

SURGICAL ENDODONTICS

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INSTRUCTIONS FOR USE

This Dental Coverage Policy provides assistance in interpreting UnitedHealthcare dental benefit plans. When deciding coverage, the member specific benefit plan document must be referenced. The terms of the member specific benefit plan document [e.g., Certificate of Coverage (COC), Schedule of Benefits (SOB), and/or Summary Plan Description (SPD)] may differ greatly from the standard benefit plan upon which this Dental Coverage Policy is based. In the event of a conflict, the member specific benefit plan document supersedes this Dental Coverage Policy. All reviewers must first identify member eligibility, any federal or state regulatory requirements, and the member specific benefit plan coverage prior to use of this Dental Coverage Policy. Other Clinical Policies and Coverage Guidelines may apply. UnitedHealthcare reserves the right, in its sole discretion, to modify its Policies and Guidelines as necessary. This Dental Coverage Policy is provided for informational purposes. It does not constitute medical advice.

BENEFIT CONSIDERATIONS

Before using this policy, please check the member specific benefit plan document and any federal or state mandates, if applicable.

Essential Health Benefits for Individual and Small Group

For plan years beginning on or after January 1, 2014, the Affordable Care Act of 2010 (ACA) requires fully insured non-grandfathered individual and small group health plans (inside and outside of Exchanges) to provide coverage for Pediatric Dental Essential Health Benefits ("EHBs"). Large group plans (both self-funded and fully insured), and small group ASO plans, are not subject to the requirement to offer coverage for Pediatric Dental EHBs. However, if such plans choose to provide coverage for benefits which are deemed Pediatric Dental EHBs, the ACA requires all dollar limits on those benefits to be removed on all Grandfathered and Non-Grandfathered plans. The determination of which benefits constitute Pediatric Dental EHBs is made on a state by state basis. As such, when using this policy, it is important to refer to the member specific benefit plan document to determine benefit coverage.

COVERAGE RATIONALE

Apicoectomy

Apicoectomy is 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
- Diagnosis of accessory canals or small fractures when post endodontic therapy symptoms persist
- When individual member considerations make prolonged non-surgical treatment not practical
- A marked over extension of obturating materials interfering with healing

Apicoectomy is not indicated for the following:

- Unusual bony or root configurations resulting in lack of surgical access

- The possible involvement of neurovascular structures
- Teeth that are considered non-restorable
- Teeth with inadequate bone support or advanced or untreated periodontal disease
- When non-surgical endodontic treatment has not been attempted or was not indicated

Periradicular Surgery without Apicoectomy (Includes Surgery and Periradicular Curettage)

Periradicular surgery without apicoectomy is 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
- Diagnosis of accessory canals or small fractures when post endodontic therapy symptoms persist
- When individual member considerations make prolonged non-surgical treatment not practical
- A marked overextension of obturating materials interfering with healing

Periradicular surgery without apicoectomy is not indicated for the following:

- Unusual bony or root configurations resulting in lack of surgical access
- The possible involvement of neurovascular structures
- Teeth that are considered non-restorable
- Teeth with inadequate bone support or advanced or untreated periodontal disease
- When non-surgical endodontic treatment has not been attempted or was not indicated

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 nonsurgically
- Root perforations
- Resorptive defects

Retrograde filling is not indicated for the following:

- When canals are successfully obturated and no evidence of radiographic pathology or clinical symptoms persist
- When a tooth has an overall poor prognosis with or without retrograde filling placement

Root Amputation

Root amputation is 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 on remaining root(s)

Root amputation is not indicated for the following:

- Teeth with an overall poor prognosis with or without root amputation
- Vital teeth

Intentional Reimplantation

Intentional replantation is 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

Intentional replantation is not indicated when any of the above criteria are not met.

Hemisection

Hemisection of multirooted teeth is 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
- Persistent periradicular pathosis where nonsurgical treatment or periradicular surgery is not possible and the problem is confined to one root
- The tooth has had successful endodontic treatment on remaining portion of tooth

Hemisection of multirooted teeth is not indicated for the following:

- Teeth with overall poor prognosis with or without hemisection
- Vital teeth

Bone Graft in Conjunction with Periradicular Surgery

Bone graft in conjunction with periradicular surgery is unproven for the treatment of lesions that are endodontic in origin.

There is insufficient clinical evidence demonstrating safety and/or efficacy of these materials in published peer-reviewed medical literature and further clinical studies are needed.

