

# Basal Implantology

Gérard M. Scortecci  
*Editor*

 Springer

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## Foreword

Basal implantology is both an art and a science. Restoration of the lost dental organ must adequately fulfill the esthetic, phonetic, and functional requirements of the patient and last in a state immune to disease. Multidisciplinary research and clinical trials have played an essential role in the development of state-of-the-art implant systems that satisfy both professional needs and the public's demand for safe, effective therapy that is both affordable and as rapid as possible.

It has been our endeavor to present a sound application of proven principles, placing emphasis on the importance of familiarity with the biological, mechanical, and prosthetic aspects of basal implants and their supporting structures as revealed by analysis of more than three decades of clinical studies, research projects, and experimental investigations.

This manual is a guide to the practical application of biological and mechanical principles in the everyday practice of basal implantology and osseointegration (BIO concept), from single tooth replacements to full arch reconstructions. In particular, it provides an introduction to techniques to improve the future implant bed by activating the patient's own stem cells (application of bone matrix osseotensors several weeks before implant installation) and multicortical osseointegration obtained using specially designed maxillo-mandibular basal Diskimplants®. Used by leading restorative implantologists for more than 30 years, these well-established treatment modalities offer patients an attractive alternative to more invasive procedures. In desperate clinical situations, basal implantology can represent the last chance for an oral invalid to have fixed teeth once again and thus be able to pursue normal personal, professional, and social activities. However, basal implantology is also indicated in less complex cases. For partially edentulous patients with little available bone, laterally inserted Diskimplants® represent a safe and rapid solution. The same is true for patients reluctant to undergo a bone graft procedure when bone anatomy is too shallow or too thin to receive a root-form implant.

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## Preface

Basal implantology has undergone tremendous growth in recent years correlated with multiple innovations, including the flat implant emergence profile, screw-secured plate-form Diskimplants®, micro-threaded tubero-ptyergoid Fractal® implants, and bone matrix osseotensors. CAD/CAM technologies, 3D treatment planning, and digital workflow processes have all contributed to this progression.

As applied sciences, medicine and dentistry are a training ground. Regardless of the implant system selected, the clinician must be prepared both technically and psychologically to manage potential complications and failures. Unexpected reactions or events can occur at any time and surprise even the most experienced teams using the most reliable systems. Hands-on courses and training with mentors are thus essential to develop skill in this particular field.

Of course, more important than the brand of implant is the ability of the professional to make the correct diagnosis and establish an appropriate treatment plan, paying attention to anticipation of potential problems. This may even mean deciding not to use implantology at all. When implants are indicated, patients must be followed up over the long term so that any necessary preventive and curative actions can be taken. While this is no absolute guarantee against failure, it reduces the potential severity and consequences. Should a problem arise, effective solutions exist. For example, screw-retained prostheses on basal implants are easily retrieved. This facilitates verification of individual implants and makes correction of problems easier and less expensive.

Today, all well-trained surgical and prosthodontic teams can incorporate basal implantology in their implant practice to successfully perform oral rehabilitation without more invasive procedures. This book is written to help professionals in this way.

Having followed these simple rules over so many years, I can say that I still enjoy practicing basal implantology as it allows so many oral invalids to once again benefit from fixed teeth.

Nice, France

G rard M. Scortecchi

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**Part I**

**Fundamental Basis**



# Principles of Basal Implantology

# 1

G rard M. Scortecchi, Carl E. Misch, and Guillaume Odin

## 1.1 Definition of Basal Implantology: Dynamic Dental Implant Classification

Endosseous dental implants can be categorized according to their shape, surface characteristics, chemical composition, or the manner in which they are inserted into the jaw. Based on their dynamic mode of insertion, all dental implant systems can be divided into one of two categories (Fig. 1.1):

### **Axially Inserted Crestal Dental Implants (Root-Forms, Blades, Mini-pins, etc.)**

Osteotomy is initiated on the crest of the jaw and proceeds axially (downward in the mandible, upward in the maxilla). The one exception is staple implants. This category includes blades (vertical platform dental implants) and root-form dental implants such as screws and cylinders. The crestal approach allows the surgeon to insert the implant perpendicular to the crest or tilted, i.e., angulated with respect to the bone crest.

