

Clinical Success

in

Endodontic Retreatment

Stéphane Simon, DCD

Former Staff Physician
Department of Dental Surgery
University of Paris 7
Paris, France

Wilhelm-Joseph Pertot, DCD

Former Assistant Professor
Lecturer
Department of Dental Surgery
University of the Mediterranean Aix-Marseille II
Marseille, France

Foreword

Jean-Pierre Proust

Q UINTESSENCE
I *nternational*



Paris, Berlin, Chicago, Tokyo, London, Milan, Barcelona,
Istanbul, São Paulo, Mumbai, Moscow, Prague, and Warsaw

Table of Contents

Foreword	5
-----------------	----------

1 Endodontic Failures and Indications for Retreatment	7
When to Retreat?	
Preoperative Considerations: To Retreat or Not to Retreat?	
Prior to Starting Retreatment	
Taking a History	
Radiographic Examination	
Conventional Retreatment or a Surgical Approach?	

2 Removal of Existing Restorations	21
Should Existing Restorations Be Removed Routinely?	
Removal of Coronal Restorations	
Removal of Restorative Material and Posts	

3 Access, Removal of Obturation Materials, and Negotiation of Canals	43
Improving Access	
Canal Anatomy and Clinical Implications	
Removal of Obturation Material	
Management of Fractured Instruments	

4 Management of Perforations	89
Factors Influencing Prognosis and Type of Treatment	
Materials Used for Perforation Repair	
Perforations in the Coronal Third	
Furcation or Strip Perforations	
Perforations of the Pulp Chamber Floor	
Perforations of the Middle and Apical Thirds of the Canal	

5 Treatment of Teeth with Open Apices	109
Immature Teeth	
Treatment by Apexogenesis	
Treatment by Apexification	
Management of Other Cases with Open Apices	
Alternative Treatment Options	

6	Prognosis and Retreatment	129
	Endodontic Disease and Its Management	
	Assessment of Periodontal Health	
	Prognosis of Endodontic Treatment and Retreatment	
	Factors that Can Interfere with Healing	
	Endodontic Surgery: An Adjunct to Treatment	

	Bibliography	140
--	---------------------	------------

	Index	141
--	--------------	------------

Foreword

It is a great honor to be asked by Wilhelm Pertot and Stéphane Simon to write the foreword for this book. I like the fact that this book is clinically relevant and addresses the challenges that we, as dentists, face on a daily basis—indications for more retreatments than pulpectomies, difficulties of managing the sequelae of trauma, and the problems associated with fractured instruments.

The practical focus of this book makes it a worthy addition to the *Clinical Success* series published under the guidance of Jean-Marie Korbendau. Having been his student in 1963 to 1964, I remember with gratitude the rigorous practical and theoretic education he provided. Each week he asked us to present a written account of our clinical experiences, and he placed as much importance on the style as on the content. Unless clearly expressed, even the most important ideas become unintelligible.

This new book is devoted to the most time-consuming phase of endodontics—retreatment. The step-by-step guide shows the clinician how to overcome obstacles such as blockages, perforations, and immature apices. In addition it details how to successfully prepare and fill canals to prevent bacterial proliferation, thereby avoiding a subsequent bacteremia with its potential complications. The persistence of bacteria in the root canal system—away from the blood vessels that constitute the police force of our immune system—makes it necessary for us to place root fillings that wall off the bacteria and prevent further spread of infection.

Every day, I apply the same techniques outlined in this book as diligently as I can. In follow-up assessment with patients treated 6 months previously, I find they have been cured of unilateral sinusitis and headaches. Cardiac patients who need treatment for a devitalized tooth but are scheduled for immediate surgery cannot afford to wait 6 months to check if the lesion is healing; I am now convinced that root canal treatment for a devitalized tooth presents no greater risk than extraction, provided that the treatment is conducted in line with the recommendations presented in this book and with the best possible disinfection procedures in place.

