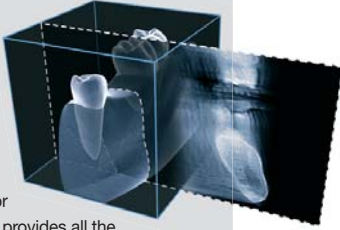


## VT and implantology

Your questions answered:

### What is VT?

VT is a Volumetric Tomography imaging tool that provides digital tomography with reliable measurements and excellent image quality for implant site evaluation. It provides all the essential information for implantology.



### What does VT do?

One VT image covers a cubical area of 60x60x60 mm, producing 256 cross-sectional slices with a minimum slice thickness of 0,23 mm.

### How does VT do this?

The resulting 3D model is reconstructed from a set of projection images targeted only on the region of interest. The reconstructed, wide volumetric view offers 256 slices, from which the optimal slice or any number of slices can be viewed.



More clinical cases and information:  
[www.vt-cube.com](http://www.vt-cube.com)

## Instrumentarium Dental

Nahkelantie 160, P.O. Box 20, FI-04301 Tuusula, Finland  
[www.instrumentariumdental.com](http://www.instrumentariumdental.com) [www.vt-cube.com](http://www.vt-cube.com)

Select 000



# VT – All the Essential Information for Implantology

## Preoperative dental implant planning using the OP200 D with Volumetric Tomography (VT)

Information provided by Instrumentarium Dental, Finland  
Case written by Oral Surgeon Jörg Mudrak, Germany

The demand for dental implant-supported prosthetic treatments has increased dramatically over the last few years. At the same time, patients' demand for quality is increasing more and more so that preoperative, radiological planning has taken on a more influential role in treatment success in terms of its aesthetic and functional appeal. 3D DVTs are becoming increasingly popular, but acquisition costs are extremely high and using them to create images is still relatively costly. The Dental CT has shown satisfactory results, however concerns about patient exposure to radiation should not be overlooked.

Instrumentarium Dental has developed a digital radiological tool in its Orthopantomograph® OP200 D. VT option, which makes use of the proven benefits of transversal tomography combined with the principles of a digital Volumetric Tomography and which, as a result, supplies valuable diagnostic information for preoperative dental implant planning. The VT option based on Narrow Beam technology allows for the

presentation of ROI in the volumetric view while keeping exposure to radiation at acceptable levels. It offers excellent image quality, suitable for everyday use as an affordable alternative to DVT and CBCT.

### Case Study:

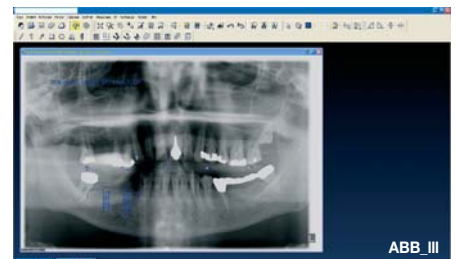
A 64 year-old patient arrived at our dental offices inquiring about treatment options for the edentulous space reg. 045; 046 in the mandible. The patient's dental history showed nothing of concern.

### Intraoral findings:

The patient's oral hygiene was excellent, the



Example of patient positioning.



upper and lower jaw and the condition of the remaining teeth had been adequately and sufficiently treated in terms of prosthetics and decay prevention

**Radiological findings:**

The radiological findings showed no pathological findings whatsoever. The bone structure reg. 045 / 046 was unproblematic. (tooth 44 had been extracted in April 2007)

**Diagnosis:**

Edentulous space reg. 045/046 in the right mandible.

**THERAPY**

**Treatment plan:**

After an in-depth consultation, the patient decided to have the edentulous space treated with dental implant support at the edentulous region, at which point the dental implant planning could be carried out with the help of the OP200 D VT option. To begin with, a dental impression was made using a bite block equipped with reference balls (Instrumentarium Dental). (ABB I)

The positioning tool in the OP200 D was then replaced with the VT panoramic positioning tool, the bite block was then

clamped in, and the patient was then positioned in the device using her dental impression. The scout image was created (ABB II, ABB III).

Subsequently the positioning tool was replaced with the VT positioning tool that can be set to five regions and the ROI was set, in this case at the mandibular molar on the right. The patient was then again positioned using her bite impression. (ABB IV, ABB V)

In less than one minute, a maximum of 11 digital images of this area in a 50-degree radius was taken.

