



aberrant—A deviation from the normal or usual course, form or location.

abfraction—A v-shaped pathologic loss of hard tooth substance caused by biomechanical loading forces; such loss is thought to be due to flexure and chemical fatigue degradation of enamel and/or dentin at some location distant from the actual point of loading; most typically the facial cervical region.

ablation—The separation, detachment or eradication of a structure; commonly used in laser treatment of dental tissue or nerve resection.

abrasion—The pathologic wearing away of a substance or structure (such as a tooth), through some unusual or abnormal mechanical process.

abscess—A localized collection of pus within a tissue or a confined space.

acute periradicular abscess—acute apical abscess—An inflammatory reaction to pulpal infection and necrosis characterized by rapid onset, spontaneous pain, tenderness of the tooth to pressure, pus formation and eventual swelling of associated tissues. *HS: acute periapical abscess, acute alveolar abscess, dentoalveolar abscess, phoenix abscess, recrudescant abscess, secondary apical abscess*

chronic periradicular abscess—suppurative periradicular periodontitis (chronic apical abscess, chronic periradicular abscess, chronic periapical abscess)—An inflammatory reaction to pulpal infection and necrosis characterized by gradual onset, little or no discomfort and the intermittent discharge of pus through an associated sinus tract. *HS: chronic alveolar abscess, chronic dentoalveolar abscess, suppurative apical periodontitis*

periodontal abscess—An inflammatory reaction originating in the periodontium; usually characterized by rapid onset, spontaneous pain, tenderness of the tooth to pressure, pus formation and swelling; frequently caused by foreign body entrapment and often associated with a tooth with a vital pulp.

pulp abscess—A localized collection of purulent exudates within the pulp of the tooth; initiated by microorganisms and/or its byproducts; describes a histological finding.

absorption—The uptake or removal of substances into or through tissues, such as the biological removal of extruded sealer.

access cavity (access preparation, endodontic access, root canal access)—The opening prepared in a tooth to gain entrance to the root canal system for the purpose of cleaning, shaping and obturating.

access, surgical—The opening prepared through soft tissue and bone surrounding a tooth to expose the root and periradicular tissues.

accessory canal—
See **canal, pulp—accessory canal**.

accessory foramen—
See **foramen—accessory foramen**.

acoustic streaming (acoustic microstreaming)—The circulation of fluid and hydrodynamic shear forces in the vicinity of a small vibrating object such as an ultrasonically activated endodontic file.

Acquired Immune Deficiency Syndrome—
See **AIDS**.

actinomycosis—Clinical infection caused by a species of the genus *Actinomyces*; abscess and multiple or persistent sinus tract formations are common and, in the cervicofacial form of the disease, usually drain to the skin surface.

aerodontalgia—See **barodontalgia**.

AIDS (Acquired Immune Deficiency Syndrome)—A syndrome caused by the progressive loss of immune function that characterizes the progression of human immunodeficiency virus infection; this natural history is thought to be responsible for opportunistic, pernicious and eventually fatal conditions that include Kaposi's sarcoma, *Pneumocystis carinii* pneumonia, and others; oral lesions may include necrotizing ulcerative gingivitis, necrotizing ulcerative periodontitis, candidiasis, hairy leukoplakia and others.

allodynia—Pain resulting from a non-noxious stimulus to normal skin or mucosa.

allograft—See **graft—allograft**.

alloplast—See **graft—alloplast**.

alloy—A compound combining two or more elements having properties not existing in any of the single constituent elements.

anachoresis—The localization or seeding of microorganisms to areas of inflammation during bacteremia.



analgesia—Absence of sensibility to pain, designating particularly the relief of pain without loss of consciousness.

analgesic—Pharmacological agent used to reduce sensibility to pain.

nonsteroidal anti-inflammatory drugs (NSAIDs)—Pharmacological agents that inhibit the cyclooxygenase pathways.

opioid agonist analgesics—
Pharmacologic agents that bind to opioid receptors thereby mimicking the action of morphine; opioid agonists induce analgesia, sedation, euphoria, dysphoria, emesis, constipation, respiratory depression and addiction.

opioid agonist/antagonist analgesics—Pharmacologic agents that include a combination of agonist effects, as well as an antagonist effect similar to naloxone; opioid agonist/antagonist analgesics have a similar effect as the agonists but do not induce respiratory depression and addiction; have potential to induce drug withdrawal syndrome in opioid-addicted individuals.

anaphylactic shock—A severe, sometimes fatal, immediate allergic reaction, usually occurring seconds to minutes after exposure to an antigen, and mediated via histamine.

anaphylaxis—Immediate hypersensitivity response to antigenic challenge, mediated by IgE and mast cells, typically life-threatening.

anastomosis (isthmus)—A thin communication between two or more canals in the same root or between vascular elements in tissues.

anatomic apex—
See **apex—anatomic apex**.

ANSI (American National Standards Institute)—The national clearing organization for standards; formerly called the American Standards Association. The American National Standards Committee MD 156 for Dental Materials and Devices is one arm of the ANSI.

anesthesia—The loss of feeling or sensation as a result of an anesthetic agent to permit diagnostic and treatment procedures.

anesthetic test—A diagnostic procedure in which a tooth suspected of being the source of referred pain is anesthetized with a local anesthetic. If the pain is alleviated, the suspected tooth may be the source of the pain.

ankylosis—See **resorption–replacement resorption**—Clinical diagnosis for the end result of replacement resorption whereby the tooth is no longer capable of normal physiologic movement due to the fusion of bone to the root surface.

anodyne—A medicine that relieves pain.

anomaly—An aberration or deviation from normal anatomy, development or function.

antibiotics—Soluble substances derived from a mold or bacteria that inhibit the growth of other microorganisms.

cephalosporins—Broad spectrum beta-lactam antibiotics chemically related to and having the same mechanism of action as the penicillins.

clindamycin—A lincosamide antibiotic with a broad spectrum of bacteriostatic activity especially against anaerobes.

macrolides—Narrow-spectrum antibiotics with a lactone ring that inhibit protein synthesis.

metronidazole—An antibiotic with bactericidal activity primarily against obligate anaerobic bacteria.

penicillins—Antimicrobial agents in the beta-lactam group; inhibit cell-wall biosynthesis; drug of choice for most endodontic infections in the non-penicillin allergic patient.

quinolones—A class of synthetic, broad spectrum antibacterial agents that exhibit bactericidal action; they inhibit DNA replication and their indications are limited in the treatment of orofacial infections.

tetracyclines—Broad-spectrum antibiotics that inhibit protein synthesis.

antibody—Serum proteins that are produced following interaction with an antigen; they bind specifically to the antigen that produced their formation, thereby causing or facilitating the neutralization of the antigen.

anticurvature filing (reverse filing) — Intentional alteration of canal shape by the removal of structure from thicker regions of the root canal wall to prevent a perforation (strip) into the furcation adjacent to a curved canal.

antigen—Any substance recognized by the immune system that induces antibody formation.

antinode—Point of maximum oscillation or displacement amplitude of object vibrating in a sinusoidal pattern, such as an ultrasonically activated endodontic file.

apex—The tip or end of the root.

anatomic apex—The tip or end of the root as determined morphologically.

radiographic apex—The tip or end of the root as determined radiographically; its location can vary from the anatomic apex due to root morphology and distortion of the radiographic image.

apex locator—An electronic instrument used to assist in determining the root canal working length or perforation; operates on the principles of resistance, frequency or impedance.

apexification—A method to induce a calcified barrier in a root with an open apex or the continued apical development of an incompletely formed root in teeth with necrotic pulps.

apexogenesis—A vital pulp therapy procedure performed to encourage continued physiological development and formation of the root end; frequently used to describe vital pulp therapy performed to encourage the continuation of this process.

apical barrier—A blockage of the apical foramen; may be an induced hard tissue or artificial materials, such as clean dentin chips, collagen, mineral trioxide aggregate or Ca(OH)₂.

apical barrier technique—Placement of a matrix in the apical region to prevent extrusion of endodontic filling materials; typically refers to teeth with open apices.

apical clearing—A technique that involves enlargement of the apical preparation followed by dry reaming to remove dentin debris and to produce a more defined apical stop.

apical constriction (minor apical diameter, minor diameter)—The apical portion of the root canal having the narrowest diameter; position may vary but is usually 0.5–1.0 mm short of the center of the apical foramen.

apical curettage—See **curettage, periradicular**.

apical cyst—See **cyst–periradicular cyst**.

apical delta—A pulp canal morphology in which the main canal divides into multiple accessory canals at or near the apex.

apical foramen—
See **foramen–apical foramen**.

apical gauging—Measurement of the terminal diameter or shape of a canal after initial crown-down shaping.

apical patency—A technique where the apical portion of the canal is maintained free of debris by recapitulation with a small file through the apical foramen.

apical periodontitis, acute—
See **periodontitis–acute periradicular periodontitis**.

apical periodontitis, chronic—
See **periodontitis–chronic periradicular periodontitis**.

apical periodontitis, subacute—
See **periodontitis–subacute periradicular periodontitis**.

apical scar—Dense collagenous connective tissue in the bone at or near the apex of a tooth with a distinctive radiolucent presentation; a form of repair usually associated with a root that has been treated surgically and noted to have perforation of both the facial and lingual osseous cortices.

apical seat—An incomplete barrier at the apical end of the root canal preparation.

A

apical stop—The matrix of dentin or other materials at the apical end of a root canal preparation that prevents further advancement or progression of both endodontic instruments and obturating materials.

apicoectomy—See **root-end resection**.

apoptosis—Programmed cell death via fragmentation into membrane-enclosed particles that can be phagocytized by other cells.

argyria—A bluish-gray discoloration of the skin or oral mucosa from prolonged exposure to silver; discoloration of the oral mucosa usually occurs from over-extended silver points, silver-containing sealer or amalgam in submucosal tissues.

aseptic—Free from infection.

astringent—An agent that causes contraction of tissues, arrests secretion or controls bleeding.

attachment level, clinical—The distance from the cemento-enamel junction to the tip of the periodontal probe during periodontal diagnostic probing.

attrition—The physiologic wearing away of a substance or structure, such as a tooth, in the course of normal use or parafunctional habits.

atypical facial pain—A syndrome characterized by a long-term continuous aching or throbbing pain that does not follow established neural pathways and a clinical examination that does not reveal an apparent cause; multiple etiologies have been suggested, including psychogenic origins.

atypical odontalgia (phantom tooth pain)—Pain with all the classic features of pulpalgia, usually following an extraction but not appearing to be of peripheral origin.

austenitic phase—See **martensitic phase**—A crystalline unstressed phase of stainless steel and nickel titanium alloy.

autograft (autogenous graft)—See **graft—autograft** (autogenous graft).

autotransplantation—The transplantation of teeth from one site to another in the same individual, involving the transfer of embedded, impacted or erupted teeth into extraction sites or into surgically prepared sockets.

avulsion—The complete separation of a tooth from its alveolus by traumatic injury; most commonly used in reference to dental injuries resulting from acute trauma.

B

B

backfilling—The injection and/or compaction of gutta-percha into a canal after creation of an apical seal.

bacteremia—The presence of bacteria in the bloodstream that can be transient, intermittent or continuous.

bacteria—Members of a group of ubiquitous, single-celled prokaryotic microorganisms that have a primitive life form; many of these are etiologic in diseases that affect all life forms including humans and other animals.

balanced force technique—A technique of cleaning and shaping the root canal system that allows opposing physical forces to guide each preparation instrument; uses clockwise rotation to engage dentin and counterclockwise rotation to cut dentin.

barodontalgia—Tooth pain caused by an increase or decrease in ambient pressure, usually reported by aircraft personnel (aerodontalgia) and divers.

bicuspidization (premolarization)—A hemisection of a mandibular molar where both sections are retained and each is restored as a premolar.

bifurcation—The anatomic area where the roots of a two-rooted tooth divide.

biofilm—The colonization and proliferation of microorganisms at a surface and solution interface; especially problematic in the small-bore water lines of dental units.

biologic width—Combined width of connective tissue and epithelial attachment superior to crestal bone.

biomechanical preparation—See **preparation, canal—biomechanical preparation**.

biopsy—The removal of tissue for histologic examination and diagnosis.

aspiration biopsy—Removal of fluid by suction through a needle for the purpose of establishing a diagnosis.

excisional biopsy—Removal of an entire lesion including a margin of contiguous, normal-appearing tissue for microscopic examination and diagnosis.

incisional biopsy—Removal of selected portion of a lesion for microscopic examination and diagnosis.

bite test—Diagnostic procedure in which a tooth suspected of being cracked is subjected to differential occlusal forces on individual cusps in an attempt to replicate the reported discomfort; usually accomplished by having the patient bite on various plastic, wood or rubber objects.

bleaching—The use of a chemical agent, sometimes in combination with heat, to remove tooth discolorations.

extracoronary bleaching (vital or external bleaching)—The use of a chemical agent on the outside of a tooth to remove discoloration from tooth structures with vital pulps; most frequently used agents are hydrogen peroxide and urea (carbamide) peroxide.

intracoronary bleaching (nonvital or internal bleaching)—The use of chemical oxidizing agents within the coronal portion of an endodontically treated tooth to remove tooth discoloration; most frequently used agents are sodium perborate and hydrogen peroxide, or sodium perborate and saline.