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## Laterally Inserted Basal Dental Implants (Diskimplants®)

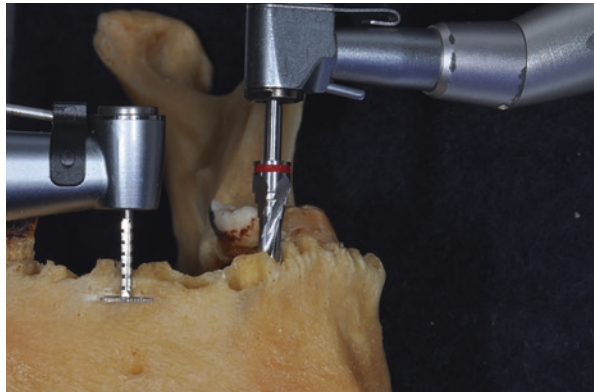
(Figs. 1.2, 1.3, and 1.4)

Osteotomy is initiated apically on the basal bone of the buccal or lingual/palatal aspect of the jaw. The entire procedure is performed laterally, at the same initial depth. This category covers all types of Diskimplants® and their clones (cf. “Disk implant,” ICOI glossary, 2017).

### Basal Implantology

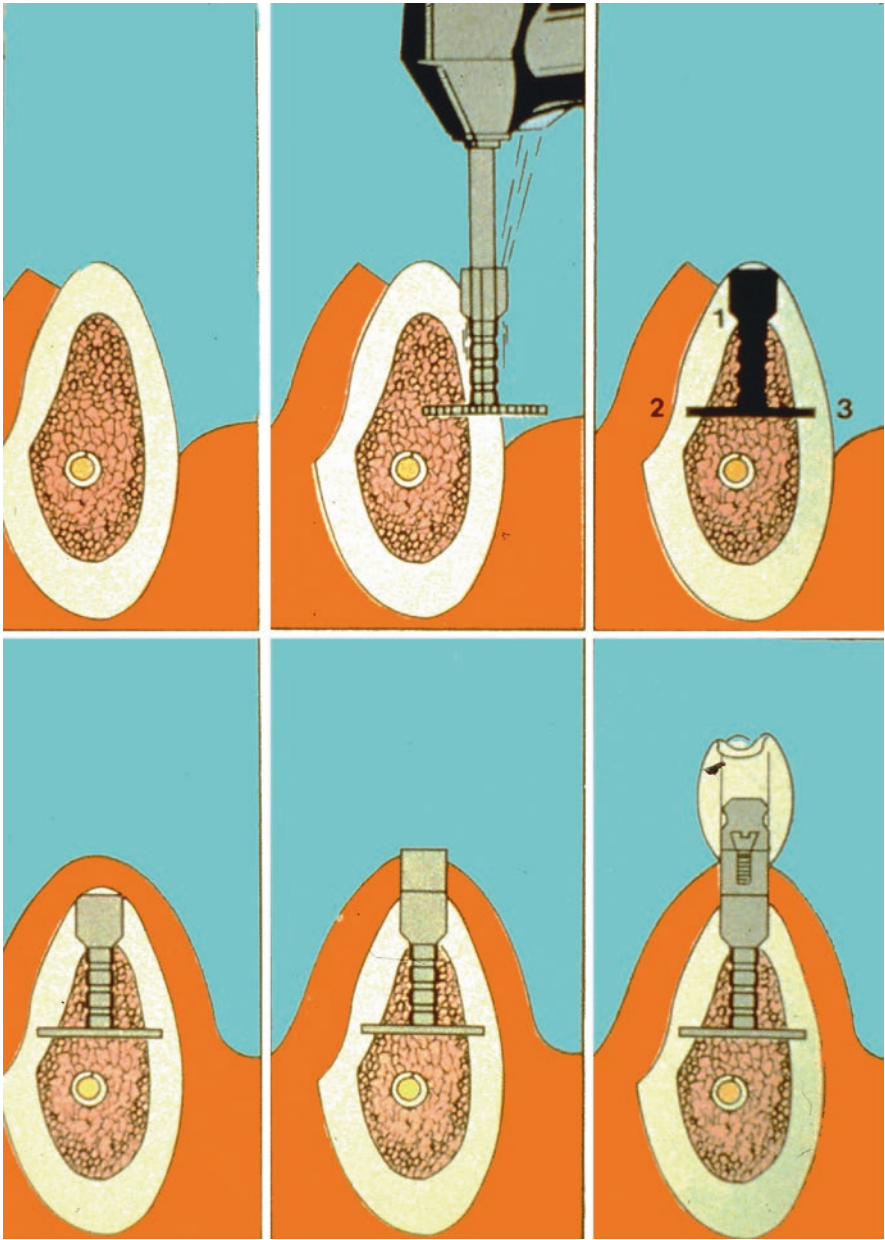
This term refers to the lateral insertion of disk-form implants into basal bone and, more generally, to the anchorage of implants in basal bone (e.g., root-form implants placed in the zygomatic and/or pterygoid process). The range of designs (single-, double-, and triple-disk implants, horizontal plate-form implants secured with osteosynthesis screws, etc.) allows management of the diversity of anatomic situations and bone qualities.

