Surgical Extraction of Impacted Teeth

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Instructions for Use

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Related Dental Policies

- Non-Surgical Extractions
- Surgical Extraction of Erupted Teeth and Retained Roots

Coverage Rationale

Surgical Extraction of Soft Tissue, Partially Bony and Complete Bony Impacted Teeth

Surgical extraction of Soft Tissue, Partially Bony and Complete Bony Impacted Teeth is indicated for the following:

- The facilitation of orthodontic treatment
- For a tooth/teeth in the line of a jaw fracture or complicating fracture management
- As part of comprehensive treatment in orthognathic surgery
- Moderate to severe or acute pain, or recurrent episodes that do not respond to conservative treatment (i.e., pain medication or antibiotics)
- Non restorable caries
- Management of, or limiting the progression of periodontal disease
- In the case of acute/chronic infection (abscess, cellulitis, pericoronitis)
- Pulpal exposure
- Non restorable pulpal or periapical lesion
- Internal resorption
- As a prophylactic procedure for an underlying medical or surgical condition (e.g., organ transplants, alloplastic implants, chemotherapy, radiation therapy prior to intravenous bisphosphonate therapy for cancer)
- Tumor resection
- Ectopic position
- For purposes of prosthetic rehabilitation (partial dentures and complete dentures)

Surgical extraction of Soft Tissue, Partially Bony and Complete Bony Impacted Teeth is not indicated for the following:

- For prophylactic reasons other than an underlying medical condition
- For pain or discomfort related to normal tooth eruption

Coronectomy

Coronectomy is indicated for the following:

- When clinical criteria for extraction of impacted teeth is met
- When the removal of complete tooth would likely result in damage to the neurovascular bundle

Coronectomy is not indicated for the following:

- For routine extractions
- For prophylactic reasons

Definitions

Completely Bony Impaction: Most or all of a tooth crown is covered by bone; requires mucoperiosteal flap, elevation and bone removal. (ADA)

Completely Bony Impaction with Unusual Surgical Complications: Most or all of a crown covered by bone; usually difficult or complicated due to factors such as nerve dissection required, separate closure of maxillary sinus required, or aberrant tooth position. (ADA)

Coronectomy: Intentional partial tooth removal performed when a neurovascular complication is likely if the entire Impacted Tooth is removed. (ADA)

Impacted Tooth: An unerupted or partially erupted tooth that is positioned against another tooth, bone, or soft tissue so that complete eruption is unlikely. (ADA)

Partially Bony Impaction: Part of tooth crown covered by bone; requires mucoperiosteal flap elevation and bone removal. (ADA)

Soft Tissue Impaction: Occlusal surface of tooth covered by soft tissue; requires mucoperiosteal flap elevation. (ADA)

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 the member specific benefit plan document 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.

CDT Code	Description
D7220	Removal of impacted tooth – soft tissue
D7230	Removal of impacted tooth – partially bony
D7240	Removal of impacted tooth – complete bony
D7241	Removal of impacted tooth – complete bony, with unusual surgical complications
D7251	Coronectomy – intentional partial tooth removal
D7922	Placement of intra-socket biological dressing to aid in hemostasis or clot stabilization, per site

Description of Services

Surgical extraction of impacted teeth is required when the tooth is not erupted in the oral cavity and is covered by soft tissue and/or bone. Extraction requires the cutting of tissue and bone. The most commonly affected teeth are third molars and maxillary canines, but impaction can occur with any teeth. The placement of intra-socket biological dressings following an extraction include products made of gelatin, collagen, and cellulose for soft tisue bleeding, and bone wax for cancellous bone bleeding. These products may be neededed to aid in hemostasis or clot stabilization and are typically considered inclusive to the primary extraction procedure.

