

# **Prosthodontic treatment for partially edentulous patients**

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Edited by

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# Prosthodontic treatment for partially edentulous patients

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*with 1458 illustrations*

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To international prosthodontic cooperation.  
May it continue to expand.

# PREFACE

This is an ambitious book. We believe that the treatment of the partially edentulous patient is, conceptually, a subject that begs to be unified, and we were bold enough to try to do it. As clinical educators we have suffered from the fact that the teaching on partial edentulism is fragmented and departmentalized in too many dental schools. As practitioners, we have seen treatment prescribed on the basis of fondly held generalizations that are closer to bigotry than to science. There exists an ever present danger in clinical dentistry that with the growth of specialization we may lose our vision of the patient as a whole. Hence, our conviction that the subject deserves a comprehensive exposition based, insofar as is possible at this time, on sound research intelligently interpreted or, where research evidence is not available, on rational hypotheses that have been applied clinically over prolonged periods of time by many practitioners in many parts of the world. Experts from several centers have contributed to this effort to fulfill the objective and to balance our views, which may at times be subjective and may not always command general assent.

To the extent the book succeeds, credit goes to our contributors (and to those

upon whose shoulders they stand). They have displayed not only expertise, but also an exceptional understanding of our needs to collate and dovetail and reword and reposition their material. They have been amazingly resilient and self-effacing. To them and to their spirit this book is dedicated.

We also owe an enormous debt to our many friends, teachers, and colleagues whose ideas we have absorbed in discussion or in reading and whose thoughts have so become a part of ourselves that we are no longer sure what is theirs and what is our own. We must content ourselves with expressing gratitude to them in general terms and ask them to forgive the omission of detailed references to their works. We are also indebted to our families for their unfailing support and to Heather Beadle for her untiring skill and patience in every phase of the preparation of the book. The efforts of the several dental photographers and illustrators, especially Margaret Hearn and Steve Burany, whose work is reproduced in this text are appreciated.

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**SECTION ONE**

**The partially edentulous milieu**



## CHAPTER 1

# Introduction

Dentists have been very successful in treating patients with depleted, or partial, natural dentitions. Such prosthodontic treatment is usually prescribed for functional as well as cosmetic purposes, although the patient's motivating force in seeking treatment is most often cosmetic. The past two decades have been noteworthy for the growing awareness that the preservation of function is best served by the conservation and protection of the natural dentition whenever possible. Advances in clinical dentistry have made it possible for more and more patients to minimize tooth loss and its cosmetically detrimental and dysfunctional consequences. Dentists are painfully aware of the mutilating effects of tooth loss as well as those of supporting or alveolar bone loss. Alveolar bone forms part of the facial skeleton, and its loss is irrevocable. This recognition characterizes the modern dentist's preoccupation with the preservation of oral tissues. There are several features, however, that must be emphasized at this point.

1. There exists a dearth of biologic information about the significance of the partially edentulous state.
2. Dentists have successfully treated patients in such a state using a variety of empirical clinical and laboratory techniques and materials. These treatment methods have rarely been based on well-documented longitudinal studies.
3. Prosthodontic treatment will almost invariably elicit a biologic price from the oral milieu in which it is placed.

4. Functional and cosmetic restoration also involves assisting the patient in the management of his oral disability.

It is the objective of this text to provide the reader with a keener insight into the effects of the partially edentulous state and to describe its clinical management.

Partial or complete tooth loss is almost invariably the result of disease of the tooth tissues per se (dental caries), or disease of the supporting tissues (periodontal disease). Both diseases have a long history, and their ultimate effects have become increasingly noticeable. The incidence of complete edentulism in several Western countries reflects the rather staggering public need for prosthetic replacement therapy. We can only speculate on the incidence of partial edentulism, but evidence supports the conviction that partial destruction of the dentition and supporting tissue is even more prevalent than complete destruction.

Few dentists doubt that dental disease is increasing and that this increase appears to have paralleled the development of Western civilization. For example, studies of cadaver skulls found in Britain demonstrated that the incidence of interproximal caries increased from the seventeenth century on. Prior to that time caries had occurred primarily on occlusal surfaces. The noted increase in caries coincided with a dietary change that occurred in England about that time. The change involved an increased consumption of refined sugar and flour (Moore and Corbett, 1975).



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Dental plaque has been widely cited as being the main etiologic factor in caries and gingivitis. And the relationship between diet, plaque development, and the patient's inability to control the latter, has been shown to account for tooth loss and its attendant sequelae.

The effectiveness of frequent professional cleaning of the teeth, coupled with good personal oral hygiene, in prevention of caries and gingivitis has been well documented (Lindhe and associates, 1975).

Also, fluoride, through ingestion or topical application, is a very effective means of curtailing caries activity. There is little doubt that a great deal of information is available to both the dental profession and the public, which if put into practice could produce a marked improvement in dental health. The obvious deterrent to implementing such programs nationwide is a logistic one. The number of dental health personnel is remarkably lacking when examined in the context of the last two centuries' increase in life span and the increase in population. In fact, recent evidence (Carlos, 1974) indicates that existing dental services can provide only a fraction of the dental treatment needed, and the cost of treating dental caries is beyond the economic resources of any country.

Furthermore, periodontal disease remains a major cause of tooth loss. Evidence from clinical practice and from planned studies indicates that the technical skill and effort, plus the time and perseverance needed to maintain a high standard of oral cleanliness, are beyond the ability of the average person (Terkla, 1976). The partially edentulous predicament is likely to continue to increase over the next several decades, and the high priority for its treatment must be recurrently emphasized. In this context, the

importance of restorative or prosthodontic therapy remains paramount. The clinical skills and judgment involved in treating the depleted masticatory system are among the most difficult to acquire and to perform in the health services. The treatment of partial edentulism and its sequelae is probably the most challenging, and ultimately the most gratifying, phase of clinical dentistry. Developments in clinical dentistry have provided the dentist with expanded knowledge and skills, and on the therapeutic side, the greater concern with pediatric dentistry, the introduction of earlier and improved operative and prosthodontic treatment, and the effectiveness of modern endodontic and periodontal therapy have dramatically modified the myth that tooth loss inevitably accompanies old age. These same therapeutic modalities are also applied to those individuals who, by virtue of earlier neglect, present for treatment with depleted or broken-down dentitions, determined to avoid wearing complete dentures. These patients can frequently have their masticatory systems restored to about normal without having to consider the prosthodontic intervention a mere interim postponement of the edentulous state.

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