Important!
Read this manual before proceeding with implant system manuals!

Concept

Radiologists
Clinicians
Laboratories
and others working with NobelGuide™
First from Nobel Biocare.

NOBELPERFECT®, (NP, RP, WP), NOBELDIRECT® (NP, RP, WP), Brånemark System®, NOBELREPLACE™ and NOBELSPEEDY™ Implants. A complete assortment with FDA clearance for Immediate Function™ in all single, partial and fully edentulous restorations in the mandible and maxilla.

Nobel Biocare AB and all production units are certified according to the Environmental Management System ISO 14001.

The procedures described herein must only be performed using components and instruments provided by Nobel Biocare.

Nobel Biocare has published disclaimers relating to patient data and purchasing conditions. The latest versions of these disclaimers are available on the NobelGuide™ area on the Nobel Biocare Extranet. Please ensure that you understand and accept these disclaimers.

Nobel Biocare reserves the right to make any necessary alterations to the methods and procedures stated in this manual.

Some products may not be available in all markets. Please contact your local Nobel Biocare office for current product assortment and availability.


For USA only: Federal law restricts this device to sale by or on the order of a licensed dentist or physician. All products are subject to change without notice.
Congratulations! You have made an excellent choice. Welcome to the Nobel Biocare family.

Getting started

Guided System Kits
- Brånemark System® Guided Surgery Kit
- NobelReplace™ Tapered Guided Surgery Kit
- NobelReplace™ Straight Guided Surgery Kit
- NobelDirect® Guided Surgery Kit

Guided Drill Stop Kit
For combination with
- Parallell wall implants

Procera Software
- Clinical Design Pro
- Clinical Design Premium

How does it work (example)

Conventional approach
- treatment planning
- surgical procedure
- relining
- remove stiches
- abutment connection
- temporary prosthetic solution
- soft-tissue control
- impression
- try in of prosthesis
- final prosthetic solution

NobelGuide™ approach
- treatment planning
- surgical procedure
- temporary prosthetic solution
- final prosthetic solution

Significantly reduced chairtime and increased profitability
quick start

model-based planning

computer-based planning

visualization of anatomy

temporization

Teeth-in-an-Hour™
# Concept Overview

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Beautiful Teeth Now™

Nobel Biocare is providing dentists with more choices than ever before. But our goals remain the same:

• To ensure that your patients leave the treatment room satisfied, comfortable, with beautiful teeth and with an improved quality of life.

• To help your practice run more smoothly, efficiently and profitably.

This Concept Manual is designed to provide quick access to important information regarding NobelGuide™, read it before the implant system related manuals. The first section gives a general overall of the concept. The remaining sections go into more detail concerning Procera® Software, laboratory and CT scan procedures included in the concept.

A NobelGuide™ Training CD is included in the back cover of this manual complete with clinical movies featuring NobelGuide™.

Other related NobelGuide™ Instruction Material

• NobelGuide™ Procedures & Products Manuals for the following implant systems:
  Brånemark System® MkIII Groovy, NobelReplace™ Tapered Groovy, NobelReplace™ Straight Groovy, NobelSpeedy™ Groovy, NobelSpeedy™ Replace

• NobelGuide™ manual for NobelDirect®

• Integrated Procera® Software tutorials and help files

• NobelGuide™ Interactive Training CD

• NobelGuide™ area on the Nobel Biocare Extranet. This area includes online training and FAQs

Important! While the NobelGuide™ methods described herein give you the opportunity to pre-plan and realize patient cases, medical responsibility for planning and treatment remains that of the clinician.

For abstracts, study references and for more information, please visit our website; www.nobelbiocare.com
Perfect Planning for Perfect Teeth

The NobelGuide™ treatment concept from Nobel Biocare enables you to transform pre-planned treatment into clinical reality.

You decide! We provide!

You decide which planning method to use (model-based or computer-based). We provide you with the components you need to create a customized Surgical Template according to your planning.

Based on the design of the Surgical Template, we then supply you with the relevant surgical and laboratory instruments and implants to facilitate the surgical procedure.

Prior to surgery, you can produce a temporary or final prosthesis that can be attached in the same session as the implant installation.

Indications: Totally and partially edentulous jaws, as well as single unit cases.

Main Benefit: Enables an easy, predictable, fast and minimally invasive dental implant and prosthetic delivery according to planning performed in advance.

NobelGuide™ components and instruments are available for treatment planning made in both computer-based and model-based environments.

Definitions

NobelGuide™: Cases where a Surgical Template, based on model- or computer-based planning, is used to guide the clinician during surgery.

Model-based planning: Surgical planning on stone model using established techniques. No CT scan data is required. Surgical Template is made at laboratory.

Computer-based planning: CT scan data is basis for surgical planning in 3D computer environment. Surgical Template is made by Nobel Biocare.

Teeth-in-an-Hour™: The screw-retained, permanent prosthesis is attached in the same surgery session.
Patient Benefits

Maximum Comfort
The surgical treatment is based on guided keyhole surgery that is minimally invasive. This reduces pain and swelling considerably for the patient compared to conventional treatment. The new concept also reduces the number of appointments and chairtime for the patient, which means fewer interruptions in everyday life.

Cost-Saving
The patient can immediately return to work and/or social life after the treatment since the concept is built on Immediate Function™. For many patients this means a considerable cost-savings.

Fast Treatment
The combination of Immediate Function™ with temporary or final prosthesis (Teeth-in-an-Hour™) ready at surgery radically shortens treatment.

Dental Professional Benefits

Increased Predictability and Safety
By planning your treatment and transforming this into a Surgical Template you will achieve higher safety and predictability. Our 3D-surgical planning program results in exceptional predictability and optimal implant placement.

Pre-production of Prosthetics
The planning will allow for pre-production of either the final or temporary prosthetics at implant level, or combined with your choice of abutments.