B

walking bleach—A form of intracoronal bleaching in which oxidizing agents are sealed into the pulp chamber for a limited period of time, usually a few days to one week; procedure may be repeated until the desired result is obtained.

blunderbuss canal—
See **canal, pulp-blunderbuss canal**.

bonding—Procedure of using an adhesive, cementing material or fusible ingredient to combine, unite or strengthen.

bone regeneration—Neoformation of osseous tissue that may occur either within an osseous structure or on its surface.

bony crypt—Osseous cavity made or modified in bone during periradicular surgery.

braiding technique—Placement and subsequent wrapping of multiple files around an object in the root canal to aid in its removal.

broach, endodontic—A thin, flexible, fragile, usually tapered and pointed metal hand instrument with sharp projections curving backward and obliquely; primarily used to remove pulp tissue or other easily engaged materials from the canal.

bruxism—An oral habit consisting of involuntary rhythmic or spasmodic nonfunctional grinding or clenching of teeth.

buccal object rule—A method for determining the relative location of objects that are superimposed on the traditional radiograph.
Rule: When two different radiographs are made of a pair of objects, the image of the buccal object moves, relative to the image of the lingual object, in the opposite direction from which the x-ray beam is directed.
HS: Clarks Rule; Clark's Shift; horizontal or vertical shift; MBD Rule; SLOB Rule; tube shift; and Walton's Projection.

buttressing bone—A marginal linear deposition of bone that may be formed in response to heavy occlusal forces.

C

C

calcific metamorphosis—A pulpal response to trauma characterized by rapid deposition of hard tissue within the canal space; entire space may appear obliterated radiographically due to extensive deposition, even though some portion of the pulp space may remain in histological sections.

calcium hydroxide [Ca(OH)₂]—An odorless, basic, white powder frequently used as an intracanal medicament in nonsurgical endodontic procedures and also secondary to traumatic injuries; preparations appear to encourage calcification; different preparations may be used in pulp capping, pulpotomy, apexogenesis and apexification procedures in the secondary dentition; appears to inhibit inflammatory resorption and demonstrates anti-microbial activity.

calcium sulfate [CaSO₄] (plaster of Paris medical grade)—A resorbable material used in surgery as a barrier in guided tissue regeneration procedures; can be used as a hemostatic material.

calcospherites—Small globules of hydroxyapatite seen in predentin; these coalesce or fuse to form dentin.

callus—A meshwork of fibrous tissue, cartilage and bone that unites the fractured ends of a bone; a similar process may occur in horizontal root fractures with dentin, osteodentin or cementum uniting the segments.

canal, pulp (root canal)—A passage or channel in the root of the tooth extending from the pulp chamber to the apical foramen; may be narrow, have lateral branches and/or exhibit irregular morphology.

accessory canal—Any branch of the main pulp canal or chamber that communicates with the external surface of the root.

blunderbuss canal—Historical term denoting an incompletely formed root in which the apical diameter of the pulp canal is greater than the coronal diameter.

c-shaped canal—A pulp canal anatomy having the cross-sectional shape of the letter "C"; found in mandibular second molar teeth in which mesio-buccal and distal canals communicate due to fusion of the mesial and distal roots.

furcation canal—An accessory canal located in the furcation.

lateral canal—An accessory canal located in the coronal or middle third of the root, usually extending horizontally from the main canal space.

carbamide peroxide (urea peroxide)—Hydrogen peroxide coupled to urea; frequently marketed in an acidified, anhydrous glycerine base as a patient-applied extracoronal tooth-bleach system; also combined with glycerine and EDTA and used as an adjunct in canal preparation; breaks down into urea, ammonia, carbon dioxide (carbonic acid in saliva) and hydrogen peroxide.

caries, dental—A localized and progressive bacterial infection that results in the disintegration of a tooth usually beginning with the dissolution of enamel and followed by bacterial invasion of the dentinal tubuli.

carious pulp exposure—See **pulp exposure-carious pulp exposure**.

carrier-based gutta-percha technique—
See **obturation technique-carrier-based gutta-percha technique**.

case-control studies—Studies in which patients who already have a certain condition are compared with people who do not; are less reliable than either randomized controlled trials or cohort studies.

causalgia—A constant, hot, burning pain following injury to a peripheral nerve; thought to be of sympathetic origin and may follow a traumatic molar extraction and alveolar osteitis (dry socket).

cavernous sinus thrombosis—Blood clot that arises from maxillary periradicular infection and settles in cavernous sinus.

cavitation—The formation of submicroscopic voids as a result of shearing a fluid medium by the alternating high frequency movement of an instrument tip; creates shock waves that propagate throughout the medium when voids implode.

cellulitis—A symptomatic edematous inflammatory process that spreads diffusely through connective tissue and fascial planes; frequently associated with an infection by invasive microorganisms with subsequent breakdown of connective tissue.

cement—See **sealer, root canal**.

cementodentinal junction (CDJ, dentinocemental junction)—The region at which the dentin and cementum are united; commonly used to denote the point at which the cemental surface terminates at or near the apex of a tooth; position can range from 0.5 to 3.0 mm from the anatomic apex.

cementoenamel junction (CEJ, cervical line)—The region at which the enamel and cementum meet in the cervical region of the tooth; cementum may overlap the enamel; cementum and enamel may meet abruptly or a gap may exist.

cementoma—
See **dysplasia, periradicular cemental**.

cementum—A mineralized tissue covering the roots of teeth that provides a medium for the attachment of the periodontal fibers that connect the tooth to the alveolar bone and gingival tissues; composed of approximately 45–50 percent inorganic substances and 50–55 percent organic material and water; softer than dentin; histologically differentiated as cellular or acellular.

cementoblastoma—A benign neoplasm thought to represent a neoplasm of cementoblasts; radiographically continuous with the roots of teeth.

cementum hyperplasia—
See **hypercementosis**.

cervical line—
See **cementoenamel junction**.

chelation—The removal of inorganic ions from tooth structure by a chemical agent, usually the disodium salt of ethylenediaminetetraacetic acid (EDTA); chelating agents are sometimes used in attempt to enlarge narrow canals or remove the smear layer after canal preparation.

chemical autoclave sterilization—
See **sterilization—chemical autoclave sterilization**.

chemokines—A group of cytokines that stimulate leukocyte movement and attraction.

chemomechanical preparation—See **preparation, canal—chemomechanical preparation**.

chloroform (trichloromethane)—A clear, colorless, nonflammable, very volatile liquid used in root canal treatment as a solvent for gutta-percha and zinc oxide-eugenol cements.

chlorhexidine—A bis-biguanide antiseptic agent used to prevent colonization of microbes and to kill or inhibit microorganisms on surfaces.

chloropercha—A paste made by dissolving gutta-percha in chloroform; historically used as a sealer in obturating root canals.

chronic focal sclerosing osteomyelitis (condensing osteitis)—A radiographic and histologic variation of chronic periradicular inflammation with localized proliferation of periradicular bone; may be asymptomatic or may exhibit signs of pulpitis; may disappear once the inflammatory stimulus is removed.

circumferential filing—Peripheral planing of all root canal walls equally during preparation.

citric acid—A tricarboxylic acid used to detoxify diseased root surfaces and expose intrinsic collagen fibers in new attachment therapy and to help remove smear layer during biomechanical preparation.

coagulation necrosis—The death of a tissue in which cells are converted to an acidophilic opaque mass with loss of cellular detail.

cohort study—A study involving patients who presently have a certain condition or receive a particular treatment, or both, and who are tracked over time and compared with another group not affected by the condition under investigation.

collagen—A genetically distinct family of structural macromolecules of the extracellular matrix that contains one or more domains assembled in a triple helix; these proteins form a wide variety of structures.

compomer—A polyacid modified composite resin composed of glass filler, a resin and a photoinitiator.

composite—An organic, polymerizable resin mix that typically contains inorganic particles treated with a bonding or coupling agent polymerized by light or chemical mechanisms.

concrecence—Cemental fusion of two adjacent teeth.

concussion—A traumatic tooth injury characterized by tenderness to percussion and no mobility or displacement.

condensing osteitis—
See **focal sclerosing osteomyelitis**.

core (core buildup)—The restorative materials used to replace missing coronal tooth structure in a root-filled tooth.

corrosion—Physicochemical interaction between a metallic element or an alloy and its environment that can result in significant degradation of the metal surfaces and unfavorably affect properties of the metal.

cracked tooth—A phenomenon involving posterior teeth in which fractures are noted primarily extending mesially to distal and usually involve the marginal ridges; primarily in minimally restored mandibular first and second molars; symptoms may vary but pain to chewing and thermal sensitivity are common.

crepitus—The crackling or grating sound produced by the rubbing together of fragments of fractured bone or by air moving in soft tissues, as in subcutaneous emphysema; also the grating sensation caused by the rubbing together of dry synovial surfaces of joints.

cross-sectional study—An observational study that examines a characteristic (or set of characteristics) and a health outcome in a sample of people at one point in time.

crown infraction—See **infraction, crown**.

crown-down preparation (step-down preparation)—A technique of canal preparation involving early flaring with rotary instruments followed by incremental removal of canal debris and dentin from the orifice to the apical foramen; involves straight files used in a larger to smaller sequence with a reaming motion and with no apical pressure once binding occurs; variations have also been advocated, all of which emphasize cleaning and shaping of the coronal portion of the canal prior to the apical portion.

crown-lengthening—A surgical procedure designed to increase the extent of supragingival tooth structure for restorative or esthetic purposes by apically positioning the gingival margin, removing supporting bone, or both; may be accomplished by orthodontic or surgical extrusion.

crown-root ratio—The relationship between the extra-alveolar portion of the tooth and the intra-alveolar portion of the tooth as determined radiographically.

c-shaped canal—
See **canal, pulp-c-shaped canal**.

culture, microbial—Aseptic technique to obtain and propagate a sample of microbes usually from the pulp cavity or from a soft tissue swelling.

curettage, periradicular (apical curettage, periapical curettage)—A surgical procedure to remove diseased or reactive tissue and/or foreign material from the periradicular bone surrounding the root of an endodontically treated tooth. By definition, the root apex is not resected.

Cvek pulpotomy—
See **pulpotomy-partial pulpotomy**.

cyst—An epithelium-lined pathologic cavity that may contain fluid, semi-solid material or cellular debris; oral and perioral cysts frequently classified as odontogenic, nonodontogenic, soft tissue and pseudocysts.

dentigerous cyst—An odontogenic cyst that develops between the enamel organ and the subjacent tooth crown of an unerupted or developing tooth.

lateral periodontal cyst—A small odontogenic cyst of the periodontal ligament found most often in the mandibular canine and premolar areas; associated with a vital pulp and postulated to originate from the rests of Malassez, the rests of the dental lamina or a supernumerary tooth bud.

nasopalatine duct cyst (incisive canal cyst or median anterior maxillary cyst)—A well-defined, radiolucent area positioned interradiarily or apically to the maxillary central incisors; may demonstrate a “heart-shaped” appearance due to the superimposition of the anterior nasal spine; typically asymptomatic; may result in root divergence; usually associated with teeth with vital pulps.

nonodontogenic cyst (fissural cyst, inclusion cyst)—A cyst derived from non-odontogenic epithelium, such as epithelial remnants of the primitive processes that participate in the embryonic formation of the face and jaws; includes nasopalatine, nasolabial and median mandibular cysts.

odontogenic cyst—A cyst derived from the odontogenic epithelium, such as the remnants of the dental lamina or enamel organs of teeth; includes periradicular cysts, dentigerous cysts, primordial cysts, odontogenic keratocysts, lateral periodontal cysts, glandular odontogenic cysts and calcifying odontogenic cysts.

odontogenic keratocyst—A developmental non-inflammatory cyst with a thin (6–8 cell layers thick), highly active corrugated epithelium; likely to recur.

periapical pocket cyst (bay cyst)—An apical inflammatory cyst containing a sac-like, epithelium-lined cavity that is open to and continuous with the root canal.

periradicular cyst (apical cyst, periapical cyst, radicular cyst)—An odontogenic cyst associated with a tooth with a necrotic pulp that develops within a periradicular inflammatory lesion; derives its epithelium from the cell rests of Malassez.

primordial cyst—An odontogenic cyst that develops in place of a tooth through cystic degeneration and liquefaction of the stellate reticulum prior to formation of any calcified enamel or dentin; epithelial lining derived from the inner and outer enamel epithelium; often exhibits histologically the characteristics of odontogenic keratocyst.

pseudocyst—A pathologic space that resembles a cyst but lacks an epithelial lining; includes aneurysmal, traumatic (hemorrhagic, solitary, simple) and static (Staphne’s) bone cysts.

soft tissue cyst—A heterogeneous group of cysts occurring in the soft tissue of the neck, oral floor and salivary glands. Examples include branchial, dermoid and thyroglossal duct cysts.

traumatic bone cyst (hemorrhagic bone cyst)—A radiolucent lesion in bone without a radiopaque border; a cavity of disputed cause, lined by no tissue or extremely thin tissue that may contain fluid (blood or serum); assumed to have been caused by trauma; teeth, if present, have vital pulps; not a true cyst.

true cyst—An apical inflammatory cyst with a distinct pathologic cavity; completely enclosed in an epithelial lining so that no communication to the root canal exists.

