Clinical Policy Title: Orthognathic surgery

Clinical Policy Number: 14.03.01

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

Related policies:

CP# 14.02.02  Temporomandibular joint disorder

ABOUT THIS POLICY: AmeriHealth Caritas Pennsylvania Community HealthChoices has developed clinical policies to assist with making coverage determinations. AmeriHealth Caritas Pennsylvania HealthChoices’ clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by AmeriHealth Caritas Pennsylvania HealthChoices when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. AmeriHealth Caritas Pennsylvania HealthChoices’ clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. AmeriHealth Caritas Pennsylvania HealthChoices will update its clinical policies as necessary. AmeriHealth Caritas Pennsylvania HealthChoices’ clinical policies are not guarantees of payment.

Coverage policy

AmeriHealth Caritas Pennsylvania HealthChoices considers the correction of facial skeletal deformities by orthognathic surgery to be clinically proven and, therefore, medically necessary when the following criteria are met (Broers 2017, Song 2017, Azarmehr 2017, Brignardello-Petersen 2015, Minami-Sugaya 2012, Mattos 2012, American Association of Oral and Maxillofacial Surgeons [AAOMS] 2012):

Anatomic criteria for orthognathic surgery:

- Antero-posterior discrepancies ≥2 standard deviations from norm (norm = 2 mm):
  - Maxillary/mandibular incisors horizontal overjet ≥5 mm; or zero to negative.
  - Molar relation discrepancy ≥4 mm.
- Vertical discrepancies ≥2 standard deviations from norm:
Open bite:
  o No vertical overlap of anterior teeth.
  o Unilateral or bilateral posterior open bite >2 mm.

Deep overbite:
  o Impingement or irritation of soft tissues.
  o Supereruption of dentoalveolar segment due to lack of occlusion.

Transverse discrepancies ≥2 standard deviations from norm.
Asymmetries >3 mm with corresponding occlusal asymmetry.

**Functional criteria and documentation requirements:**

Along with preauthorization requests, providers must submit a written explanation of the patient’s clinical course, including dates, nature, and outcomes of previous treatments; pretreatment imaging studies; and detailed descriptions of functional impairments considered to be direct results of anatomic abnormalities.

For example:

- Sleep apnea documented by sleep studies and failure of nonsurgical treatments.
- Persistent chewing and swallowing difficulties where other causes have been ruled out.
- Malnutrition, significant weight loss, or failure to thrive attributable to facial skeletal deformity.
- Speech dysfunction attributed to deformity by speech or language pathologist.

**Limitations:**

AmeriHealth Caritas Pennsylvania HealthChoices considers the correction of facial skeletal deformities by orthognathic surgery to be medically unnecessary for individuals not meeting the anatomical and functional criteria listed above; however, these may be reviewed on a case-by-case basis.

Three-dimensional virtual planning of orthognathic surgery is considered experimental and investigational, and is not a covered benefit.

**Background**

Orthognathic surgical procedures are used to correct improper alignment of upper and lower jaws when such misalignment cannot be corrected by movement of teeth (orthodontics) within existing configurations of bone alone. Jaw misalignment problems can be evidenced as functional (chewing, speech, or swallowing problems; difficulty breathing during sleep [sleep apnea]); or esthetic (open bite, protruding or receding chin).
The surgeon chooses from among available and often eponymously named specific procedures (e.g., Le Fort I, II, and III maxillary osteotomies; mandibular genioplasty) for a variety of technical, anatomical, and other patient-related reasons.

Orthognathic surgery is an invasive and complex intervention reserved for defects not amenable to less drastic measures.

**Searches**

AmeriHealth Caritas Pennsylvania HealthChoices searched PubMed and the databases of:
- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on March 19, 2018. Search term was: "orthognathic surgery."

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

**Findings**

Systematic review evidence for orthognathic surgery is very limited; all reviewers cite insufficient evidence for definitive answers to their review questions.

As for any invasive procedure, surgery should be limited to anatomic or functional defects unable to be corrected by less drastic measures such as orthodontics.

**Policy updates:**

A systematic review (Broers 2017) evaluated the medical evidence regarding patient satisfaction with, and the impact of, orthognathic surgery on psychosocial functioning of patients 17 years of age and older. A secondary aim was to determine whether individuals with psychiatric disorders and mental health conditions are more likely to be dissatisfied with the treatment outcome than those without. Based on 3,948 studies (1,053 studies in Pubmed, 2,023 in Embase, and 872 in PsycInfo) the authors
noted a consistently high risk of bias and a low or moderate depth of evidence. They concluded, given the poor quality of the methods of studies published to date on the effects of orthognathic surgery on patient satisfaction or the psychosocial impact that inferences on the effects of orthognathic surgery on patient satisfaction or their psychosocial functioning could not be made with confidence at this time.