Total Solution Concept
We provide a complete solution supporting you from the planning stage to completed oral rehabilitation. The concept is powered by Procera® which makes the process simple and convenient.

Business Opportunity
The NobelGuide™ concept allows you to differentiate and develop your business to stay competitive. Reducing chairtime and patient visits for treatments allows you to increase your profitability and grow your business.

Reduced Inventory
Since clinicians know what instruments and components they need beforehand, this ensures minimal inventory requirements.
Flowchart

Model-based
page 9–16

Fabricate Stone Model

Planning on Model

Fabricate Mapping Guide

Mapping

Transfer Mapping and placement of Implant Replica

Fabricate Surgical Template

Examination of Patient and Treatment Evaluation

Computer-based

Register Patient in Procera® Software

Prepare Radiographic Guide

CT Scan

Planning in Procera® Software

Order Surgical Template in Procera® Software

Fabricate Stone Model & Surgical Index

Prosthetic Solutions (temporary or final, screw-retained or cemented)

Clinical Procedures

Model-based planning & procedure
Examination of Patient and Treatment Evaluation

**NobelGuide™** Model-Based Planning, is intended for single and partially edentulous jaws where the patient:

- meets general health requirements for undergoing oral surgery
- is fully healed after any dental grafting procedures
- has a sufficient amount of jaw bone
- has sufficient mouth opening capability to accommodate the surgical tooling instrumentation.

Careful preoperative evaluation and investigation has to be carried out, just as with any surgery using diagnostic radiographic imaging and other available investigation methods.

**Note!** Length of implants and mesio-distal direction has to be decided based on radiographic imaging to avoid interference with adjacent roots and other anatomical structures.

There are several methods available for model-based planning. This manual will cover one mapping technique and two different methods to place the implant replicas.

- Make impressions of both jaws and take a bite registration.

**Fabricate Stone Model**

- Produce a stone model.

**Planning of Model**

- Mark the positions of the implants on the stone model with a string of wax going from the buccal to the lingual side over the soft tissue.
**Fabricate Mapping Guide**

- Press a vacuum-pressed template over the stone model to make a Mapping Guide.

- Make a series of holes in the line marked by the string of wax. It is recommended to have three buccal holes, three lingual/palatinal holes and one hole on top of the crest.

**Mapping**

- The Mapping Guide is placed in the patients mouth.

- Use a probe to perforate the soft tissue through the Mapping Guide.

- Measure the thickness of the soft tissue after removing the Mapping Guide by using a probe with a plastic endodontic disc.
Transfer mapping

- Mark the positions of the holes on the stone model.
- Draw lines to connect the holes as indicated in the picture.

- **Method A** Section the stone model in the line previously marked with the string of wax – where the implant should be placed.

- **Method B** Section the stone model according ordinary crown and bridge work.

- The lines previously drawn on the stone model give the correct position for each depth measurement.

- Mark the mucosa thickness measurements on the side of the sectioned stone model.

- Grind down the stone model sections according to the bone-profile, exposing the topography of the underlying bone.
Placement of Implant Replica

- Grind/drill a hole for the Implant Replica in the planned implant site.

- Glue the Implant Replicas into the stone model in relation to the bone and planned implant position.

- The exact orientation and angulation of the implant can further be checked with Guide Pins.

- Implant Replica in position.
**Soft Tissue Replica**
- Use the Mapping Guide as a mold for Soft Tissue Replica.

- Uncover the Implant Replica by using a Soft Tissue Punch.
Fabricate Surgical Template

A key component to produce a Surgical Template is the Guided cylinder w. Pin. These two components, Guided cylinder(1) and Pin(2), ensure the geometrical relation between the Guided Sleeve(3) (to be embedded in the template) and the Implant(4).

• Place a Guided Sleeve between the Guided Cylinder and the Pin and screw it on the Unigrip™ Screwdriver to the Implant Replica.

• Block undercuts and lubricate all surfaces that are not to be embedded in the Surgical Template.
• Embed the entire jaw and the Guided Sleeve in acrylic. Be sure to use enough material to produce a stiff and strong Surgical Template.

• Let the acrylic set, unscrew the Guided Cylinder w Pin and remove the Surgical Template.
• Grind the Surgical Template into the desired shape.
• Make sure that the top of the Guided Sleeves are exposed without damaging the sleeves.

• Grind the Inspection Windows through the top of the Surgical Template to allow for inspection of the underlying dentition, and confirming the proper seating of the Surgical Template.
• The Inspection Windows should be monitored throughout the surgery in order to verify correct seating.
When carrying out a Guided Surgery prosthetic procedure, a wide range of Nobel Biocare abutments can be used, such as:

- Immediate Temporary Abutment (for single cases)
- Guided Abutment (for partial edentulous cases)
- Procera® Abutment
- Snappy Abutment™
- Esthetic Abutment
- Multi-Unit Abutment

- For this indication the Procera® Abutment Zirconia is fabricated.
- A temporary bridge is fabricated in the laboratory prior to surgery.

**Implant Placement**

- The Surgery is performed according to the surgical procedure as described in the relevant NobelGuide™ Procedures & Products manuals using the lab-made Surgical Template.