cytokines—A large group of proteins that are capable of regulating a wide variety of cellular functions involved in controlling the immune response.

cytotoxicity—The ability to kill cells.

dead tracts—Dentinal tubules seen in histologic sections to be devoid of cellular processes indicating odontoblastic destruction; may contain debris and microorganisms.

debridement—Removal of foreign matter, devitalized tissue and microorganisms from an area of injury.

root canal debridement—Elimination of organic and inorganic substances as well as microorganisms from the root canal by mechanical and/or chemical means.

decalcification—Removal of calcium salts from bone or teeth; a form of demineralization yielding a pliable collagenous matrix that may be digested with enzymes or inorganic chemicals such as sodium hypochlorite.

decompression—See **marsupialization**.

dehiscence—A narrow, vertical defect in the alveolar plate of bone over a root extending from the crestal area apically; usually located on the facial aspect of the alveolar process.

demineralization—The process of removing all mineral salts from calcified tissues.

dens evaginatus—An anomalous outgrowth of tooth structure resulting from the folding of the inner enamel epithelium into the stellate reticulum with the projection of structure exhibiting enamel, dentin and pulp tissue.

dens invaginatus (dens in dente)—A developmental defect resulting from infolding of the crown before calcification has occurred; may appear clinically as an accentuation of the lingual pit in anterior teeth; in its more severe form, gives a radiographic appearance of a tooth within a tooth, hence the term “dens in dente”; most common in the maxillary lateral incisors but may occur in any tooth of the dental arch.

dental dam (rubber dam)—A small latex or non-latex sheet used to isolate a tooth or teeth from the oral environment and to prevent migration of fluids or foreign objects into or out of the operative field; single or multiple holes punched through barrier allow placement around the tooth or allow teeth to be isolated; provides a dry, visible and clean operative field.

dental (rubber) dam clamp—A spring metal or plastic device that is placed around a tooth at the level of the gingiva to secure a rubber dam in position; available in varying configurations to fit differing tooth shapes.

dental (rubber) dam clamp forceps—An instrument used to spread a rubber dam clamp allowing it to be placed around or removed from a tooth.

dental (rubber) dam frame—A plastic or metal device used to stretch the rubber dam, hold it and secure its edges away from the operative site.

dental (rubber) dam punch—A special device used to punch holes in rubber dam sheeting.

dental granuloma (granuloma)—A histologic term used to describe tissue formed adjacent to the apex of a tooth with pulp pathosis; characterized by chronic inflammatory cells such as macrophages, plasma cells and lymphocytes and sometimes a cluster of multinucleated giant cells; capillaries, fibroblasts and collagen fibers also present.

dental lamina—A developmental structure derived from the primary epithelial band; localized proliferation of this structure results in a series of epithelial ingrowths into the ectomesenchyme at sites corresponding to the positions of the developing teeth; dental lamina gives rise to the enamel organ.

dental organ—See **enamel organ**.

dental papilla—A condensation of ectomesenchymal cells under the dental lamina that eventually becomes the dental pulp.

dental sac—A condensation of ectomesenchymal cells surrounding the dental papilla, the enamel organ and dental follicle; gives rise to the periodontium.

denticle—See **pulp stone**.

dentigerous cyst—
See **cyst-dentigerous cyst**.

dentin—A mineralized tissue that forms the bulk of the crown and root of the tooth, giving the root its characteristic form; surrounds coronal and radicular pulp, forming the walls of the pulp chamber and root canals; composition is approximately 67 percent inorganic, 20 percent organic and 13 percent water.

globular dentin—Areas of mineralized dentin (calcospherites) that have not fused into a homogenous mass.

interglobular dentin—Areas of unmineralized or hypomineralized dentin that persist within mature dentin and are usually found in the circumpulpal dentin just below the mantle dentin.

intertubular dentin—The calcified dentinal matrix found external to the peritubular dentin and comprising the main body of dentin; consists of large numbers of fine collagen fibrils enveloped in an amorphous ground substance; not as highly calcified as peritubular dentin.

mantle dentin—The first portion of dentin formed beneath both the enamel and the cementum; contains variable amounts of coarse fibril bundles (Von Korff’s fibrils) that are arranged at right angles to the dentinal surface.

peritubular dentin (intratubular dentin)—A highly calcified, narrow strip of dentin surrounding the lumen of each dentinal tubule.

predentin—A circumpulpal, collagenous, mucopolysaccharide matrix adjacent to dentin; secreted by odontoblasts prior to mineralization.

primary dentin—Dentin formed during tooth development; exhibits well-organized pattern of tubules and cell processes.

reactionary dentin—Tertiary dentin matrix secreted by surviving odontoblast cells in response to an appropriate stimulus.

reparative dentin—Tertiary dentin matrix secreted by odontoblast-like cells in response to an appropriate stimulus after the death of odontoblasts; stimuli tend to be much stronger than those causing reactionary dentin formation.

sclerotic dentin (transparent dentin)—Dentin characterized by calcification of the dentinal tubules as a result of injury or normal aging; it appears translucent in ground sections due to the difference in refractive indices of calcified dentinal tubules and adjacent normal tubules when examined by transmitted light.

secondary dentin—Circumpulpal dentin formed by normal pulp function after tooth formation is complete; tubular pattern is regular, but number of tubules is less than that found in primary dentin; secondary dentin is separated from primary dentin histologically by a hyperchromatic line or demarcation zone.

tertiary dentin (irritation dentin)—Dentin formed by external influences, including caries and attrition, and can range from regular tubular dentin that differs little from primary and secondary dentin (reactionary dentin), but can be very dysplastic and/or irregular, and atubular when there is odontoblast loss depending on the differentiation status of the formative cell. *HS: irregular dentin and osteodentin*

tubular dentin—Dentin or predentin with tubules arranged in an orderly pattern. The term is used to differentiate regular dentin from the amorphous calcified tissue seen in irritation dentin.

dentin blush—Red to pink discoloration of dentin due to pulpal hemorrhage, usually a result of trauma or operative procedures.

dentin bridge—Tertiary (reparative) dentin formation that provides closure of a previously exposed pulp or forms across the excised surface of a pulp after pulpotomy; can be irregular in structure, contains tunnel defects and is less calcified than secondary dentin; may be facilitated by chemical agents such as calcium hydroxide and mineral trioxide aggregate (MTA).

dentinal fluid—An intratubular and extracellular fluid that is thought to be an ultrafiltrate of blood from the terminal pulpal capillaries. It diffuses through the space around the odontoblastic process and possibly through the intracellular structure of the odontoblast itself prior to entering the dentinal tubule and continuing a slow outward movement under a pressure gradient and eventually leaving the tooth through dentinal tubules.

dentinal plug—Dentin particles, remnants of vital or necrotic pulp tissue, microbial components and retained irrigant forced into dentinal tubules for several microns during canal preparation.

dentinal tubule—A circular duct in the dentin matrix that contains an odontoblastic process and fluid. A typical dentinal tubule has a diameter of 3-4 μm at its pulpal end and about 1 μm at the dentinoenamel or dentinocemental junction. The number of dentinal tubules ranges from 20,000 to 75,000 per square millimeter of dentin.

dentinoenamel junction—
See **cementodentinal junction**.

dentinogenesis—The formation of dentin.

dentoalveolar abscess, acute—See **abscess—acute periradicular abscess**.

dentoalveolar abscess, chronic—See **abscess—chronic periradicular abscess**.

desensitize—To eliminate or reduce painful dentinal response to irritating agents.

diagnosis—The art and science of detecting and distinguishing deviations from health and the cause and nature thereof.

differential diagnosis—The process of identifying a condition by comparing the symptoms of all pathologic processes that may produce similar signs and symptoms.

digital radiography—Use of sensors to produce electronic radiographic images that can be viewed on a monitor and that allow for a reduction in radiation exposure; sensors can be integrated with intraoral digital cameras and patient management database software.

dilaceration—A deformity characterized by displacement of the root of a tooth from its normal alignment with the crown; may be a consequence of injury during tooth development. Common usage has extended the term to include sharply angular or deformed roots.

direct pulp cap—
See **pulp cap—direct pulp cap**.

disinfection—A nonspecific term implying the destruction of pathogenic microorganisms, but not necessarily of spores; usually by chemical agents.

double-blind study—A study in which neither the patient nor the investigator knows whether the patient is receiving the treatment of interest or the control treatment; it is the most rigorous clinical research design because, in addition to the randomization of subjects that reduces risk of bias, it can eliminate placebo effects, which is a further challenge to the validity of the study.

dowel—See **post**.

downpacking—The compaction of incremental segments of heat-softened gutta-percha to create an apical plug.

drain—A tube, wick or other material placed into a wound, sore, abscess or body cavity to provide an avenue of escape for pus, inflammatory products and tissue exudates.

dry heat sterilization—
See **sterilization—dry heat sterilization**.

dysplasia, periradicular cemental (periradicular fibrous dysplasia, periradicular osteofibrosis)—A benign, reactive (non-neoplastic), fibro-osseous lesion of unknown etiology in which bone around the apices of teeth with vital pulps is initially replaced with fibrous connective tissue and subsequently by a mixture of tissue, cementum and bone. Radiographically, three phases are recognized: radiolucent, mixed and radiopaque. This condition is common in African-American middle-aged females, usually occurs in the anterior mandible and may take years to reach the final stage of development. *HS: cementoma*

dystrophic calcification—Diffuse foci of calcification frequently found in the aging pulp; usually described as being perivascular or perineural.

ecchymosis—An extravasation of blood into subcutaneous tissue or mucosa.

ectopic eruption—A tooth erupting in a site other than its normal position.

edema—An accumulation of fluid in a tissue.

EDTA (ethylenediaminetetraacetic acid)—An odorless, white, crystalline solid whose various salts are soluble in water; disodium salt of ethylenediaminetetraacetic acid in a buffered aqueous solution is used as a chelating agent in root canal preparation; used to remove calcium, demineralize and soften dentin, and remove the smear layer.

elasticity—The quality that allows a structure or material to return to its original form upon removal of an external force.

elbow—The narrow portion of a curved canal immediately coronal to a transportation or zip.

electric pulp test—See **pulp test—electric pulp test**.

electronic apex locator—See **apex locator**.

electrosurgery—Removal, division or coagulation of tissue by use of a high frequency electric current applied locally with a metal instrument or needle; can be used to expose coronal tooth structure for isolation; may also be used in controlling hemorrhage during surgical procedures, pulpotomy and pulpectomy.

emergence profile—Contour of a tooth or restoration such as a crown on a natural tooth or dental implant as it relates to the adjacent soft tissues.

eminence—A prominence or projection, especially one on the surface of a bone.

emphysema, subcutaneous—An accumulation of air or other gases in tissue spaces; in endodontics, usually results from injection of air through the root canal into surrounding soft tissues or from air-driven dental handpieces used in surgical procedures.

enamel—A mineralized tissue that forms a protective covering of variable thickness over the entire surface of the crown of the tooth. The hardest tissue in the human body, enamel provides a resistant covering suitable for mastication. Its composition is approximately 96 percent inorganic and 4 percent organic substance and water.

enamel micro-abrasion—A method of removing certain superficial enamel demineralization and decalcification coloration defects.

enamel organ (dental organ)—Structure of ectodermal origin composed of four layers: inner enamel epithelium, stratum intermedium, stellate reticulum and outer enamel epithelium. During tooth development this structure is responsible for determining the shape of the crown, initiating dentin formation, establishing the dentogingival junction and forming enamel.

enamel pearl—A focal mass of enamel located apical to the cemento-enamel junction.

enamel projection—An apical extension of enamel usually toward a molar furcation.

endocarditis—Inflammation of the endocardial surface of the heart.

infective endocarditis—A microbial infection of the endocardial surface of the heart, usually involving the heart valves.

endodontic access—See **access, surgical**.

endodontic implant—
See **implant—endodontic implant**.

endodontic/periodontic lesion—A process involving interaction of diseases of the pulp and periodontium. These interactions or lesions are classified by etiology, diagnosis and prognosis as follows: 1) primary pulpal lesions with extension to the periradicular tissues; 2) primary pulpal lesions with extension to the periradicular tissues with secondary imposition of periodontal disease; 3) primary periodontal lesions; 4) primary periodontal lesions with extension to the pulpal tissues; 5) combined pulpal-periodontal lesions in which independent disease processes in both tissues have joined or coalesced in the periradicular tissues; 6) concomitant pulpal-periodontal lesions in which disease processes exist independently in both tissues and are not apparently interrelated.

endodontics—The branch of dentistry concerned with the morphology, physiology and pathology of the human dental pulp and periradicular tissues. Its study and practice encompass the basic and clinical sciences including the biology of the normal pulp and the etiology, diagnosis, prevention and treatment of diseases and injuries of the pulp and associated periradicular conditions.

