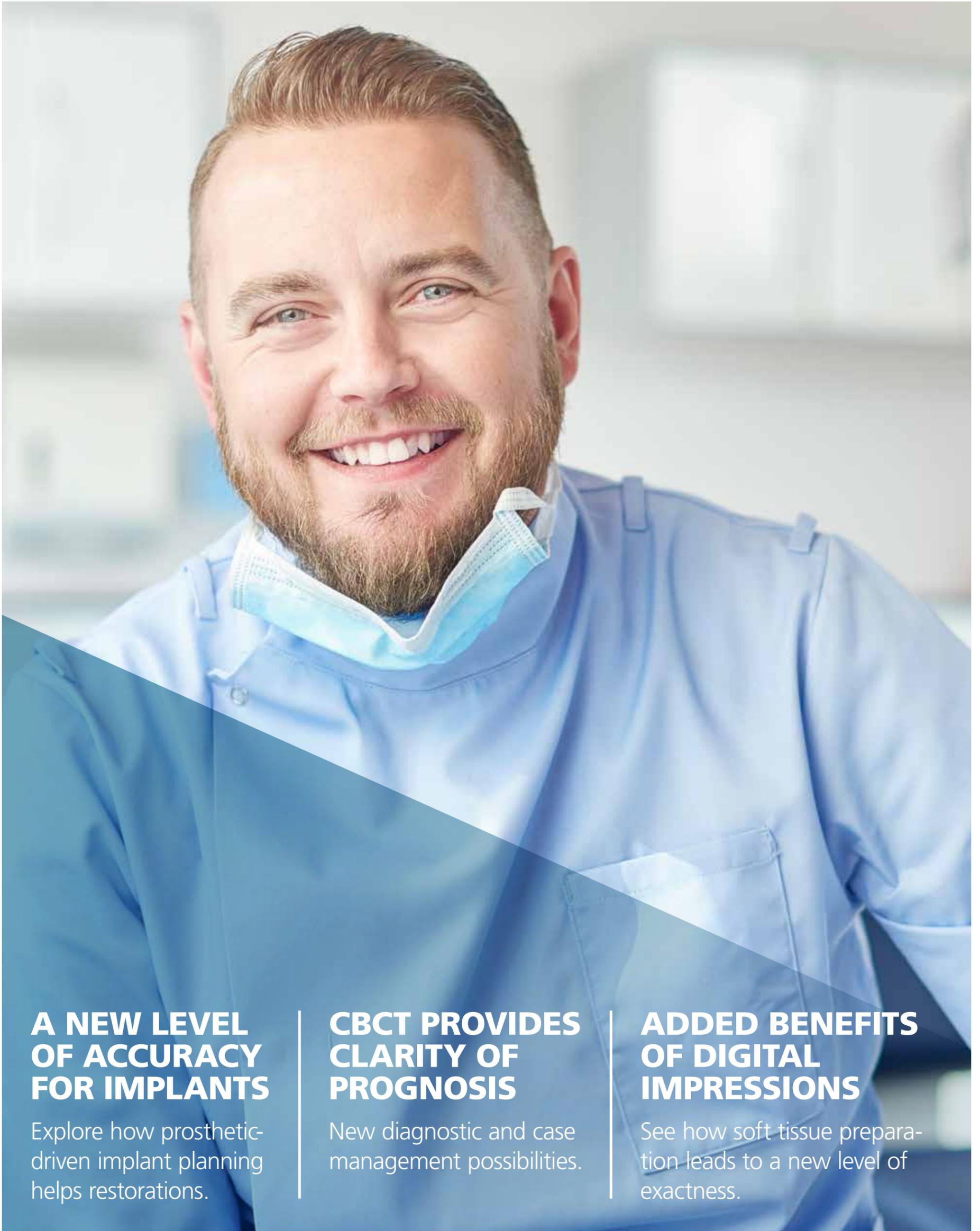


THE DIGITAL DENTIST



A NEW LEVEL OF ACCURACY FOR IMPLANTS

Explore how prosthetic-driven implant planning helps restorations.