**Prosthetic Procedure**

- Proceed with the prosthetic procedures to connect the abutments and make a temporary cementation of the bridge.
- Follow established prosthetic procedures to make the final restoration after a sufficient healing period.
Examination of Patient and Treatment Evaluation

Model-based

Flowchart

Fabricate Stone Model

Planning on Model

Fabricate Mapping Guide

Mapping

Transfer Mapping and placement of Implant Replica

Fabricate Surgical Template

Computer-based page 17–30

Register Patient in Procera® Software

Prepare Radiographic Guide

CT Scan

Planning in Procera® Software

Order Surgical Template in Procera® Software

Fabricate Stone Model & Surgical Index

Prosthetic Solutions (temporary or final, screw-retained or cemented)

Clinical Procedures
Examination of Patient and Treatment Evaluation

NobelGuide™ Computer-Based Planning is intended for single, partial and fully edentulous jaws where the patient:

• meets general health requirements for undergoing oral surgery
• is fully healed after any dental grafting procedures
• has a sufficient amount of jaw bone
• has sufficient mouth opening capability to accommodate the surgical tooling

Register Patient in Procera® Software

Procera® Software guides you through the computer-based NobelGuide™ process. It is also used to access the Procera® Software Planning Program – Surgical (see page 24).

• Use Procera® Software to register the patient and to receive a Treatment ID number.

Prepare Radiographic Guide

• Make an impression of both jaws and a bite registration index. The index should be made using stiff material.

• For fully edentulous jaws, the bite registration should be made using the existing optimized prosthesis or, if needed, a newly produced prosthesis = Radiographic Guide.

If the patient only has a few teeth in the opposing jaw and does not wear a partial prosthesis, make sure to fill up the area where the teeth are missing with occlusion index material to make contact with the alveolar ridge. This is to ensure that you have a horizontal, well-balanced bite registration.

Radiographic Guide

The Radiographic Guide is used to simulate the teeth, the soft tissue surface and edentulous space during the CT scan (see page 37). The correct design of the Radiographic Guide is a pre-requisite for successful treatment since the final outcome of the rehabilitation is determined by the Radiographic Guide.

When fabricating a Radiographic Guide, please note that material has to be of acrylic or with similar density.

– In fully edentulous cases, the existing optimized prosthesis or, if needed, a newly produced prosthesis should be used.

– In single and partial cases, instruct your laboratory to fabricate an acrylic Radiographic Guide.
General design requirements Radiographic Guide

- Optimal representation of position of the restored teeth
- Optimal fit to anatomy, including;
  - Palate (if applicable)
  - Gingiva
  - Existing denture (if applicable), covering buccal, lingual and occlusal aspects
- Extend over the buccal and lingual soft tissue to the vestibular extension
- Has an ideal set-up of teeth in terms of occlusion, position, occlusal height & lip support
- Inspection windows should be made in partial and single cases
- Made in a non radio-opaque material, i.e. acrylic
- Extend back to the retromolar area
- Gutta-percha markers should be inserted
Radiographic Guide – Surgical Template

The geometry of Radiographic Guide is transferred to the Surgical Template.

Fully edentulous cases

• Use existing optimized prosthesis, or a specially produced prosthesis, Radiographic Guide, where the teeth are more optimally placed for lip support, height etc
• Cover a sufficient part of the gingiva to accommodate for Guided Anchor Pin placement
• Ensure that the Anchor Pins have a large enough base of thick material for optimal stiffness of the Anchor Pin Sleeves
• This can be further verified in the Planning Program

Single & Partial case

• Fabricate stone models of the patient’s jaws based on the impressions
• Set up the stone model in the articulator using the bite registration index
• Make a diagnostic wax-up of the patient’s tooth/teeth to be restored on the stone model

• Cover the existing teeth down to the vestibular extension with a >2.5–3 mm thick resin material. Also, cover palate if applicable. Be sure to block all undercuts.

• Ensure
  – that the **Guided Anchor Pin** has a large enough base of thick material for optimal stiffness of the **Anchor Pin Sleeve**. This can be further verified in the Planning Program.
  – to cover buccal, lingual and occlusal sides for optimal retention of the Surgical Template

Maintain occlusal plane untouched in areas to be restored. Cover only the buccal and lingual aspects with plastic. This ensures that the correct occlusal plane is transferred to the Planning Program.

---

**Prepare and make Radiographic Guide (for all indications)**

• Attach the resin cover to the lingual and buccal sides of the diagnostic wax-up, but do not add material on the occlusal aspect of the diagnostic wax-up.

• Be sure that there is an optimal and homogenous bond between wax-up and acrylic.

• Make sure that the Radiographic Guide extends all the way back to rest on the retromolar area.

• Option: The set-up of teeth can also be made of acrylic as long as the geometry is optimal.

• Make the Radiographic guide of homogenous and uniform acrylic. This can be beneficial during the CT-scan.
Reference Points (for all indications)
To facilitate the double CT scanning technique and the subsequent matching of the two CT scans in Procera® Software, six reference points must be inserted into the Radiographic Guide.

- Make 6 small holes (Ø 1.5 mm) in the Radiographic Guide. The holes should be no more than 1 mm deep.
- Place two of the reference points lingually/palatally to the canines, two disto-buccally to the premolars and two in the molar region.
- Place the reference points at different levels in relation to the occlusal plane.
- Fill the holes with gutta-percha.
  - In single and partial cases where metal fillings are present in the existing denture, place the reference points on levels other than those of the fillings, for example, below the teeth.

Inspection windows (Partial and Single cases)

- The inspection windows made on single and partial Radiographic Guides are transferred to the Surgical Template where they allow inspection of the underlying dentition, thus confirming the proper seating of the Surgical Template during surgery.
- Make inspection windows in the Radiographic Guide through the occlusal surface over the existing dentition.
- Make 3–4 windows evenly distributed over the entire arch where one or two windows are located adjacent to the area to be restored.
- The inspection windows should preferably be placed over a cusp or a corner of a tooth so that the underlying dentition protrudes through the window.
Radiographic Index

For fully edentulous cases the bite registration index is the Radiographic Index.

For partial and single cases prepare Radiographic Index.
- Insert the Radiographic Guide in the articulator and, using stiff material make an occlusal index between the Radiographic Guide and the opposing dentition.

