1. / < ~



IN THE NAME OF ALLAH
THE MERCIFUL AND THE MOST GRACIOUS

			5	

617.692 H.M.

$P_{ m RINCIPLES}$ OF $C_{ m OMPLETE}$ $D_{ m ENTURE}$ $P_{ m ROSTHODONTICS}$

Dr. Moustafa A.M. Hassaballa, BDS, MScD

Associate Professor
Department of Prosthetic Dental Sciences
College of Dentistry
King Saud University

Dr. Yousef F. Talic, BDS, MScD

Associate Professor
Department of Prosthetic Dental Sciences
College of Dentistry
King Saud University



© King Saud University, 2004

King Fahad National Library Cataloging-in-Publication Data

Hassballa, Moustafa A.

Principles of complete denture prosthodontics / Moustafa A. Hassaballa; Yousef F. Talic, - Riyadh 276 pp. 21 x 28 cm

1. Dentures 2. Prosthodontics i -Yousef F Talic (co. author) ii- Title

617.692 dc 1425/7144

Legal Deposit No. 1425/7144 ISBN: 9960-37-779-2

This book has been referred by a specialized committee appointed by the Academic Council of the University. After examining the reports of the referees, the Council authorized its publication in its 16th session of the academic year A.H. 1424/1425, which was convened on 21-02-1425 H. (11-04-2004).



This book is not intended to replace conventional prosthodontic texts, but to supplement them. We have attempted to present a selection of methods and techniques involved in the construction of complete dentures, which are meant to serve as an introduction to the subject. Their application should not be an empty mechanical exercise, but must be based on an understanding of the fundamental principles involved. We hope that the descriptions and illustrations will prove useful to students, dentists, dental assistants as an aid for improving existing skills and adding new ones.

We owe an enormous debt to our teachers and colleagues in the Department of Prosthetic Dental Sciences for their support, help and suggestion of some valuable ideas. We are also

indebted to our wonderful wives, Mrs. Karima Shaheen and Mrs. Nadwa Shabib for their unfailing support and continuous encouragement. The efforts of the several dental photographers and illustrators especially Mr. Ponciano Padilla, and Mr. Rolly Abanto, whose work is reproduced in this text are appreciated. Our thanks also go to Mr. Arturo Malabuyo, Mr. Romeo Fortifaes, and Mr. Osman Mohammad (Dental Technicians) for their meticulous work and assistance in performing some of the laboratory procedures included in this book. We would like to express our deep gratitude to our secretaries. Ms. Vilma S. Dizon and Ms. Liza Grace G. Dawal for their care in preparing and organizing the manuscript and patience throughout this difficult task with all its many alterations and revisions.

> Moustafa A. Hassaballa Yousef F. Talic



CHAPTER 1: Introduction to prosthodontics

Changes associated with loss of teeth, 6 Objectives of complete denture prosthodontics, 8 Limitations of complete dentures, 11 Synopsis of clinical and laboratory procedures in the fabrication of complete denture, 11

CHAPTER 2: Anatomy of the mouth in relation to complete dentures

Anatomical landmarks, 17 Denture support, 25 Denture retention, 29 Denture stability, 32

CHAPTER 3: Diagnosis and treatment planning

Dental history, 34 Clinical examination, 37 Radiographic examination, 44

CHAPTER 4: Complete denture impressions

Objectives, 47
Preliminary impressions, 50
Impression trays, 51
Pouring the primary impression and trimming the study cast, 57

CHAPTER 5: Fabrication of custom trays and making final impressions

Requirements for custom impression trays, 65 Advantages of custom impression trays, 66 Custom impression tray materials, 67 Final (secondary) impression, 77 Border molding, 78

CHAPTER 6: Boxing and pouring final impressions

Advantages of boxing, 81 Wax boxing method, 81 Plaster-pumice boxing method, 83 Separation of the impression and master cast, 85 Trimming the master casts, 85