The scope of endodontics includes, but is not limited to, the differential diagnosis and treatment of oral pains of pulpal and/or periapical origin; vital pulp therapy such as pulp capping and pulpotomy; nonsurgical treatment of root canal systems with or without periradicular pathosis of pulpal origin, and the obturation of these root canal systems; selective surgical removal of pathological tissues resulting from pulpal pathosis; intentional replantation and replantation of avulsed teeth; surgical removal of tooth structure such as in root-end resection, hemisection

and root resection; endodontic implants; bleaching of discolored dentin and enamel (teeth); retreatment of teeth previously treated endodontically; and treatment procedures related to coronal restorations by means of post and/or cores involving the root canal space.

endodontist—A dentist with two or more years of advanced training in the scope of endodontics who has received a certificate in endodontics from an advanced education program accredited by the ADA Commission on Dental Accreditation and who limits his or her practice to endodontics. (Dentists who limited their practice to endodontics prior to recognition of the specialty in 1963 are also recognized as endodontists.) The endodontic specialist is responsible for the advancement of endodontic knowledge through research, the transmission of information concerning the most recent advances in biologically acceptable procedures and materials, and the education of the public as to the importance of endodontics in keeping the dentition in a physiologically functional state for the maintenance of oral and systemic health.

Board-certified endodontist—As defined by the American Board of Endodontics, an endodontist who has satisfied all requirements of the certification process of the ABE, has been declared Board-certified by the directors of the ABE and maintains Board certification. This individual is a Diplomate of the ABE.

Board-eligible endodontist—As defined by the American Board of Endodontics, an educationally qualified endodontist whose application has the approval of the Board.

educationally qualified endodontist—

As defined by the American Board of Endodontics to identify those eligible to take the exam, an endodontist who successfully completed an advanced educational program accredited by the ADA and is eligible to apply for examination by the American Board of Endodontics.

endodontology—The study of endodontics.

endo-osseous implant—

See **implant–endodontic implant**.

endorphin—

Endogenous antinociceptive morphine-like substance in the cerebral spinal fluid that acts as an inhibiting neurotransmitter on nociceptive pathways.

endoscopy—

The use of a flexible, fiberoptic probe to view and magnify anatomical structures.

endosseous implant—

See **implant–endosseous implant**.

endosteal implant—

See **implant–endosseous implant**.

endotoxin—

See **lipopolysaccharide**.

enostosis—A condensation of normal bone within a bony cavity or extending centrally from the cortical plate.

enucleation—The removal of an organ or tissue lesion in its entirety; in endodontics, the term usually refers to the surgical removal of periradicular lesions.

envelope flap—A horizontal intrasulcular surgical flap with no vertical releasing incisions.

epidemiology—The science dealing with the incidence, distribution and control of disease in a population.

epithelial rests of Malassez—Cellular remnants of Hertwig's epithelial root sheath that persist as a fenestrated network around the tooth within the periodontal ligament.

erosion—A loss of tooth substance by a chemical process without bacteria.

essential oils—A group of volatile, nongreasy, nonsaponifying oils with characteristic odors and tastes obtained from plants and other sources or prepared synthetically. They have varying degrees of antiseptic, anodynic and toxic properties, and are used by the public and the profession for the treatment of pain. In endodontics, they have been used primarily as intracanal medicaments such as eugenol and eucalyptol, components of sealers and provisional or sedative restorations.

etching agents—Acidic agents used to demineralize enamel or dentin to enhance adhesion of some filling materials to tooth structure, to remove the smear layer and plugs from canal walls prior to root canal obturation and to expose collagen fibers on the surface of a diseased root structure to facilitate reattachment of the periodontal ligament.

ethoxybenzoic acid—An ingredient added to zinc oxide eugenol formulations used for root-end fillings.

ethyl chloride (chloroethane)—A colorless, extremely volatile, flammable liquid used in endodontics to apply cold as a pulp test; also has been used topically as an anesthetic and for treatment of myofascial pain; alternative is dichlorodifluoromethane (DDM).

ethylene oxide gas sterilization—

See **sterilization–ethylene oxide gas sterilization**.

ethylenediaminetetraacetic acid—

See **EDTA**.

etiology—Factors implicated in the causation of disease; may be local or systemic.

eucalyptus oil, N.F.—An essential oil containing approximately 74 percent eucalyptol; used in some root canal sealer liquids and as a gutta-percha solvent.

eucapercha—A paste of gutta-percha dissolved in oil of eucalyptus; sometimes used as a root canal sealer or cementing medium in obturating root canals.

eugenol, U.S.P.—A phenolic compound with anodynic and antiseptic properties that occurs as a colorless or pale yellow liquid and is the essential constituent of oil of cloves; often combined with zinc-oxide or zinc-oxide base preparations to form various pastes and cements; sometimes used as an anodyne or as an intracanal medicament after removal of a vital pulp.

evidence-based dentistry—An approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences.

evidence-based practice—Integration of best research evidence with clinical expertise and patient values. Best research evidence refers to clinically relevant research, especially from patient-centered clinical research; clinical expertise means the ability to use clinical skills and experience to rapidly identify each patient's unique health state and diagnosis, individual risks and benefits of potential interventions, and personal values and expectations; and patient values refers to the unique preferences, concerns, and expectations that each patient brings to a clinical encounter and that must be integrated into clinical decisions if they are to serve the patient.

exostosis—A benign bony growth projecting outward from the surface of a bone.

exotoxin—A toxic substance produced by certain bacterial species and found outside the cell wall.

external enamel epithelium—

See **outer enamel epithelium**.

external oblique ridge—A smooth ridge on the buccal surface of the body of the mandible that extends from the anterior border of the ramus with diminishing prominence downward and forward to the region of the mental foramen; changes very little in size and direction throughout life.

external resorption—

See **resorption–external resorption**.

extracoronary bleaching—

See **bleaching, extracoronary**.

extrusion—Movement of a tooth in an incisal or occlusal direction; can be intentional, physiologic or traumatic; also extension of obturating materials beyond the apical foramen.

root extrusion (forced eruption)—Orthodontic movement of a tooth or root in a coronal direction to expose a carious, resorptive or traumatic defect for restoration.

extrusive luxation—
See **luxation–extrusive luxation**.

exudate—Fluid, cells and plasma proteins that have escaped from the vascular system and accumulated in a tissue or tissues; usually the result of inflammation.

fibrinous exudate—An exudate characterized by an abundance of fibrinogen that results in deposition of fibrin at the site of injury.

hemorrhagic exudate—An exudate characterized by an abundance of red blood cells.

purulent exudate—An exudate characterized by an abundance of polymorphonuclear leukocytes resulting in pus formation at the site of injury.

serous exudate—An exudate characterized by an abundance of proteinaceous fluid at the site of injury.

F

fatigue—Transitional weakening of a material due to cyclic loading and unloading characterized by fracture below its ultimate tensile strength (fatigue fracture).

fenestration—A window-like opening or defect in the alveolar plate of bone frequently exposing a portion of the root; usually located on the facial aspect of the alveolar process.

ferric sulfate—An acidic hemostatic agent.

ferrule—A band or ring of restorative material surrounding the crown or root of a tooth to provide strength.

fiberoptics—Glass or plastic fibers that conduct light; used to transilluminate teeth and tissues, and to detect cracks, canal orifices and fractured roots.

fibrinous exudate—
See **exudate–fibrinous exudate**.

fibroblast—Most common cell type in the pulp, producing and maintaining the collagen and ground substance.

file—A tapered and pointed metal instrument with cutting edges used to enlarge the root canal by rotation or filing action; classified principally on activation method, alloy, cross-sectional shapes, taper, tip design and length of cutting flutes.

D-type file—A file made from a rhombus cross-sectional blank that results in alternating large and small flutes along its length.

H-type file (Hedström file)—A file with spiral edges arranged as a buttress-threaded screw so that cutting occurs only on a pulling stroke.

K-type file—A file with tightly spiraled cutting edges that cut when pushed, pulled or rotated; cross-sectional configurations include diamond, square and triangular.

Ni-Ti file—A hand or rotary file manufactured with superelastic nickel-titanium alloy that is available in a variety of different designs.

filing—A dynamic movement of a file to optimally effect canal debridement; predominantly a push-pull, rotational movement or a combination of the two.

fissural cyst—
See **cyst–nonodontogenic cyst**.

fistula—An abnormal communication pathway between two internal organs or from one epithelial lined surface to another epithelial lined surface; **not** a sinus tract.

flap, surgical—A section of tissue, such as gingival mucosa, that has been partially detached from the underlying tissue but retains uninterrupted blood supply through an intact base; classified by position—apically positioned, lateral or vertical sliding; by geometric shape—curved (semilunar), rectangular, scalloped, trapezoidal or triangular; or by location of the incision—intralucular, submarginal or vertical.

full mucoperiosteal flap—A flap involving an intralucular horizontal incision and including epithelium, attached gingiva, alveolar mucosa and periosteum; triangular and rectangular flaps are examples.

triangular—An intralucular incision with one vertical releasing incision.

rectangular—An intralucular incision with two vertical releasing incisions.

limited mucoperiosteal flap—A flap involving a submarginal horizontal incision that includes epithelium, attached gingiva, alveolar mucosa and periosteum; submarginal and semilunar flaps are examples.

submarginal flap—A flap with the horizontal incision in attached gingiva; may have two vertical releasing incisions; generally rectangular or trapezoidal in shape; indicated when crowns are present on anterior teeth and an adequate zone of healthy attached gingiva is present.
HS: Luebke-Ochsenbein flap

flare-up—An acute exacerbation of an asymptomatic pulpal and/or periradicular pathosis after the initiation or continuation of root canal treatment.

fluctuant—A tactile sensation of fluid motion noted during palpation of a mass or swelling such as an abscess.

fluorosis, dental—A form of enamel hypoplasia. Mottling and discoloration of enamel results from ingestion of excessive amounts of fluoride during the apposition phase of tooth development. *HS: Endemic fluorosis*

focal infection theory—A hypothesis that bacteria existing in a primary site, the focus, may gain entry into the circulatory system and cause unexplained degenerative diseases elsewhere in the body.

focal sclerosing osteomyelitis (condensing osteitis, periradicular osteosclerosis, sclerosing osteitis, sclerotic bone)—A diffuse radiopaque lesion believed to represent a localized bony reaction to a low-grade inflammatory stimulus, usually seen at the apex of a tooth (or its extraction site) in which there has been a long-standing pulp pathosis.

F

foramen (pl. foramina)—A natural opening or passage, especially into or through a bone; also describes openings in the root structure that communicate with the dental pulp and generally contain neural, vascular and connective elements.

accessory foramen—An orifice on the surface of a root communicating with a lateral or accessory canal.

apical foramen—The main apical opening of the root canal.

foreign body reaction—A chronic inflammatory reaction to a foreign material within a tissue; often characterized by giant cells.

formaldehyde—A disinfectant gas or solution (HCHO) used as an antiseptic, disinfectant and histologic fixative.

formalin—An aqueous solution of formaldehyde.

formocresol—A toxic mixture of 19 percent formaldehyde and 35 percent cresol in a water glycerin vehicle; has been used for pulpotomy of deciduous teeth and as an intracanal medicament for permanent teeth during root canal treatment.

fracture—A split or break in bone, cartilage or tooth structure; classified according to extent, location and type; listed in the World Health Organization trauma classification as follows:

crown fracture with pulp

involvement—A complicated fracture involving enamel, dentin and exposure of the pulp.

crown fracture without pulp

involvement—An uncomplicated fracture involving enamel and dentin, but no pulp exposure.

crown-root fracture with pulp

involvement—A complicated fracture of enamel, dentin and cementum with pulp exposure.

crown-root fracture without pulp

involvement—An uncomplicated fracture of enamel, dentin and cementum with no pulp exposure.

enamel fracture—A fracture involving the enamel only; includes enamel chipping and incomplete fractures (cracks).

root fracture—Limited to fractures involving roots involving cementum, dentin and pulp.

horizontal root fracture (oblique root fracture)—Fracture due to traumatic injury confined to the root in a transverse plane separating the coronal and apical segments.

vertical root fracture—Fracture occurs most frequently in endodontically treated teeth; characterized by a crack that begins in the root and extends toward the occlusal surface, usually buccal-lingual; may be associated with an isolated periodontal defect; radiographic detection may be difficult due to superimposed obturation and restorative materials.

fremitus—A palpable movement of a tooth when subjected to occlusal forces.

furcation (furca)—The anatomic area of a multi-rooted tooth where the roots diverge.

furcation canal—

See **canal, pulp–furcation canal**.

fusion—A “double” tooth resulting from the union of two adjacent tooth germs.

G

galvanism (electrogalvanism)—The flow of direct electric current between two or more dissimilar metals; may occur in the oral cavity when metallic restorations of differing compositions contact, resulting in varying degrees of sensation.

