

Tooth-Preserving Surgery







TOOTH-PRESERVING SURGERY

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PREFACE

Tooth-preserving surgery is probably only performed occasionally in dental practices, but it is done several times per day in oral surgery or oral and maxillofacial surgery practices and clinics. The authors have many years of experience in tooth-preserving surgery. It is an integral part of dentistry that—despite all the advances made in oral implantology—seeks to preserve teeth whenever possible. For this reason, the possibilities of tooth-preserving surgery should be considered before any dental extraction. As patients age, this often satisfies their wish to hold on to their own teeth for as long as is possible and practical.

A lot of the techniques of tooth-preserving surgery are classic methods (eg, apicoectomy, exposure and alignment of teeth, hemisection, root amputation). While many have enjoyed a renaissance in recent years (eg, tooth transplantation), many, unfortunately, are still little known (eg, intentional replantation) or even totally unknown (eg, transplantation). What these procedures all have in common is the fact that considerable knowledge about them has been gained in the past 10 to 15 years. This is evident from ever-improving techniques, higher success rates, and better predictability, which all provide great benefits for the patient.

The aim of this book is to present modern tooth-preserving surgery to expand the range of treatments offered in daily practice or to bring them up to date. This volume is not intended as a textbook but rather as an illustrated atlas and reference work. A further aim is to communicate the latest knowledge clearly to students of dentistry for the benefit of their eventual patients.

The products and medications used and recommended by the authors are listed at the end of each chapter. The references in the clinical chapters (ie, chapters 3 to 7) have been kept to a minimum to avoid redundancies with chapter 8, which presents an up-to-date analysis of the success rates and influencing factors based on the existing literature.

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Over 20 years ago, as a young assistant dental surgeon, I had the opportunity of contributing to the second edition of *Atlas der Chirurgischen Zahnerhaltung* or *Atlas of Surgical Tooth Preservation* (Hanser Fachbuch, 1996) under Professor Horst Kirschner. This experience and related activities made an enormous impression on me, with the result that this subject area has always been a focal point in my clinical work.

A great deal has changed in the field of tooth-preserving surgery in the 20 years since we created the original atlas, such as materials used, terminology, and indications. For example, in the 1990s, amalgam and even gold were commonly used for fillings (Fig 1-1); these have since been replaced with hydraulic silicate cements. Different types of tooth plantation were referred to as auto-, auto-allo-, and alloplastic. Orthograde and retrograde post insertion methods (Figs 1-2 and 1-3) are rarely used today; not only do they require a steep learning curve, but advances in endodontics have rendered them less necessary. Other changes include the type of incisions (eg, abscess incision on the alveolar process or apicoectomy), intraoperative medication such as enamel matrix proteins, splinting techniques (Fig 1-4), and much more.

Despite the great advances made in oral implantology in the past 20 years, tooth-preserving surgery has never lost its importance. The reasons for this are many and varied. One example would be for young patients whose jaws are still growing; proper periodontal healing may not be possible with implants (Figs 1-5 and 1-6). This can impede eventual orthodontic treatment in adults and may be responsible for peri-implantitis. In addition, many patients prefer to keep their own teeth for as long as

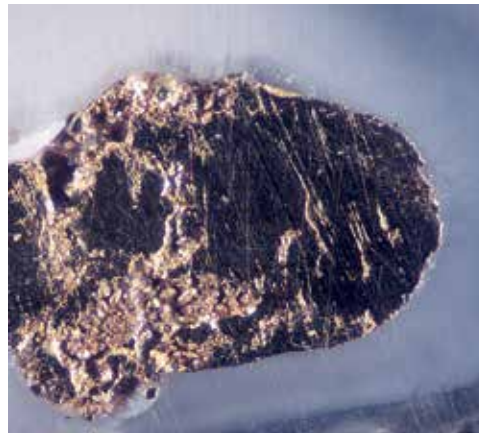


Fig 1-1 Retrograde cohesive gold filling in an extracted tooth.

