Osseointegration and Multidisciplinary Treatment

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Dedication

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This book is dedicated to my father Sebastião (*in memorian*) and my mother Milthes, to my wife Ana Luiza, and to my children Carlos Eduardo, Ana Carolina and Fabrício, who allowed me to sacrifice much of our family activities and devote myself to Dentistry and patients.

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Introduction to Osseointegrated Oral Rehabilitation

The edentulous patient is an oral invalid, a condition similar to the defect situation after amputation of any other part of the body.

Accordingly, it is imperative to respect the functional consequences of loss of teeth and provide not only anatomical substitutes, but also respect the necessity of restoring incorporation of the prosthetic replacement within the physical and psychological function of the patient. Thus, whereas the articulator could be an important tool for somatic restoration of a third dentition it is equally decisive to provide cognitive perception so that the neuromuscular harmony of maxillo-facial function is provided.

This is where Osseointegration can make an important contribution to the final result of rehabilitation.

A carefully planned and multidisciplinary based therapeutic protocol, interacting with the patients expectations and realities, is strongly motivated. The provision of a third dentition is expected to last a lifetime. Unprejudiced consultation between clinical disciplines, – all the time with the patient's comments and consent – is a prerequisite for a predictable prognosis whatever methods are finally chosen.

It is imperative, that the clinical procedures are provided by clinicians with adequate experience, not only of routine techniques, but particularly with knowledge of alternative solutions, if the preoperative planning can not be realized in some decisive aspects when the actual anatomy is exposed.

It is equally crucial to be able to discuss selection of interactive alternatives between surgery and prosthetics before a final decision is made – remembering that it could have a decisive influence on the quality of life for the patient.

Another aspect is the ambition of using procedures which expose the patient to minimal surgery as

well as individualized harmonious occlusion, carefully and successively adjusted over time, as the directly bone anchored teeth are being recognized by the multicapabel brain via osseoperception.

The neurophysiological function of how dynamic load is transferred from a rigid metallic body – a fixture – to a much less rigid bone tissue, remodelled to the specific situation, is still incompletely understood.

However, parallel studies on amputated limbs with Osseointegrated prostheses, provide important additional information on how to adjust anchorage and prosthetics to optimize function.

In the future, advanced neuro physiological analytical methods will be available to understand how to secure undisturbed function in a situation, that was not genetically intended.

Even now, decisive factors can be identified by listening to the patient and talking to experienced colleagues.

Parafunctional situations require individual analysis – including psychological considerations – of how to adjust the anatomy of the third dentition with respect to transfer of load across the interface between maxilla and mandible, but also between fixture and bone at different levels of dimension.

Prestige and prejudice are certainly counterproductive, particularly since we are still in a very early phase of identifying choice of safe and optimal surgical methods for the individual patient and reliable, affordable prosthetic devices, with the option of future adaptation to possible changes in maxillofacial topography and function.

In close cooperation between basic and clinical disciplines there is a strong indication and motivation – also related to cost of treatment – to simplify procedures within obvious respect for the safetly of the patient.

Consequences – good or bad – of minor or major alternations – in hardware or software in clinical systems should be openly documented and reported after adequate time of relevant observation in consecutive series of patients.

The final advice to the patient should be based on respect for the basic philosophy in health care, that less is more and that re-establishing quality of life for the edentulous patient is not necessarily requiring the most sophisticated scientific clinical procedures but instead giving priority to what is safe, simple and predictable. Long term documented clinical function without negative effects should be the decisive intention for selection of the restorative procedure.

In many cases careful exploration of the anatomy of available local bone for anchorage of the necessary dimensions and adequate numbers of fixtures will reveal opportunities for anchorage without resorting to grafting of bone tissue or other major surgical procedures.

Careful detailed radiographic diagnosis of the 3-dimensionally defect jaw bone topography is

always required, and collaboration with diagnostic radiology is a prerequisite for unprejudiced selection of minimalistic surgical procedures and precision, harmonious prosthetics for the benefit of the patient.

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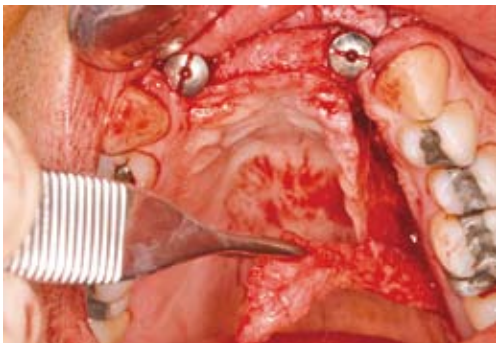

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Fig. 6-20. Final aspect of implant-supported prosthesis. Observe the interaction between ceramic crowns, gingival tissue and implants.

Periodontal phenotype (biotype)

Basically, there are two periodontal biotypes, thin-scalloped and thick-flat, accounting for 15% and 85% of the population, respectively. According to Kois,[38] the thicker the tissue, the more it can withstands trauma and recession; on the other hand, pocket formation and junction epithelium migration are facilitated. Thinner tissues are more prone to tearing and recession; thus, papillae are lost after surgical procedure.

The tooth shape determines the height and width of interproximal gingival tissues. Square teeth have a broader contact area and black triangles rarely occur. Tapered tooth forms show more incisal contact points. Thus, soft tissue that fulfills embrasure area is considerable. There is a great chance of black triangles after flap surgery. Usually, triangular teeth show more amplitude for interdental bone crest. However, the difference between labial contours and interdental bone crest drives the implant more apically.[60] In these cases, implant designs with anatomic platforms must be used.

Esthetics – smile line

The analysis of the height of the smile line is very important. A high lip line (exposing teeth cer-