Surgical Endodontics
(For Ohio Only)

Policy Number: CSDEN337OH.A
Effective Date: December 1, 2023

Instructions for Use

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Related Dental Policies

- Biological Materials for Soft and Hard Tissue Regeneration
- Bone Replacement Grafts
- Dental Barrier Membrane Guided Tissue Regeneration
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Application

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

Coverage Rationale

Apicoectomy

Apicoectomy may be indicated for the following:

- Failed retreatment of endodontic therapy
- When the apex of tooth cannot be accessed due to calcification or other anomaly
- Where visualization of the Periradicular tissues and tooth root is required when perforation or root fracture is suspected
- Further diagnosis when post endodontic therapy symptoms persist
- A marked over extension of obturating materials interfering with healing

Apicoectomy is not indicated for the following:

- Bony or root configurations that do not allow surgical access
- If there is the possible involvement of neurovascular structures
- Teeth with a hopeless prognosis

Surgical Exposure of Root Surface(s) (without Apicoectomy or Repair of Root Resorption)

Surgical exposure of root surfaces may be indicated for the following:

- Failed retreatment of endodontic therapy

- When the apex of tooth cannot be accessed due to calcification or other anomaly
- When a biopsy of Periradicular tissue is Necessary
- Where visualization of the Periradicular tissues and tooth root is required when perforation or root fracture is suspected
- Further diagnosis when post endodontic therapy symptoms persist
- A marked overextension of obturating materials interfering with healing

Surgical exposure of root surfaces is not indicated for the following:
- Bony or root configurations that do not allow surgical access
- If there is the possible involvement of neurovascular structures
- Teeth with a hopeless prognosis

Retrograde Filling

Retrograde Filling is indicated for the following:
- Periradicular pathosis and a blockage of the root canal system that could not be obturated by nonsurgical root canal treatment
- Persistent Periradicular pathosis resulting from an inadequate apical seal that cannot be corrected non-surgically
- Root perforations
- Resorptive defects

Retrograde Filling is not indicated for teeth with an overall poor prognosis.

Root Amputation

Root Amputation may be indicated for the following:
- Class III Furcation involvement
- Untreatable bony defect (of one root)
- Root fracture
- Root caries
- Root resorption
- Persistent sinus tract or recurrent apical pathology
- When there is greater than 75% bone supporting remaining root(s)
- The tooth has had successful endodontic treatment

Root Amputation is not indicated for teeth with an overall poor prognosis with or without Root Amputation.

Intentional Reimplantation

Intentional replantation may be indicated when all of the following clinical conditions exist:
- Persistent Periradicular pathosis following endodontic treatment
- Nonsurgical retreatment is not possible or has an unfavorable prognosis
- Periradicular surgery is not possible or involves a high degree of risk to adjacent anatomical structures
- The tooth presents a reasonable opportunity for removal without fracture
- The tooth has an acceptable periodontal status prior to the replantation procedure

Hemisection

Hemisection of multirooted teeth may be indicated for the following:
- Class III or Class IV periodontal furcation defect
- Infrabony defect of one root of a multi-rooted tooth that cannot be successfully treated periodontally
- Coronal fracture extending into the furcation
- Vertical root fracture confined to the root to be separated and removed
- Carious, resorptive root or perforation defects that are inoperable or cannot be corrected without root removal
- The tooth has had successful endodontic treatment

Definitions

Biologic Materials: Agents that alter wound healing or host-tumor interaction. Such materials can include cytokines, growth factor, or vaccines, but do not include any actual hard or soft tissue graft material. These agents are added to graft material or used alone to effect acceleration of healing or regeneration in hard and soft tissue surgical procedures. They are also known as biologic response modifiers. (ADA)

Experimental, Investigational or Unproven Services: Medical, dental, surgical, diagnostic, or other health care services, technologies, supplies, treatments, procedures, drug therapies or devices that, are determined to be:

- Not approved by the U.S. Food and Drug Administration (FDA) to be lawfully marketed for the propose use and not identified in the American Hospital Formulary Service or the United States Pharmacopoeia Dispensing Information as appropriate for the proposed use; or
- Subject to review and approval by any institutional review board for the proposed use; or
- The subject of an ongoing clinical trial that meets the definition of a Phase 1, 2 or 3 clinical trial set forth in the FDA regulations, regardless of whether the trial is actually subject to FDA oversight; or
- Not demonstrated through prevailing peer–reviewed professional literature to be safe and effective for treating or diagnosing the condition or illness for which its use is proposed; or
- Pharmacological regimens not accepted by the American Dental Association (ADA) Council on Dental Therapeutics

Furcation: The anatomic area of a multirooted tooth where the roots diverge. A furcation involvement refers to loss of periodontal support in a furcation (ADA, 2016).