Note in partial cases! If the patient only has a few teeth in the opposing jaw and does not wear a partial prosthesis, make sure to fill up the area where the teeth are missing with occlusion index material to make contact with the alveolar ridge. This is to ensure that you have a horizontal, well-balanced bite registration.

Deliver the Radiographic Guide and the Radiographic Index to be used during CT scan.

CT Scan
Double scanning technique (see page 37)
1. Patient wearing Radiographic Guide and Radiographic Index.
2. Radiographic Guide on its own Planning Program Surgical application, and order Convert the CT DICOM files into a file format compatible with Procera® Software Planning Program – Surgical.

Computer-based Planning
- Plan the patient in the Procera® Software Planning Program Surgical application, and order all necessary components including the customized Surgical Template and Duplicate Denture (if needed for lab work).
Planning in Procera® Software

Procera® Software is used to guide you through the computer-based NobelGuide™ process. It is also used to access the Procera® Software Planning Program – Surgical (see next page). Procera® Software is available in two versions for NobelGuide™ applications:

CLINICAL DESIGN PREMIUM

Clinical Design Premium includes the file conversion application for converting CT scans to a 3D planning model. When you receive the CD with CT data from your radiologist you can convert the files directly yourself, saving time and conversion costs.

1. Register and edit patient information, and receive Treatment ID
2. Start Procera® Software CT scan file converter application
3. Open Procera® Software Planning Program – Surgical (see next page)
4. Import planning into Procera® CadDesign
5. Create Surgical Template
6. Verify Surgical Template
7. Verify products (drills, instruments, etc) print operation specification documents.
   Order Surgical Template and surgical/laboratory products

CLINICAL DESIGN PRO

When using Clinical Design Pro, you upload your CT scan files to Nobel Biocare’s website (the NobelGuide Extranet Area) where they are converted to a 3D planning file and sent back to you for a fee.

1. Register and edit patient information, and receive Treatment ID
2. Send CT scan data to Nobel Biocare and receive 3D planning files from Nobel Biocare.
3. Open Procera® Software Planning Program – Surgical (see next page)
4. Import planning into Procera® CadDesign
5. Create Surgical Template
6. Verify Surgical Template
7. Verify products (drills, instruments, etc) print Operation Specification. Order Surgical Template and surgical/laboratory products

Important! It is the responsibility of the clinician to store all planning and CT scan files in the same way as other radiographic material.
Procera® Software Planning Program – Clinical Design

Procera® Software – Computer Requirements

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<tr>
<td>Hard disk</td>
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<td>Internet connection</td>
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</table>

*Please note that an nVIDIA graphics card is required for the software to function

We recommend that you install the Procera® System on a dedicated stand-alone computer according to the latest hardware recommendations.

- Procera® Software Planning Program – Clinical Design is a three-dimensional (3D) image-based environment for planning the position and orientation of dental implants. It is used to determine the optimal sites for implant placement, taking into account anatomical constraints and also prosthetic and esthetic considerations.

- The planning environment is based on the concept of representing a 3D medical image volume as a 3D scene.

- This approach bridges the gap between conventional (stacks of) two-dimensional radiological images and the actual view on a patient in the operating theatre.

- In a 3D scene, you gain a good understanding of the patient’s anatomy in relation to implant components, as well as to the prosthetic situation.

- Each planning process is unique and is based entirely upon the specific considerations and prerequisites that are present for each individual patient.

- The implant sites have to be planned with a minimum distance from center-to-center depending on which platform(s) you are using.

- The yellow zone around implants indicates a distance of 1.5 mm.
All Teeth Missing: Three Anchor Pins (⌀ 1.5 mm) are planned in the jawbone between the implants in an axial plane to enable proper stabilization of the Surgical Template during surgery.

Several Teeth Missing: A minimum of one Anchor Pin is recommended.

One Tooth Missing: The Surgical Template is retained on the existing denture only.

For more information about the planning procedure and Procera® Software Planning Program – Clinical Design, see:
- NobelGuide™ area on Nobel Biocare Extranet
- Integrated Software tutorial
- Procera® Software Planning Program help file

Order Surgical Template in Procera® Software
- When you have finished your planning, you must verify and approve it.
- Order the Surgical Template using the Procera® Software.

Surgical Template and Surgical Index
- Once you have received the surgical Template, verify that the Treatment ID Number is correct and instruct your lab to fabricate:
  - Stone model
  - Surgical Index
  - Temporary/final prosthesis

- Ensure that the mechanical strength of the Surgical Template is sufficient. Recommended thickness is 2.5–3 mm. Reinforce, if required, by adding plates or gel from a light cured tray material (e.g. Triad). If adding material, be sure to leave the top of the Sleeves untouched so that the reference level is maintained.
- Ensure that the Surgical Template can be correctly positioned on the teeth. Use the Inspection Window to check the position. Adjust, if required.
- Make the Surgical Index
Fabricate Stone Model and Surgical Index

General
The Surgical Index is used during surgery to position the Surgical Template on the jaw before anchoring it with Anchor Pins.

The Surgical Template is developed in a CAD environment and contains all the necessary information for making the stone model, on which a permanent or a temporary prosthesis can be fabricated.

Important information about Surgical Template
- The Surgical Template is made of a material that is sensitive to moisture and UV light. Store the Surgical Template together with a moisture absorbent in the UV protective plastic bag in which it was delivered.
- Always store the Surgical Template in a dry and dark location.
- Never expose the Surgical Template to direct sunlight.
- Never remove the moisture absorbent.
- Use a high level disinfectant (eg CidexOPA Solution) for 12 minutes at room temperature. Rinse thoroughly with sterile water. Dry quickly but without using heat.

Caution! The Surgical Template may deform if exposed to liquids (even water) for more than 30 minutes.