Smailienė et al. (2019) conducted a retrospective study using cone beam computerized tomography (CBCT) to assess the relationship between external root resorption (ERR) on the distal aspect of second molars' roots and positional parameters of impacted third molars (ITM). Cone beam computed tomography scans of 109 patients (41 males, 68 females; mean age 26.4 ± 7.9 years) with 254 ITM (131 in the maxilla and 123 in the mandible) were retrospectively analyzed. Positional parameters of ITM (mesio-distal position, angulation, impaction depth, and available eruption space) were evaluated. The presence, location, and depth of ERR of adjacent second molars were assessed. Analysis showed a relationship between ITM impaction depth, mesial inclination angle, and the presence of ERR. Mesial inclination angle of more than 13.6° increased the odds of ERR occurrence by 5.439 (95% CI, 2.97-9.98). ITM presence at the level of ½ of roots of the adjacent second molar or more apically increased the odds of ERR occurrence by 2.218 (95% CI, 1.215-4.048). No significant correlation was detected between the occurrence of ERR and patient age, gender, or the available eruption space in the mandible. Depth of ERR did not depend on its location. The author's concluded that the incidence of ERR in second molars is significantly associated with mesial inclination and a deep position of ITM.

Monaco et al. (2019) conducted a prospective cohort study of early (up to 1 month) and late (from 2 to 60 months) postoperative complications following coronectomy to reduce the risk of neurologic damage to the inferior alveolar nerve (IAN). 116 coronectomies in 94 healthy patients (37 men and 57 women; mean age, 28.99 ± 8.9 years) were completed, and at 5 years' follow-up, re-evaluated 63 patients with 76 coronectomies. In total, 30 complications were verified. No cases of neurologic lesions to the IAN or lingual nerve were observed after surgery. In the first 3 years, the surgeons extracted migrated roots in 5 cases (6%) without any neurologic lesions to the IAN. No complications were observed from the third to fifth year. The author's concluded no cases of neurologic lesions, no cases of late infection of the retained roots at 5 years, and a low rate of immediate postoperative complications. Further investigations should include a follow-up study at 10 years and more research about the mechanism of pulp healing.

Ghaeminia et al (2016). This Cochrane Database Systematic Review is an update of an existing review published in 2012. The goal is to evaluate the effects of removal compared with retention (conservative management) of asymptomatic disease-free impacted wisdom teeth in adolescents and adults. The authors searched the following electronic databases: Cochrane Oral Health's Trials Register through May 24, 2016, the Cochrane Central Register of Controlled Trials (CENTRAL) (2016, Issue 4), MEDLINE Ovid (1946 to 24 May 2016) and Embase Ovid (1980 to 24 May 2016). They also searched ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform for ongoing and unpublished studies to 24 May 2016. There were no restrictions imposed on language or date of publication, and included studies comparing removal (or absence) with retention (or presence) of asymptomatic disease-free impacted wisdom teeth in adolescents or adults. Included, were randomised controlled trials (RCTs) with no restriction on length of follow-up, if available and quasi-RCTs and prospective cohort studies if investigators measured outcomes with follow-up of five years or longer. The previous review included one RCT with a parallel-group design, which was conducted in a dental hospital setting in the United Kingdom; the search for this update identified one prospective cohort study conducted in the private sector in the USA. No eligible studies in this review reported the effects of removal compared with retention of asymptomatic disease-free impacted wisdom teeth on health-related quality of life. Only low to very low quality evidence of the effects of removal compared with retention of asymptomatic disease-free impacted wisdom teeth for a limited number of secondary outcome measures. One prospective cohort study, reporting data from a subgroup of 416 healthy male participants, aged 24 to 84 years, compared the effect of the absence (previous removal or agenesis) against the presence of asymptomatic disease-free impacted wisdom teeth on periodontitis and caries associated with the distal of the adjacent second molar during a follow-up period of three to over 25 years. Very low quality evidence suggests that the presence of asymptomatic disease-free impacted wisdom teeth may be associated with increased risk of periodontitis affecting the adjacent second molar in the long term. In the same study, which is at serious risk of bias, there is insufficient evidence to demonstrate a difference in caries risk associated with the presence or absence of impacted wisdom teeth. One RCT with 164 randomised and 77 analysed adolescent participants compared the effect of extraction with retention of asymptomatic disease-free impacted wisdom teeth on dimensional changes in the dental arch after five years. Participants (55% female) had previously undergone orthodontic treatment and had 'crowded' wisdom teeth. No evidence from this study, which was at high risk of bias, was found to suggest that removal of asymptomatic disease-free impacted wisdom teeth has a clinically significant effect on dimensional changes in the dental arch. The included studies did not measure other secondary outcomes: costs, other adverse events associated with retention of asymptomatic disease-free impacted wisdom teeth (pericoronitis, root resorption, cyst formation, tumour formation, inflammation/infection) and adverse effects associated with their removal (alveolar osteitis/postoperative infection, nerve injury, damage to adjacent teeth during surgery, bleeding, osteonecrosis related to medication/radiotherapy, inflammation/infection). The authors concluded that insufficient evidence is

