From Scan to Plan to Guide

Anthony Reynolds
Medical Physicist

Nicolette Schroeder
Dental Technologist

IDT Ireland

15 Market Street, Kinsale, Co. Cork    Tel +353 21 470 9501    Email info@idtireland.ie
Scan

We’ll arrange a CT or CBCT Scan at one of 17 partner sites from €150
CBCT Scans taken at Consultants Private Clinic
Get the most out of your dental CT/CBCT scans

IMPLANT SIMULATION
REFORMAT AN EXISTING SCAN
REQUEST A RADIOLOGY REPORT
REQUEST A NEW DENTAL CT SCAN

Choose a scanning site in the UK or Ireland

SEARCH
Plan
We’ll help with the treatment planning
from €70
Guide
We’ll make the surgical drill guide
from €150
We support the following software:

• Osirix™
• Blue Sky Plan™
• SIMPLANT™
• In Vivo Dental™
• coDiagnostiX™
• Sirona™
• Carestream™
• i-CATVision™
Dental (CB)CT Scans

- Bony anatomy of Mandible, Maxilla, Zygomatic Arches

- Useful for:
  - impacted, supernumerary and abnormal teeth
  - root canals, root fractures
  - planning dental implants
  - periapical disease
  - cleft palate assessment
  - TMJ and airway analysis
Take the CT Scan first, do the surgery second (not the other way around)!
Restoration-Driven Implant Planning

“Create a model of the desired result, then work backwards to determine how it can be achieved”

- Radio-Opaque Scanning Stents
- 3D Implant Planning Software
- Surgical Drill Guides
3D interactive implant planning software

SIMPLANT™ is a trademark of DENTSPLY Implants
Why 3D software is important
Radio-Opaque Scanning Stents

- Gives inter-arch stability for the patient during the scan
- Opens the bite slightly (a few mm) using occlusal stops
- Shows position and size of the desired restorations
- Shows inter-arch relationship
- **If you want a mucosa-supported surgical guide, edentulous patients MUST be scanned wearing a stent**
**Surgical Drill Guides**

The guide controls:
- Position
- Orientation
- Depth

Guide can rest on:
- Bone
- Mucosa
- Teeth

Guiding cylinders
**Guides can be supported on**

**Bone Supported Guides:**
- Bone crest must be clearly visible in the CT images and ≥ 3cm long

**Mucosa Supported Guides:**
- Patient must be scanned with a scanning stent in place

**Tooth Supported Guides:**
- Tips of teeth must be clearly visible in the CT images
- A recent and accurate plaster cast will be required

**Need to think about the Guide before you request the CT Scan!**
Making a Scanning Stent

- Plastic and clear acrylic does not show up on a CT scan.
- To make it show up, you can:
  - mix barium sulphate with the acrylic
  - paint barium sulphate on the surface
  - use radio-opaque teeth
  - use markers made from a radio-opaque material
    - lab putty
    - gutta percha
    - glass ionomer
  - use a dual-scan technique.
• We recommend using a barium sulphate-acrylic mix for both the radio-opaque teeth and the baseplate.

• Use 15% barium sulphate in the teeth and 10% barium sulphate in the baseplate. This allows the teeth to be picked out separately.

• Do not use too much Barium Sulphate as it will cause an artefact.

• An accurate fitting stent with radio-opaque baseplate is usually the best option for mucosa-supported surgical drill guides.
Good Stent
Bad Stent
Terrible Stent
Dual Scan Technique
Partially Dentate Patients

- Drill Guide will be supported on patient’s existing teeth
- Need a recent and accurate impression or plaster cast
- Optical (laser) scan of plaster cast
- Import optical scan into the implant planning software
- Guide will be designed to fit the plaster cast.
Optical Scan of Plaster Cast
Designing the Guide