This book is complete yet concise and easy to consult before appointments when you realize an alternative treatment option might be simpler (eg, extraction, implant). The authors guide the clinician through routine endodontic retreatment and its myriad complications including perforations, blockages, fractured instruments, and pulpal necrosis in immature teeth.

Whether you are a practicing clinician or a student, this book will aid in professional development. It offers a wealth of information accumulated by two practitioners who have acquired enormous practical experience in the field of endodontics. They have an extensive knowledge of the literature as well as a thorough understanding of the materials involved.

I am grateful for this opportunity to thank them for the invaluable contribution they have made in helping practitioners overcome the difficulties that are, alas, all too frequently encountered in endodontic retreatment.

Jean-Pierre Proust, PU-PH

The use of a crown remover is, however, dependent on whether or not the channel through the crown has been prepared no deeper than the metal substructure. This can be difficult to gauge, as it is impossible to determine the thickness of the metal before starting the procedure.

The WAMkey (WAM) is currently the instrument of choice for removing crowns and even short-span fixed partial dentures intact (Figs 2-5a and 2-5b). Available in three sizes, the instrument is placed on the occlusal surface of the tooth and a rotating motion is used, allowing the crown to be lifted off. The design of the WAMkey tip prevents leverage forces from being applied when it is used. A window is prepared on the lateral aspect of the crown and the head of the WAMkey is inserted between the crown and the occlusal surface of the tooth; the instrument is then turned gently in a clockwise direction.



2-5a The WAMkey is available in three sizes.



2-5b Each of the three WAMkeys features the distinctively shaped tip, characteristic of the product.

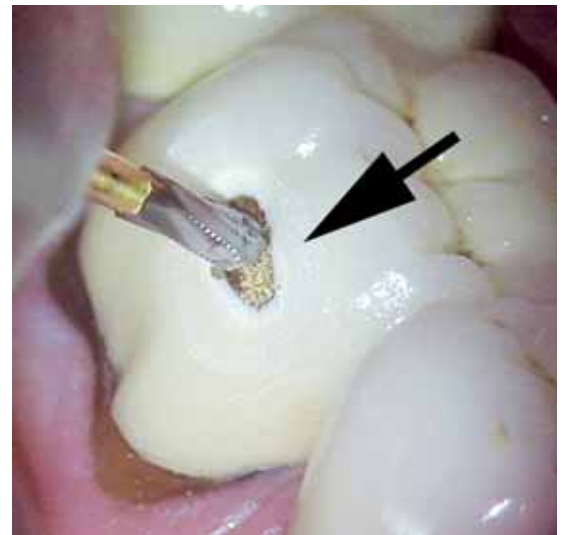
Use of the WAMkey on a porcelain-fused-to-metal crown

1. A round diamond 018 bur is used with plenty of water spray to remove porcelain from the buccal aspect of the crown (Fig 2-6a), creating a window in the porcelain. The window should be situated 2.0 mm to 2.5 mm below the buccal groove and extend depthwise until the metal substructure of the crown is just visible. It is important to use the buccal groove and not a buccal cusp as a reference point.
2. The window is then deepened and extended with a 012 transmetal bur to create a horizontal groove in the crown (Figs 2-6b and 2-6c).
3. The WAMkey #1 is inserted parallel to the occlusal surface and must penetrate through the full thickness of the crown (Fig 2-6d).
4. The instrument is rotated a quarter of a turn without forcing it and without applying any leverage. If WAMkey #1 spins with no effect, WAMkey #2 and then #3 are tried. Because of the instrument's shaped tip, rotation of the WAMkey gently lifts the crown and decementation is easily achieved (Fig 2-6e).



2-6a Porcelain is removed with a round diamond bur until the metal substructure of the crown is visible.

2-6b The margins of the cavity are bevelled (*black arrow*). The cavity is extended to create a horizontal groove in the crown that is parallel to the occlusal surface of the tooth. It is deepened to extend halfway into the tooth buccolingually.



