

Table of Contents

1 The Endodontium	1	Provocation Tests	78
Structure	1	Anesthesia Test	78
The Dentin	1	Optical Tests	79
The Dental Pulp	5	Radiographic Examination	79
Reaction Patterns	9	Tentative Diagnosis	79
Pulpitis	9	Clinical Diagnosis	81
Pathogenesis of Pulpitis	11	Further Reading	82
Systemic Influences	24		
Pulp Necrosis	25	5 Treatment of Teeth with Vital Pulp	84
Repair in the Pulp	26	Endodontic Aspects of Restorative Procedures	84
Further Reading	29	Cavity and Crown Preparation	84
		Cavity Cleansing and Drying	85
2 The Apical Periodontium	31	Impression Methods	85
Structure	31	Pulp Protection	86
Reaction Patterns	32	Marginal Leakage	87
Apical Periodontitis	32	Pulp Capping	88
Etiology of Apical Periodontitis	32	Indications	88
Pathogenesis of Apical Periodontitis	41	Wound Dressing and Tissue Reactions	89
Radiographic Appearance and Differential		Pulpal Seal	90
Diagnosis	54	Follow-up Examination and Prognosis	91
Further Reading	62	Capping of the Inflamed Pulp	93
		Pulpotomy	94
3 Endodontic Symptomatology	65	Indications	94
Pulpal Pain	65	Wound Dressing and Tissue Reactions	96
Dental Hypersensitivity	65	Clinical Considerations	96
Symptomatic Pulpitis	66	Follow-up Examinations and Prognosis	96
Periapical Pain	68	Pulpectomy	96
Symptomatic Apical Periodontitis	68	Indications	97
Oral and Perioral Pain of Endodontic Interest	69	Treatment Principles	97
Periodontal Diseases	69	Clinical Considerations	101
Infection of Cysts and Salivary Glands	70	Follow-up Examinations and Prognosis	102
Sinusitis	70	Further Reading	102
Temporomandibular Joint Dysfunction			
Syndrome	71	6 Treatment of Nonvital Teeth	104
Trigeminal Neuritis	72	Conservative Endodontic Treatment	105
Chronic Neurogenic Pain	73	Indications	105
Referred pain	74	Treatment Principles	105
Further Reading	74	Clinical Considerations	112
		Follow-up Examinations and Prognosis	114
4 Endodontic Examination and Diagnosis	76	Apical Periodontitis Refractory to	
History	76	Endodontic Treatment	116
Clinical Examination	76	Systemic Antibiotic Treatment	117
Percussion and Palpation Tests	76	Surgical Treatment	118
Sensitivity Tests	77	Prognosis	119

