Chapter X
A New System in Guided Surgery: The Flatguide™ System

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ABSTRACT

In this chapter the authors describe a new system for guided surgery in implantology. The aim of this system is to have a “user friendly” computerized instrument for the oral surgeon during implant planning and to have the dental lab included in the decisional process. This system gives him the possibility to reproduce the exact position of the implants on a stone model; the dental technician can create surgical guides and provisional prosthesis for a possible immediate loading of the implants. Another objective of this system is to reduce the economic cost of surgical stents; in such a way it can be applied as a routine by the surgeon.

INTRODUCTION

In this chapter the authors present a new system of implant planning dedicated to guided surgery. They will explain the details of a process that leads from the elaboration of the digital data of a maxillary CT to the creation of surgical stents and provisional prosthesis.

They will try to organize the steps leading to a correct planning of the case and its realization from the surgical and prosthetical point of view.
Setting up the treatment plan.
Creation of the Flatguide™ diagnostic stent.
Acquisition of the digital CT.
OneScan Software 3D phase.
Flatguide™ Implant Planning.
Creation of the Real Volume.
Technical phase.
Surgical phase.
Prosthetic phase.

• Robotic systems with radium-mat repere points on the diagnostic stents to gauge the difference between the capture plan and the diagnostic stent creation plan.
• Systems utilizing stereolithographic models to transfer the implant position onto the model;
• Double acquisition systems, with the stent and the maxillary CT with the stent to match the images.

BRIEF HISTORY OF IMAGE DIAGNOSTIC IN IMPLANTOLOGY

The use of Dentascan in implantology goes back to the second half of the 80’. The first article dealing with the use of CT goes back to 1987.

After only one year, in 1988, the first article describing a system based on surgical stents based on CT appeared.

In the 90’s there is the appearance of the first interactive Software for dentistry use.

After that, up to nowadays, one has noticed the more and more systematic appearance of:

• Systems utilizing known angle values and emergency points to be gauged by means of appliances and protractors.

THE NINE STEPS OF THE TECHNIQUE

Setting up the Treatment Plan

In the phase of the visit to the patient the clinician must start to elaborate treatment plans able to solve the needs of the patient himself.

It will be necessary to check the patient’s general state of health, and the state of health of the oral cavity. The evaluation of the periodontal situation, in case the patient is not completely toothless, is of vital importance.

One starts from the phase of impressions, of the bite registration and of the facial arc if necessary.

Figure 1. Stent attached over the Flatguide™