2-6c Note the following features: (1) porcelain; (2) metal substructure of the crown; (3) amalgam core; (4) gold post.

2-6d The WAMkey is inserted into the groove in the crown and positioned parallel to the occlusal surface of the tooth.



2-6e The instrument is gently rotated a quarter of a turn and the crown lifts off easily.



Use of the WAMkey on a metal crown

The technique for removal of metal crowns is the same as that for porcelain-fused-to-metal (PFM) crowns, but gaining access is slightly different. A metal crown is not as thick as a PFM crown, so the access groove in the metal crown is prepared just 1 mm below the buccal groove with a transmetal bur.

ultrasonic instruments (Fig 3-27d). An appropriately sized tube is selected and gently introduced into the canal to prevent any damage; it should slide passively into the canal and fit over the fractured instrument. The fine, narrow walls that allow the tube to penetrate further into the root canal may otherwise fracture. In curved canals, the long part of the bevelled edge of the tube should be oriented against the outer wall of the curve. The wedge is inserted into the tube and twisted in a counterclockwise direction, thus engaging and securing the fragment by wedging it within the lumen of the tube. The tube-and-wedge assembly is then removed from the canal (Fig 3-27e), allowing root canal treatment to be continued (Fig 3-27f).

This system is difficult to use when retrieving fractured instruments; it is better suited to the removal of Lentulo spiral fillers or silver points.

Fractured Lentulo spiral fillers

As with silver points, it is imperative that the operator resist the temptation to pull on the visible portion of a Lentulo spiral filler. Tugging on the fragment without any preliminary



3-26 The IRS is designed to remove fractured instruments. Like the Masserann system, it employs a hollow tube and a wedge to insert into the tube; however, the IRS tubes are narrower and finer than those in the Masserann kit.



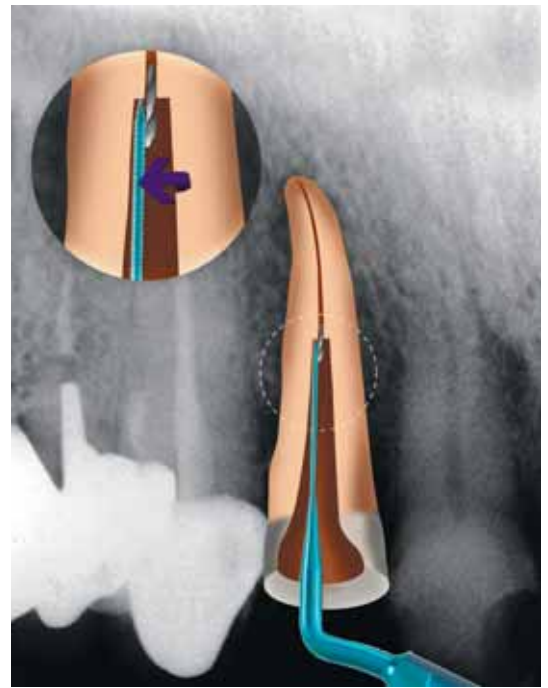
3-27a Preoperative radiograph of a maxillary lateral incisor with two fractured instruments (a barbed broach and a nickel-titanium instrument).



3-27b A Gates Glidden drill is used to widen the canal for instrumentation.



3-27c A modified (shortened) Gates Glidden drill is used to establish a ledge around the fragment.



3-27d Ultrasonic tips are used to create a gutter and free the coronal 3 mm of the fragment so it can be vibrated. In this case, vibration alone was sufficient to remove the fractured nickel-titanium instrument.



3-27e An IRS tube is selected and inserted passively into the canal until it covers the exposed coronal tip of the fractured instrument. The wedge is inserted and twisted counterclockwise; the entire assembly can then be removed from the canal.



3-27f Immediate postoperative radiograph.