



Dental Policy

Subject: Endodontic Therapy

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Description

This document addresses the procedure of endodontic or root canal therapy of teeth.

Note: Please refer to the following documents for additional information concerning related topics:

- Crown Lengthening – 04-206
- Crown (Core) Buildup (02-901)
- Clinical Policy-01 Teeth With A Guarded Prognosis
- Crown Inlays and Onlays – 02-701
- Abutment Crowns and fixed Partial Dentures (06-701)

Clinical Indications

Root canal or endodontic treatment is appropriate when the tooth pulp tissue becomes inflamed or infected as a result of: deep decay, repeated dental procedures, faulty crowns, or a significant crack or chip in the tooth. In addition, trauma to a tooth may cause pulp damage even if the tooth has no visible chips or cracks. Other indications for endodontic therapy are failure of initial endodontic therapy and internal and external resorption.

As it applies to appropriateness of care, dental services are:

- provided by a Dentist, exercising prudent clinical judgment
- provided to a patient for the purpose of evaluating, diagnosing and/or treating a dental injury or disease or its symptoms
- in accordance with the generally accepted standards of dental practice which means:
 - standards that are based on credible scientific evidence published in peer-reviewed, dental literature generally recognized by the practicing dental community
 - specialty society recommendations/criteria
 - any other relevant factors
- clinically appropriate, in terms of type, frequency and extent
- considered effective for the patient's dental injury or disease

- not primarily performed for the convenience of the patient or Dentist
- Not more costly than an alternative service.
- dependent on group contract provisions, cosmetic services may not qualify for benefit coverage even though the services may be clinically appropriate.

Root canal or endodontic treatment is not appropriate in the absence of pulpal disease, in cases of extensive caries involving the furcation, extensive alveolar bone loss due to periodontal disease, furcation defect/involvement with extensive bone loss/, and internal and external resorption with questionable or unfavorable prognosis.

Note: Whether a service is covered by the plan, when any service is performed in conjunction with or in preparation for a non-covered or denied service, all related services are also either not covered or denied.

Note:

A group may define covered dental services under either their dental or medical plan, as well as to define those services that may be subject to dollar caps or other limits. The plan documents outline covered benefits, exclusions and limitations. The health plan advises dentists and enrollees to consult the plan documents to determine if there are exclusions or other benefit limitations applicable to the service request. The conclusion that a particular service is medically or dentally necessary does not constitute an indication or warranty that the service requested is a covered benefit payable by the health plan. Some plans exclude coverage for services that the health plan considers either medically or dentally necessary. When there is a discrepancy between the health plan's clinical policy and the group's plan documents, the health plan will defer to the group's plan documents as to whether the dental service is a covered benefit. In addition, if state or federal regulations mandate coverage then the health plan will adhere to the applicable regulatory requirement.

Criteria

Requirements/Indications for Endodontic Therapy:

1. A documented history of pulpal pain complaints
2. A preoperative radiograph of the tooth to be treated showing the periapical lesion
3. Documentation of pulpal disease which may include but is not limited to results of pulp testing when cracked tooth syndrome is potential diagnosis, a narrative fully describing the presenting signs and symptoms is necessary to submit.
4. The tooth must meet guidelines to restore the tooth including a favorable crown root ratio of 1:1 or more favorable that increases longevity
5. Pre-operative radiographic image of the tooth to be treated
6. A post-operative/post treatment radiographic image is required showing a well-obtured root canal where the root canal filling extends to the apical constriction of each canal.
7. Incomplete endodontic therapy may be plan dependent
8. Cleaning, shaping, and obturation past a root canal obstruction is considered a part of the overall completed endodontic treatment
9. Retreatment of a previously treated endodontic tooth may be allowed once per tooth per Lifetime
10. Internal and external resorptive lesion with a favorable prognosis (see discussion section)

Indications for Treatment (Nonsurgical root canal treatment for primary teeth is indicated if *any* of the following clinical conditions exist:

1. Irreversible pulpitis or pulpal necrosis with no evidence of a permanent successor tooth.
2. Pulpal necrosis with or without evidence of periradicular disease.
3. Treatment will not jeopardize the permanent successor.
4. Adequate alveolar bone with absence of substantial root resorption.

