

Endodontics

General Guidelines

Endodontic services include:

- Vital pulp treatment
- Pulpotomy
- Non-surgical treatment of root canals and pulp chambers
- Surgical treatment of periapical and lateral pathosis of pulpal origin
- Apicoectomy
- Replantation of teeth
- Endodontic implants

Since many of the features of evaluation in endodontics are common to all of dental practice, they will not be discussed in detail in this section. Only those aspects that have specific importance for this area have been included.

Examination of the endodontic patient should include an evaluation of the pain and the stimuli that induce or relieve pain. Such tests as thermal, electric, percussion, palpation, test cavity and mobility may be used. Treatment planning should include the strategic importance of the tooth or teeth considered for treatment, the prognosis, and such other factors as excessively curved canals, periodontal disease, occlusion, tooth fractures and calcified or occluded canals. Teeth that are predisposed to fracture following endodontic treatment should be adequately protected.

Endodontic services may include:

Vital Pulp Treatment:

Indirect pulp capping may be indicated in the presence of deep carious lesions when there is evidence of vital and normal pulp tissue. It is a two stage procedure, the second stage of which is accomplished after there is adequate radiographic evidence of protective reparative dentin formation.

Direct pulp capping may be indicated in the presence of a small exposed vital or normal pulp.

Pulpotomy may be indicated in permanent teeth when there is evidence of a vital and normal pulp in order to maintain pulp vitality in the immature permanent root or roots and promote maturation of the root. When the root is fully formed, endodontic treatment should be completed

Pulpotomy may be indicated on deciduous teeth where there is a reasonable residual period of retention and function of the deciduous tooth and when the pulp pathosis is confined to the coronal portion or when there is a pulp exposure too large for capping.

Factors which should be considered in determining the acceptability of vital pulp treatment are:

- Radiographic evidence of calcification, i.e., reparative dentin formation for pulp capping and root apex maturation for pulptomy.
- The absence of tooth supportive structure changes.
- A normal vital pulp response for pulp capping.

Root Canal Treatment:

Root Canal treatment may be indicated on teeth with diseased or potentially diseased pulp with or without evidence of periapical pathosis. Treatment procedures consist of:

- Acceptable access
- Bio-mechanical cleansing and the shaping of the canal system
- Culturing when indicated
- Obturation of pulp chamber and canal system with suitable radiopaque material

Above procedures should be performed under rubber dam isolation whenever feasible.

Non-Surgical Root Canal Treatment:

- Apexification treatment may be indicated on a tooth with a necrotic pulp which has an immature root. The treatment involves the induction of apical closure over a period of several months. When closure is complete, normal endodontic therapy is performed.

Surgical Root Canal Treatment:

- Surgical treatment may be indicated when:
 - The root canal system cannot be acceptably treated non-surgically
 - There is active root resorption
 - Access to the canal is obstructed
- There is gross over fill of the root canal filling
- Periapical or lateral pathosis persists despite an acceptable root canal therapy
- There is a fracture of the root or perforation at a level where the tooth has a guarded or better prognosis
- There is periodontal involvement requiring *root amputation* or *hemisection*

Hemisection may be indicated when there is a fracture dividing the crown and/or roots or there is extensive loss of bone support for one or more of the roots and retention of one half of the tooth is considered necessary for maintenance of function.

Root Amputation may be indicated on multi-rooted teeth when there is extensive loss of bone support on one root and amputation will significantly aid the periodontal condition and the patient's access for cleaning the involved area. Root canal treatment on the retained portions of the canal system is preferably completed prior to hemisection or root amputation.

An important factor which should be considered for the acceptability of root amputation and hemisection is the accomplishment of suitable hard and soft tissue contours that maximizes the patient's access for cleaning and minimizes the entrapment of food and oral debris.

Replantation of a tooth may be indicated when the canal system is not accessible and owing to anatomic consideration apical surgery in site is not advisable. Teeth that have been accidentally evulsed from the alveolus may be replanted to their original position. Root canal treatment is performed prior or after replantation although the latter has been recommended. Occlusal adjustment and stabilization may be necessary. All replanted teeth may show varying radiographic signs of root resorption. Failure of the replanted tooth from root resorption may occur in one or two or more years. The degree or extent of root resorption increases the longer the time interval for returning the tooth to its alveolus.

Success or failure of endodontic therapy is not solely related to the technique which is utilized. Immediate post operative radiographs are helpful in evaluating the techniques of endodontic treatment but long term success of the treatment is determined by follow-up examinations continued for a minimum of two years after treatment. The examinations must include periapical radiographs, clinical examination and a record of the presence or absence of symptoms.