A systematic review (Song 2017) examined the effect of orthognathic surgical treatment on temporomandibular disorders (TMD), quality of life (QoL), and psychosocial wellness to quantify the impact of each measure on overall satisfaction with treatment. The authors documented a paradigm shift in clinical mindset from solely objective measures to a more holistic, patient-centric approach of addressing patients' expectations and improving QoL when treating patients with dentofacial disharmonies. The authors also pointed out that psychological factors and TMD exerted a stronger influence on patients' QoL more than objective treatment outcome measures.

A systematic review (Azarmehr 2017) looked at the most common indications, treatments, and outcomes of three-dimensional (3-D) surgical navigation (SN) in oral and maxillofacial surgery in the fields of traumatology, orthognathic surgery, cancer and reconstruction surgery, skull-base surgery, and foreign body removal. The average technical system accuracy and intraoperative precision reported were <1 mm and 1 to 2 mm, respectively. The authors concluded that, in general, 3-D SN is a useful tool for surgical planning, execution, evaluation, and research, particularly in regard to treatment of complex orbital fractures.

Brignardello-Petersen (2015) conducted a systematic review of 11 trials that assessed the effects of antibiotic prophylaxis for preventing surgical site infection (SSI) in people undergoing orthognathic surgery. Long-term antibiotic prophylaxis reduced the risk of SSI (plausible effects range between a 76 percent to a 0.26 percent relative reduction in SSI with long-term antibiotic prophylaxis) (472 participants; RR 0.42, 95 percent CI 0.24 to 0.74; moderate-quality evidence). There was uncertainty surrounding the relative effects of short-term antibiotics compared with a single dose (220 participants; RR 0.34, 95 percent CI 0.09 to 1.22; low-quality evidence). No reports described adverse effects associated with the drugs in those trials that reported in this outcome. None of the trials assessed or reported data regarding other outcomes, and information was insufficient to show whether a specific antibiotic is better than another. The authors concluded that for people undergoing orthognathic surgery, long-term antibiotic prophylaxis decreases the risk of SSI compared with short-term antibiotic prophylaxis.

Summary of clinical evidence:

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broers (2017)</td>
<td>Do patients benefit from orthognathic surgery? A systematic review on the effects of elective</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Citation</td>
<td>Content, Methods, Recommendations</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------</td>
</tr>
</tbody>
</table>
| orthognathic surgery on psychosocial functioning and patient satisfaction. | health conditions are more likely to be dissatisfied with the treatment outcome than those without.  
- Based on 3,948 studies (1,053 studies in Pubmed, 2,023 in Embase, and 872 in PsycInfo) the authors noted a consistently high risk of bias and a low or moderate depth of evidence.  
- They concluded, given the poor quality of the methods of studies published to date on the effects of orthognathic surgery on patient satisfaction or the psychosocial impact that inferences on the effects of orthognathic surgery on patient satisfaction or their psychosocial functioning could not be made with confidence at this time. |
| Song (2017) Orthognathic treatment of dentofacial disharmonies: its impact on temporomandibular disorders, quality of life, and psychosocial wellness | Key points:  
- A systematic review examined the effect of orthognathic surgical treatment on temporomandibular disorders (TMD), quality of life (QoL), and psychosocial wellness to quantify the impact of each measure on overall satisfaction with treatment.  
- The authors documented a paradigm shift in clinical mindset from solely objective measures to a more holistic, patient-centric approach of addressing patients' expectations and improving QoL when treating patients with dentofacial disharmonies.  
- The authors also pointed out that psychological factors and TMD exerted a stronger influence on patients’ QoL more than objective treatment outcome measures. |
| Azarmehr (2017) Surgical navigation: a systematic review of indications, treatments, and outcomes in oral and maxillofacial surgery | Key points:  
- A systematic review looked at the most common indications, treatments, and outcomes of 3-D surgical navigation (SN) in oral and maxillofacial surgery in the fields of traumatology, orthognathic surgery, cancer and reconstruction surgery, skull-base surgery, and foreign body removal.  
- The average technical system accuracy and intraoperative precision reported were 1 mm and 1 to 2 mm, respectively.  
- The authors concluded that, in general, 3-D SN is a useful tool for surgical planning, execution, evaluation, and research, particularly with regard to treatment of complex orbital fractures. |
| Brignardello-Petersen (2015) Antibiotic prophylaxis for preventing infectious complications in orthognathic surgery | Key points:  
- Systematic review to assess the effects of antibiotic prophylaxis for preventing surgical site infection (SSI) in people undergoing orthognathic surgery.  
- A total of 11 trials were included in this review.  
- Seven of these trials provided evidence for the main comparison and the primary outcome, and these were pooled.  
- Overall, long-term antibiotic prophylaxis probably reduces the risk of SSI (plausible effects range between a 76% to a 0.26% relative reduction in SSI with long-term antibiotic prophylaxis) (472 participants; RR 0.42, 95% CI 0.24 to 0.74; moderate-quality evidence).  
- There is uncertainty surrounding the relative effects of short-term antibiotics compared with a single dose (220 participants; RR 0.34, 95% CI 0.09 to 1.22; low-quality evidence).  
- No reports described adverse effects associated with the drugs in those trials that reported in this outcome.  
- None of these trials assessed or reported data regarding other outcomes and information was insufficient to show whether a specific antibiotic is better than another.  
- Authors’ conclusions: |
For people undergoing orthognathic surgery, long-term antibiotic prophylaxis decreases the risk of SSI compared with short-term antibiotic prophylaxis and the uncertainty of whether short-term antibiotic prophylaxis decreases SSI risk relative to a single preoperative dose of prophylactic antibiotics.