Requirements/Indications for Pulpotomy:

1. Exposed vital pulp or irreversible pulpitis of primary (deciduous) teeth
2. Primary teeth with insufficient root structure or associated periodontal or periapical pathology that may jeopardize permanent tooth development are not indicated for pulpotomy
3. Pre-operative radiographic image of the tooth to be treated
4. A post-operative/post treatment radiographic image is required
5. Used as an emergency procedure in permanent teeth until endodontic therapy can occur. Pulpal debridement is acceptable but benefits are group dependent.

6. When used as an interim procedure for permanent teeth with immature root formation to allow completion of root formation (apexogenesis)

Requirements/Indications for Apexogenesis:

1. Allowed once per tooth per lifetime
2. Tooth with deep carious lesion likely to result in pulp exposure during excavation
3. No evidence of periapical pathosis
4. Pre-operative radiographic image of the tooth to be treated
5. A post-operative/post treatment radiographic image is required
6. Bleeding is controlled at site exposure when mechanical exposure of a vital tooth occurs
7. Exposure of the pulp occurs when the pulp has been exposed while under a dental dam
8. Adequate seal of the coronal restoration can be maintained
9. Exposure allows for direct pulp cap with vital pulpal tissue
10. Patient informed of possibility of future endodontic therapy

Requirements/Indications for Apicoectomy:

1. Allowed once per root per tooth per lifetime
2. Pre-operative radiographic image of the tooth to be treated
3. A post-operative/post treatment radiographic image is required
4. Periradicular pathology is evident
5. Periradicular lesion that enlarges after completion of initial endodontic therapy (post endodontic therapy -pre, post and follow up radiographic images required documentation)
6. Marked overextension of obturating materials with periapical pathology
7. Access for curettage and/or biopsy
8. Access to additional root
9. When periapical pathology is present, non-surgical or conventional endodontia should first be attempted prior to apicoectomy
10. Access when periradicular pathosis cannot be eliminated/adequately treated by non-surgical endodontic therapy (cleaned, shaped and obturated)
11. Appropriate when the root canal demonstrates an inadequate fill and may or may not have a post and crown
12. Will not be considered when performed in conjunction with root resection surgery on multi-rooted teeth

Root Resection:

1. Requirements/Indications for Root Resection: Periodontal furcation defect with infrabony defect
2. Pre-operative radiographic image of the tooth to be treated
3. A post-operative/post treatment radiographic image is required
4. Vertical root fracture confined to the root to be separated (multi-rooted tooth)
5. Inoperable carious, resorptive, iatrogenic (perforation) root defects
6. Persistent periradicular pathosis where non-surgical root canal therapy or periradicular surgery is not possible
7. Adequate bony support and crown root ratio around remaining roots (see Clinical Crown Lengthening -04-206)
8. Will not be considered when performed in conjunction with any peri-radicular surgery on multi-rooted teeth.

Coding

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

CDT

Including, but not limited to, the following:

D3220	Therapeutic pulpotomy (excluding final restoration) – removal of pulp coronal to the dentinocemental junction and application of medicament
D3221	Pulpal debridement, primary and permanent teeth
D3222	Partial pulpotomy for apexogenesis – permanent tooth with incomplete root development
D3310	Endodontic therapy, anterior tooth (excluding final restoration)
D3320	Endodontic therapy, bicuspid tooth (excluding final restoration)
D3330	Endodontic therapy, molar (excluding final restoration)
D3331	Treatment of root canal obstruction; non-surgical access
D3332	Incomplete endodontic therapy; inoperable, unrestorable or fractured tooth
D3333	Internal root repair of perforation defects
D3346	Retreatment of previous root canal therapy - anterior
D3347	Retreatment of previous root canal therapy - bicuspid
D3348	Retreatment of previous root canal therapy - molar
D3351	Apexification/recalcification – initial visit (apical closure/calcific repair of perforations, root resorption, etc.)
D3352	Apexification/recalcification – interim medication replacement
D3353	Apexification/recalcification –final visit (includes completed root canal therapy – apical closure/calcific repair of perforations, root resorption, etc.)
D3355	Pulpal regeneration – initial visit
D3356	Pulpal regeneration – interim medication replacement
D3357	Pulpal regeneration
D3410	Apicoectomy - anterior
D3421	Apicoectomy – bicuspid (first root)
D3425	Apicoectomy – molar (first root)
D3426	Apicoectomy – (each additional root)
D3427	Periradicular surgery without apicoectomy
D3428	Bone graft in conjunction with periradicular surgery
D3429	Bone graft in conjunction with periradicular surgery, each additional contiguous tooth
D3430	Retrograde filling – per root
D3431	biological materials to aid in soft and osseous tissue regeneration
D3432	guided tissue regeneration, resorbable barrier, per site

CPT

41899 Unlisted procedure, dentoalveolar structures

ICD-10 Diagnosis

K02.53	Dental caries on pit and fissure surface penetrating into pulp
K02.63	Dental caries on smooth surface penetrating into pulp
K02.7	Dental root caries
K02.7	Dental caries, unspecified
K03.3	Pathological resorption of teethK04.0
K04.0	Pulpitis
K04.1	Necrosis of pulp
K04.2	Pulp degeneration
K04.4	Acute apical periodontitis of pulpal origin
K04.5	Chronic apical pulpitis
K04.6	Periapical abscess with sinus
K04/8	Radicular cyst
K04.9	Other diseases of pulp and periapical tissue

Discussion/General Information

A healthy tooth has a pulp space containing soft tissues (nerves, blood vessels, and connective tissue) that maintain the vitality of a tooth. During development of the tooth, the blood vessels, nerve and connective tissue help to grow the tooth root. There can be several causes for tooth pain that include dental decay, an injury or an infection. Teeth

may be severely damaged as a result of trauma from biting, an external blow or from advanced tooth decay. An external blow to a tooth from which endodontic symptoms commence may or may not show physical damage, but may require root canal therapy as a consequence of pulpal injury. Tooth pain from an injury or tooth decay, increased sensitivity to hot or cold, and oral or facial swelling may be signs of potential dental infections that require treatment. If a tooth develops a large cavity, the bacteria within the decay can damage the pulp, which is often the cause for a toothache. Persistent pain determined to be of pulpal origin or the result of an infection, sharp pain upon biting, pain lasting more than 30 seconds after eating hot or cold foods likely requires root canal therapy which is diagnosed by a dentist or dental specialist. Irreversible damage to the pulp of permanent teeth usually requires root canal treatment or endodontic therapy. The decision to treat the tooth by root canal therapy or some other treatment (e.g. – extraction) is made between the dentist and patient. In the case of a badly decayed tooth, restoration of function with the goal of tooth longevity may not be possible even after root canal therapy is determined.

Endodontic Obturation

- The root canal filling should extend as close as possible to the apical constriction of each canal (ideal .5-1.2mm) with appropriate fill density.
- Gross overextension (over 2mm beyond canal) or under fill (short over 2mm in the presence of patent canals) should be avoided.
- For prosthodontic services, subsequent post-operative x-rays should demonstrate that periapical lesions (radiolucent area) decrease or remain constant in size with trabeculation present.
If the tooth had a normal periodontal ligament space and an intact lamina dura surrounding the root(s) at the time of obturation, the subsequent postoperative radiographic appearance should remain unchanged for resolution of any transitory radiographic changes.
If a tooth had a preoperative periradicular radiolucency, the follow-up radiographic examination should optimally demonstrate an intact lamina dura and a normal periodontal ligament space around the root(s) under observation.
If the radiolucent area is decreasing in size or is not enlarging and the tooth is asymptomatic additional follow-up visits with radiographic examination are indicated.
There may be periradicular bone healing without reformation of a normal periodontal ligament space.
- The tooth is asymptomatic.