Biologic Materials to Aid in Soft and Osseous Tissue Regeneration in Conjunction with Periradicular Surgery

Biologic materials to aid in soft and osseous tissue regeneration in conjunction with periradicular surgery are unproven for the treatment of lesions that are endodontic in origin.

There is insufficient clinical evidence demonstrating safety and/or efficacy of these materials in published peer-reviewed medical literature and further clinical studies are needed.

Guided Tissue Regeneration Resorbable Barrier in Conjunction with Periradicular Surgery

Guided tissue regeneration, resorbable barrier, per site, in conjunction with periradicular surgery is unproven for the treatment of lesions that are endodontic in origin.

There is insufficient clinical evidence demonstrating safety and/or efficacy of these materials in published peer-reviewed medical literature and further clinical studies are needed.

DEFINITIONS

Apicoectomy: The amputation of the apex of a tooth. (ADA)

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).

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). The 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: The surgical separation of a multi-rooted tooth through the furcation in such a way that a root and the associated portion of the crown may be removed. (AAE Glossary of Endodontic Terms)

Periradicular: The area surrounding the root. (ADA)

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

Root Amputation: Root resection (root amputation) is the surgical removal of an entire root(s) leaving the crown of the tooth intact. (AAE Glossary of Endodontic Terms 2012)

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 Clinical Policies and Coverage 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) |
| D3427 | Periradicular surgery without apicoectomy |
| D3428 | Bone graft in conjunction with periradicular surgery – per tooth, single site |
| D3429 | Bone graft in conjunction with periradicular surgery – each additional contiguous tooth in the same surgical site |
| D3430 | Retrograde filling – per root |
| D3431 | Biologic materials to aid in soft and osseous tissue regeneration in conjunction with periradicular surgery |
| D3432 | Guided tissue regeneration, resorbable barrier, per site, in conjunction with periradicular surgery |
| D3450 | Root amputation – per root |
| D3460 | Endodontic endosseous implant |
| D3470 | Intentional reimplantation (including necessary splinting) |
| 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 |

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DESCRIPTION OF SERVICES

The aim of endodontic treatment is to disinfect the pulp space by removing necrotic pulp tissue and reducing the microbial load of the infected canal space, followed by sealing this space to prevent recontamination. For cases that demonstrate reinfection or failure, retreatment is normally the first course of treatment. When this is unsuccessful or not possible, surgical treatment may be required. Surgical endodontics encompasses the elimination of pathology through Periradicular surgery, bone grafting, Guided Tissue Regeneration, Root Amputation and Hemisectioning of multirooted teeth. Bone grafting, Guided Tissue Regeneration and the use of Biological Materials to aid in tissue regeneration have applications in different areas of dentistry, and each has its own coverage rationale and indications. Please see the procedure specific policies for details.

Surgical Endodontics

Del Fabbro et al (2016). In this Cochrane Systematic Review, which is an update to a 2008 review, the authors reviewed the published literature to assess the effects of surgical and non-surgical therapy for retreatment of teeth with apical periodontitis, and to assess effects of surgical root-end resection under various conditions, for example, when different materials, devices or techniques are used. Included were randomised controlled trials (RCTs) involving people with periapical pathosis. Studies could compare surgery versus non-surgical treatment or could compare different types of surgery. Outcome measures were healing of the periapical lesion assessed after one-year follow-up or longer; postoperative pain and discomfort; and adverse effects such as tooth loss, mobility, soft tissue recession, abscess, infection, neurological damage or loss of root sealing material evaluated through radiographs. The authors concluded that the available evidence does not provide clinicians with reliable guidelines for treating periapical lesions. Further research is necessary to understand the effects of surgical versus non-surgical approaches, and to determine which surgical procedures provide the best results for periapical lesion healing and postoperative quality of life. Future studies should use standardised techniques and success criteria, precisely defined outcomes and the participant as the unit of analysis. There was evidence that adjunctive use of a gel of plasma rich in growth factors reduced postoperative pain compared with no grafting but was in one RCT, with 36 participants and evidence was of low quality.