available to determine whether or not asymptomatic disease-free impacted wisdom teeth should be removed. Well-designed RCTs investigating long-term and rare effects of retention and removal of asymptomatic disease-free impacted wisdom teeth, in a representative group of individuals, are unlikely to be feasible. In their absence, high quality, long-term prospective cohort studies may provide valuable evidence in the future. Patient values should be considered and clinical expertise used to guide shared decision making with patients who have asymptomatic disease-free impacted wisdom teeth. If the decision is made to retain asymptomatic disease-free impacted wisdom teeth, clinical assessment at regular intervals to prevent undesirable outcomes is advisable.

Mukherjee et al (2016) Iatrogenic damage to Inferior Alveolar Nerve (IAN) is a significant risk factor following prophylactic or therapeutic removal of impacted mandibular third molar. The risk to IAN injury increases many fold, when the third molar root overlaps the nerve canal as identified by the radiographic imaging. The aim of this study was to evaluate the fate of the root (resorbed, exfoliated, and covered by bone) after coronectomy or intentional root retention of impacted mandibular 3(rd) molars in patients with high risk for inferior alveolar nerve damage as evaluated by the intra oral periapical radiograph. Twenty impacted mandibular third molar teeth, in 18 patients with high risk of injury to IAN based on Rood's Criteria in an intra-oral periapical radiographic examination, between the age group of 18 to 40 years, were included in the study. Preoperatively the impacted third molars were evaluated clinically as well as radiographically. Pederson Difficulty Index and Winter's Classification of impacted tooth was recorded. Coronectomy was done at the cemento enamel junction leaving the roots 2-3mm below the alveolar crest and primary closure was done. Patients were evaluated periodically for two years at six months interval. Post-operative pain, swelling, IAN injury or any other complications were observed and recorded. The results showed none of the patients had IAN injury, required a second surgery to remove roots, or developed a post-operative infection. However, two patients had failed coronectomy (10%) due to mobilization of roots intra operatively and the roots were removed. One patient developed profuse bleeding intra-operatively in the failed coronectomy case. One patient had temporary lingual nerve paresthesia. The authors concluded that a coronectomy procedure is effective in controlling inferior alveolar nerve injury following third molar surgery, in radiographically evaluated high risk cases and it has very low incidence of complications.

Long et al. (2015) conducted a systemic review, to compare the outcomes between coronectomy and total removal for third molar extractions with high risk of nerve injury. PubMed, Embase, Web of Science, CENTRAL, and SIGLE database searches were conducted from January 1990 to October 2011, and included review of randomized or non-randomized controlled trials. Four studies met the inclusion criteria. A relatively high rate of failed coronectomy in one study (38.3%, compared with 2.3%-9.4% in others) may be attributed to a higher proportion of narrowing roots and vertical impactions. Although root migration rate was high (13.2%-85.29%), the migration distances were short (3.06 ± 1.67 mm), and the directions were away from the nerves. Moreover, the rates of re-operation and root exposure were low. It was concluded that coronectomy is superior to total removal for reducing inferior alveolar nerve damage and could be used in clinical practice for third molar extractions with high risk of nerve injury.

Martin et al. (2015) conducted in systematic review that examined the clinical outcomes after coronectomy. PubMed, SCOPUS and the Cochrane Library publications were reviewed through January 31, 2014 and this included randomized clinical trials, controlled clinical trials, prospective cohort studies or retrospective studies. Ten articles qualified for the final analysis. The successful coronectomy varied from a minimum of 61.7% to a maximum of 100%.Several variables were evaluated, including inferior alveolar nerve (IAN) injury, lingual nerve (LN) injury, and postoperative adverse effects, pulp disease, and root migration. Coronectomy was associated with a low incidence of complications in terms of the variables evaluated, with the exception of migration of the retained roots which ranged from 2%-85.3%. It was concluded that coronectomy appears to be a safe procedure, with a reduced incidence of postoperative complications, and a coronectomy can be indicated for teeth that are very close to the inferior alveolar nerve. If a second operation is needed for the remnant roots, they can be removed with a low risk of paresthesia, because the roots have likely migrated away from the mandibular nerve.