CBCT PROVIDES CLARITY OF PROGNOSIS

New diagnostic and case management possibilities.

ADDED BENEFITS OF DIGITAL IMPRESSIONS

See how soft tissue preparation leads to a new level of exactness.

FACT SHEET

Dr. Nicolas Boutin

An implant specialist in Paris, Dr. Boutin is the coauthor of a publication about the anatomical risks of implant treatment, as well numerous publications about immediate loading protocols. He is a lecturer in multiple international courses and congress in anatomy, implant surgery and prosthesis.

- Graduated from Paris V University and SAPO IMPLANT
- Instructor, SAPO IMPLANT
- Teaching fellow at University Paris VII, Post Graduate in Implant Surgery and Periodontology
- Founder of Paris Graftless Center and Live Implant Surgery Center

CLINICAL CASE STUDY

UNLIMITED POSSIBILITIES IN THE LIMITED SPACE BETWEEN TEETH

ANTERIOR SINGLE IMPLANT-SUPPORTED RESTORATION IN THE AESTHETIC ZONE USING GUIDED SURGERY

INITIAL CLINICAL SITUATION

A 35-year old male patient presented at the office with a missing maxillary lateral incisor. Visual examination revealed limited space for the restoration as well as a supraocclusion.

A cone beam computed tomography (CBCT) scan was taken to validate the bone volume. The implant was planned with the CS 3D Imaging software using a virtual tooth to determine if the prosthetic emergence would be compatible with the underlying bone volume. When the feasibility of the treatment was validated, digital impressions were acquired using the CS 3600 intraoral scanner.

The impression file was sent to the dental laboratory to create a wax up, which was then used to generate a second digital model. Using NobelClinician™ software, this file was merged with the patient's CBCT scan to complete implant planning and create and order a surgical guide.



Initial clinical situation



The clinical situation including both the bone information and the soft tissue

Testimonial

On an aesthetic zone with limited space between teeth, prosthetic-driven planning enabled us to accurately determine the implant axis in order to place the screw-retained implant in a more palatal position. With CBCT imaging and 3D implant planning software, we were able to effortlessly plan and validate this case. By combining implant planning with guided surgery, we achieved a successful prosthetic outcome. Digital impressions also allow dentists to immediately place the temporary restoration, thanks to CAD/CAM design and milling.

TREATMENT PLAN

The surgery was performed using a pilot drill guide to position the axis of implants and was then completed free-hand.

The digital impression was taken with the CS 3600 intraoral scanner, which allowed the implant network to quickly create the temporary restoration for immediate loading. Once the digital impression was transferred to the laboratory, the restoration design was validated live through an online video conference before milling took place. Less than two hours later, the patient received the temporary crown.



The treatment plan with all the information on one screen: virtual crown, virtual implant, bone structure and soft tissue



Pilot drill guide used to initiate the placement of implants



The emergence profile



Temporary crown designed using third party CAD software (laboratory)



The milled crown (Laboratoire Beaupère - Quincy Voisins - France. Crown milled with Amann Girschbach Motion 2)



The temporary crown one month after the surgery



CLINICAL CASE STUDY



FACT SHEET

Dr. Mark Limosani, DDS MSD

Dr Limosani received his D.M.D. degree from the University of Montreal in 2007. He attended the specialty program in Endodontics at Nova Southeastern University, where he also received his Masters Degree in Dental Science. Dr. Limosani is a Fellow of the Royal College of Dentists of Canada and a diplomate of the American Board of Endodontics. He is currently on staff at Miami Children's Hospital and teaches at the AEGD residency program at Community Smiles. Dr. Limosani has lectured locally and internationally on dental traumatology, restoration of endodontically treated teeth, restoratively minded endodontics, diagnosis and treatment planning and cone beam computed tomography.

