination of etiology
      d. Arthroscopic surgery
      e. Removal of implant or foreign body
   2. Chronic infection
      a. Aspiration and/or arthrocentesis
      b. Incision and drainage with culture and sensitivity studies
      c. Identification and elimination of etiology
      d. Arthroscopic surgery
      e. Biopsy
      f. Arthroplasty
      g. Alloplastic joint replacement

D. Posttreatment management
   1. Ongoing medical management of infection
   2. Wound care
   3. Pain management
   4. Diet and oral hygiene management
   5. Physical therapy
   6. Reassessment of infectious process
   7. Instructions for posttreatment care and follow-up
   8. Management of residual deformity after elimination of infectious process (eg, orthognathic surgery, joint reconstruction)

V. Outcome Assessment Indices for Infectious Arthritis

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
   1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Elimination of infection
   3. Limited period of disability
   4. Acceptable clinical appearance (eg, absence of motor deficits, absence of hypertrophic scar formation, absence of facial asymmetry or deformity)
   5. Improved mandibular function (eg, maximum incisal opening, lateral and protrusive excursions)

B. Known risks and complications associated with surgery
   1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Need to remove an autograft or alloplast
   3. Ankylosis
   4. Progression of infection (eg, osteomyelitis, sepsis, deep space infection)
   5. Adherent unacceptable scar formation

MANDIBULAR DISLOCATION: RECURRENT OR PERSISTENT
Mandibular dislocation can be acute, recurrent, or persistent. All of these refer to the dislocation of the intact nonfractured condyle. Acute dislocation describes blockage of the condyle by the eminence that prevents its return to the glenoid fossa, thus causing inability to close the mouth. Recurrent dislocation describes multiple episodes of dislocation during a specific period. Persistent dislocation describes a long-term blockage of the condyle by the eminence and may be associated with irreversible intracapsular pathology. This section addresses the therapy for recurrent or persistent dislocation. Acute dislocation is addressed in the Trauma Surgery chapter.

I. Indications for Therapy for Mandibular Dislocation: Recurrent or Persistent

May include one or more of the following:

A. Moderate-to-severe pain
   1. Temporomandibular pain
   2. Preauricular pain
   3. Masticatory muscle pain (see Masticatory Muscle Disorders section)

B. Dysfunction that is disabling and characterized by any of the following:
   1. Frequent, recurrent and/or persistent mandibular dislocation
   2. Restricted range of jaw motion
   3. Excessive range of jaw motion in patients who relocate after the dislocation
   4. Joint noises (eg, clicking, popping, crepitation)
   5. Abnormal masticatory function (eg, painful chewing, malocclusion)
   6. Displaced autograft or alloplastic implant

C. Imaging evidence of dislocation and/or displaced autograft or alloplastic implant

II. Specific Therapeutic Goals for Mandibular Dislocation: Recurrent or Persistent

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Correction and prevention of dislocation

C. Limited pain in the joint

D. Elimination or reduction of noise in the joint

III. Specific Factors Affecting Risk for Mandibular Dislocation: Recurrent or Persistent

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Status and/or degree of abnormal condylar and/or articular eminence growth and development

C. Presence of autograft and/or alloplastic implant

D. Presence of oromandibular dystonia or other jaw dyskinesia

E. Therapeutic use of medications causing extrapyramidal reactions

IV. Indicated Therapeutic Parameters for Mandibular Dislocation: Recurrent or Persistent

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Focused history and physical examination of the TMJ region to determine the presence of indications for care of mandibular dislocation and to identify factors affecting risks
   3. An imaging examination, based on the history and physical findings, may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI

The following procedures for the management of mandibular dislocation are not listed in order of preference:
B. Nonsurgical management
   1. Patient education (eg, dietary recommendations, jaw rest, decreased range of motion)
   2. Discontinuation of use of medications causing extrapyramidal reactions
   3. Medication (eg, drugs used to manage tremors, NSAIDs, analgesics, muscle relaxants, steroids)
   4. Physical medicine (eg, physical therapy, massage, heat, cold, ultrasonography)
   5. Intracapsular diagnostic and therapeutic injections
   6. Behavioral modification (eg, counseling, biofeedback, psychotherapy)