Agbaje, JO et al.(2015) conducted a study to assess the surgical management of impacted third molar with proximity to the inferior alveolar nerve and complications associated with coronectomy in a series of patients undergoing third molar surgery. The position of the mandibular canal in relation to the mandibular third molar region (and mandibular foramen in the front part of the mandible) was identified on panoramic radiographs of patients scheduled for third molar extraction. Close proximity to the inferior alveolar nerve (IAN) was observed in 64 patients with an impacted mandibular third molar. Coronectomy was performed in these patients. Coronectomy did not increase the incidence of damage to the inferior alveolar nerve and would be safer than complete extraction in situations in which the root of the mandibular third molar overlaps or is in close proximity to the mandibular canal. The most common complication was tooth migration away from the mandibular canal (n=14), followed by

root exposure (n=5). The results of this study indicate that coronectomy can be considered a reasonable and safe treatment alternative for patients who demonstrate elevated risk for injury to the inferior alveolar nerve with removal of the third molars.

Stathopoulos et al. (2011) conducted a retrospective analysis over an 11 year period from 1990-2001 assessing the type and frequency of cysts and tumors associated with impacted third molars (ITM). 7,782 ITMs were identified in 6,182 patients with the main reason for surgical removal being signs and symptoms of infection due to pericoronitis. The ages of the patients ranged from 12 to 92 years, with a mean of 32.7 years. The ratio of maxillary to mandibular molars was 1:2.9. Of the 7,782 ITM specimens examined, 417 met inclusion criteria with a pericoronal space of greater than 3 mm on the panoramic radiograph and were submitted for histopathologic examination. Of the 417 specimens submitted for examination, 167 cysts (40.04%) of which the majority were dentigerous or odontogenic keratocysts, 48 benign tumors (11.5%) that included ameloblastoma, odontoma, odontogenic myxoma, odontogenic fibroma, as well as 202 normal dental follicles (48.44%) were found. This retrospective analysis concluded that the incidence of cyst and tumor development around ITMs is low (2.77%) and suggests that, as far as the prevention of cyst and tumor development around ITMs is concerned, surgical removal is not sufficiently justified.

Professional Societies

American Association of Oral and Maxillofacial Surgeons (AAOMS) White Paper on the Management of Third Molar Teeth states the following:

- In the absence of evidence regarding current associated symptoms or disease to support surgical management, the surgeon should review the likelihood of pathology developing in the future, functionality, risks of removal, risks of retention, and protocol for active surveillance. Removal should be favored when the third molar is currently or likely to be non-functional, there is an overlying removable prosthesis, orthodontic removal is justified (such as when the tooth is preventing the eruption of the second molar) and in the case of planned orthognathic surgery. Patients should also be informed of the greater difficulty and increased rate of complications associated with third molar removal as they age. When appropriate, patients should be advised that if they retain their disease-free wisdom teeth, it is possible they could live their entire lives without problems.

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 considers hemostatic agents to be Class III medical devices. Refer to the following website for more information regarding products. Search by device name or using product code LMF: https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMA/pma.cfm (Accessed September 3, 2020)

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Policy History/Revision Information

Date	Summary of Changes
03/15/2021	• Updated dental entity brand logo
01/01/2021	Template Update • Reformatted policy; transferred content to new template
01/01/2020	Supporting Information • Updated *Description of Services*, *Clinical Evidence*, and *FDA* sections to reflect the most current information; no change to *Coverage Rationale* or *Applicable Codes* • Archived previous policy version DCP006.05

Instructions for Use

This Dental Clinical Policy provides assistance in interpreting UnitedHealthcare standard dental benefit plans. When deciding coverage, the member specific benefit plan document must be referenced as the terms of the member specific benefit plan may differ from the standard dental plan. In the event of a conflict, the member specific benefit plan document governs. Before using this policy, please check the member specific benefit plan document and any applicable federal or state mandates. UnitedHealthcare reserves the right to modify its Policies and Guidelines as necessary. This Dental Clinical Policy is provided for informational purposes. It does not constitute medical advice.