Pulpal debridement may be performed for the relief of acute pain prior to conventional endodontics. When the soft tissue in the pulp chamber becomes infected, the infected part of the pulp chamber can sometimes be removed while leaving the soft tissue in the canals of the roots if determined to still be healthy. When the soft tissue in the canals is determined healthy, a medicated filling can be put into the pulp chamber after the diseased tissue is removed in an attempt to keep the remaining pulp (in the canals) alive. The process of removing the pulp from the chamber is described as a pulpotomy.

Dependent upon the internal health of the tissue within the canals, a pulpotomy can be performed for primary and permanent teeth. When there is pulpal involvement of permanent teeth with incompletely formed roots as a result of trauma or disease, services related to the induction of apical closure should be completed prior to the initiation of endodontic treatment.

When there is pulpal involvement of permanent teeth with incompletely formed roots, techniques for the induction of apical closure should be completed before endodontic therapy is begun. Apexification is the dental procedure related to inducing the development of a calcified barrier at the apex of a non-vital (dead) permanent tooth when there is incomplete root formation. Apexogenesis refers to a procedure performed on a damaged permanent tooth that still contains vital (living) pulpal tissues where the procedural goal is to stimulate the completion of the physiological development and formation of the root end closing the apex.

Regenerative endodontics uses the concept of tissue engineering to restore the root canals to a healthy state, allowing for continued development of the root and surrounding tissue. Biologically based regenerative endodontic materials can be applied to necrotic immature permanent teeth resulting in continued root development, increased thickness in the dentinal walls promoting apical closure.

Endodontic Retreatment

After having root canal therapy, teeth may not heal properly becoming painful or diseased months or even years after treatment. When this occurs, it may be necessary to retreat the tooth. Reasons for retreatment may include:

- Narrow or curved canals not treated during the initial procedure.
- Complicated canal anatomy that was not detected during the first procedure.
- Crown placement other restoration was delayed following the endodontic treatment.
- New tooth decay or a broken filling may expose the root canal to bacteria causing a new infection within the tooth.
- The tooth fractures.

During retreatment, access to the root canal is reopened by removing the old filling material. The interior of the tooth is examined for potential additional canals not previously obturated or for an infection. When an infection is noted, it is addressed by removing it. The old filling material is removed, the canals cleaned and new filling material (e.g. – gutta percha) is placed. The opening to the tooth is then sealed with a temporary filling. Once the tooth heals, a new permanent restoration is placed to protect the tooth.

An apicoectomy is a root end surgical procedure where the root tip is removed and a restoration (retrograde amalgam) placed in the severed root tip that acts as a seal. This procedure can be performed when there is: symptomatic periradicular pathosis post endodontic therapy; a periradicular lesion that enlarges post endodontic therapy; overextension of obturating material that interferes with healing; it is necessary to assist with periradicular curettage, biopsy or for access to an additional root; access to the root end for root preparation and root end filling is necessary; pathosis at the apical portion of the root which cannot be cleaned, shaped and obturated. These procedures require the elevation of a soft tissue flap with bone removal to allow visualization of and access to the tooth root. Guided tissue regeneration and bone graft may be necessary dependent upon the clinical condition. As bone heals by secondary intention, a bone graft is typically not required unless the surgical or pathological defect created is greater than the confine of the tooth root space or surgery creates damage to adjacent teeth or anatomical structures.