Torabinejad et al. (2009) conducted a systematic review to compare the clinical and radiographic outcomes of nonsurgical retreatment with those of endodontic surgery to determine which modality offers more favorable outcomes. The study began with targeted electronic searches, followed with hand searching and citation mining for all articles reporting clinical and/or radiographic outcomes for at least a mean follow-up of 2 years for these procedures. Pooled and weighted success rates were determined from a meta-analysis of the data abstracted from the articles. A significantly higher success rate was found for endodontic surgery at 2–4 years (77.8%) compared with nonsurgical retreatment (70.9%) for the same follow-up period. At 4–6 years, however, this relationship was reversed, with nonsurgical retreatment showing a higher success rate of 83.0% compared with 71.8% for endodontic surgery. The researchers concluded that endodontic surgery offers more favorable initial success, but nonsurgical retreatment offers a more favorable long-term outcome.

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.

Sreedevi et al. (2011) conducted a study to evaluate and compare the clinical and radiographic healing following periapical surgery with and without bone grafting. Twenty patients were selected and randomly divided into two groups: A and B. After periapical surgery, Group A patients had the bony defect filled with hydroxyapatite, while Group B did not. Radiographic angulations were standardized for subsequent followup during the period of the study, and only lesions with 0.5-2cm in dimension were selected. Following surgery all patients were assessed both clinically and radiographically for a period of nine months. Clinical parameters assessed included pain on percussion and palpation, mobility, swelling and vitality of adjacent teeth. Radiographically the graft was assessed by comparing it to surrounding bone (the margin between the bone and the graft, radiopacity of the graft in comparison with the surrounding bone, the presence of trabecular bone formation), and size of the lesion. On clinical evaluation the test group (Group A) did not show any significant immediate or delayed clinical symptoms. Radiographically, in the follow up period of 6 - 9 months the bone graft became indistinguishable from the surrounding bone which indicates complete bone regeneration. Group B showed incomplete bone fill at the end of the nine month evaluation period. The authors concluded that bone regeneration following periapical surgery is effective and can be facilitated using an alloplastic bone graft. Randomized controlled studies with larger patient populations are required to validate these findings.

Taschieri et al. (2011) conducted a retrospective cohort study to evaluate the 4-year success rate of endodontic surgery in combination with a collagen resorbable membrane for the treatment of through-and-through periradicular lesions. Patients with one or more teeth with a through-and-through periradicular lesion in need of endodontic surgery were treated. A clinical and radiographic evaluation was performed at 3, 6, 12, 24, 36, and 48 months. The outcome was categorized at 1 and 4-year follow-up as success, failure, and doubtful depending on clinical signs and symptoms

and radiographic evaluation. Fisher's exact test was used to evaluate differences between successful and failed cases. Forty-three teeth in 33 patients were radiographically and clinically evaluated after 4 years. Thirty-eight teeth were classified as success, 4 teeth as failure, and 1 tooth as doubtful. No statistically significant differences were found in results related to tooth type, tooth location, and presence of post. The authors concluded that guided tissue regeneration for the treatment of through-and-through periapical lesions leads to excellent outcomes up to 4 years, and that standardized criteria are needed to determine the treatment outcome.

Corbella et al (2016) conducted a comprehensive review of the published scientific literature of experimental and clinical studies to assess the efficacy and effectiveness of guided tissue regeneration (GTR) in enhancing hard and soft tissue healing after endodontic surgery. The included articles are classified considering the anatomical characteristics of the lesion. Fourteen articles were included in the review after abstract and title selection. Eight articles were on studies on lesions affecting only the periapical region (three about through-and-through lesions) while six were about the treatment of apico-marginal lesions. On the basis of the currently available literature, there is a low scientific evidence of a benefit related to the use of guided bone regeneration procedure in endodontic surgery.

Deng et al (2016) conducted a systematic review and meta-analysis to evaluate the effect of regeneration techniques (RTs) on the outcome of periapical surgery with different protocols for different lesion types. Clinical evidence indicates that most of the repair or regeneration of the bone defect takes place during the first year after the procedure and that very few changes occur later, therefore this study only extracted data collected at 1 year after periapical surgery. PubMed, the Cochrane Library, and Embase were searched through December 30, 2014. Studies that met the inclusion criteria were systematically evaluated, and a meta-analysis was performed. Eight randomized controlled trials met the inclusion criteria. A significantly better outcome was found in the combination group (membranes plus bone replacement analogues) and bone replacement analogue-only group whereas no significant beneficial effect was found in the membrane-only group. The results of this meta-analysis showed that use of RTs in periapical surgery yielded better outcomes than traditional periapical surgery, which was inconsistent with a previous meta-analysis (Tsesis et al 2011). The use of RTs favorably affected the outcome of periapical through-and-through lesions and large lesions (≥ 10 mm). There was no significant benefit of using RTs for 4-wall lesions. Both the isolated use of bone replacement analogues and the combination of membranes and bone replacement analogues can improve the outcome of periapical surgery, whereas using membranes alone does not have significantly favorable effects. The use of RTs for through-and-through and large lesions should be recommended.