**Fig. 1.1** Lateral osteotomy (basal implants) and crestal osteotomy (axial implants)



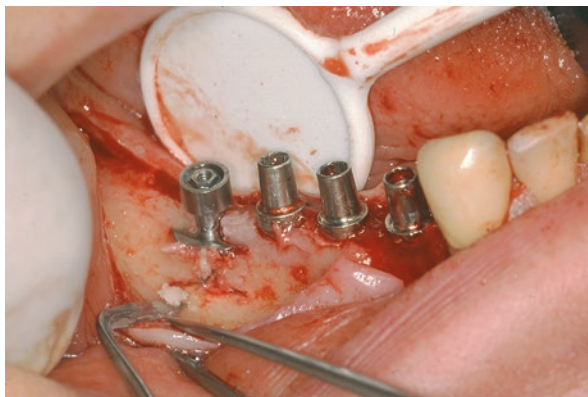
**Fig. 1.2** Basal Diskimplant® inserted laterally above the mandibular canal





**Fig. 1.3** Lateral osteotomy with a titanium cutter; full-thickness flap procedure (submerged protocol; waiting period 4–6 months)

**Fig. 1.4** Three root-form implants and one laterally inserted double Diskimplant® (7G2-DDM5) were installed to replace the two missing lower right molars and the missing lower right premolar (immediate loading protocol). The lateral osteotomy was filled in with autologous bone chips from the axial drilling procedure for the root-form implants



## Diskimplants®

These laterally inserted basal dental implants are installed such that their wide apical base extends from the buccal cortical plate to the lingual or palatal cortical plate. The Diskimplant® design combines a horizontal platform (similar to blade implants) and a perpendicular cylindrical shaft (equivalent to a root-form dental implant). A specific titanium instrument, called a cutter, is utilized to prepare the “T-shaped” osteotomy. This unique tool “cuts” the bone horizontally and vertically at the same time. Diskimplants® were first presented at the International Congress of Oral Implantology in Munich, Germany on June 13, 1984. The BIO concept (Basal Implants and Osseointegration) was internationally developed at the First European BIO Forum in Paris on Nov. 29, 2001. Over the years, Diskimplants® have undergone various modifications (external threaded shaft, external hexagon, internal thread, Monobloc flat emergence profile, etc.). However, three features have remained unchanged: one-piece fabrication from titanium bars (i.e., true even for the large horizontal plate-form Diskimplants®), a non-modified surface machined *ad modum Brånemark*, and use of one-piece T-shaped titanium cutters for lateral osteotomy.

## 1.2 Objectives of Basal Implantology

The main objective of basal implantology is restoration of the vital function and characteristic beauty of the masticatory apparatus in difficult or extremely difficult anatomic situations using a minimally invasive procedure based on rational application of biologic, anatomic, physiologic, and mechanical principles with respect of hygiene and esthetic requirements. Straightforward basal implant techniques are generally preferable to invasive high-risk procedures involving long waiting periods. A “root-form implant only” approach, for example, may require prior modification of the bone anatomy using grafting procedures before implant placement is feasible.

As oral implantology is not an emergency procedure, the only candidates for this prosthetically driven technique procedure are physically and mentally fit