Glickman Classification of Tooth Furcation Grading (Sims, 2015):

- Grade I:
  - Incipient
  - Just barely detectable with examination hand instruments
  - No horizontal component of the furcation is evident on probing
- Grade II:
  - Early bone loss
  - Examination hand instrument goes partially into the furcation, but not all the way through
  - Furcation may be grade II on both sides of the tooth, but are not connected
- Grade III:
  - Advanced bone loss
  - Examination hand instrument goes all the way through furcation, to other side of tooth
  - Furcation is through-and-through
- Grade IV:
  - Through-and-through, plus furcation is clinically visible due to gingival recession

Guided Tissue Regeneration: A surgical procedure with the goal of achieving new bone, cementum, and PDL attachment to a periodontally diseased tooth, using barrier devices or membranes to provide space maintenance, epithelial exclusion, and wound stabilization. (AAP)

Hemisection (Biscuspidization): The surgical separation of a multirooted tooth, usually a mandibular molar, through the furcation in such a way that a root and the associated portion of the crown may be removed or retained. (AAE)

Intentional Reimplantation: The intentional removal, inspection and treatment of the root and replacement of a tooth into its own socket. This does not include necessary retrograde filling material placement. (ADA)

Necessary: Dental Services and supplies which are determined through case-by-case assessments of care based on accepted dental practices to be appropriate; and

- Needed to meet your basic dental needs; and
- Rendered in the most cost-efficient manner and type of setting appropriate for the delivery of the dental service; and
- Consistent in type, frequency and duration of treatment with scientifically based guidelines of national clinical, research, or health care coverage organizations or governmental agencies that are accepted; and
- Consistent with the diagnosis of the condition; and

- Required for reasons other than the convenience of you or your dental provider; and
- Demonstrated through prevailing peer-reviewed dental literature to be either:
  - Safe and effective for treating or diagnosing the condition or sickness for which its use is proposed; or
  - Safe with promising efficacy:
    - For treating a life-threatening dental disease or condition; and
    - In a clinically controlled research setting; and
    - Using a specific research protocol that meets standards equivalent to those defined by the National Institutes of Health

Periradicular: Surrounding the root. (AAE)

Retrograde Filling: A method of sealing the root canal by preparing and filling it from the root apex. (ADA)

Root Amputation: Surgical removal of all of the root and adherent soft tissues leaving the crown of the tooth intact and supported by remaining root(s). (AAE)

Root End Resection/Apicoectomy: The surgical removal of the apical portion of a root and adherent soft tissues; may be performed in advance of root-end preparation for a root end filling or as a definitive treatment. (AAE)

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
D3410	Apicoectomy – anterior
D3421	Apicoectomy – premolar (first root)
D3425	Apicoectomy – molar (first root)
D3426	Apicoectomy/periradicular surgery (each additional root)
D3430	Retrograde filling – per root
D3450	Root amputation – per root
D3460	Endodontic endosseous implant
D3470	Intentional reimplantation (including necessary splinting)
D3471	Surgical repair of root resorption - anterior
D3472	Surgical repair of root resorption – premolar
D3473	Surgical repair of root resorption – molar
D3501	Surgical exposure of root surface without apicoectomy or repair of root resorption – anterior
D3502	Surgical exposure of root surface without apicoectomy or repair of root resorption – premolar
D3503	Surgical exposure of root surface without apicoectomy or repair of root resorption – molar
D3910	Surgical procedure for isolation of tooth with rubber dam
D3920	Hemisection (including any root removal), not including root canal therapy
D3950	Canal preparation and fitting of preformed dowel or post
D3999	Unspecified endodontic procedure, by report

Description of Services

When retreatment of endodontic therapy is unsuccessful or not possible, surgical treatment may be required. Surgical endodontics encompasses the elimination of pathology through periradicular surgery, root amputation and hemisectioning of multirooted teeth. Currently, many surgical endodontic procedures are being performed less frequently, as the high success rate of dental implants makes them an accepted alternative for challenging cases. As a result, new evidence for these procedures is lacking.

Clinical Evidence

Surgical Endodontics

Kim et al. (2018) conducted a comprehensive review discussing current knowledge as well as future directions on regenerative endodontics. The European Society of Endodontology and the American Association for Endodontists have both released position statements and clinical considerations for these procedures. Endogenous stem cells from an induced periapical bleeding and scaffolds using blood clot, platelet rich plasma or platelet-rich fibrin have been utilized in regenerative endodontics. It is hoped that with the concept of tissue engineering, namely stem cells, scaffolds and signaling molecules, that true pulp regeneration is an achievable goal. However, much is still not known about clinical and biological aspects of regenerative endodontics.