Testimonial

As clinicians, we can all recognize the importance of managing patient expectations prior to initiating treatment. When explaining all potential risks and benefits associated with our intervention, it becomes imperative for us to gather a significant amount of evidence to allow the patient to make an enlightened decision. CBCT helps uncover another layer of the dental diagnostic truth while concomitantly enabling us to properly document our decision-making process.

The CS 8100 3D extraoral imaging system is an integral part of treatment planning and has provided me with the resources to make my discussions with patients more thorough and meaningful. It enhances the value of the care I provide. CBCT technology provides practitioners with another level of comprehension both from a diagnostic, as well as a case management, perspective. With 3D imaging, we are able to evaluate cases more accurately while, at the same time, providing the patient with more effective diagnostic tools that minimize additional costs, procedures and discomfort.

UNCOVER LAYER AFTER LAYER OF DIAGNOSTIC EVIDENCE

CBCT PROVIDES CLARITY OF PROGNOSIS

CASE OVERVIEW

It's no wonder that doctors who specialize in implantology were early adopters of 3D imaging technology.

A 67 year old female taking Forteo (Teriparatide) for the treatment of osteoporosis was referred to my office by her general dentist because of her history of ongoing low grade discomfort associated with the UR quadrant and, more specifically, tooth #3. Her dental history revealed previous root canal therapy was completed on tooth #3.

She didn't recall when the procedure was performed, but was confident it was more than 5 years prior to presenting at my office. Clinical examination revealed a slight buccal swelling associated with the tissue buccal to tooth #3. No sinus tract was

evident. The palpation of the temporalis and masseter muscles did reveal some trigger point sensitivity suggestive of myositis, possibly subsequent to parafunctional habits. Tooth #3 demonstrated slight sensitivity to biting, palpation and percussion.

A 6mm probing was noted on the MP aspect of the P root. This finding was concomitant with purulent discharge. The PA radiograph (Figure 1) demonstrated that tooth #3 had previous root canal treatment. Probable radiolucent findings were associated with the apical portion of the MB and P roots. The root canal filling material associated with all three roots appeared underextended and underfilled. A decision was made to take a CBCT in order to obtain more valuable diagnostic information.



Figure 1: 2D periapical radiograph of previous RCT on tooth #3

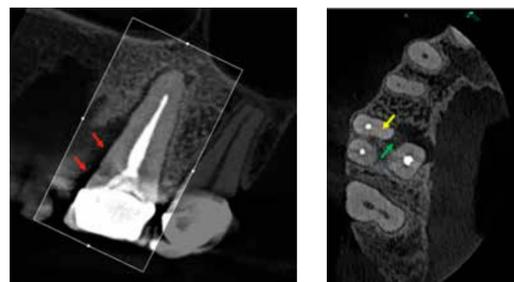


Figure 2: Oblique sagittal CBCT view of #3 with attenuation patterns suggestive of a narrow bony defect associated with the MB aspect of the P root of tooth #3 (red arrows)

Figure 3: Axial view with finding of an unaddressed MB2 canal (yellow arrow) and furcal defect (blue arrow) on #3



Figure 4 & 5: Operating microscope intraoral photographs of the partially debrided tooth # 3 with the finding of a crack extending from the mesiobuccal canal through the palatal root

FINDINGS

The sagittal slice demonstrated attenuation patterns suggestive of a narrow bony defect associated with the mesiobuccal (MB) aspect of the palatal root of tooth #3. The axial slice demonstrated the high likelihood of an unaddressed second MB canal as well as a furcal defect involving the MB and palatal roots. No radiolucent findings were associated w/ the apical portion of the MB root.

- 1) A crack extending from the MB root to the P root.
- 2) A second mesiobuccal (MB2) canal that was unaddressed during the initial therapy that was causing persistent periradicular periodontitis.

The patient was given the option to have the tooth extracted or to re-access the pulp chamber in order to investigate the presence of a crack or missed canal.