Workflow (Fully Edentulous Case)
- Verify that the Surgical Template has the correct Treatment ID engraved on the lingual aspect and that the overall geometry of the Surgical Template is similar to that of the Radiographic Guide.

A key component to produce a Surgical Template is the Guided cylinder w. Pin. These two components Guided cylinder(1) and Pin(2) ensure the geometrical relation between the Guided Sleeve(3) and the Implant.

- Mount Implant Replicas(4) in each of the holes in the Surgical Template using the Guided Cylinder with Pin. The replicas and type of Guided Cylinder to use are specified in the documents accompanying the case.

- Insert Anchor Pins(5) into Anchor Pin sleeves(6).

- Use vaseline to lubricate the bottom of the Guided Cylinder with Pin and the top surface of the Surgical Template for easier dismounting of the soft-tissue replica.

- Add soft-tissue replica. Use a very small tube to ensure that you can reach right down to the Guided Cylinder with Pin.
• Use soft-tissue replica or boxing wax on the buccal side of the vestibular extension to prevent the Surgical Template from locking after the plaster has set.

• Pour in die stone model plaster.

• Use a plaster box to facilitate the manufacturing of the stone model.

• After the plaster has set, remove the Anchor Pins.

• Next remove the Guided Cylinder with Pin, using a Unigrip™ Screwdriver, and the Surgical Template.

• Use a cutter to remove the high edges around the holes.

• Attach the Duplicate Denture (ordered via Procera® Software Planning Program – Surgical) or the patient’s optimized prosthesis onto the stone model and mount the stone model in an articulator together with the model of the opposing jaw. Use the Radiographic Occlusal Index to verify the correct occlusion.

• Replace the Radiographic Guide with the Surgical Template and secure it with Anchor Pins.

• Add index material (e.g. A-silicone) on top of the Surgical Template.

Note! If the patient only has front teeth in the opposing jaw and does not wear a partial prosthesis, build up the bite in the area where the teeth are missing to ensure contact with the alveolar ridge. This is to ensure that you have a horizontal, well-balanced bite registration.

• Add a string of index material on the opposite jaw and bite the jaws together.

• Make sure you have enough material to get a good index.

• Put the Surgical Template back in the UV-protective plastic bag in which it was delivered (see storage instructions on page 27).

You now have a finished Surgical Template and Surgical Index, to be used during surgery.
Workflow (Single & Partially Edentulous Cases)

- Verify that the Surgical Template has the correct Treatment ID engraved on the lingual aspect.
- Verify the proper seating of the Surgical Template onto the original stone model of the patient using visual inspection through the inspection windows.
- Mark the approximate locations of the implants on the model.
- Cut away the section to be restored on the stone model in order to make room for the Implant Replicas.

A key component to produce a Surgical Template is the Guided cylinder w. Pin. These two components Guided cylinder(1) and Pin(2) ensure the geometrical relation between the Guided Sleeve(3) and the Implant.

- Mount Implant Replicas(4) in each of the holes in the Surgical Template using the Guided Cylinder with Pin. The replicas and type of Guided Cylinder to use are specified in the documents accompanying the case.
- Verify that the mounted Implant Replicas fit in the cut-away section of the stone model.
- Mount Anchor Pins(5) in Surgical Template if applicable.

Note! When you use an engaging abutment (i.e. a rotational lock abutment), care must be taken to rotate the Implant Replicas so that the side of the hex is parallel with the curvature of the jaw (Brånemark System®), or so that a lobe of the internal connection is oriented buccally (NobelReplace™).

- Use vaseline to lubricate the bottom of the Guided Cylinder with Pin and the surface of the Surgical Template for easier dismounting of the soft-tissue replica.
- Add soft-tissue replica in the area of the restoration. Use a very small tube to ensure that you can reach right down to the Guided Cylinder with Pin.
- Position the Surgical Template on the Stone Model. Add some sticky wax to secure the proper positioning of the Surgical Template. Verify the proper seating of the Surgical Template via the inspection windows.

- Fill the area to be restored with die stone.
- Verify the proper seating of the Surgical Template via the inspection windows throughout the stone’s setting process.
• Once the plaster has set, unscrew and remove the Guided Cylinder with Pin, the Anchor Pins and the Surgical Template.

• Remove any high edges around the template cylinder holes.

• Attach the Radiographic Guide onto the stone model and mount it in an articulator together with a stone model of the opposing jaw and the Radiographic Index.

• Replace the Radiographic Guide with the Surgical Template and verify the correct position through the inspection windows.

• If applicable, secure the Surgical Template with Anchor Pins.

• Add index material (e.g. Silicone A) between the Surgical Template and the opposite jaw, and bite the jaws together.

• Make sure you have enough material to get a good index.

**Note!** *If the patient only has front teeth in the opposing jaw and does not wear a partial prosthesis, build up the bite in the area where the teeth are missing to ensure contact with the alveolar ridge. This is to ensure that you have a horizontal, well-balanced bite registration.*

• Put the Surgical Template back in the UV-protective plastic bag in which it was delivered (see storage instructions on page 27)

You now have a finished Surgical Template and a Surgical Index, to be used during surgery.
Flowchart

Examination of Patient and Treatment Evaluation

Model-based

Fabricate Stone Model

Planning on Model

Fabricate Mapping Guide

Mapping

Transfer Mapping and placement of Implant Replica

Fabricate Surgical Template

Computer-based

Register Patient in Procera® Software

Prepare Radiographic Guide

CT Scan

Planning in Procera® Software

Order Surgical Template in Procera® Software

Fabricate Stone Model & Surgical Index

Prosthetic Solutions
(temporary or final, screw-retained or cemented)
Page 31–32

Clinical Procedures
Prosthetic Solutions

NobelGuide™ provides you with complete freedom to choose the appropriate prosthetic solution to satisfy patient requirements as well as the clinical situation.