Song et al. (2012) published the results of a study to evaluate the outcomes of cases that were classified as successes in a previous study of the surgical treatment of lesions of endodontic and combined periodontic endodontic origin. Long-term predictability of treated teeth is important in the decision-making process between root retention versus extraction and other treatments. The purpose of this study was to evaluate the outcomes over a period of 6 to 10 years, of the 172 cases of the cases that were classified as successes in the previous study. Patients were followed up every 6 months for 2 years and every year up to 10 years. On every follow-up visit, clinical and radiographic evaluations were performed according to the same criteria as in the original study by the same 2 examiners. The results showed a follow-up rate of 104 out of the selected 172 cases. Of these 104 cases, 97 cases were included in the successful group, 91 with complete healing and 6 with incomplete healing, with the overall maintained success rate of 93.3%. The authors concluded that endodontic surgery has a high rate of long-term success and is a viable treatment for retaining endodontically involved teeth requiring surgery.

Intentional Tooth Reimplantation

Asgary et al. (2014) presented a case series aimed at comprehensively introducing intentional replantation (IR) with a focus on its indications and case selection in endodontics. Twenty teeth were selected and 19 of them had failed endodontic treatment and needed retreatment, surgical treatment, or extraction. The same private practice endodontist provided the IR procedure. Teeth were extracted atraumatically, extraoral time kept to a minimum (< 15 minutes), leaving the periodontal ligament and root surface untouched. Root end pathology was treated, and teeth reimplanted into extraction socket with position verified radiographically. Teeth were not splinted as they were deemed to be outside of primary occlusion. Patients were given post-operative instructions and returned for oral examination at 1, 7 and 14 days, with follow up beyond 6 months planned. Treatment was deemed successful via clinical and radiographic verification. Subjective symptoms such as pain or discomfort were considered failures, as were teeth that showed symptoms of infection or inflammation. Radiographic examination of teeth that showed no change in size of periapical lesion were also considered failures. Patients were followed up from 8-24 months, with the mean being 15.5 months. Of the original 18 teeth treated with IR, 18 were successful clinically and radiographically. One of the two classified as failures did have some resolution of the periapical lesion, however it was not completely eliminated. The authors concluded that with proper tooth and patient selection and skilled providers, IR can have a high success rate.

Hemisection and Amputation

Park et al. (2009) conducted a 10-year retrospective study on the long-term outcome of root resection of molars. From December 1992 to March of 2006, 579 patients received root resection on 691 molar teeth at the Institute of Oral Health Science, Samsung Medical Center in Seoul, Korea. Cases were chosen based on root resection therapy for periodontal problems, endodontic problems, caries and root fracture. Ultimately 60 cases were excluded due to missing clinical information, and a retrospective review was done of all clinical and radiographic documentation. Data collected included type of prosthetic abutment, opposing dentition, furcation classification, and amount of bone support on remaining root. They also included clinical information in regard to the presence of periapical lesions, endodontic status and total number of teeth

remaining in the dentition. The amount of bone was measured using radiographs taken with the same film holding device to minimize operator differences in film and tube head placement providing standardization. The study showed a 10-year survival rate of molar resected teeth of 29.8% which is similar to previous studies. The researchers concluded that root resection is still a valid treatment option for retention of teeth with loss of bone due to periodontal disease or endodontic lesions, with periodontal defects showing a slightly higher long-term prognosis. Success is highly dependent on patient case selection, careful prosthetic planning and practitioner skill level. The authors also concluded that further studies are needed in this area, but not likely due to more dentists and patients choosing extraction and implants as a treatment modality with higher long-term success.

Zafiropoulos et al. (2009) conducted a retrospective non-randomized study on the long-term success of mandibular molar resectioning and implant procedures in a private practice setting. A retrospective chart review was performed. In one group of patients 56 mandibular first or first and second molars were treated by hemisection (Group H). A second group received 36 implants in the mandible to replace periodontally involved first or first and second molars (Group I). All patients had been in maintenance for at least 4 years after treatment and the occurrence and timing of posttreatment complications were evaluated. The majority of hemisected teeth (68% of Group H) and implants (89% of Group I) remained free of complications for the entire observation period. Group H had a greater incidence of overall complications. The results indicated that both root resected mandibular molars and mandibular molar implants could be expected to have, on average, a complication-free survival of 6 years. Although root resected molars were at a significantly greater risk for complications, approximately 80% of root resected mandibular molars were retained overall, and almost 70% of root resected mandibular molars remained complication free for an average of 5 years. The authors concluded that within the limitations of this retrospective, practice-based study, implants replacing periodontally involved mandibular molars had fewer complications than hemisected mandibular teeth, but hemisected teeth have an acceptable long term survival rate.

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.

Surgical endodontics encompasses procedures and are not subject to FDA regulation.

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Policy History/Revision Information

Date	Summary of Changes
12/01/2023	New dental policy

Instructions for Use

This Dental Policy provides assistance in interpreting the UnitedHealthcare Community Plan of Ohio dental benefit plans. When deciding coverage, the member specific benefit plan document must be referenced as the terms of the member specific benefit plans may differ. 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 Policy is provided for informational purposes. It does not constitute the practice of medicine or medical advice.

Archived Policy Versions

Effective Date	Guideline Number	Guideline Title
N/A	N/A	N/A