The VT pan image and one single or all of these 11 digital projection images can now be displayed on the monitor. (ABB VI, ABB VII)

By clicking an icon, the VT software links these images so that the VT reconstruction can be started just by clicking on another icon. In the meantime, the patient was free to leave and a date was set for the implant procedure. After approx. 10 minutes, the VT reconstruction was calculated. The results of these calculations are 256 slices with a minimum slice thickness of 0.23 mm in a 60 mm long, sagittal volume tomographic presentation. With the aid of a panoramic view in a navigation window, it is now possible to navigate through this ROI presentation. (ABB VIII)

With the means of this special presentation

**DENTIST to DENTIST**

**Jörg Mudrak, Oral Surgeon,  
Ludwigsgau, Germany**

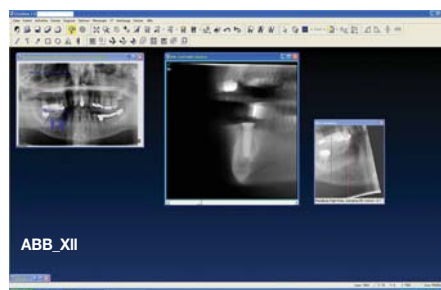
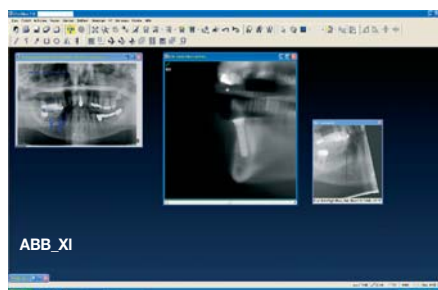
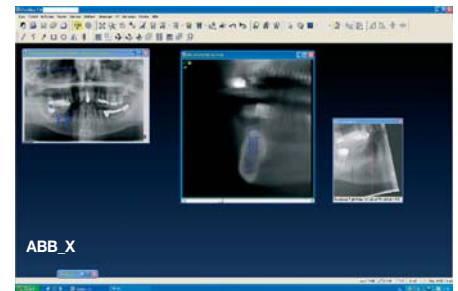
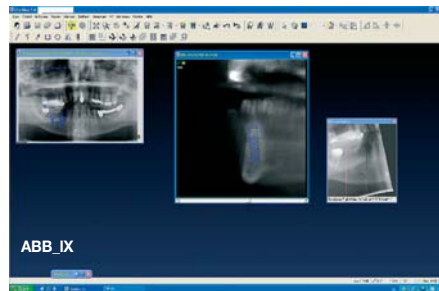
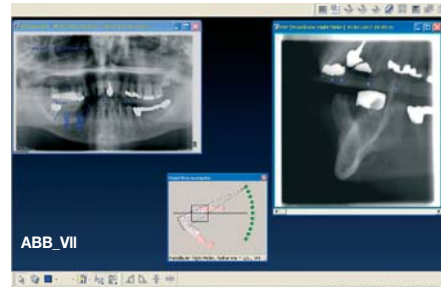
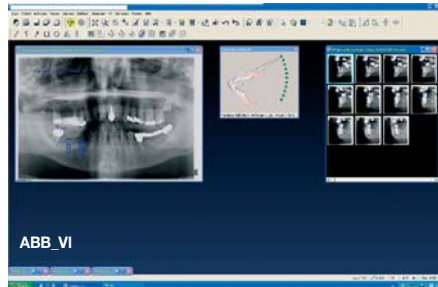


“The OP200 VT option represents a valuable diagnostic tool for the dental implant process, even in cases, which appear to be “straightforward”. In our office and day clinic, the use of the VT option for dental implant planning has become standard practice, because images can be made in reproducible form without requiring any additional time or effort. The time required to analyze the images is manageable, because the illustration of the VT images, as opposed to a CT or DVT, is similar to the established and time-tested dental imaging process.

As is the case with any image processing software, even the VT option has its limitations. However, this OP200 VT option is definitely an interesting, not to mention affordable alternative to DVT and CT.”



Example of patient positioning.





of a volume, exact information on the anatomic conditions of the area to be operated on, is now available along with any additional information required. It was now possible to exactly measure the condition of the bone structure and, with the help of the archived implant information included in the software, a virtual implant procedure could now be carried out. (ABB IX, ABB X)

Based on the results available from the VT images, in reg. 045, a 4.1 x 14 mm Straumann Standard Plus dental implant and in reg. 046 a 4.1 x 12 mm Straumann Standard Plus

Explore the possibilities of VT yourself at:

- FDI Stockholm, 24-27 September 2008, stand C06:32 - C06:36
- BDTA Dental Showcase, London, 2-4 October 2008, stand C05
- Hammaslääkäripäivät 2008, Helsinki, 13-15 November 2008, stand 2b25

dental implant was inserted.