She agreed to access the tooth, where upon a crack was discovered (Figures 4 and 5) extending from the MB canal through the palatal root.

TREATMENT PLAN

My endodontic diagnosis for tooth #3 was a previously endodontically treated tooth with an acute apical abscess. The differential diagnosis associated w/ the etiology of bone loss was assessed as follows:



CLINICAL CASE STUDY



FACT SHEET

Dr. Silverman

Dr. Silverman is in private practice limited to Oral and Maxillofacial Surgery in New City, NY and is an attending Physician at Westchester County Medical Center, Department of Oral and Maxillofacial Surgery and Nyack Hospital, Department of Dentistry. He is also a Clinical Associate Professor at New York Medical College. He lectures nationally on several different implant systems and is President of the Bi-State and Hudson River Implant Study Clubs. He is a past president of the Rockland County Dental Society and previously served on the Board of Governors of the Ninth District Dental Society.

Dr. Silverman graduated from Fairleigh Dickinson University in 1982 Summa Cum Laude and received his doctorate in Dental Medicine in 1986 from Fairleigh Dickinson Jr. School of Dentistry, where he was a member of the Omicron Kappa Upsilon Honor Society. He completed his Oral and Maxillofacial Surgical residency at Westchester County Medical Center in 1989 and was Chief Resident during his final year. Dr. Silverman is currently a Diplomate of the American Board of Oral and Maxillofacial Surgery.

BETTER TREATMENT RESULTS WITH INTRAORAL SCANNING

SOFT TISSUE PREPARATION LEADS TO A NEW LEVEL OF EXACTNESS

INTRODUCTION

Digital dentistry has provided a new level of exactness from implant planning and placement to the ability to sculpt gingival tissues prior to fabrication of a final prosthesis. The following case study demonstrates the preparation of the soft tissue emergence profile prior to taking the impression for the fabrication of the final restoration.

WORKFLOW WITH A SCANNING BODY

A 52-year-old female presented to my office following the removal of a second deciduous left molar by her general dentist. As no succedaneous tooth was present, an implant was chosen as a viable option.

IMPLANT PLACEMENT AND DIGITAL IMPRESSION

A Thommen 5.0mm Element Implant was placed in tooth #20 with an insertion torque greater than 35 ncm. At the time of implant placement, a scanning body was placed and a CS 3600 scanner was used to take a digital impression of the area.

ABUTMENT PLACEMENT

The patient returned to our office within 48 hours and the abutment was placed allowing the contouring of the gingival tissues during the implant osseointegration process.



Scanbody placed for digital impression



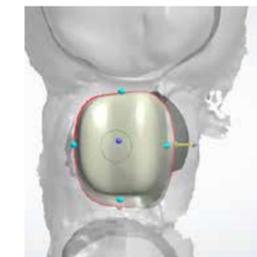
Emergence profile

CONCLUSION

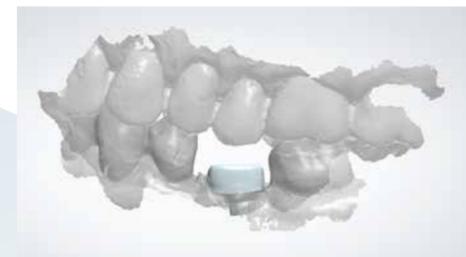
This workflow demonstrates how intraoral digital scanning allows the fabrication and placement of customizable healing abutments—the benefit of which allows the contouring of the gingival tissues during the osseointegration process. By sculpting the tissues to more closely resemble the natural contour of the gingival architecture, we achieve better esthetic results for implant patients.



Designing customized titanium abutment in third-party CAD software



Designing customized titanium abutment in third-party CAD software



Designing customized titanium abutment in third-party CAD software



Placement of customized abutment



[Watch a video of scanning in real time](#)



WORKFLOW INTEGRATION | **HUMANIZED** TECHNOLOGY | **DIAGNOSTIC** EXCELLENCE

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