When carrying out a Guided Surgery prosthetic procedure, a wide range of Nobel Biocare abutments can be used, such as:

– Immediate Temporary Abutment (for single cases)
– Guided Abutment (for partial and fully edentulous cases)
– Procera® Abutment
– Snappy Abutment™
– Esthetic Abutment
– Multi-Unit Abutment

In both model-based and computer-based procedures, after the production of the stone model, most prosthetic procedures are the same as those for conventional treatment.

Teeth-in-an-Hour™ solutions

Below is a description for NobelGuide™ screw-retained solutions based on adjustable Guided Abutments:

• Make a set-up of teeth in the articulator.
• If possible, use the set-up of the Radiographic Guide as a template.
• Make a silicone key to be able to replace the teeth in the same position on top of the model.

• Mount the Guided Laboratory Abutment(1) and Guided Ti Temporary Coping(2) together and connect them to the Implant Replica(4) using Guide Pin(3) and Unigrip™ Screwdriver.
• Make a resin replica of the bridge frame into which the Guided Ti Temporary Copings are embedded.
• Make a new silicone key that follows the frame. Put some silicone under the frame to create the space for the surrounding acrylic.
• Send the Resin Frame and Stone Model to Nobel Biocare’s production facilities according to normal procedures for Procera® Implant Bridge.
• Once it is returned, follow normal finishing procedures.

Note! The Guided Ti Copings can also be used for temporary restorations.

See the Nobel Biocare Laboratory Procedures manual for more information relating to other prosthetic procedures.
Flowchart

Examination of Patient and Treatment Evaluation

Model-based

Fabricate Stone Model

Planning on Model

Fabricate Mapping Guide

Mapping

Transfer Mapping and placement of Implant Replica

Fabricate Surgical Template

Computer-based

Register Patient in Procera® Software

Prepare Radiographic Guide

CT Scan

Planning in Procera® Software

Order Surgical Template in Procera® Software

Fabricate Stone Model & Surgical Index

Prosthetic Solutions (temporary or final, screw-retained or cemented...)

Clinical Procedures Page 33–36
Below are Quick Start examples of the surgical and prosthetic procedures relating to NobelGuide™. For a complete description see the relevant NobelGuide™ Clinical Procedure and Product Catalog.

**One Tooth Missing**

- **surgical procedure**
  - Position Surgical Template
  - Installation of Implant

- **prosthetic option: temporization**
  - Abutment Connection
  - Cementation of Temporary
Several Teeth Missing

surgical procedure

Anchor Surgical Template

Installation of Implants

prosthetic option: Teeth-in-an-Hour™

Guided Abutment/Final Bridge Connection

Final Procera® Implant Bridge

prosthetic option: temporization

Abutment Connection

Cementation of Temporary
All Teeth Missing

surgical procedure

Anchor Surgical Template → Installation of Anchor Implants → Installation of Remaining Implants

prosthetic option: Teeth-in-an-Hour™ → Guided Abutment/Final Bridge Connection → Final Procera® Implant Bridge

prosthetic option: temporization → Abutment Connection → Cementation of Temporary
Double-scan Technique

In computer-based NobelGuide™ cases, CT scan data is used as a basis for surgical planning and for the production of a Surgical Template that guides the surgery during installation of dental implants. It is, therefore, important that the CT-scan data is a true representation of the dental anatomy of the patient.

The purpose of the double-scan is to get clear and precise data of the patient’s alveolar bone and of the Radiographic Guide. These can then be shown clearly in the Procera® Software Planning Program – Surgical application.

Our double-scan technique is the key to realizing this, with two CT scans being performed:
1. patient scan with radiographic guide and index
2. radiographic guide scan without index

Since the Hounsfield Units generated for the radiographic guide resemble so closely those of soft tissue, the double-scan is used to solve the problem of extracting the guide from a single CT scan.

The gutta percha markers on the Radiographic Guide are vital as reference points to perform an accurate fusion of both scans.

**Important!** In fully edentulous cases the patient’s existing optimized prosthesis or, if needed, a newly produced prosthesis, should be used as the Radiographic Guide.
Radiographic Guide and Index
Apart from the referral with the Treatment ID number, there are two important things the patient should bring from his or her referring physician to the CT scan:

- **The Radiographic Guide**

- **A Radiographic Index**
  This index ensures the optimal bite of the patient and is used to make sure the Radiographic Guide is in the optimal position during CT scan.

If the patient does not bring the Radiographic Guide and/or Radiographic Index:
The CT scan cannot be completed and the patient must return to the referring physician, collect the guide and/or index and be scanned some later time.

If the Radiographic Guide has no markers:
The CT scan cannot be completed and the radiologist should contact the referring dentist.
CT Scan Protocol

First Scan
The first CT scan in the procedure is a scan of the patient wearing the prepared Radiographic Guide and the Radiographic Index.

The following routine is recommended:

- Position the patient in the CT scan with the Radiographic Guide in the proper edentulous place in the mouth.

In single and partially edentulous cases: There should be holes, or “inspection windows”, drilled on the radiographic guide to verify the correct position over the remaining teeth.

- Ask the patient to lean his or her head forward with the chin close to the chest, while remaining comfortable.

- Make sure that the patient is positioned with the occlusal plane and the horizontal laser indicator parallel and coinciding (if the CT scan has a vertical laser indicator, this should be positioned between the central incisors). No gantry tilt is allowed.

In single and partially edentulous cases: When the patient has metal restorations on his or her remaining teeth, they may create disturbing artifacts on the CT scans. Try to position the patient so that most of the field of interest of the axial slices through the radiographic guide avoids passing through the metal restorations.

- The patient should be advised to remain very still during the whole scanning process, and avoid swallowing.