CHAPTER 7: Record bases and occlusion rims

Properties of an ideal denture base material, 87
Temporary denture bases, 89, 90
Criteria of record bases, 89
Permanent denture bases, 89, 96
Occlusion rims, 105
Marking the master casts, 106
Principles of occlusion rim design, 108

CHAPTER 8: Mandibular movements and recording of the maxillomandibular relations

Mandibular movements, 111

Maxillomandibular relationships, 114

Vertical jaw relation, 115

Vertical dimension of rest position, 115

Vertical dimension of occlusion, 115

Interocclusal distance
(freeway space), 115

Horizontal jaw relation, 116

Centric relation, 116

Ridge relationships, 117

Summary of the clinical procedures of recording maxillomandibular relationship, 118

CHAPTER 9: Articulators and face-bows

Uses of an articulator, 123 Requirements of an articulator, 123 Classification of articulators, 123 Hanau H2 articulator, 127 Face-bows, 130

CHAPTER 10: Selection of teeth

Selection of the anterior teeth, 133
Dentogenic concept in selecting artificial teeth, 137
Selection of the posterior teeth, 138
Selection of the occlusal form of the posterior teeth, 141
Materials of the posterior teeth, 141

CHAPTER 11: Mounting the casts on the articulator

Objectives of the mounting procedure, 143
Articulator preparation, 143
Preparation of the casts, 144
Face-bow / ear bow transfer and mounting the maxillary cast on the articulator, 145
Mounting the mandibular cast, 147
Adjusting the horizontal condylar guidance, 148

CHAPTER 12: Occlusion in complete dentures

Balanced occlusion, 151
Factors that affect occlusal balance, 153
Arranging non-anatomic teeth for balanced occlusion, 158
Neutrocentric occlusion, 158
Lingualized occlusion, 160

CHAPTER 13: Arrangement of teeth

Arrangement of the anterior teeth, 165 Inclinations of the anterior teeth, 168 Maxillary anterior teeth, 168 Mandibular anterior teeth, 170 General principles of anterior teeth arrangement, 170 Gum-fitting, 173 Arrangement of posterior teeth, 173 Neutral zone, 175 Axial inclinations of maxillary posterior teeth, 177 Arrangement of mandibular posterior teeth, 178 Axial inclinations of the mandibular posterior teeth, 180 Arrangement of teeth in bilateral balanced occlusion using a lingualized occlusal scheme, 182 Arrangement of teeth for abnormal jaw relationships, 184 Occlusion for the class II jaw relations patient, 184 Occlusion for the class III jaw relations patient, 186 Arranging teeth in cross-bite relationships, 188 Arrangement of non-anatomic teeth in monoplane occlusion, 188

CHAPTER 14: Waxing and processing the dentures

Complete denture wax-up, 193 Objectives of waxing-up, 193 Stippling the waxed dentures, 197
Flasking complete dentures, 199
Preparation of dentures for flasking, 200
Flasking procedure, 202
Alternate flasking procedure, 203
Wax elimination, 205
Application of separating medium, 207
Packing the mold, 208
Complete dentures with clear palate, 212
Processing of dentures, 213
Structural defects of acrylic resin, 213

CHAPTER 15: Deflasking and denture remounting

Deflasking, 215
Laboratory remounting, 218
Clinical remounting, 224
Recovering the denture from the cast, 225
Finishing and polishing the complete denture, 226
Preparation of remounting casts, 229

CHAPTER 16: Relining and rebasing of complete dentures

Indications for relining and rebasing, 233
Contraindications, 234
Static impression technique, 235
Functional impression technique, 236
Laboratory procedures, 236
Flask method, 236
Hooper duplicator or articulator method, 237
Relining or rebasing of denture using a layered silicone rubber mold, 239
The chairside reline, 240

CHAPTER 17: Denture duplication

Indications for denture duplication, 243 Tray method, 243 Modified denture flask method, 244 Making a denture replica during its initial fabrication, 247

CHAPTER 18: Denture repairs

Causes of fracture of the dentures, 249 Types of repairs, 245