Gates-Glidden drill—A rotary, power-driven, flame-shaped bur with spiral inclined cutting edges mounted on a slender noncutting shaft and tipped with a guiding pilot point.

gemination—A disturbance during odontogenesis in which partial cleavage of the tooth germ occurs and results in a tooth that has a double or “twin” crown; usually not completely separated; common root and pulp space shared.

globular dentin—

See **dentin–globular dentin**.

glucocorticoids—A group of steroid hormones that affect carbohydrate, fat and protein metabolism; these typically possess anti-inflammatory properties.

glutaraldehyde—A colorless, toxic oil (C₅H₈O₂) that is soluble in water, commonly used in a 2 percent solution for disinfection, sterilization and tissue fixation.

glycosaminoglycans (mucopolysaccharides)—

Large unbranched polysaccharide side-chains that comprise the ground substance of the pulp.

hyaluronic acid—A proteoglycan that is a major constituent of the ground substance of connective tissue such as the dental pulp.

chondroitin sulfate—Major proteoglycan present in teeth with active dentinogenesis.

graft—A piece of living tissue or synthetic material placed in contact with injured tissue to repair a defect or supply a deficiency in that tissue.

allograft—A graft between genetically dissimilar members of the same species; examples include freeze-dried or fresh bone.

alloplast—A synthetic graft or inert foreign body implanted into tissue; examples include bioactive glasses and bioceramics.

autograft (autogenous graft)—A graft from one's own body.

xenograft—A tissue graft obtained from another species; examples include bovine bone and natural coral.

granuloma —See **dental granuloma**.

granulation tissue—Healing tissue that consists of fibroblasts, capillary buds, inflammatory cells and edema.

granulomatous tissue—A pathologic tissue response characterized by a distinctive morphologic pattern of inflammation consisting of macrophages that have been transformed into epithelioid cells surrounded by mononuclear cells, usually lymphocytes.

growth factors—A diverse group of polypeptides that have important roles in regulation of regeneration, growth and development of a variety of tissues.

guided tissue (bone) regeneration—

Barrier technique using materials such as Teflon or collagen to regenerate lost periodontal structures by excluding epithelium and the gingival corium from the root surface in the belief that they interfere with regeneration.

gutta-percha—The purified coagulated exudate from the *Palaquium gutta* tree, commonly called the “mazer wood” tree, of the Burma and Malay archipelago. Both gutta-percha and natural rubber are high molecular weight stereo-isomers of polyisoprene. Natural rubber, *cis*-polyisoprene, exists with its —CH₂ groups (the chain-forming links between the individual isoprene units) on the same side of the double bond; while gutta-percha, *trans*-polyisoprene, exists with its —CH₂ groups on opposite sides of the double bond. Gutta-percha exists in two crystalline forms, the naturally occurring alpha form and the beta form found in most commercial formulations. Dental gutta-percha points are reported to contain approximately 19–22 percent gutta-percha, 1–4 percent plasticizing waxes and resins, 59–75 percent zinc oxide, 1–17 percent metal sulfates for radiopacity and trace amounts of organic dyes for coloration. Since the late 1950s, material compounded in the United States for “gutta-percha” points has been made from balata, a nearly identical latex derived from the *Mimusops Globsa* tree of South America.

gutta-percha point (gutta-percha cone)—A pliable, radiopaque cone available in various sizes used to obturate root canals in conjunction with sealers.

H

halothane—An inhalation general anesthetic agent that may be used to dissolve gutta-percha; chemical name is 2-bromo-2-chloro-1,1,1-trifluoroethane.

Hank’s balanced salt solution—A balanced electrolyte solution commonly used for cell and tissue culture; has been shown to prolong the viability of periodontal ligament cells in cases of tooth avulsion.

hapten—A substance that by itself is not antigenic, but, when combined with a body protein, may induce an immune response.

hardness—The mechanical property of resistance to surface indentation.

heat, applied—The application of heat to increase circulation or bring about the localization of infection or relief of muscle spasm.

heat, test (hot test)—The use of hot gutta-percha, hot water, a rotating rubber cup or commercial heating device to identify and reproduce a chief complaint of pain to heat upon application.

Hedström file—See **file-H-type file**.

hematoma—A localized collection of extravasated blood, usually clotted, that forms in a tissue, organ or space.

hemisection—The surgical separation of a multirrooted 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.

hemolysis—The breakdown of red blood cells and the release of hemoglobin that may be metabolized into the blood pigments hemosiderin and bilirubin, which are brown in color; may contribute to tooth discoloration following pulp necrosis when the process occurs in the pulp.

hemorrhagic exudate—
See **exudate-hemorrhagic exudate**.

hemostasis (hemostatic agent)—The process (or agent) whereby bleeding is controlled.

Hertwig’s epithelial root sheath (HERS)—A double layer of cells, the inner and outer enamel epithelium, that proliferates and grows around the dental papilla, inducing differentiation of odontoblasts from cells at the periphery of the dental papilla and defining the shape of the root; root sheath fragments form a fenestrated network around the tooth with growth; cells in this residual network known as epithelial rests of Malassez.

HIPAA (Health Insurance Portability and Accountability Act)—A law, effective April 2003, that implemented standards intended to streamline the flow of information integral to the operation of the health care system while protecting confidential health information from inappropriate access, disclosure and use.

histamine—A compound found in all cells that results from breakdown of the amino acid histidine; responsible for vasodilatation that may affect the pulp during an acute inflammatory process.

histiocyte—Large phagocytic cell; member of the mononuclear-phagocyte system also known as macrophage.

hollow tube theory—A hypothesis that tissue fluids can diffuse into a root canal system containing a necrotic pulp, breakdown and subsequently recirculate causing inflammation in tissues surrounding the canal orifice; research supports the premise of tissue fluid circulation, but, unless the tubular contents are contaminated with bacteria or other antigenic material, significant inflammation does not occur.

horizontal shift—See **buccal object rule**.

horn, pulp—Extension of pulp tissue into occlusal or incisal projections following the cusp tips or developmental lobes.

H-type file—See **file-H-type file**.

hydrocodone—A semisynthetic narcotic analgesic and antitussive agent that is similar to, but more potent than, codeine.

hydrogen peroxide—A clear, colorless, unstable liquid (H₂O₂) with disinfectant and bleaching properties commonly marketed in solutions of 3–35 percent that exhibits variable levels of tissue irritation; used as an irrigant, a bleaching agent and to prepare the tooth surface preoperatively, prior to disinfection with iodine or other disinfectants.

hydrodynamic theory—A hypothesis that maintains the inward or outward movement of fluid through the dentinal tubules activates sensory nerve fibers in the dentin or the pulp to produce pain; fluid movement can be in response to dehydration, osmotic changes, mechanical probing or thermal changes.

hydroxyapatite—An inorganic compound [Ca₁₀(PO₄)₆(OH)₂] found in bone and teeth; there are synthetic forms used in bone grafting and for coating dental implants.

hyperalgesia—Increased pain sensation or lowered pain threshold that accompany an inflammatory reaction.

hypercementosis (cementum hyperplasia)—An excessive deposition of cementum on the root surface; commonly found in Paget's disease.

hyperemia—An increased volume of blood within dilated vessels in an organ or tissue; used as a histophysiologic term to describe increased blood flow in the pulp.

hyperplastic pulpitis, chronic (pulp polyp)—A form of chronic pulpal inflammation usually following carious or traumatic exposure; characterized by proliferation of dental pulp tissue from the exposed pulp chamber, filling the cavity with a pedunculated or sessile, pinkish-red, fleshy mass; usually covered with epithelium.

hypersensitivity—The short, exaggerated, sharp painful response elicited when exposed dentin is subjected to thermal, mechanical or chemical stimuli.

hypocalcification—Reduced or deficient calcification of mineralized tissue, such as bone, dentin, enamel or cementum.

hypochlorite accident—Extrusion of sodium hypochlorite into the periradicular area during root canal irrigation, causing severe pain, swelling, ecchymosis and potential paresthesia.

I

immunoglobulins—Serum proteins (gamma globulins), also known as antibodies, secreted by plasma cells; play an important role in immunity against microbial irritants. They belong to one of the following main isotypes: IgG, IgA, IgM, IgE and IgD.

immunohistochemistry—A histologic technique used to demonstrate the presence of specific molecules (usually proteins) in tissue sections or cell smears by binding the molecule to a specific antibody. The antigen-antibody complex is attached to an enzyme that further binds with a fluorescent or a visible light dye for visualization.

implant—Material inserted or grafted into the tissues of a host.

endodontic implant (endosseous implant)—A metallic rod placed in the canal of the root of a tooth and extending into osseous tissues to stabilize the tooth in the dental arch.

endosseous (endosteal) implant—An implant of alloplastic material such as titanium, sapphire or hydroxyapatite, often of a screw design, inserted into surgically prepared cavities in the alveolar bone to serve as support for a dental restoration or prosthesis.

osseointegrated implant—A direct structural and functional connection between bone and the surface of an immobile, load-bearing implant.

incision and drainage (I&D)—A surgical opening created in soft tissue for the purpose of releasing purulent or hemorrhagic exudate.

inclusion cyst—
See **cyst–nonodontogenic cyst**.

indirect pulp cap—
See **pulp cap–indirect pulp cap**.

indurated—Firm or hard; term usually used in reference to soft tissues that have become hardened from edema associated with inflammation, infection or neoplastic changes.

infarction—Sudden insufficiency of arterial and venous supply leading to ischemia and necrosis; pulp infarction might occur following traumatic injuries.

infection—Invasion and proliferation of pathogenic microorganisms in body tissues and the reaction of the tissues to their presence.

infection, focal—
See **focal infection theory**.

inflammation—The cellular and vascular response of tissues to injury.

acute inflammation—A response that is abrupt in onset and short in duration characterized by the exudation of fluid, serum proteins, inflammatory mediators and cells, mainly polymorphonuclear leukocytes into the area of injury; may become chronic if the injurious agent persists.

chronic inflammation—A response that is slow in onset and of long-standing duration characterized by proliferation of fibroblasts and vascular endothelium and an influx of lymphocytes, plasma cells, macrophages and inflammatory mediators. It may be primary or preceded by acute inflammatory response.

inflammatory resorption—
See **resorption–inflammatory resorption**.

informed consent—An agreement by the patient to have treatment rendered by the provider after the risks of the treatment, the results of no treatment, the alternatives to treatment and all prognoses have been explained.

infraction, crown—An incomplete crack of the enamel without loss of tooth structure.

injection, intra-osseous—A technique in which the anesthetic solution is injected directly into the cancellous bone.

injection, intrapulpal—
See **intrapulpal injection**.

injection, periodontal ligament (intra-ligamentary injection, ligamentary injection, PDL injection)—A low volume, high pressure injection of local anesthetic through the periodontal sulcus into the periodontal ligament. The anesthetic solution is actually forced into the alveolar bone and therefore the PDL injection should be classified as an intra-osseous injection.

inner enamel epithelium (internal enamel epithelium)—A layer of cells in the enamel organ between the dental papilla and the stratum intermedium. Under the influence of the dental papilla, these cells differentiate into ameloblasts.

instrumentation—Cleaning and shaping of the root canal space using hand- or engine-driven instruments.

intentional replantation—
See **replantation, tooth–intentional replantation**.

interferons—A group of glycoproteins that have important antiviral or immune mediating properties.

interglobular dentin—
See **dentin–interglobular dentin**.

I

interleukins—A group of cytokines produced by a wide variety of inflammatory or noninflammatory cells, but mainly lymphocytes and macrophages; important in mediating or suppressing the immune response; may aid or modulate bone resorption.

internal matrix technique—Placement of barrier during perforation repair to prevent extrusion of restorative materials.

internal resorption—
See **resorption–internal resorption**.

intertubular dentin—
See **dentin–intertubular dentin**.

intracanal medicament—A chemical agent sealed within the root canal system; used between appointments as an anodyne and/or antimicrobial agent.

intracoronary bleaching—
See **bleaching–intracoronary bleaching**.

intra-ligamentary injection—
See **injection, periodontal ligament**.

intraosseous injection—
See **injection, intra-osseous**.

intrapulpal injection—A technique in which the anesthetic solution is injected directly into the pulp under pressure.

intrusive luxation—
See **luxation–intrusive luxation**.

iodine potassium iodide—An intracanal medicament/irrigant composed of iodine 2 percent (w/w), potassium iodide 4 percent and distilled water 94 percent, that exhibits antimicrobial action with minimal toxicity and tissue irritation.

iodine, tincture of—5 percent iodine in alcohol; used to disinfect tooth surfaces prior to access preparation.

iodoform— CHI_3 triiodomethane; a topical antimicrobial agent.

iodophor—A 1 percent iodine combination with a surfactant carrier, such as polyvinylpyrrolidone, that is applied as a slow release antimicrobial agent.

irregular dentin—
See **dentin–tertiary dentin**.

irreversible pulpitis—A clinical diagnosis based on subjective and objective findings indicating that the vital inflamed pulp is incapable of healing.

irrigants—Liquids used for intracanal irrigation; examples include sodium hypochlorite, saline, chlorhexidine, hydrogen peroxide and EDTA.

irrigation—Washing by a stream of fluid; intracanal irrigation facilitates physical removal of materials from the canal and introduction of chemicals for antimicrobial activity, demineralization, tissue dissolution, bleaching, deodorizing and hemorrhage control.

irritation dentin—
See **dentin–tertiary dentin**.

ISO (International Standards Organization)—An international nongovernmental organization whose objective is the development of international standards; a committee, TC106-Dentistry, is responsible for the standardization of terminology, test methods and specifications for dental materials, instruments, appliances and equipment.

isotonic—Relates to an equal osmotic pressure to interstitial or intracellular fluids; an important requirement for media used to transport traumatically avulsed teeth.

isthmus—See **anastomosis**.

K

kinins—Inflammatory mediators that are produced when plasma or tissue kallikreins contact kininogen; bradykinin and neurokinin A are examples of the kinins that may reduce the pain threshold in pulpal inflammation.

kloroperka—A paste made by dissolving a powder consisting of zinc oxide, gutta-percha and rosin in chloroform and used as a cementing medium for gutta-percha points during the obturation procedure.