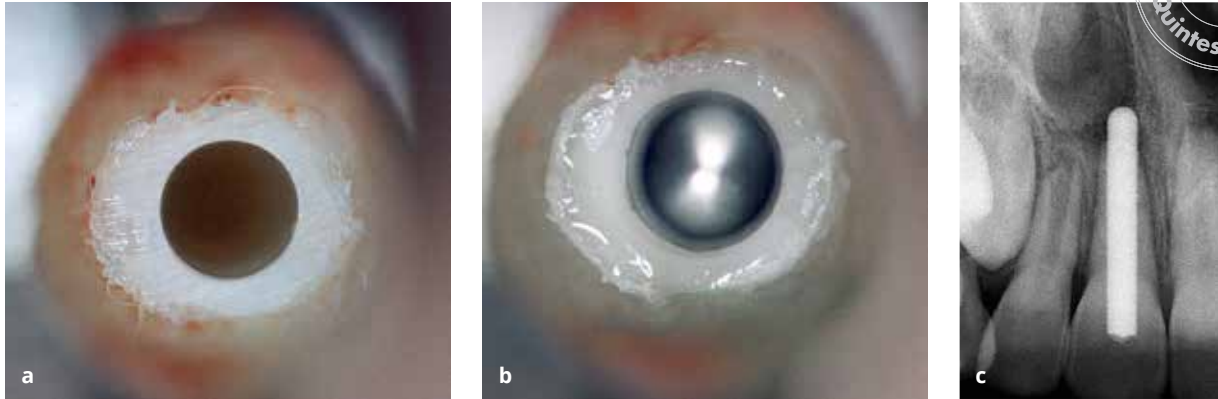


Fig 1-2 Retrograde post insertion. (a) Situation after wide-lumen rotary preparation. (b) Sealer fixation of a smooth cylindrical titanium post. (c) Resulting radiograph.

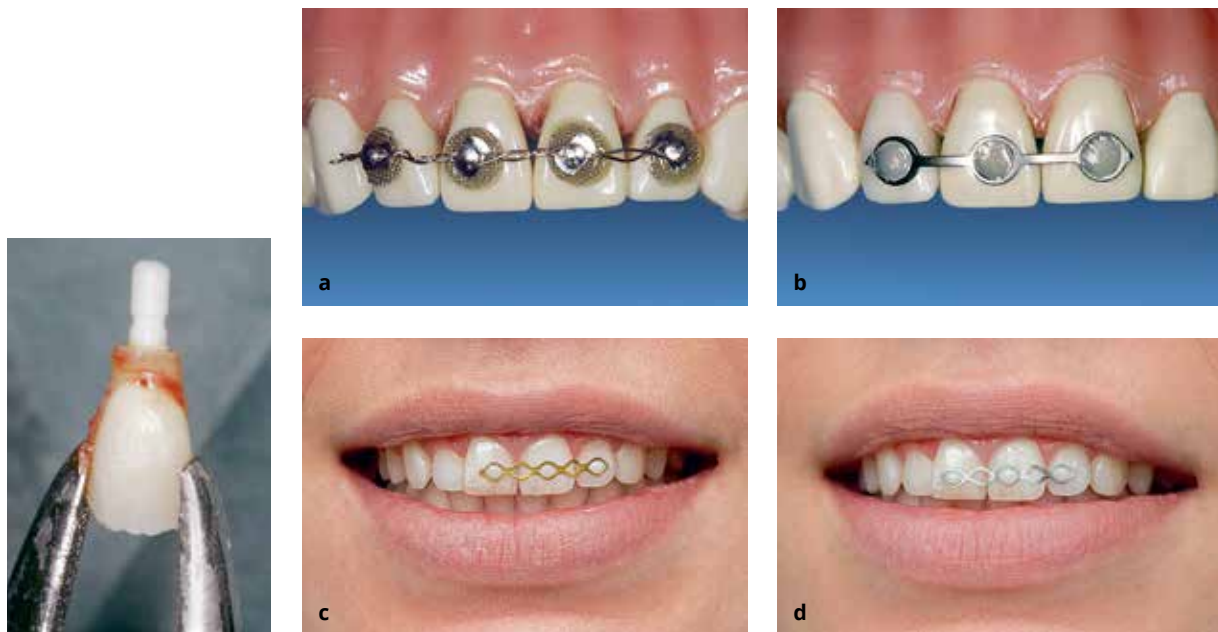


Fig 1-3 Before the introduction of titanium posts, ceramic posts were used.