C. Surgical management
   1. Manipulation and relocation of the condyle
   2. Application of maxillomandibular fixation
   3. Arthroscopic surgery
   4. Arthrotomy or arthroplasty
      a. Disk repair procedures
      b. Diskectomy without replacement
      c. Diskectomy with replacement
      d. Articular surface recontouring (condyle/eminence)
      e. Removal of displaced autograft or alloplastic implant
   5. Autogenous graft to limit condylar movement
   6. Temporalis muscle scarification
   7. Inferomedial fracture of zygomatic arch
   8. Orthognathic surgery
   9. Autogenous or alloplastic joint replacement
   10. Neuromuscular blocking agents

D. Posttreatment management
   1. Wound care
   2. Pain management
   3. Diet and oral hygiene management
   4. Physical therapy
   5. Occlusal management
   6. Patient reassessment
   7. Instructions for posttreatment care and follow-up

V. Outcome Assessment Indices for Mandibular Dislocation: Recurrent or Persistent

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
   1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Absence of recurrent or persistent mandibular dislocation

B. Known risks and complications associated with therapy
   1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Need to remove an autograft or alloplast
   3. Continued dislocation

ANKYLOSIS AND RESTRICTED JAW MOTION

Intra-articular and extra-articular processes may restrict jaw motion severely. Ankylosis of the TMJ is an intra-articular process characterized by fibrous, fibro-osseous, or osseous obliteration of the joint space.

Extracapsular causes of restricted jaw motion (pseudoankylosis) include but are not limited to coronoid-zygomatic fusion, coronoid hypertrophy, and muscular fibrosis.
Surgical intervention for ankylosis is indicated only when nonsurgical therapy has been ineffective and pain and/or dysfunction are moderate to severe. Pretreatment therapeutic goals are determined individually for each patient.

I. Indications for Therapy for Ankylosis and Restricted Jaw Motion

May include one or more of the following:

A. Severely restricted jaw motion accompanied by one or more of the following:
   1. Inadequate masticatory function
   2. Abnormal speech (eg, constrained)
   3. Inability to undergo dental and/or medical care (eg, dental preventive and/or restorative, oral or pharyngeal surgery, endoscopy)
   4. Compromised anesthetic management (eg, intubation)
   5. Inhibited facial growth
   6. Imaging evidence of osseous or soft tissue abnormality
   7. Clinical and/or imaging evidence of restriction or obstruction unrelated to the TMJ (eg, coronoid-zygomatic fusion, coronoid hypertrophy)

II. Specific Therapeutic Goals for Ankylosis and Restricted Jaw Motion

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Release of ankylosis
C. Access for dental and/or medical care
D. Improved speech
E. Improved masticatory function
F. Relief or reduction of pain

III. Specific Factors Affecting Risk for Ankylosis and Restricted Jaw Motion

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
B. Type of ankylosis (eg, fibrous or bony)
C. Etiology of the ankylosis (eg, traumatic or inflammatory)
D. Extent and duration of ankylosis
E. Degree of preexisting muscular atrophy
F. Ankylosis in a growing child
G. Previous placement of alloplastic joint

IV. Indicated Therapeutic Parameters for Ankylosis and Restricted Jaw Motion

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Focused history and physical examination of the TMJ region to determine the presence of indications for care of ankylosis and restricted jaw motion and to identify factors affecting risks
   3. An imaging examination, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, CT, 3-dimensional CT, cone beam computed tomography, radionuclide scanning, and/or MRI

The following procedures for the management of ankylosis and restricted jaw motion are not listed in order of preference:
B. Nonsurgical management (usually not helpful in bony ankylosis)
   1. Medication (eg, NSAIDs, analgesics, muscle relaxants, antiarthritics, steroids)
   2. Physical therapy
   3. Management of dental abnormalities

C. Surgical management
   1. Brisement (forceful manipulation of jaw under general anesthesia)
   2. Arthroplasty
   3. Condylectomy, partial or total and with or without replacement
   4. Gap arthroplasty with autogenous or alloplastic replacement (eg, with autogenous fat grafting)
   5. Coronoidectomy or coronoidotomy
   6. Osteotomy of zygoma or zygomatic arch
   7. Myotomy
   8. Scar revision (eg, intraoral and/or extraoral)
   9. Orthognathic surgery for residual maxillofacial deformity (see the Surgical Correction of Maxillofacial Skeletal Deformities chapter)
   10. Excision of heterotopic bone or gap arthroplasty with reconstruction of the ramus-condyle unit by distraction osteogenesis
   11. Partial or total joint reconstruction (eg, autogenous graft, allogeneic graft, alloplastic total joint replacement)

D. Posttreatment management
   1. Wound care
   2. Physical therapy
   3. Pain management
   4. Diet and oral hygiene management
   5. Occlusal management
   6. Appropriate diagnostic records to determine progression of the disease (eg, serial bite registration and models, imaging studies in select cases)
   7. Patient reassessment
   8. Instructions for posttreatment care and follow-up