Treatment of Immature Nonvital Teeth	120	Materials with Assumed Therapeutic Effect	173
Apexification	120	Retrograde Filling Materials	175
Follow-up Examinations and Prognosis	121	Further Reading	177
Endodontic Treatment of Root-Fractured Teeth	123		
Endodontic Treatment of Endo-Perio Lesions	125	11 Endodontic Techniques	178
Surgical-Endodontic Treatment	127	Preparation for Treatment	179
Indications	127	Access Cavity	179
Asepsis	132	Rubber Dam	181
Flap Design and Surgical Access	133	Root Canal Instrumentation	183
Microbiological and Microscopic Examination	134	Step-Back Preparation	184
Resorption Lacunae and Perforation Defects	134	Apical Box Preparation	185
Apicoectomy	137	Crown Down Preparation	187
Intentional Replantation	137	Instrumentation of Curved Root Canals	188
Aftercare	138	Root Canal Obturation with Silver Points	189
Follow-up Examination and Prognosis	138	Root Canal Obturation with Gutta-Percha Points	190
Further Reading	139	The Dipping Technique	190
		Thermoplasticized Gutta-Percha Techniques	191
7 Endodontic Emergency Treatment	141	Lateral Condensation Technique	194
Emergency Treatment of Vital Teeth	141	Standardized Endodontic Technique	195
Teeth with Symptomatic Pulpitis	141	Two-Step and Other Techniques	197
Crown Fractures	142	Root Canal Obturation with Adhesive Technique	199
Dental Hypersensitivity	142	Root Canal Obturation with Pastes	200
Traumatic Occlusion	143	Regenerative Endodontics	201
Emergency Treatment of Nonvital Teeth	143	Further Reading	201
Symptomatic Apical Periodontitis	143		
Further Reading	145		
		12 Dental Morphology and Treatment Guidelines	203
8 Endodontic Aspects of Root Resorption	146	Maxillary Central Incisor	203
Internal Root Resorption	149	Treatment Guidelines	203
Cervical Root Resorption	150	Maxillary Lateral Incisor	204
External Inflammatory Root Resorption	152	Treatment Guidelines	204
Replacement Resorption	155	Maxillary Canine	205
Further Reading	156	Treatment Guidelines	205
		Maxillary First Premolar	205
9 Endodontic Instruments	158	Treatment Guidelines	206
Root Canal Instrumentation	158	Maxillary Second Premolar	206
Hand Instruments	158	Treatment Guidelines	206
Engine-Driven Instruments	161	Maxillary Molars	207
Root Canal Obturation	163	Maxillary First Molar	207
Hand Instruments	163	Maxillary Second Molar	207
Gutta-Percha Guns	163	Mesiobuccal Root of Maxillary Molars	207
Surgical Instruments	164	Distobuccal Root of Maxillary Molars	208
Further Reading	166	Palatal Root of Maxillary Molars	208
		Treatment Guidelines	208
10 Endodontic Materials	167	Maxillary Third Molar	209
Temporary Filling Materials	167	Mandibular Incisors	209
Root Canal Filling Materials	168	Treatment Guidelines	210
Core Materials	168	Mandibular Canine	210
Root Canal Sealers	171		

Treatment Guidelines	210	Root Filled Teeth with Normal Apical Periodontium	231
Mandibular First Premolar	211	Retreatment	232
Treatment Guidelines	211	Treatment-Resistant Cases	232
Mandibular Second Premolars	212	Surgical Retreatment	233
Treatment Guidelines	212	Further Reading	234
Mandibular Molars	212	15 Bleaching of Discolored Teeth	236
Mandibular First Molar	212	Discoloration of Teeth	236
Mandibular Second Molar	213	Vital Teeth	236
Mesial Root of Mandibular Molars	213	Nonvital Teeth	237
Distal Root of Mandibular Molars	213	Bleaching of Endodontically Treated Teeth	238
Treatment Guidelines	213	Preparation for Bleaching	238
Mandibular Third Molar	214	Bleaching Agents	239
Further Reading	214	Bleaching Procedures	239
13 Endodontic Complications	215	Restoration of the Bleached Tooth	240
Incomplete Analgesia	215	Bleaching of Vital Teeth	240
Access Cavity	215	Bleaching of Teeth with Enamel Defects	240
Perforations from the Pulp Chamber	216	Bleaching of Teeth with Dentin Discolorations	240
Root Perforations	217	Further Reading	241
Apical Perforations	217	16 Restoration of Endodontically Treated Teeth	242
Lateral Perforations	220	Strengthening of Endodontically Treated Teeth	242
Post Perforations	221	Intracoronar Restorations	242
Obliterated Root Canal	222	Coronar Restorations	244
Fracture of an Instrument	223	Retention of Prosthetic Appliances in Endodontically Treated Teeth	244
Adverse Reactions to Medicaments	226	Preparation of Root Canal Post Space	246
Local Tissue Irritation	226	Cementation of Root Canal Posts	246
Neurotoxic Reactions	226	Further Reading	246
Allergic Reactions	227	17 Prognosis of Endodontic Treatment	247
Overfilling of the Root Canal	227	Further Reading	249
Vertical Root Fractures	228		
Further Reading	229		
14 Endodontic Retreatment	230		
Indications for Retreatment	230		
Root Filled Teeth with Apical Periodontitis	230		