Dhiman et al. (2015) conducted a prospective randomized controlled trial to evaluate the healing outcomes of platelet-rich fibrin (PRF) in periapical surgeries involving apicomarginal defects and to compare these results with surgeries not using any guided tissue regeneration techniques. Thirty patients with suppurative chronic apical periodontitis and apicomarginal communication were randomly assigned to either the PRF or the control group. Clinical and radiographic parameters including pocket depth (PD), clinical attachment level, gingival marginal position, size of periapical lesion, and percentage reduction of the periapical radiolucency were recorded at baseline and at an interval of 3 months for a period of 12 months. The results showed an overall success rate of 83.33%, with a success rate of 86.66% (13 of 15 teeth) for PRF group and 80% (12 of 15 teeth) for control group. Both the groups exhibited a significant reduction in PD, clinical attachment level, gingival marginal position, and size of periapical lesion at 12-month period. No significant differences were observed between the 2 groups for these parameters except PD, which showed a statistically significant reduction in the PRF group. The authors concluded that the adjunctive use of regenerative techniques may not promote healing of apicomarginal defects of endodontic origin.

Tsesis et al. (2011) conducted a systematic review and meta-analysis to evaluate the influence of guided tissue regeneration (GTR) on the outcome of surgical endodontic treatment. This systematic review included clinical studies that reported the use of guided tissue regeneration in surgical endodontic treatment in patients with apical periodontitis in endodontically treated teeth. Search engines MEDLINE and EMBASE and MESH were utilized and the methodologic quality of the selected studies was evaluated independently and in duplicate by two reviewers. The full texts of the studies were obtained and reviewed for suitability based on the inclusion and exclusion criteria. There were five articles included in the final meta-analysis and were subject to data extraction, methodologic quality assessment, and data synthesis and analysis. The review concluded that while there was a trend of better outcome when GTR was used compared to control cases and that GTR techniques may improve the outcome of bone regeneration after surgical endodontic treatments of teeth with certain lesions. Additional large-scale prospective clinical studies are needed to further evaluate possible benefits of GTR techniques in endodontic surgery.

von Arx et al. (2011) conducted a literature review of the current clinical and experimental studies to evaluate the outcome of regenerative techniques (RT) in conjunction with apical surgery with regard to type of periapical lesions. A literature search with PubMed and Cochrane databases was conducted in April 2010 and a total of 11 clinical and 10 experimental studies fulfilled the inclusion criteria and included the following: The assessed outcome had to be periapical healing based on radiographic and clinical parameters for clinical studies, or periapical healing based on radiographic, histologic or histomorphometric parameters for experimental studies. The studies had to have a minimum of 10 teeth with a minimum follow-up period of 6 months for clinical studies and of 8 weeks for

experimental studies. One clinical and one experimental study of those included differentiated between different types of lesions. The current literature studies do not contain strong evidence demonstrating the need for more research. However, based on the current literature, the authors concluded that the reviewed clinical and experimental studies show no or only minimal benefits of using RT in apical surgery for the treatment of osseous defects limited to the periapical area, (as unimpeded new bone formation can take place) and that the use of RT in apical surgery for treatment of lesions limited to the apical area is not warranted. None of the tested regenerative techniques or materials resulted in a better outcome when comparing test and control sites, except for Expanded Polytetrafluoroethylene Membranes (ePTFE) in two studies. However this material has also been associated with an increased risk of wound dehiscence and site infection in several other studies.

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 regards 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 tubehead 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.