K/L

L

lamina dura—The layer of compact bone forming the wall of a tooth alveolus seen in dental radiographs as a thin radiopaque line surrounding the roots of teeth; loss of continuity and changes in its width and radiopacity may indicate pathosis.

Langerhans cells—Dendritic, clear cells that may participate in antigen processing and presentation in periradicular inflammation.

laser (light amplification by stimulated emission of radiation)—A device that concentrates high energies into an intense narrow beam of nondivergent monochromatic electromagnetic radiation; used in surgery, cauterization and for a variety of diagnostic purposes; various types available depending on the laser wavelength, probe characteristics and the laser energy; types include the carbon dioxide, Nd:YAG, argon and xenon chloride excimer lasers.

laser Doppler flowmetry—See **pulp test**.

lateral canal—See **canal, pulp–lateral canal**.

lateral compaction (condensation)—
See **obturation technique–lateral compaction**.

lateral luxation—
See **luxation–lateral luxation**.

lateral periodontal cyst—
See **cyst–lateral periodontal cyst**.

ledge—An artificial irregularity created on the surface of the root canal wall that impedes the placement of instruments to the apex of an otherwise patent canal.

L

lentulo—A flexible, loosely spiraled, wire instrument that can be mounted in the dental handpiece or used by hand; this rotating instrument carries paste materials, such as root canal sealers or medicaments, into the root canal.

lingual (palatal) groove defect—A developmental groove occasionally present on the lingual surface of maxillary incisors; may be deep enough to communicate with the pulp, causing pulp necrosis due to the invasion of bacteria; may contribute to isolated periodontal defects due to loss of attachment in the area.

lipopolysaccharide (endotoxin)—Cell wall molecule from Gram-negative bacteria that consists of a variable polysaccharide and a conserved lipid; induces an intense inflammatory response, and, if absorbed systemically in large quantities, can cause septic shock.

liquefaction necrosis—Death of a tissue in which cells and tissue elements become partly or completely liquefied.

lubricants—Used during root canal instrumentation, particularly with rotary instruments, to enhance negotiation of the canal and to minimize friction and the risk of file separation.

Ludwig's angina—Severe, life-threatening infection, usually of odontogenic origin; arises if there is bilateral involvement of the submental, sublingual and submandibular spaces; is characterized by painful swelling of the floor of the mouth, tongue elevation, dysphagia, dysphonia and (at times) compromises the airway.

luxation—Displacement of a tooth from its original position in the alveolus, without total avulsion, resulting from acute trauma.

extrusive luxation—A partial axial displacement of the tooth out of its socket.

intrusive luxation—An axial displacement of the tooth into the alveolus accompanied by comminuted apical fracture of the alveolar socket.

lateral luxation—A displacement of the tooth in a direction other than axially, usually accompanied by fracture of the alveolar socket.

subluxation—An abnormal loosening of the tooth in the alveolar socket without displacement.

lymphocyte—Immunocompetent cell with large circular nucleus that mediates a variety of specific and nonspecific immune reactions.

B-cell—Lymphocytes that are primarily responsible for the mediation of humoral immunity through production of antibodies.

NK-cell—Natural killer cells are a type of lymphocyte involved in innate immunity against viruses and antibody-dependent cellular cytotoxicity.

T-helper cell (CD4 Positive)—Lymphocytes that mediate specific immune responses by stimulation of B-cells, other T cells and activation of macrophages. Two main variants are currently recognized: T_H1 and T_H2. The former has a cytokine profile that produces a pro-inflammatory response, whereas the latter produces cytokines that activate B-cells and may contribute to the reduction of the inflammatory response and the inhibition of T_H1 cells.

T-suppressor/cytotoxic cell (CD8 Positive)—Cells that mediate lysis of virus infected cells, tumor cells and graft rejection, and other forms of cell-mediated hypersensitivity.

lymphokine—A cytokine produced by a lymphocyte, such as IL-2.

M

macrophage—Large phagocytic cells that mediate the innate immune responses by producing cytokines, bactericidal enzymes, oxygen-reactive molecules and growth factors; participate in antigen presentation to lymphocytes; arise from circulating monocytes and constitute a group of heterogeneous cells in various tissues of the body known as the mononuclear-phagocyte system.

major apical diameter—The area of the apical foramen where the walls are farthest apart, usually located in the cementum.

malar—Related to the cheek or the zygomatic bone.

Malassez—
See **epithelial rests of Malassez**.

mantle dentin—
See **dentin-mantle dentin**.

marsupialization (decompression)—The creation of a pouch; in endodontics, the surgical exteriorization of a large cyst by resection of a wall and insertion of a tube or other type of drain to decompress the lesion during healing. *HS: Partsch I operation*

martensitic phase—See **austenitic phase**—A crystalline phase transformation that occurs in nickel titanium alloy as a result of cooling or the application of stress.

master apical file—The largest file used to the full working length of the completely prepared root canal.

M

master apical rotary—The largest rotary instrument used to the full length of the completely prepared canal in some rotary preparation systems.

master point (master cone)—The largest gutta-percha point that can be placed either to full working length or to within a short distance of working length (usually 0.5 mm or less), of the completely prepared root canal prior to obturation by either lateral or vertical compaction.

mast cell—A connective tissue cell that is involved in anaphylactic reactions by producing histamine.

mechanical pulp exposure—See **pulp exposure-mechanical pulp exposure**.

mechanical pulp test—See **test cavity**.

medicament (medication)—An agent used for medicinal value; commonly refers to intracanal, interappointment agents used for palliative or antimicrobial purposes.

meta-analysis—Statistical process commonly used with systematic reviews; involves combining the statistical analyses and summarizing the results of several individual studies into one analysis. When data from multiple studies are pooled, the sample size and power usually increase.

metacresyl acetate (Cresatin)—A colorless, oily liquid with a characteristic phenolic odor exhibiting varying degrees of toxicity and having mild, nonspecific antibacterial and antifungal actions; used as a root canal medicament.

microbial culture—See **culture, microbial**.

microleakage—The ingress of oral fluids along any interface between a tooth surface, restoration, cement or root canal filling material; concept of microleakage also applicable to the passage of periradicular tissue fluids coronally along any interface between a root canal surface and its obturating materials.

mineral trioxide aggregate (MTA)—A cement-like material used as a root-end filling material, for perforation repair and pulp capping, and as a root-end barrier in teeth with an open apex.

minor apical diameter—
See **apical constriction**.

mobility—Movement of tooth in its socket resulting from an applied force, usually measured on an increasing scale of 1–3, or measured by the amount of horizontal and/or vertical mobility in millimeters.

modulus of elasticity (Young’s modulus)—Measure of stiffness of an object, defined as the amount of strain resulting from applying a given stress.

morbidity—A diseased state; a ratio of sick to well in a community or the frequency of the appearance of complications following a surgical procedure or other treatment.

mucocele—A cyst or cyst-like structure that contains mucous glycoproteins typically found in the lining of paranasal sinuses and salivary glands.

multivariate analysis—An analysis that takes into account multiple dependent variables simultaneously, to control for confounding factors and determine the interrelationship of variables.

myelin—A lipoproteinaceous sheath surrounding certain types of nerve fibers; thought to be related to the speed of transmission of an action potential.

myofascial pain dysfunction—A syndrome characterized by deep, dull, aching, regionally referred pain associated with focally tender “trigger points” (TPs), in muscle and fascia; most prevalent cause of painful symptoms in temporomandibular disease (TMD); referred pain may be interpreted as headache, toothache, TMD or sinus pain.

N

neuralgia—Pain that extends along the course of one or more nerves; many varieties are distinguished according to the body part affected or to the cause.

neuralgia-inducing cavitational osteonecrosis (NICO)—A controversial pathologic designation used to refer to osseous cavitational defects secondary to chronic inflammation or necrosis from bacterial osteomyelitis or vascular/coagulation pathosis following tooth extraction; such defects are proposed as etiologic factors in certain types of chronic orofacial pain; proposed diagnosis of NICO is based on the presence of palpation sensitivity over an edentulous area that is otherwise normal clinically and radiographically; rapid pain reduction with the administration of infiltration anesthesia in the area is a diagnostic feature.

neurogenic inflammation—Stimulation and persistence of inflammation by the vasoactive properties of neuropeptides.

neuroma—A proliferation of neural tissue that may form in healing soft or hard tissues; implicated in atypical facial pain and atypical odontalgia.

neuropeptides—A class of proteins produced by neurons which have inflammatory, sensory and vasoactive properties; examples of neuropeptides identified in the dental pulp include substance P, calcitonin gene-related peptide (CGRP) and neurokinin A. Neuropeptides are potent mediators of pulpal pain, inflammation and vascular dynamics.

nickel-titanium—An alloy of nickel and titanium, also known as “NiTi” or “nitinol,” with unique properties of flexibility and shape memory; nitinol is used in dentistry for orthodontic wire and endodontic files.

nociceptor—A peripheral pain receptor; afferent nerve receptors that respond to multiple types of stimuli are termed “polymodal,” while those responding to temperature change are termed “thermoceptors” and those responding to mechanical change are termed “mechanoreceptors.”

node—The point of minimum oscillation or displacement amplitude of an object vibrating in a sinusoidal wave pattern, such as an ultrasonically activated endodontic file.

nonodontogenic cyst—
See **cyst-nonodontogenic cyst**.

nonstandardized instrument—An endodontic reamer, file or finger spreader that does not correspond to the ANSI/ADA specification nos. 28 or 58.

nonstandardized point (nonstandardized cone)—A gutta-percha or paper point that does not conform to size and taper of standardized endodontic instruments; more tapered than standardized points, with fine apical diameters gradually increasing to larger coronal diameters than standardized points; taper and diameter specifications corresponding to size nomenclature—extra-fine, fine-fine, fine, medium-fine, fine-medium, medium, coarse and extra-coarse—have not been defined and may vary among manufacturers.

nonvital bleaching—
See **bleaching-intracoronal bleaching**.

nonvital tooth—See **pulp necrosis**

normal pulp—A clinical diagnostic category in which the pulp is symptom free and normally responsive to vitality testing.



obtundent—An agent having the power to dull sensibility or to alleviate pain.

obturate—To fill the shaped and debrided canal space with a temporary or permanent filling material.

obturation technique—The method used to fill and seal a cleaned and shaped root canal using a root canal sealer and core filling material; sealers are frequently used as the sole obturating material in deciduous teeth; there are a variety of techniques used to obturate the canal space:

carrier-based gutta-percha

technique—Sealer is placed in the canal followed by a plastic or metal core carrier coated with gutta-percha; device is heated prior to placement.

lateral compaction—A sealer is placed in the canal followed by a fitted gutta-percha master point compacted apically and laterally by a tapering spreader to make room for additional accessory points.

plasticized technique—A sealer is placed in the canal followed by a filling material that has been softened with heat or chemicals prior to compaction in the canals.

silver point technique—A sealer is placed in the canal followed by a fitted silver point.

vertical compaction—A sealer is placed in the canal followed by a fitted master point warmed and compacted vertically by a plugger to make room for additional warmed segments of filling.

Occupational Safety and Health

Administration (OSHA)—A federal governmental agency assigned the responsibility to provide a safe working environment for employees by providing guidelines for the workplace.

odontalgia—Pain originating from a tooth.

odontoblast—A highly-differentiated connective tissue cell found on the periphery of the dental pulp adjacent to the predentin; main function is the formation of dentin.

odontoclast—A multinucleated giant cell responsible for resorption of tooth structure; functionally and morphologically analogous to the osteoclast.

odontogenesis—Tooth formation; the origin and histogenesis of teeth; involves initiation, histodifferentiation, morphodifferentiation and apposition.

odontogenic cyst—
See **cyst-odontogenic cyst**.

odontogenic keratocyst—
See **cyst-odontogenic keratocyst**.

orifice—The opening leading from the pulp chamber into a root canal, especially in a tooth with multiple canals.

orifice opener (shaper)—A variety of hand- or power-driven pointed instruments used to widen the canal orifice for easier introduction of cleaning and shaping instruments.

oroantral fistula—An abnormal opening between the maxillary sinus and the oral cavity.

ossifying fibroma (cementifying fibroma)—
A benign, neoplastic, fibro-osseous lesion thought to originate from remnants of the PDL; early stage osteolytic lesions present radiographically as a radiolucent area in the periradicular areas and may be confused with chronic periradicular periodontitis; becomes radioopaque over time; tends to occur in younger patients in the premolar/molar region; associated with teeth with vital pulps.

osteitis—Bone inflammation involving Haversian spaces, canals and their branches.

osteodentin—See **dentin-tertiary dentin**.

osteomyelitis—Inflammation of bone marrow and adjacent bone caused by an infectious organism, usually the staphylococcus species; inflammation may remain localized or may spread throughout the bone to involve the marrow, cortex, cancellous tissue and periosteum. Chronic osteomyelitis may follow acute osteomyelitis and usually necessitates treatment with surgical and chemotherapeutic (antibiotics) intervention.

osteoporosis—A metabolic bone disease of variable etiologies that results in a net decrease in bone mass; characterized by disproportionate osteoclastic activity in cells.