Fig 1-4 (a) Old wire and bracket splint. (b) Nonphysiologic rigid bonded ring splint. (c) Modern Titanium Trauma Splint (TTS; Medartis). (d) Since 2017, the TTS has also been available in a far less conspicuous silver color.

possible. The risk of implant treatment for patients taking certain medications may be too great. There are also financial considerations—implants may be too expensive for many patients.

Tooth-preserving surgery has also developed considerably over the years, and its current success rates need not be overshadowed by those of oral implantology. Tooth-preserving surgery is not only more convenient; it is a far more natural, biologic therapy that more closely fulfills the wishes of many patients who prefer to keep their



Fig 1-5 Clinically progressing infraposition 7 years after implant placement at the right central incisor, which was done far too early at the age of 25 years.



Fig 1-6 Clinically progressing infraposition 14 years after implant placement at the left central incisor. This patient also had the implant placed at age 25, which was too early.



Fig 1-7 Advanced invasive cervical resorption. (a) Maxillary left first molar. (b) Mandibular right first molar. (c) Mandibular left canine.



Fig 1-8 Root caries and marginal periodontitis with furcation involvement at a maxillary left first molar.



Fig 1-9 Longitudinal fracture at a maxillary left first premolar.



Fig 1-10 Advanced traumatic root resorption at a maxillary left central incisor.

own teeth rather than have a foreign body surgically inserted. Natural teeth have far better long-term prognoses than implants, provided the tooth has a vital pulp (which primarily applies to transplantation of teeth, orthodontic space closure, and exposure and orthodontic alignment).

However, this does not mean tooth-preserving surgery is advisable in every case—it is not even possible in every case. Tooth preservation is usually not appropriate by the time any of the following have occurred (Figs 1-7 to 1-10):



- Extensive root caries
- Advanced root resorption (eg, invasive cervical resorption, replacement resorption, resorption due to infection)
- “Final” marginal periodontitis
- Deep crown and root or longitudinal fractures

The indications for tooth extraction are much stronger (and options for tooth preservation limited) in the presence of general medical problems, such as planned heart valve replacement, necessary antiresorptive therapies (eg, bisphosphonates, denosumab), immunosuppression, radiotherapy in the head and neck area, and serious psychiatric or degenerative central nervous system diseases such as dementia. Depending on the individual case, teeth that may need to be removed include teeth with periodontal furcations that are not already loose, teeth with apical periodontitis, teeth with untreated pulpal necrosis, or partially impacted teeth. In these situations, other options such as apicoectomy, intentional replantation, transplantation, transreplantation, or exposure and alignment may not even be considered.

For many patients, however, both options may be considered or at least discussed: (1) tooth-preserving surgery or (2) dental extraction followed by the placement of a tooth-, implant- or mucosa-supported prosthesis. Additional factors that will play a role include local anatomical factors, the visibility of the teeth when smiling, the situation of the adjacent teeth, and the residual dentition as well as patient compliance or treatability.

Unfortunately, this discussion for or against tooth preservation is also influenced by the attending dentist. Many of the options in tooth-preserving surgery, such as transreplantation, are unfamiliar to many dentists. They may not be performed in the dental practice or even in other local oral surgery practices. In that situation, well-informed and motivated patients must often travel long distances to specialist centers, which is a shame. This book is intended to inform dental surgeons about the current possibilities of tooth-preserving surgery and encourage them to offer these treatment options to their patients.

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