Professional Societies

American Association of Endodontists (AAE)

In the 2013 Guide to Clinical Endodontics, the AAE makes the following recommendations regarding surgical endodontics. The guide also states that "Guided Tissue Regeneration techniques and/or bone replacement may be used if, at the time of surgery, the clinical condition warrants their use:"

Periradicular Curettage: Indications for Treatment

Periradicular curettage is indicated if **any** of the following clinical conditions exist:

- Symptomatic periradicular pathosis following endodontic treatment.
- A periradicular lesion that enlarges after endodontic treatment, as noted on follow-up radiographic examination.
- A periradicular lesion that may involve soft tissue swelling.
- A marked overextension of obturating materials interfering with healing.
- A biopsy is deemed necessary.
- A periradicular lesion associated with intractable discomfort in spite of orthograde endodontic treatment

Root-End Resection (Apicoectomy): Indications for Treatment

A root-end resection (apicoectomy) in conjunction with periradicular curettage is indicated if **any** of the following clinical conditions exist:

- Symptomatic periradicular pathosis following endodontic treatment.
- A periradicular lesion that enlarges after endodontic treatment, as noted on follow-up radiographic examination.
- A marked overextension of obturating materials interfering with healing.
- Access for periradicular curettage, biopsy or to an additional root is necessary.
- Access for root-end preparation and root-end filling is necessary.
- When the apical portion of the root canal system of a tooth with periradicular pathosis cannot be cleaned, shaped and obturated.

Root-End Filling (Retrofilling)/Root Repair: Indications for Treatment

Root-end filling (retrofilling) and root repair, when anatomically feasible, are indicated if **any** of the following clinical conditions exist:

- Persistent periradicular pathosis resulting from an inadequate apical seal that cannot be corrected nonsurgically.
- Periradicular pathosis and a blockage of the root canal system that could not be obturated by nonsurgical root canal treatment.
- Root perforations and transported canals.
- Resorptive defects.

Root Resection (Root Amputation): Indications for Treatment

A root resection procedure is indicated if at least one root of the tooth is structurally sound and **any** of the following conditions exist:

- Periodontal furcation defect with a severe infrabony defect.
- 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.
- Persistent periradicular pathosis where nonsurgical root canal treatment or periradicular surgery is not possible.

Intentional Replantation (Extraction/Replantation): Indications for Treatment

Intentional replantation is 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.

Surgical Removal of the Apical Segment of a Fractured Root: Indications for Treatment

When a root fracture occurs in the apical portion and pulpal necrosis results, the fractured segment may be removed surgically following or in conjunction with nonsurgical root canal treatment. Surgical removal of the apical segment of a fractured root is indicated when **all** of the following clinical conditions exist:

- Root fracture in the apical portion of the root.
- Pulpal necrosis in the apical segment as indicated by a periradicular lesion or clinical signs or symptoms.
- Coronal tooth segment is restorable and functional.

Products used for bone grafting and guided tissue regeneration for endodontic applications are extensive. See the following website for more information and search by product name in device name section: <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmnm.cfm>. (Accessed January 2018)

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POLICY HISTORY/REVISION INFORMATION

| Date | Action/Description |
|------------|--|
| 04/01/2018 | <ul style="list-style-type: none"> • Updated coverage rationale: <ul style="list-style-type: none"> ○ Replaced references to “patient” with “member” ○ Modified language pertaining to clinical evidence/study findings for: <ul style="list-style-type: none"> Bone graft in conjunction with periradicular surgery <ul style="list-style-type: none"> ▪ Replaced language indicating “additional clinical studies are needed to further evaluate possible benefits of bone grafting in endodontic surgery” with “there is insufficient clinical evidence demonstrating safety and/or efficacy of these materials in published peer-reviewed medical literature and further clinical studies are needed” Biologic materials to aid in soft and osseous tissue regeneration in conjunction with periradicular surgery <ul style="list-style-type: none"> ▪ Replaced language indicating “additional clinical studies are needed to further evaluate possible benefits of biologic material to aid in tissue and osseous regeneration in endodontic surgery” with “there is insufficient clinical evidence demonstrating safety and/or efficacy of these materials in published peer-reviewed medical literature and further clinical studies are needed” Guided tissue regeneration resorbable barrier in conjunction with periradicular surgery <ul style="list-style-type: none"> ▪ Replaced language indicating “additional clinical studies are needed to further evaluate possible benefits of guided tissue regeneration techniques in endodontic surgery” with “there is insufficient clinical evidence demonstrating safety and/or efficacy of these materials in published peer-reviewed medical literature and further clinical studies are needed” • Added definition of: <ul style="list-style-type: none"> ○ Biologic Materials ○ Guided Tissue Regeneration • Updated supporting information to reflect the most current description of services, clinical evidence and references • Archived previous policy version DCP010.03 |