outer enamel epithelium (external enamel epithelium)—Cuboid shaped cells that form the outer border of the enamel organ and join with the inner enamel epithelium at the future cements-enamel junction to form Hertwig's epithelial root sheath.

overextension—A solid or semi-solid core root canal filling extending beyond the apical foramen, often the result of failure to create an apical stop during instrumentation; commonly used to imply that the root canal space is not completely obturated.

overfilling—A solid or semi-solid core root canal filling extending beyond the apical foramen; commonly used to imply that the root canal space is completely obturated.

overinstrumentation—Instrumentation beyond the apical foramen resulting in the loss of an apical constriction.



pain—A multifactorial noxious experience that involves not only the sensory response but also modification by cognitive, emotional and motivational influences related to past experience.

referred pain—Pain that is interpreted to originate in a part of the body other than the actual site of origin.

palatal groove—A developmental groove in a root that, when present, is usually found on the lingual aspect of maxillary incisor teeth.

palpation—The use of the sense of touch to examine tissue for diagnostic reasons, such as to determine texture, rigidity and tenderness.

paper point—A cone of paper used to dry root canals.

parachlorophenol (PCP)—A colorless, crystalline, toxic phenolic compound historically used as a nonspecific antimicrobial agent for the disinfection of the pulp canal space; may be used in 2 percent aqueous solution or combined with camphor as a vehicle (CMCP, CPC or CPCP).

paraformaldehyde—A toxic polymer of formaldehyde occurring as a white, amorphous solid that is slowly soluble in water; historically used in pulp mummification; at body temperature, gradually depolymerizes and releases formaldehyde.

paresthesia—A sensation such as burning, prickling or partial numbness caused by neural injury; sometimes follows acute traumatic injuries or infection to the teeth and jaws, root-end resection or overfilling of the root canal with impingement upon a nerve.

parulis—A sessile nodule on the gingiva at the site where a draining sinus tract reaches the surface.

pathfinder—A small diameter instrument initially used to negotiate a canal.

percussion—A diagnostic procedure used to assess the condition of a body part by means of tapping; painful response may indicate periradicular inflammation; variations in sound may indicate other periodontal ligament conditions.

perforation—The mechanical or pathologic communication between the root canal system and the external tooth surface.

periapex (adj. periapical)—The anatomic site situated at and around the apical portion of a root.

periapical (periradicular) abscess, acute—
See **abscess—acute periradicular abscess**.

periapical (periradicular) abscess, chronic—
See **abscess—chronic periradicular abscess**.

periapical (periradicular) curettage—
See **curettage, periradicular**.

periapical (periradicular) cyst—
See **cyst—periradicular cyst**.

pericementitis—
See **periodontitis**.

periodontal abscess—
See **abscess—periodontal abscess**.

periodontal ligament (PDL)—The highly vascular and highly cellular connective tissue that surrounds the roots of teeth and attaches them to the alveolar bone.

periodontal ligament injection—
See **injection, periodontal ligament**.

periodontitis (pericementitis)—
Inflammation of the periodontium.

acute periradicular (apical) periodontitis—Inflammation usually of the apical periodontium producing clinical symptoms including painful response to biting and percussion.

chronic periradicular (apical) periodontitis—Inflammation and destruction of apical periodontium that is of pulpal origin, appears as a periradicular radiolucent area and does not produce clinical symptoms.

subacute periradicular periodontitis—Inflammation usually of the apical periodontium producing mild clinical symptoms; not as severe as acute periradicular periodontitis.

periodontium (adj. periodontal)—The tissues that surround and support teeth, attaching them to the alveolar bone; includes bone, connective tissue, vascular and neuronal elements.

periradicular—Surrounding the root.

periradicular abscess, acute—
See **abscess—acute periradicular abscess**.

periradicular abscess, chronic—
See **abscess—chronic periradicular abscess**.

periradicular cemental dysplasia—
See **dysplasia, periradicular cemental**.

periradicular curettage—
See **curettage, periradicular**.

periradicular cyst—
See **cyst—periradicular cyst**.

periradicular fibrous dysplasia—
See **dysplasia, periradicular cemental**.

periradicular osteofibrosis—
See **dysplasia, periradicular cemental**.

periradicular osteosclerosis—
See **focal sclerosing osteomyelitis**.

peritubular dentin—
See **dentin—peritubular dentin**.

phantom tooth pain—Regional pain that continues in an area after tooth extraction, similar to phantom limb pain; pathophysiology includes deafferentation, nerve sprouting, neuroma formation and sympathetic efferent activity.

phoenix abscess—
See **abscess—acute periradicular abscess**.

pink tooth—Reddish discoloration of the crown of a tooth caused by resorption.

plasticized technique—
See **obturation technique—plasticized technique**.

plugger—A smooth, flat-ended and slightly tapered metal instrument designed to compact materials vertically within a prepared root canal.

polymerase chain reaction (PCR)—An enzymatic method for repeated copying of the two strands of specific DNA sequences in a particular gene of interest; widely used to amplify minute quantities of biological material so as to provide adequate specimens for laboratory studies or identification.

post (dowel)—A custom or proprietary rod that is fitted and cemented into the root canal of an endodontically treated tooth for core retention.

postherpetic neuralgia—Induced by the reactivation of latent herpes zoster virus in infected ganglion of sensory nerve endings; typically occurs in immune-compromised or elderly individuals; manifested by continuous pain along the dermatome of the affected nerve, which can include the dental pulp; root canal treatment may relieve pulpal pain.

potassium nitrate—A desensitizing agent for dentin hypersensitivity; a common constituent of over-the-counter treatments.

potassium oxalate—A desensitizing agent developed for dentin hypersensitivity; when applied to exposed dentin, produces calcium oxalate crystals that occlude the dentinal tubules, prolonging the therapeutic effects.

predentin—See **dentin–predentin**.

premolarization—See **bicuspidization**.

preparation, canal—Procedures involved in cleaning and shaping the canal system prior to obturation.

biomechanical preparation—Use of rotary and/or hand instruments to expose, clean, enlarge and shape the pulp canal space, usually in conjunction with irrigants.

chemomechanical preparation—Use of chemicals for irrigation of the root canal, demineralization of dentin, dissolution of pulp tissue and neutralization of bacterial products and toxins; used in conjunction with biomechanical preparation.

primary dentin—
See **dentin–primary dentin**.

primordial cyst—
See **cyst–primordial cyst**.

pseudocyst—See **cyst–pseudocyst**.

pulp, dental or tooth—A richly vascularized and innervated specialized connective tissue of ectomesenchymal origin; contained in the central space of a tooth, surrounded by the dentin, with inductive, formative, nutritive, sensory and protective functions.

pulp amputation—See **pulpotomy**.

pulp canal—See **canal, pulp**.

pulp canal obliteration (PCO)—
Radiographic evidence of increased dentin production primarily in response to trauma.

pulp cap—Treatment of an exposed vital pulp by sealing the pulpal wound with a dental material such as calcium hydroxide or mineral trioxide aggregate to facilitate the formation of reparative dentin and maintenance of a vital pulp.

direct pulp cap—A dental material placed directly on a mechanical or traumatic vital pulp exposure.

indirect pulp cap—A procedure in which a material is placed on a thin partition of remaining carious dentin that, if removed, might expose the pulp in immature permanent teeth.

pulp chamber—The portion of the pulp space within the anatomic crown of the tooth.

pulp exposure—An opening in dentin that uncovers pulp.

carious pulp exposure—A pulp exposure resulting from the progressive destruction of tooth structure by acids and proteolytic enzymes elaborated through microbial activity; underlying pulp is inflamed to a varying and unknown extent, due to the progression of dental caries.

mechanical pulp exposure—An accidental exposure of the pulp by hand- or engine-driven dental instruments in the absence of dental caries; if aseptic conditions are maintained, the underlying pulp is usually not inflamed.

traumatic pulp exposure—A pulp exposure due to a fracture of the tooth.

pulp extirpation—See **pulpectomy**.

pulp fibrosis—An increase in the number and size of fibrous elements of the pulp with a concomitant decrease in the number of cells; believed to occur as part of a normal aging process but may also be accelerated by traumatic injuries or pathologic degenerative changes in the pulp.

pulp necrosis—A clinical diagnostic category indicating death of the dental pulp.

pulp polyp—
See **hyperplastic pulpitis, chronic**.

pulp space—The cavity within the tooth that houses the dental pulp system.

pulp stone (denticle)—A calcified mass occurring within the pulp or attached to pulp space walls; classified as true or false denticles, according to composition and morphology, and free, adherent or interstitial denticles, according to their location in relation to the pulp space walls.

pulp test—A diagnostic procedure to determine pulpal status; can be performed with electrical, mechanical or thermal stimuli, or by the assessment of the blood supply to the tooth.

electric pulp test (EPT)—A pulp test that utilizes an electrical current to stimulate sensory nerves of the dental pulp; modes of testers include both bipolar and monopolar.

laser Doppler flowmetry—A pulp test that assesses pulpal blood flow by the detection of light scatter generated by moving erythrocytes; effective in young traumatized pulps and large pulps that do not respond dependably to other forms of sensitivity testing.

mechanical pulp test—See **test cavity**.

pulse oximetry—A pulp test to assess vascular integrity by measuring the oxygenation of blood.

thermal pulp test—A pulp test using a hot or cold stimulus to induce dentinal tubule fluid movement and resultant stimulation of sensory receptor elements within the pulp.

cold tests—Usually conducted with an ice stick, a frozen stick of carbon dioxide or a cotton pellet sprayed with difluorodichloromethane (DDM).

heat tests—Usually conducted with hot liquid, heated temporary stopping material or devices specifically designed to administer heat of a specified temperature.

pulpal abscess—
See **abscess–pulp abscess**.

pulpalgia—Pain arising from the dental pulp.

pulpectomy (pulp extirpation)—The complete surgical removal of the vital dental pulp.

pulpitis—A clinical and histologic term denoting inflammation of the dental pulp; clinically described as reversible or irreversible and histologically described as acute, chronic or hyperplastic.

chronic hyperplastic pulpitis (pulp polyp)—
See **hyperplastic pulpitis, chronic**.

pulpless tooth—A tooth from which the pulp has been removed.

pulpotomy (pulp amputation)—The surgical removal of the coronal portion of a vital pulp as a means of preserving the vitality of the remaining radicular portion; may be performed as emergency procedure for temporary relief of symptoms or therapeutic measure, as in the instance of a Cvek pulpotomy.

partial pulpotomy (shallow pulpotomy; Cvek pulpotomy)—The surgical removal of a small portion of the coronal portion of a vital pulp as a means of preserving the remaining coronal and radicular pulp tissues.

purulent exudate—
See **exudate–purulent exudate**.

pus—An inflammatory exudate fluid product of inflammation containing leukocytes and the debris of dead cells and tissue elements liquified by enzymes elaborated by polymorphonuclear leukocytes.

R

radicular—Pertaining to the root of a tooth.

radicular cyst—
See **cyst–periradicular cyst**.

radiograph—An image on a photographic emulsion produced by the action of x-rays.

radiographic apex—
See **apex–radiographic apex**.

radiographic techniques—Methods for making radiographic images using film and an x-ray source.

bisecting angle technique—The x-ray beam is directed at a right angle to an imaginary plane that bisects the angle formed by the film and the central axis of the tooth; the film is placed as close as possible to the tooth.

paralleling technique (long cone technique) —The x-ray film is supported parallel to the long axis of the teeth and the central ray of the x-ray beam is directed at right angles to the teeth and film; to reduce geometric distortions, it is important that the x-ray source be located relatively distant from the teeth, hence the use of a long cone.

radiolucency (rarefaction)—An area of darkness on a radiograph indicating that an object of low density is allowing complete or partial penetration by x-rays.

radiopacity—An area of lightness on a radiograph indicating that the density of an object is preventing penetration by x-rays.

randomized controlled trial—An experimental study in which subjects are randomized to receive an experimental or a control treatment or intervention. The relative effectiveness of the interventions is assessed by comparing event rates and outcomes in the two groups.

rarefaction—See **radiolucency**.

reactive dentin—
See **dentin–tertiary dentin**.

reamer (K-type reamer)—A tapered and pointed metal instrument with spiral cutting edges used to enlarge root canals by rotary action; differs from a K-type file primarily in having fewer spirals or twists (flutes) per unit length of cutting blade.

recapitulation—Reintroduction of small files during canal preparation to keep the apical area clean and patent.

reduced enamel epithelium—The structure comprised of the stratified epithelial layer and ameloblasts that protects the crown of a tooth until eruption.

referred pain—See **pain–referred pain**.

regression analysis—Statistical method of finding the best mathematical model to describe one variable as a function of another.

reliability—The degree of stability that exists when a measurement is repeatedly made under different conditions or by different observers.

reparative dentin—
See **dentin–tertiary dentin**.

replacement resorption—
See **resorption–replacement resorption**.

replantation, tooth—The return of a tooth to its alveolus.

intentional replantation (extraction/replantation)—Insertion of a tooth into its alveolus after the tooth has been extracted for the purpose of performing treatment, such as root-end filling(s) or perforation repair.

resorption—A condition associated with either a physiologic or a pathologic process resulting in a loss of dentin, cementum and/or bone.