**Key points:**
- Treatments for adults with prominent lower front teeth.
- Insufficient evidence for superiority of one procedure over another.

**Key points:**
- Effects on oropharyngeal airway.
- Study designs not specified beyond “moderate or high methodological soundness.”
- Insufficient evidence to determine effects.

**References**

**Professional society guidelines/other:**


**Peer-reviewed references:**


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

No NCDs identified as of the writing of this policy.

**Local Coverage Determinations (LCDs):**

No LCDs identified as of the writing of this policy.

**Commonly submitted codes**

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

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>21100</td>
<td>Application of halo type appliance for maxillofacial fixation, includes removal (separate procedure)</td>
<td></td>
</tr>
<tr>
<td>21110</td>
<td>Application of interdental fixation device for conditions other than fracture or dislocation, includes removal</td>
<td></td>
</tr>
<tr>
<td>21125</td>
<td>Augmentation, mandibular body or angle; prosthetic material</td>
<td></td>
</tr>
<tr>
<td>21127</td>
<td>Augmentation, mandibular body or angle; with bone graft, onlay or interpositional (includes obtaining autograft)</td>
<td></td>
</tr>
<tr>
<td>21141</td>
<td>Reconstruction midface, LeFort I; single piece, segment movement in any direction (e.g., for Long Face Syndrome), without bone graft</td>
<td></td>
</tr>
<tr>
<td>21142</td>
<td>Reconstruction midface, LeFort I; 2 pieces, segment movement in any direction, without bone graft</td>
<td></td>
</tr>
<tr>
<td>21143</td>
<td>Reconstruction midface, LeFort I; 3 or more pieces, segment movement in any direction, without bone graft</td>
<td></td>
</tr>
<tr>
<td>21145</td>
<td>Reconstruction midface, LeFort I; single piece, segment movement in any direction, requiring bone grafts (includes obtaining autografts) (e.g., ungrafted unilateral alveolar cleft)</td>
<td></td>
</tr>
<tr>
<td>21146</td>
<td>Reconstruction midface, LeFort I; 2 pieces, segment movement in any direction, requiring bone grafts (includes obtaining autografts) (e.g., ungrafted unilateral alveolar cleft)</td>
<td></td>
</tr>
<tr>
<td>21147</td>
<td>Reconstruction midface, LeFort I; 3 or more pieces, segment movement in any direction, requiring bone grafts (includes obtaining autografts) (e.g., ungrafted bilateral alveolar cleft or multiple osteotomies)</td>
<td></td>
</tr>
<tr>
<td>21150</td>
<td>Reconstruction midface, LeFort II; anterior intrusion (e.g., Treacher-Collins Syndrome)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M26.00</td>
<td>Unspecified anomaly of jaw size</td>
<td></td>
</tr>
<tr>
<td>M26.10</td>
<td>Unspecified anomaly of jaw-cranial base relationship</td>
<td></td>
</tr>
<tr>
<td>ICD-10 Code</td>
<td>Description</td>
<td>Comments</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>M26.12</td>
<td>Other jaw asymmetry</td>
<td></td>
</tr>
<tr>
<td>M26.51</td>
<td>Abnormal jaw closure</td>
<td></td>
</tr>
<tr>
<td>M89.38</td>
<td>Hypertrophy of bone, other site</td>
<td></td>
</tr>
<tr>
<td>M89.8x8</td>
<td>Other specified disorders of bone, other site</td>
<td></td>
</tr>
<tr>
<td>M95.2</td>
<td>Other acquired deformity of head</td>
<td></td>
</tr>
<tr>
<td>Q18.9</td>
<td>Congenital malformation of face and neck, unspecified</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HCPCS Level II Code</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>