

# Table of Contents

## Chapter 1

### The patient

F. Alfonsi, S. Romeggio, A. Barone.....	1
Bibliography.....	5

## Chapter 2

### Indications and contraindications

A.R. Bolzoni.....	7
Indications.....	7
Age.....	10
Medical History.....	12
Anatomy of the recipient site.....	14
Contraindications.....	17
Bibliography.....	17

## Chapter 3

### Surgical anatomy of the middle third of the facial skeleton

F. Gallo.....	19
Introduction.....	19
ZAGA™ Classification.....	22
Anatomical Regions.....	26
Zygomatic bone.....	26
Maxillary bone.....	29
Orbit.....	33
Temporal fossa.....	37
Zygomatic fossa (infratemporal fossa).....	38
Pterygopalatine fossa.....	40
Oral cavity.....	41
Nasal structure.....	41
Evaluation of intermaxillary relationships.....	43
Bibliography.....	44

## Chapter 4

### Digital diagnostics

F. Zingari, P. Beretta, L.M. Sconfienza.....	45
Introduction.....	45
Tools and methodology.....	46
Intraoral scanner.....	46
Reverse engineering facial scanner.....	54
Diagnostic wax-up.....	57
Condylar axiography.....	58
Digital articulator.....	63
Digital radiology.....	64
Bibliography.....	65

## Chapter 5

### Digital prosthetic plan

F. Zingari, P. Beretta.....	67
Introduction.....	67
From the diagnostic wax-up to the 3D printing prototype.....	67
Studying the prototype on the patient.....	68
Aesthetic analysis of the prototype.....	69
Functional analysis of the prototype.....	74
The prototype as a radiological guide.....	77
Radiological guide.....	78
How to convert the prototype into a radiological guide.....	78
How to carry out the radiological examination.....	80
How to import the STL files for the prototype/radiological guide into guided-surgery software.....	80
How to realign the STL files for the prototype/radiological guide with the DICOM files from the CBCT.....	80
Planning the implants in the software.....	81
Clinical and prosthetic rationale for zygomatic implants.....	82
Clinical and prosthetic rationale for pterygoid implants.....	86
Inserting the implants in the software.....	87
Bibliography.....	88

**Chapter 6****Zygomatic implantology technique**

F. Gallo.....	89
Preoperative evaluations.....	89
Toolkit. Preparing the patient .....	90
Extrasinus technique.....	93
Where to start: anterior or posterior implant?.....	96
ZAGA™ classes and cylinder .....	103
Choosing the implant .....	106
Guided technique .....	107
Pterygoid implantology .....	114
Final surgical phases.....	117
Bibliography .....	120

**Chapter 7****Digital immediate loading**

F. Zingari, P. Beretta, M. Del Fabbro.....	121
Biological basis of immediate loading .....	121
Factors affecting osseointegration .....	122
Implant characteristics .....	122
Importance of micromovements at the interface .....	123
Biomechanical factors with biological effects .....	124
Implant stability and zygomatic bone .....	126
Experimental studies on animal models.....	126
Histological studies of immediate loading in humans .....	128
Terminology .....	130
Clinical aspects of immediate loading.....	131
Completely edentulous patients with a full prosthesis.....	132
Planning and building the surgical guide for zygomatic and pterygoid implants.....	132
Steps for the production of surgical guides that rest on bone.....	132
Prosthetic steps for the construction of the immediate loading provisional for guided surgery.....	134
Prosthetic steps for the construction of the immediate loading provisional for software-assisted surgery.....	137
Digital steps for immediate loading .....	139
Analog steps for immediate loading.....	146
Completely edentulous patients without a full prosthesis... ..	149
Patients with posterior bilateral edentulism/posterior bilateral edentulism with progression to full edentulism....	149
Prosthetic steps for the construction of the immediate loading provisional for guided surgery in patients with bilateral edentulism.....	149
Prosthetic steps for the construction of the immediate loading provisional for software-assisted surgery in patients with bilateral edentulism .....	155

Analog steps for immediate loading in software-assisted surgery for patients with bilateral edentulism progressing towards full edentulism .....	160
Hemimaxillectomy patients and patients with unilateral posterior edentulism.....	163
Presurgical prosthetic steps.....	163
Postsurgical prosthetic steps .....	166
Inserting the definitive prosthesis.....	166
Patients with unilateral posterior edentulism .....	168
Prosthetic steps for the construction of the immediate loading provisional for guided surgery in patients with unilateral posterior edentulism .....	168
Prosthetic steps for the construction of the immediate loading provisional for software-assisted surgery in patients with unilateral posterior edentulism .....	170
Analog steps for immediate loading in software-assisted surgery for patients with unilateral posterior edentulism .....	170
Cancer patients with oroantral communication.....	170
Presurgical prosthetic steps.....	171
Postsurgical prosthetic steps .....	177
Bibliography .....	180

**Chapter 8****Surgical complications**

A.R. Bolzoni .....	183
Intraoperative complications .....	183
Predictable intraoperative complications.....	185
Unpredictable intraoperative complications.....	187
Early postoperative complications .....	193
Late postoperative complications .....	193
Prosthetic complications .....	194
Bibliography .....	195

**Chapter 9****Dynamic navigation zygomatic implant technique**

D. Holtzclaw .....	197
Background .....	197
Static guided remote anchorage implant technique .....	199
Dynamic navigation remote Anchorage implant technique .....	204
Robotic guided remote anchorage implant technique .....	207
Conclusion.....	209