Treatment of Endodontic Resorptive Lesions/Prognosis

Prognosis: External Resorptive Lesion

Favorable

- Minimal loss of tooth structure.
- Located cervically but above the crestal bone.
- The lesion is accessible for repair
- Apical root resorption associated with a tooth exhibiting pulp necrosis and apical pathosis

Questionable

- Minimal impact on restorability of tooth. Crown lengthening or orthodontic root extrusion may be required.
- The pulp may be vital or necrotic.

Unfavorable

- Structural integrity of the tooth or root is compromised.
- There are deep probing depths associated with the resorptive defect.
- The defect is not accessible.

Prognosis: Internal Resorption

Favorable

- Small medium defect. A small lesion in the apical or mid-root area

Questionable

- Larger defect that does not perforate the root

Unfavorable

- A large defect that perforates the external root surface.

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Definitions

Alveolar Bone - the thickened ridge of **bone** that contains the tooth sockets (dental **alveoli**) on bones that hold teeth. In humans, the tooth-bearing bones are the maxillae and the mandible.

Apex – the terminal end of the root of the tooth

Apexification – a method of inducing a calcified barrier at the apex of a non-vital tooth with incomplete root formation

Apexogenesis - a vital pulp therapy procedure performed to encourage physiological development and formation of the root end.

Endodontic – concerned with the study and treatment of the dental pulp

Furcation - the root trunk of a tooth where two or more roots meet (bifurcation or trifurcation).

Furcation defect - bone loss, usually a result of periodontal disease, affecting the base of the root trunk of a tooth where two or more roots meet (bifurcation or trifurcation). The extent and configuration of the defect are factors in both diagnosis and treatment planning.

Gutta Percha – an endodontic filling material

Necrosis - the death of most or all of the cells in an organ or tissue due to disease, injury, or failure of the blood supply.

Non-vital - dead tooth with no access to blood flow

Obturate – to close or obstruct

Pathosis - a state of disease, diseased condition, or disease entity.

Periradicular - around the root of a tooth

Tooth Pulp - the part in the center of a tooth made up of living connective **tissue** and cells called odontoblasts. The dental pulp is a part of the dentin–pulp complex (endodontium).

Tooth Root Resorption - is a process by which all or part of a tooth structure is lost due to activation of the body's innate capacity to remove mineralized tissue, as mediated via cells such as osteoclasts. Types include external resorption and internal resorption. It can be due to trauma, infection, or hyperplasia

References

Peer Reviewed Publications:

1. Guide To Clinical Endodontics; Sixth Edition- 2013: AAE (American Association of Endodontists); Dahlkempe, Ang, Goldberg, Rubin, Schultz, Sheridan, Slingbaum, Stevens, Powell
2. N Y State Dent J. 1999 May; 65(5):23-5; Apexification & apexogenesis; Goldstein S1, Sedaghat-Zandi A, Greenberg M, and Friedman S.

3. Chugal, Spangberg – 2003: Endodontic infection: some biologic and treatment factors associated with outcome: Oral Surg Oral Med Oral Pathol Oral Radiol Endod. July 96(1):81-90
4. Sjogren 1990: J Endod 16(10):498-504

Government Agency, Medical Society, and Other Authoritative Publications:

History

Revision History	Version	Date	Nature of Change	SME
	initial	3/24/17	creation	M Kahn G Koumaras
	Revision	1/30/18	Related policies, criteria	M Kahn
	Revision	1/31/18	Endodontic Obturation Discussion	M Kahn
	Revision	2/6/18	Related policies, Appropriateness/medical necessity	M Kahn

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Alternatively, commercial or FEP plans or lines of business which determine there is not a need to adopt the guideline to review services generally across all providers delivering services to Plan's or line of business's members may instead use the clinical guideline for provider education and/or to review the medical or dental necessity of services for any provider who has been notified that his/her/its claims will be reviewed for medical or dental necessity due to billing practices or claims that are not consistent with other providers, in terms of frequency or in some other manner.

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