- Choose the correct distance between the axial slices, with a recommended maximum distance of 0.5 mm.
• When the “scout image” is shown on the screen, correction of the position of the patient should be done to a horizontal position of the hard palate. Then the field of interest for axial slices, parallel with the horizontally positioned hard palate, can be assigned.

**In single and partially edentulous cases:**
The “scout image” point above applies to the upper jaw. For the lower jaw, either the occlusal plane, if enough teeth remain, or the alveolar crest, alternatively the middle part of the basis mandible around the pre-molar region will be horizontally positioned giving almost horizontal axial slices in the field of interest. No gantry tilt is allowed.

• Insert the Radiographic Index in the correct position between the Radiographic Guide and the opposing teeth. It is very important that the patient bites firmly on the index and Radiographic Guide during the scanning, to align the guide well to the soft tissue of the patient eliminating any potential air pockets.

**Note:** The patient should not bite so hard that the Radiographic Guide deforms in any way.

• Check that the position of the patient remains stable, and start scanning.
Second Scan

• After the first CT scan, allow the patient to leave the scanner and remove the Radiographic Guide from his or her mouth in order to scan the guide alone, without the index.

• The Radiographic Guide should be scanned in a similar position as the patient scan. Therefore, attach the guide to a suitable object of radiolucent material and position it in the CT scanner, as close to possible as it was located in the patient’s mouth during the first scan.

Note! The positioning of the Radiographic Guide is only important for a good orientation. An accurate final match is performed during pre-processing of the data using the Procera® Software Planning Program – Surgical data, based on the gutta percha-markers.

• The material used to properly position the Radiographic Guide should be as radiolucent as possible. Make sure that the material is significantly darker after scanning than the Radiographic Guide. Paper boxes or other head-sized objects made of polyethylene and polyurethane-foam materials are suitable. Use adhesive tape to attach the Radiographic Guide to the material, such as Leukoflex, Leukosilk (BSNmedical); or Nexcare paper tape series, Durapore tapes (3M).

• Apply the same CT settings for the second scan used for the first scan, including the same distance of the axial slices.

• Start scanning.

Data Transfer of CT Data once the double-scan is completed and the Radiographic Guide and Radiographic Index have been returned to the patient, transfer the CT data to the dentist in the uncompressed DICOM 3 format for pre-processing.

Important! It is the responsibility of the surgeon, or the radiologist, to generate CT images of optimal quality according to the standard routine of programs available for each specific device, at as low a radiation dose as possible.
## Generic CT protocol

### Single slice CT scanner

**Scan settings**
- Spiral CT
- No gantry tilt
- Tube voltage: 120 kV
- Effective tube current: 100 mAs
- Collimation: 1 mm
- Table speed: 1 mm/rotation
- Gantry rotation speed: 1 rotation/s

**Reconstruction settings**
- Reconstruction interval is 0.5 mm.
- Reconstruction kernel: a sharp bone filter is preferred

### Multi-slice CT scanner

**Scan settings**
- Spiral CT
- No gantry tilt
- Tube voltage: 120 kV
- Effective tube current: 90 mAs
- Collimation equals (number of detectors ×) smallest detector width
- Feed/rotation is set equal to collimation × 0.7
- Gantry rotation speed is about 0.75 seconds for one rotation

**Reconstruction settings**
- Reconstruction interval is half detector width (typically: 0.3 mm or 0.5 mm)
- Reconstruction kernel: a sharp bone filter is preferred.

### Cone-beam CT scanner

- The cone-beam CT scanners are dedicated for imaging the skull. Follow the manufacturer’s instructions to scan a jaw for oral implant planning. The side of a cubic voxel should be within the range of 0.3 – 0.5 mm.
- During reconstruction, no tilting of the axial slices is allowed.
The following Nobel Biocare implant systems are included in the NobelGuide™ treatment concept:

- Brånemark System® Mk III Groovy
- Brånemark System® Mk III Shorty
- NOBELSPEEDY™ Groovy
- NOBELSPEEDY™ Shorty
- NOBELSPEEDY™ Replace
- NOBELREPLACE™ Straight Groovy
- NOBELREPLACE™ Tapered Groovy
- NOBELDIRECT® Groovy Implant
Procera® Software
(for Computer-Based Planning)
15400 Procera® Software Clinical Design Pro*
15401 Procera® Software Clinical Design Premium*
15402 Procera® Software Clinical Premium upgrade
15403 Procera® Software Premium Suite*
15849 Procera® Software Clinical Design – Add-on Licence
16113 Procera® Software Clinical Premium for Lab* (for Procera® Lab)
* Please note that the Procera® Software requires an annual licence fee which is included the first year.
15653 Procera® Software CT Conversion

Surgical Templates
(to be ordered in Procera® Software Clinical Design Pro or Premium)
14750 Finished Surgical Template 5 implants and more
15404 Finished Surgical Template 2-4 implants
15405 Finished Surgical Template 1 implant
14751 Duplicate Denture

NobelGuide™ Surgical Kits
32306 Brånemark System® Guided Surgery Kit
 Kit includes products for RP-platform
 Note! Instruments for rp and wp need to be ordered separately.
32320 Brånemark System® Guided Surgery Kit Box
30909 Guided Anchor Pin 1.5 mm
32110 Brånemark System® Manual Torque Wrench Surgical
29167 Manual Torque Wrench Adapter Prosthetic
32865 Guided Implant Mount Bmk Syst RP
32804 Guided Template Abutment w Screw Bmk Syst RP
29081 Connection to handpiece
29149 Screwdriver Manual Unigrip® 28 mm
29151 Screwdriver Machine Unigrip™ 20 mm
32797 Guided Drill Guide Kit Box
32813 Handle for Guided Drill Guide
32815 Guided Drill Guide rp to 2 mm
32818 Guided Drill Guide rp to 2.8 mm
32820 Guided Drill Guide rp to 3 mm
32822 Guided Drill Guide rp to 3.2 mm
32823 Guided Drill Guide rp to 3.4 mm
29543 Implant sleeve holder
33132 Brånemark System® Guided Surgery Wall chart