V. Outcome Assessment Indices for Ankylosis and Restricted Jaw Motion

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
   1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. In a growing child, continued symmetric growth of the mandible in proper relationship to the midface
   3. Acceptable clinical appearance (eg, absence of motor deficits, absence of hypertrophic scar formation, absence of facial asymmetry or deformity)
   4. Improved mandibular function (eg, maximum incisal opening, lateral and protrusive excursions)

B. Known risks and complications associated with therapy
   1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Need to remove an autograft or alloplast
   3. Recurrence of ankylosis

CONDYLAR HYPERPLASIA OR HYPOPLASIA

Abnormal condylar size or configuration characterizes condylar hyperplasia or hypoplasia, which may be associated with abnormal mandibular and/or maxillary growth or changing skeletal relationships.
Surgical intervention for condylar hyperplasia or hypoplasia is indicated when nonsurgical therapy has been ineffective and/or considered inappropriate and pain, dysfunction, or deformity is moderate to severe.

Pretreatment therapeutic goals are determined individually for each patient.

The clinical and imaging characteristics of the condylar abnormality may mimic those of a neoplasm or other pathologic process, necessitating further evaluation.

I. Indications for Therapy for Condylar Hyperplasia or Hypoplasia

May include one or more of the following:

A. Moderate-to-severe pain
   1. Temporomandibular pain
   2. Preauricular pain
   3. Referred pain (eg, earache)
   4. Masticatory muscle pain (see Masticatory Muscle Disorders section)

B. Dysfunction that is disabling and characterized by any of the following:
   1. Restricted range of jaw motion (eg, hypomobility: acute, chronic, intermittent, persistent)
   2. Excessive range of jaw motion (eg, hypermobility: acute, chronic, intermittent, persistent)
   3. Joint noises (eg, clicking, popping, crepitation)
   4. Abnormal masticatory function (eg, painful chewing, malocclusion)

C. Imaging evidence of condylar hyperplasia or hypoplasia

D. Maxillofacial deformity

E. Continued abnormal growth

II. Specific Therapeutic Goals for Condylar Hyperplasia or Hypoplasia

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Limited pain in the joint

C. Elimination or reduction of noise in the joint

D. Limited progression of the disease

E. Corrected malocclusion

F. Corrected or improved associated maxillofacial deformity

III. Specific Factors Affecting Risk for Condylar Hyperplasia or Hypoplasia

Severity factors that increase risk and the potential for known complication:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Status and/or degree of abnormal condylar growth

IV. Indicated Therapeutic Parameters for Condylar Hyperplasia or Hypoplasia

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Regional history and physical examination to determine the presence of indications for care for condylar hyperplasia or hypoplasia and to identify factors affecting risks
   3. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI
   4. Appropriate diagnostic records to determine progression of the disease (eg, serial bite registration and models, imaging studies in selected cases)
The following procedures for the management of condylar hyperplasia or hypoplasia are not listed in order of preference:

B. Surgical management
   1. Incisional or excisional biopsy
   2. Partial or total condylectomy
   3. Arthroplasty
   4. Partial or total joint reconstruction (eg, autogenous graft, allogeneic graft, alloplastic implant)
   5. Osseous reduction or augmentation
   6. Soft tissue reduction or augmentation
   7. Orthognathic surgery (see the Surgical Correction of Maxillofacial Skeletal Deformities chapter)

C. Posttreatment management
   1. Wound care
   2. Pain management
   3. Diet and oral hygiene management
   4. Physical therapy
   5. Occlusal management
   6. Patient reassessment
   7. Instructions for posttreatment care and follow-up

V. Outcome Assessment Indices for Condylar Hyperplasia or Hypoplasia

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
   1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Acceptable clinical appearance

B. Known risks and complications associated with therapy
   1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
   2. Removal of autograft or alloplast
   3. Infection
   4. Continued growth
   5. Continued asymmetry

GOUTY ARTHRITIS

Gouty arthritis (arthritis, hyperuricemia) is a metabolic disease that may affect the TMJ. The disease may be primary or secondary to another disease and/or medication that causes an increase in serum uric acid. In acute gouty arthritis, urate crystals can be precipitated in the synovial fluid of the TMJ, causing a severely painful inflammation. This condition should be treated with the close cooperation of the physician managing the overall systemic disease.