cervical resorption (extracanal invasive resorption)—A type of external resorption that usually occurs in the coronal third of the root in a tooth with a vital pulp. It may be related to trauma, orthodontic treatment or may be of idiopathic etiology.

external resorption—Resorption initiated in the periodontium and initially affecting the external surfaces of a tooth; may be further classified as surface, inflammatory or replacement, or by location as cervical, lateral or apical; may or may not invade the dental pulp space.

inflammatory resorption—A pathologic loss of cementum, dentin and bone resulting in a defect in the root and adjacent bony tissue; occurs as the result of microbial infection; characterized radiographically by radiolucent areas along the root.

internal resorption—A pathologic process initiated within the pulp space with loss of dentin and possible invasion of the cementum; may or may not perforate to the external root surface; effectively managed by removal of the vital pulp and subsequent conventional root canal therapy.

replacement resorption (ankylosis)—A pathologic loss of cementum, dentin and periodontal ligament with subsequent replacement of such structures with bone, resulting in fusion of bone to cementum and/or dentin with a loss of physiologic mobility and lack of radiolucency at the resorptive interface; can progress to total replacement of the root by bone and exfoliation of the clinical crown.

surface resorption—A physiologic process causing small superficial defects in the cementum and underlying dentin that undergo repair by deposition of new cementum.

retreatment—A procedure to remove root canal filling materials from the tooth, followed by cleaning, shaping and obturating the canals.

retrofilling—See **root-end filling**.

reversible pulpitis—A clinical diagnosis based upon subjective and objective findings indicating that the pulp is capable of healing.

rotary instrumentation—Any one of a number of systems designed to clean and shape the root canal system utilizing files specifically designed to act via rotation supplied by a handpiece; typically nickel titanium files are used.

root amputation—See **root resection**.

root canal—See **canal, pulp**.

root canal access—See **access, surgical**.

root canal filling—Any material or combination of materials placed inside a root canal for the purpose of obturating and sealing the canal space.

root canal system—The space containing the dental pulp inside the crown and root of a tooth.

root extrusion—
See **extrusion–root extrusion**.

root-end resection—The surgical removal of some or all of a root and adherent soft tissues leaving the crown of the tooth intact; may be performed in advance of root end preparation for a root-end filling or as a definitive treatment alone as in the instance of root amputation.

root submergence—A surgical procedure to cover a retained root with soft tissue; often advocated for ankylosed young permanent teeth in a child or for alveolar bone retention under dentures.

root-end filling (retrofilling)—A restorative material placed in the root-end preparation during periradicular surgery or intentional replantation; designed to enhance the seal of the root canal where orthograde obturation has been less than optimal.

root-end cavity preparation—A cavity created to receive a root-end filling during periradicular surgery or intentional replantation; may be accomplished using rotary or ultrasonic instrumentation.

rubber dam—See **dental dam**.

S

sclerosing osteitis—
See **focal sclerosing osteomyelitis**.

sclerotic bone—
See **focal sclerosing osteomyelitis**.

sclerotic dentin—
See **dentin–sclerotic dentin**.

sealer, root canal (cement)—A radiopaque dental cement used, usually in combination with a solid or semi-solid core material, to fill voids and to seal root canals during obturation.

secondary dentin—
See **dentin–secondary dentin**.

sedative restoration—A medicated restorative material placed in a tooth temporarily to relieve pain.

serous exudate—
See **exudate–serous exudate**.

silver point (silver cone)—A rigid radiopaque cone produced from almost pure silver in a variety of sizes, usually corresponding to the diameters and tapers of root canal files; has been used to obturate root canals in conjunction with a sealer.

silver point technique—See **obturation technique–silver point technique**.

sinus tract—A pathway from an enclosed area of infection to an epithelial surface; opening or stoma may be intraoral or extraoral and represents an orifice through which pus is discharged; usually disappears spontaneously with elimination of the causative factor by endodontic treatment. The term fistula is often inappropriately used instead of sinus tract.

slot preparation—A channel created in the buccal wall of the root that extends into the apical root canal space; used in endodontic surgery for the placement of a root-end filling. *HS: Matsura apical preparation*

smear layer—A surface film of debris retained on dentin and other surfaces after instrumentation with either rotary instruments or endodontic files; consists of dentin particles, remnants of vital or necrotic pulp tissue, bacterial components and retained irrigant.

sodium hypochlorite solution—A clear, pale, greenish-yellow, strongly alkaline liquid with a strong chlorine odor; has a solvent action on organic tissue and is a potent antimicrobial agent; used for irrigating root canals either in full strength or diluted solutions.

sodium perborate—An odorless, white, crystalline solid that liberates oxygen in the presence of moisture; used either with water or hydrogen peroxide for intracoronary bleaching of discolored teeth.

soft tissue cyst—See **cyst–soft tissue cyst**.

sonic instrumentation—Preparation of the root canal system with a transversely oscillating file at a frequency within the audible range of perception (1,500 to 6,500 cps); vibration created by means of compressed air activating a rotor-shaft assembly in a handpiece.

splint—A rigid or flexible device used to support, protect or immobilize teeth that have been loosened, replanted, fractured or subjected to certain endodontic surgical procedures.

spreader—A smooth, pointed, slightly-tapered metal instrument designed to compact materials within a prepared root canal; available in a variety of designs that include hand held, finger held or rotary driven.

standardized instrument—An endodontic instrument that conforms to ANSI/ADA specification no. 28 (K-type file or reamer), or no. 58 (H-type file), for diameter, length, taper, torsional properties, tip design, etc.

standardized point (standardized cone)—A gutta-percha, silver or paper point manufactured to conform to the size and taper of a standardized endodontic instrument.

steam autoclave sterilization—
See **sterilization–steam autoclave sterilization**.

stellate reticulum—Cells comprising the center of the enamel organ, lying between the stratum intermedium and the outer enamel epithelium that secrete hydrophilic glycosaminoglycans into the extracellular compartment.

stepback technique (telescopic technique)—A method of canal preparation using smaller, more flexible files in the apical one-third, followed by files sequentially larger than the master apical file at incremental lengths of 0.5 to 1 mm short of working length.

sterilization—The complete destruction of microorganisms.

chemical autoclave sterilization—A method of sterilization using the action of a vapor consisting of formaldehyde, alcohols, ketones and water heated to 126°C (260°F) at 20–25 pounds pressure for 20 minutes.

dry heat sterilization—A method of sterilization using the action of air heated to 170°C (340°F) in an oven for sixty minutes.

ethylene oxide gas sterilization—A method of sterilization using the action of a gas consisting of ethylene oxide and Freon heated to 130–140°F (55–60°C) for two hours under conditions of initial vacuum followed by increased pressure; process must be followed by a period of aeration to remove residual ethylene oxide gas that adheres to surfaces.

steam autoclave sterilization—A method of sterilization using the action of water vapor heated to 121°C (250°F) at 15 pounds pressure for 10–30 minutes.

stratum intermedium—A layer of flattened cells between the inner enamel epithelium and the stellate reticulum characterized by exceptionally high alkaline phosphatase activity; these cells do not produce enamel but are essential for deposition of enamel.

strip perforation—A complete penetration of a root canal wall due to excessive lateral tooth structure removal during canal preparation; usually occurs in curved roots or roots with surface invaginations.

subcutaneous emphysema—
See **emphysema, subcutaneous**.

subluxation—Injury to supporting tissues resulting in abnormal loosening of a tooth or teeth without displacement.

suppurative periradicular periodontitis—
See **abscess, chronic periradicular abscess**.

surface resorption—
See **resorption–surface resorption**.

surgical access—See **access, surgical**.

surgical flap—See **flap, surgical**.

surgical repositioning—Intentional loosening and realignment of a tooth in its alveolar socket; performed to manage coronal-third fractures, perforations or deeply placed tooth margins when extrusion or crown lengthening are contraindicated.

syndrome—A complex of signs and symptoms that together are pathognomonic of a particular disorder.

systematic review—A process of systematically locating, appraising and synthesizing evidence from scientific studies in order to obtain a reliable overview; findings from systematic reviews may be used for decision-making about research and the provision of health care.

taurodontism—A dental morphologic variation in which the body of the tooth is enlarged and the roots are reduced in size; results in taurodont teeth with large pulp chambers and apically positioned furcations.

telediagnosis—Electronic transmission of data that permits communication between remote sites.

telescopic technique—
See **stepback technique**.

tertiary dentin—
See **dentin–tertiary dentin**.

test cavity (mechanical pulp test)—A diagnostic procedure in which a small cavity is prepared without anesthesia into the dentin to test for pulpal responsiveness.

thermal pulp test—
See **pulp test–thermal pulp test**.

thermography—Sensing and recording the thermal map of the body.

thermomechanical—A term used to describe the plasticity generated within a material by heat from mechanical activity or friction.

thermoplastic—Softening under heat and capable of being molded with pressure, then solidifying on cooling without undergoing chemical change.

tic douloureux—See **trigeminal neuralgia**.

titanium—See **nickel-titanium**.

torque—Force that produces or tends to produce twisting or rotation within a structure such as a rotary file.

T

transient apical breakdown—A response to tooth luxation consisting of radiographic apical bone and root resorption that resolves spontaneously without intervening treatment.

transillumination—The passage of a beam of light through a tooth or other tissue for diagnostic purposes.

transition angle—An angle formed by termination of the cutting edges of K-type files; must be $75^\circ \pm 15^\circ$ to meet ISO specifications; recently altered designs increase or eliminate this angle.

transparent dentin—See **dentin-sclerotic dentin**.

transplantation—The transfer of a tooth from one alveolar socket to another socket or area either in the same or another person.

transportation—Removal of canal wall structure on the outside curve in the apical half of the canal due to the tendency of files to restore themselves to their original linear shape during canal preparation; may lead to ledge formation and possible perforation.

transudate—Noninflammatory edema fluid.

traumatic pulp exposure—See **pulp exposure-traumatic pulp exposure**.

trephination—The surgical perforation of the alveolar cortical plate or apical foramen to release accumulated tissue exudate.

trichloromethane—See **chloroform**.

trifurcation—The area where a tooth divides into three distinct roots.

trigeminal neuralgia (tic douloureux)—A neurologic disorder in which the dominant symptom is a severe, paroxysmal stabbing pain provoked by stimuli to trigger zones; follows the distribution of any branch of the trigeminal nerve; unilateral in any one paroxysm; patients present with no objective sensory deficits.

trismus, dental—Spasm of the muscles of mastication resulting in difficulty in opening the mouth; etiology may be infection, stress or injury.

tubular dentin—
See **dentin-tubular dentin**.

tugback—Slight frictional resistance of a master point to withdrawal when seated; indicates a relative degree of adaptation, at least in two dimensions.

U

ultrasonic instrumentation—Preparation of the root canal system with a transversely oscillating diamond or file at a frequency above the audible range of perception (18,000 to 40,000 Hz); instruments activated by electrical current passing through arrangement of lamellar metal plates, creating alternating attractive and repulsive forces transformed into mechanical vibratory movement.

underfilling—An incomplete obturation of the root canal space with resultant voids.

universal precautions—Methods designed for infection control to prevent transmission of blood borne diseases, such as AIDS and Hepatitis B, in health care settings. These include engineering and work control practices, use of personal protective equipment, proper barrier techniques, blood-borne pathogen exposure control, sharps disposal system, hazard communication and others.

urea peroxide—See **carbamide peroxide**.

U/V

V

validity—Degree to which data or results of a study truly measure what they purport to measure.

vertical compaction—
See **obturation technique-vertical compaction**.

vital bleaching—
See **bleaching-extracoronary bleaching**.

W/X

walking bleach—

See **bleaching-walking bleach**.

wear facet—A worn spot on a tooth produced by chewing or grinding.

WHO—World Health Organization.

working length—The distance from a coronal reference point to the point at which canal preparation and obturation should terminate.

X

xenograft—See **graft, xenograft**.

xerostomia—Dryness of the mouth.

x-ray—Electromagnetic radiation emitted from a highly evacuated tube, excited by the bombardment of the target anode with a stream of electrons from a heated cathode; passes through solid bodies, can cause destructive changes in living tissues and affects a photographic emulsion.

Z

zinc oxide—A fine, odorless, amorphous, white or yellowish powder (ZnO) used in combination with eugenol in various sealers and temporary cements; the principal component by weight in gutta-percha.

zip—An elliptical shape that may be formed in the apical foramen during preparation of a curved canal when a file extends through the apical foramen and subsequently transports that outer wall; a procedural error that complicates cleaning and obturation.

zones of infection (zones of Fish)—A historical description of the histologic appearance of bacterial infection in bone that includes four concentric zones of tissue reaction: contamination, infection, irritation and stimulation.

Z

zone of contamination—The area surrounding the zone of infection that is contaminated by diffusible toxic products and contains round cell infiltrates that have replaced normal tissue.

zone of infection—The central and only area demonstrating bacterial presence; polymorphonuclear leukocytes have replaced all normal tissue cells.

zone of irritation—The area surrounding the zone of contamination where the contamination of diffusible toxic products is sufficiently low to permit the survival of many of the normal tissue cells; typically includes round cells, histiocytes and osteoclasts.

zone of stimulation—The most peripheral area, appearing as a defensive perimeter typified by intense reparative activity; typically includes young fibroblasts and osteoblasts.