32954 NobelReplace™ Tapered Guided Surgery Kit
 Includes instruments for rp and rp Implants.
 Note! Instruments for wp and 6.0 need to be ordered separately
32955 NobelReplace™ Tapered Guided Surgery Kit Box
30909 Guided Anchor Pin Δ 1.5 mm
32827 Guided Drill Tapered rp 3.5 x (+) 8 mm
32828 Guided Drill Tapered rp 3.5 x (+) 10 mm
32829 Guided Drill Tapered rp 3.5 x (+) 13 mm
32830 Guided Drill Tapered rp 3.5 x (+) 16 mm
32831 Guided Drill Tapered rp 4.3 x (+) 8 mm
32832 Guided Drill Tapered rp 4.3 x (+) 10 mm
32833 Guided Drill Tapered rp 4.3 x (+) 13 mm
32834 Guided Drill Tapered rp 4.3 x (+) 16 mm
29167 Manual Torque Wrench Adapter Prosthetic
product catalog

32856 Guided Screw Tap Tapered NP
32858 Guided Screw Tap Tapered RP
33065 NobelReplace™ Connection to Handpiece
29149 Screwdriver Manual Unigrip™ 28 mm
29151 Screwdriver Machine Unigrip™ 20 mm
32844 Guided Dense Bone Drill Tapered NP 3.5 x 13 mm
32845 Guided Dense Bone Drill Tapered NP 3.5 x 16 mm
32847 Guided Dense Bone Drill Tapered RP 4.3 x 13 mm
32848 Guided Dense Bone Drill Tapered RP 4.3 x 16 mm
32957 Guided Drill Guide Tapered Kit Box
32813 Handle for Guided Drill Guide
32814 Guided Drill Guide NP to ∅ 2 mm
32815 Guided Drill Guide RP to ∅ 2 mm
33018 Guided Drill Guide Tapered RP to NP
32864 Guided Implant Mount NobRpl NP
32866 Guided Implant Mount NobRpl RP
32803 Guided Template Abutment w Screw NobRpl NP
32805 Guided Template Abutment w Screw NobRpl RP
29543 Implant Sleeve Holder
33065 NobelReplace™ Connection to handpiece
29149 Screwdriver Manual Unigrip™ 28 mm
29151 Screwdriver Machine Unigrip™ 20 mm

32794 NobelReplace™ Straight Guided Surgery Kit
Includes instruments for RP Implants.
Note! Instruments for NP, WP and 6.0 need to be ordered separately

32796 NobelReplace™ Straight Guided Surgery Kit Box
30909 Guide Anchor Pin ∅ 1.5 mm
29167 Manual Torque Wrench Adapter Prosthetic
32866 Guided Implant Mount NobRpl RP
32805 Guided Template Abutment w Screw NobRpl RP
33065 NobelReplace™ Connection to handpiece
29149 Screwdriver Manual Unigrip™ 28 mm
29151 Screwdriver Machine Unigrip™ 20 mm

32797 Guided Drill Guide Kit Box
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32823 Guided Drill Guide RP to ∅ 3.4 mm
29543 Implant sleeve holder
33133 NobelReplace™ Straight Guided Surgery Wall chart

Drill Stops

33085 Guided Drill Stop Kit
Included in kit:
33086 Guided Drill Stop Kit Box
33063 Drill Stop ∅ 2
33064 Drill Stop ∅ 2.8
33075 Drill Stop ∅ 3
33077 Drill Stop ∅ 3.2
33078 Drill Stop ∅ 3.4
33080 Drill Stop ∅ 3.8
33081 Drill Stop ∅ 4.2
### Manuals
- 15684 GB  Procedures & Products NobelGuide™ NOBELSPEEDY™ Groovy
- 15691 GB  Procedures & Products NobelGuide™ NOBELSPEEDY™ Replace
- 15699 GB  Procedures & Products NobelGuide™ NOBELREPLACE™ Straight
- 15706 GB  Procedures & Products NobelGuide™ NOBELREPLACE™ Tapered
- 15713 GB  Procedures & Products NobelGuide™ Brånemark System®
- 15662 GB  Procedures & Products NobelGuide™ NOBELDIRECT®

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### Lab Components Brånemark System®

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Achievements

• Inheritors and developers of the work of Professor Brånemark – founder of modern implantology. World leaders in the field
• Providers of the most comprehensive and flexible crown, bridge and implant solutions in the world
• Creators of unique biocompatible material TiUnite® for optimal osseointegration, Immediate Function™ and Soft Tissue Integration™
• Creators of CAD/CAM dentistry
• Creators of unique Procera® System – one seamless procedure from 3D planning to fully guided surgery right through to customized ceramic restoration
• FDA cleared for Immediate Function™ (except 3.0 and Zygoma)
• FDA cleared for Teeth-in-an-Hour™ in 2004

Quality

• Zero non-conformities in 2004 FDA inspection of Nobel Biocare production units in Göteborg, Karlskoga and Stockholm

Research

• Formal collaboration with over 50 academic institutions and 600 independent scientists around the world
• More clinical studies on immediate or early loading than all other competitors combined (Medline Feb 2005)
• More prospective clinical studies with at least 5-year follow-up than all other competitors combined (Berglund et al 2002)

Support

• 165.000 customers trained by 1.985 dental professionals in 37 countries and in 19 languages, during 2004
• Own sales organizations with local Nobel Biocare staff in 29 countries
• Leading business website in 8 languages, with complete online service supplying all products and at least 500 courses available at all times