Gout occurs in less than 0.5% of the population and is more common in males than in females. The disease, when present, usually occurs in people older than 40 years. Although the large toe is the joint most commonly involved, the TMJ can also be affected. A synovial fluid analysis demonstrating urate crystals is necessary to confirm the diagnosis. Symptoms include severe TMJ pain, swelling, erythema, joint noise, and restricted mandibular mobility.

Surgical intervention for arthritic conditions 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.

I. Indications for Therapy for Gouty Arthritis

May include one or more of the following:

A. Moderate-to-severe pain
   1. Temporomandibular joint pain
   2. Preauricular pain
   3. Referred pain (eg, earaches)
   4. Masticatory muscle pain (see Masticatory Muscle Disorders section)

B. Dysfunction that is disabling and characterized by any of the following:
   1. Restricted range of jaw motion (eg, locking of the joint: acute, chronic, intermittent, persistent)
   2. Joint noises (eg, clicking, popping, crepitation)
   3. Abnormal masticatory function (eg, painful chewing, malocclusion)
   4. Joint swelling and/or effusion
   5. Erythema of skin over the TMJ region

C. Imaging evidence of arthritic process

D. Maxillofacial deformity

II. Specific Therapeutic Goals for Gouty Arthritis

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Limited pain in the joint gouty arthritis

C. Decreased systemic uric acid level

D. Improved function

E. Elimination or reduction in noise in the joint

F. Limited progression of the disease

G. Corrected or improved associated maxillofacial deformity

III. Specific Factors Affecting Risk for Gouty Arthritis

Severity factors that increase risk and the potential for known complications:

A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery

B. Active process of condylar cortical erosions, bone spurs, and exostoses

C. Presence of alloplast or autograft

D. Gouty arthritis affecting other joints

IV. Indicated Therapeutic Parameters for Gouty Arthritis

A. The pretreatment assessment includes, at a minimum:
   1. General history and physical examination, as detailed in the Patient Assessment chapter
   2. Focused history and physical examination of the TMJ region to determine the presence of indications for care for gouty arthritis and to identify factors affecting risks
   3. Appropriate laboratory studies to confirm the diagnosis of gouty arthritis (eg, identification of uric acid crystals in the synovial fluid, serum uric acid level, and, in acute cases, leukocytosis and an elevated sedimentation rate)
   4. An imaging examination, if indicated, based on the history and physical findings. The examination may include but is not limited to the following: panoramic radiography, cephalometric radiography, conventional tomography, arthrography, CT, cone beam computed tomography, radionuclide scanning, and/or MRI
   5. Appropriate diagnostic records to determine progression of the disease (eg, laboratory studies,
The following procedures for the management of gouty arthritis are not listed in order of preference:

B. Nonsurgical management
1. Medication (eg, colchicine, indomethacin, NSAIDs, analgesics)
2. Physical medicine (eg, physical therapy, cold)
3. Intracapsular diagnostic synovial fluid aspiration
4. Medical management (eg, steroid injections, evaluation of medications that can increase uric acid)
5. Orthopedic appliances (eg, splints)

C. Surgical management
1. Synovial fluid aspiration
2. Arthrocentesis
3. Arthroscopic surgery
4. Biopsy
5. Arthroplasty
6. Partial or total joint reconstruction (eg, autogenous graft, allogeneic graft, alloplastic implant)

E. Posttreatment management
1. Wound care
2. Pain management
3. Diet and oral hygiene management
4. Physical therapy
5. Laboratory studies
6. Occlusal management
7. Patient reassessment
8. Instructions for posttreatment care and follow-up

V. Outcome Assessment Indices for Gouty Arthritis
Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes
1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
2. Acceptable clinical appearance (eg, absence of motor deficits, absence of hypertrophic scar formation, absence of facial asymmetry or deformity)
3. Improved mandibular function (eg, maximum incisal opening, lateral and protrusive excursions)

B. Known risks and complications associated with therapy
1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Temporomandibular Joint Surgery
2. Removal of autograft or alloplast
3. Ankylosis

SELECTED REFERENCES – TEMPOROMANDIBULAR JOINT SURGERY
This list of selected references is intended only to acknowledge some of the sources of information drawn on in the preparation of this document. Citation of the reference material is not meant to imply endorsement of any statement contained in the reference material. The list is not an exhaustive compilation of information on the topic. Readers should consult other sources to obtain a complete bibliography.

SPECIAL CONSIDERATIONS FOR PEDIATRIC TEMPOROMANDIBULAR JOINT SURGERY


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DEGENERATIVE JOINT DISEASE

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