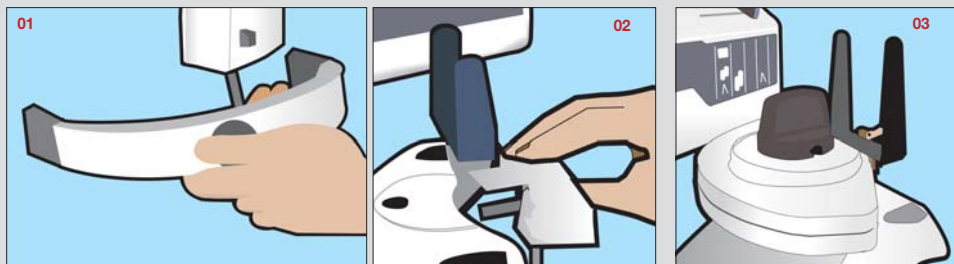
After the insertions were complete, a VT image of this region was again created, which shows the implants centered in the jaw and exactly in the positions they were planned to be in. (ABB XI, ABB XII)

The prosthetic treatment of the implant reg. 045, 046 is carried out after an approx. four to five month healing period. ■

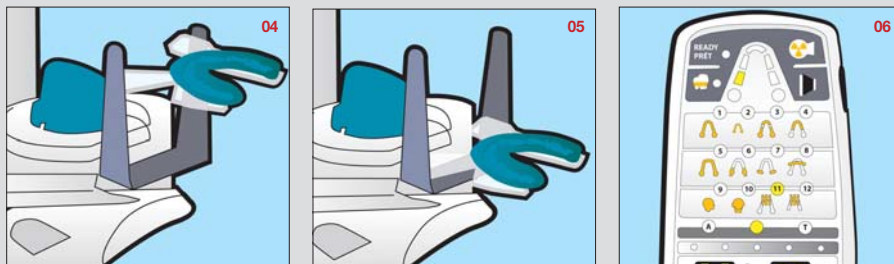
QUICK GUIDE FOR TAKING SUCCESSFUL VT IMAGES WITH ORTHOPANTOMOGRAPH® OP200 VT

Start with taking a normal orthogonal panoramic image. After that follow the VT projection workflow:

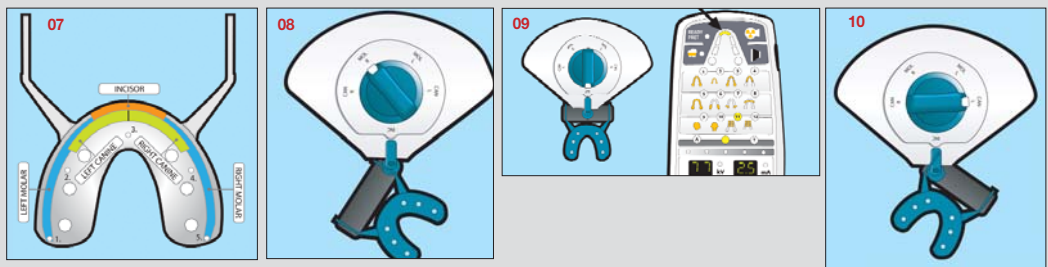
■ Prepare your Orthopantomograph® unit for VT projection image. Remove (01), (02). Add (03).



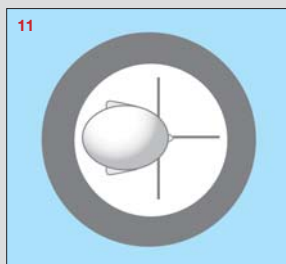
■ Put bite index to upper or lower jaw position. Select upper or lower jaw from control panel (P11 or P12). Select manually exposure values. Upper jaw (05), Lower jaw (04)



■ Region selection guide: choose the region on the positioning device. Control panel indicates the selected region. Patients right region (08). Incisors region (09) and Patients left region (10).



■ Press patient positioning button and after movements guide the patient into the unit and bite on the Bite index. Start image capture from CliniView software. Make exposure (11)



■ Associate VT-PAN with projection images and start reconstruction. (12)