Endodontic cases that lie outside the knowledge and experience of the treating dentist should be referred for consultation and/or treatment.

The following quality-evaluation criteria should be considered merely as AIDS for the discrimination between the four ratings for each characteristic. The determination of the rating of any given dental service is dependent upon the sound JUDGMENT of the peer review examiners.

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QUALITY EVALUATION RATING SYSTEM		
	Rating	Operational Explanation
S A T I S F A C T O R Y	<p>R Range of Excellence</p> <p>ROMEO Code: R Call: Romeo</p>	<p>The endodontic treatment is of satisfactory quality and is expected to preserve the natural dentition.</p>
	<p>S Range of Acceptability</p> <p>SIERRA Code: S Call: Sierra</p>	<p>The endodontic treatment is of acceptable quality but exhibits one or more features which deviate from the ideal.</p>
N O T S A T I S F A C T O R Y	<p>T Repeat or correct for Prevention</p> <p>TANGO Code: T Call: Tango</p>	<p>The endodontic treatment is not of acceptable quality. Future damage to the tooth and/or its surrounding tissues is likely to occur.</p>
	<p>V Repeat or Correct Statim</p> <p>VICTOR Code: V Call: Victor</p>	<p>The endodontic treatment is not of acceptable quality. Damage to the tooth and/or its surrounding tissues is now occurring.</p>

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QUALITY EVALUATION CRITERIA AND ABBREVIATIONS			
Code	Vital Pulp Treatment	Code	Root Canal Treatment Surgical and Non-Surgical
	<p>Treatment has been accomplished and tooth is asymptomatic.</p> <p>Evidence of reparative dentin formation.</p> <p>Vital pulp response.</p> <p>(Refer to General Guidelines.)</p>		<p>Tooth is asymptomatic.</p> <p>The endodontic filling is dense and obturates the root canal system.</p> <p>Treated tooth or teeth are functional and non-mobile.</p> <p>(Refer to General Guidelines.)</p>
<p>SSY SAT</p>	<p>Tooth is asymptomatic. Abnormal thermal response.</p>	<p>SSY SFD SOF SOE SUE SOA SIR SSF SSFF SIC SRR</p>	<p>Tooth is asymptomatic or there is presence of symptoms either spontaneous or provoked in light of treatment having been accomplished.</p> <p>Endodontic filling (<i>Gutta Purcha, MTA, GI, Biocallex</i>) lacks density and shows minor voids in the coronal 2/3 of canal.</p> <p>Over-entention < to ~ 1.0mm) of the root canal.</p> <p>Under-entention (< to ~ 1.0mm) of the root canal.</p> <p>Over-entention (minor) of access.</p> <p>Evidence of some residual tissue (<i>scarring</i>).</p> <p>Obturation to correct canal terminus bypassing a documented Separated file.</p> <p>Obturation up to a documented Separated file, asymptomatic and devoid of pathosis.</p> <p>Improved but incomplete apical calcification.</p> <p>Evidence of some root resorption.</p>
<p>TNV TPN TPNE TPNA TPNF</p>	<p>Non vital pulp. Intermittent spontaneous pain, Pain in response to percussion, palpitation or function.</p>	<p>TPN TPNE TPNA TPNF TOF TUF TPAT TIF TUC TFU</p>	<p>Intermittent spontaneous pain. Pain in response to percussion, or palpitation, or function (all etiologic to noted unacceptable execution of the root canal procedure).</p> <p>Overfilled (> to ~ 1.0mm) of the root canal.</p> <p>Underfilled (> to ~ 1.0mm) of the root canal.</p> <p>Evidence of persistent Pathosis</p> <p>Incomplete instrumentation and obturation of canal in apical 1/3 with radiographic evidence of pathosis.</p> <p>Unnegotiated/Untreated canals.</p> <p>No follow up procedure established.</p>
<p>VPN VPAT VSW VSI</p>	<p>Persistent pain. Radiographic evidence of pathosis. Clinical evidence of swelling. Sinus tract.</p>	<p>VPN VPAT VSW VSI VPD VSF VSP VTF</p>	<p>Persistent pain/peresthesia</p> <p>Radiographic evidence of pathosis, Clinical evidence of swelling, Sinus tract (all etiologic to noted unacceptable execution of the root canal procedure).</p> <p>Undocumented Perforation.</p> <p>Undocumented Separated File.</p> <p>Sargenti paste/formaldehyde containing transported/zipped paste instrumentation obturation with pathosis.</p>

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