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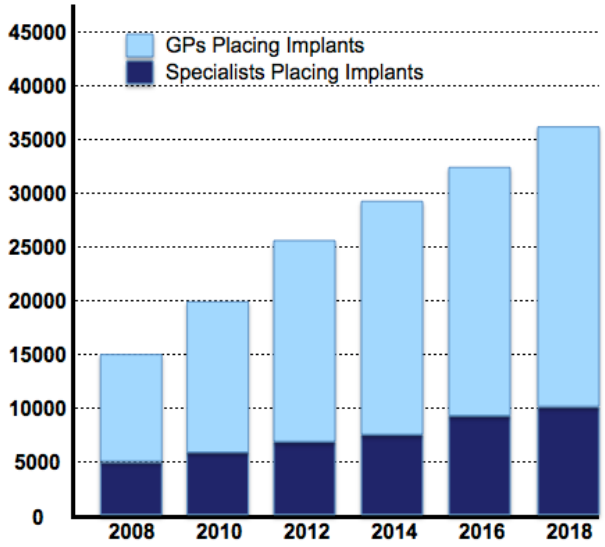
Reinvent Your Practice and Your TEAM through 3D Guided Implantology

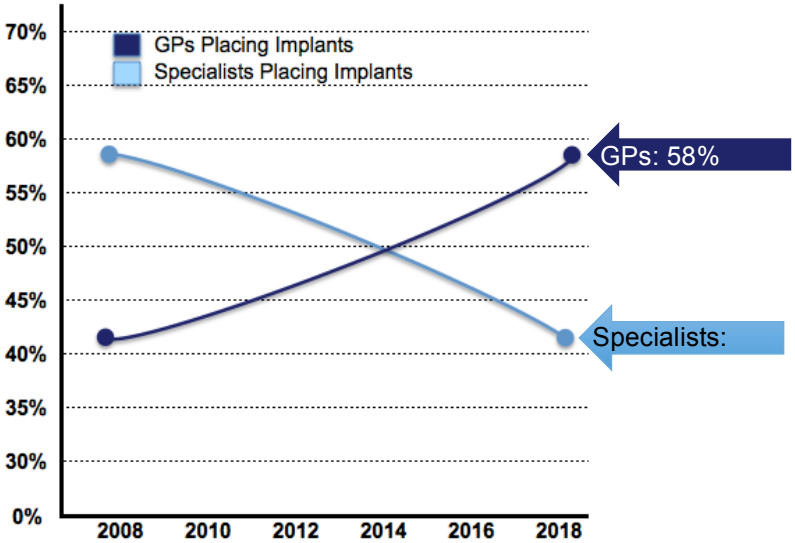
By Patrick Hayden, M.Ed

The Dental Market

In 2011 there were over half a billion missing teeth in adults 18-65*. Two million of those missing teeth were replaced by dental implants, and implant placement is expected almost double by 2018**. More important, a significant trend of GPs are placing dental implants. By 2018 58% of all dental implants will be placed by GPs (24% of all GPs)**.



Implant Placement:
GPs vs. Implant Specialists, US, 2008-2018



% of Implants Placed:
GPs vs. Implant Specialists, US, 2008-2018

*Source: 2011 US Census Data- National Institute of Health
**Source: "U.S. Market for Dental Implants, Final Abutments and Computer Guided Surgery", Idata Research, Nov 2011

3D Guided Implantology

3D guided dental implant procedures are an integral reason for this explosive growth in dental implants. The 3D cone beam is the "Hubble Telescope" of diagnostics for dentists and has become the new norm. If the dentist can "see" through better diagnostics, they can offer an accurate and predictable treatment plan and the patient can get healthy.

Stars

Stars seen through Hubble Telescope

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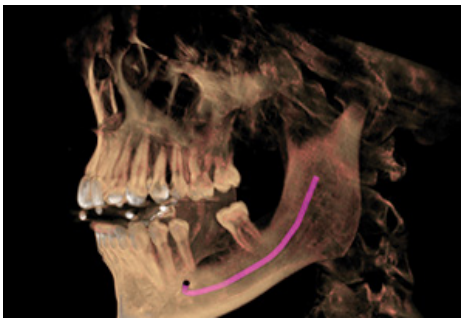
The 3D Guided Implantology Workflow

3D CBCT Scan

It all starts with a 3D CBCT scan of the patient's jaw. CBCT stands for "Cone Beam Computed Tomography". Tomography derives from the Greek word "tomos" meaning "slice" or "section", and "graphe" meaning "drawing". Literally thousands of images of the patient's jaw are captured into "slices". All the images of the patient's jaw together are called a digital DICOM file (Digital Imaging and Communications in Medicine) that is transferred into the 3D Implant Planning Software on a computer.

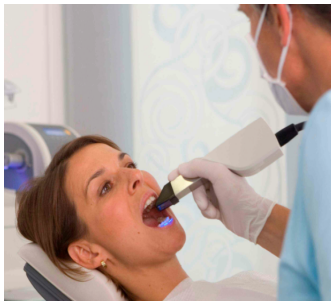
3D CBCT Scan



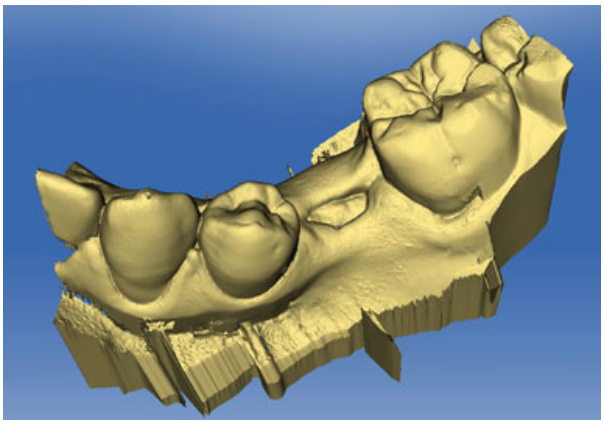
DICOM File

Tooth Surface Scan

A second scan (called a tooth surface scan) is taken of the patient's missing teeth and surrounding teeth. This scan captures the patient's gingival contours and dentition detail. The dentist takes a conventional impression of the patient's arch, (using polyvinyl or polyether), and a stone model is poured. This stone model is then shipped to the dental lab where the surgical guide will be fabricated. The lab digitally scans the stone model to create what is called a digital STL file (STereoLithography, or Standard Tessellation Language). If the dentist has a digital impression scanner (i.e., CEREC) the tooth surface scan can be captured digitally chairside and sent to the lab electronically with no need to create a stone model.



Digital Tooth Surface Scan



STL File

Conventional Tooth Surface Scan

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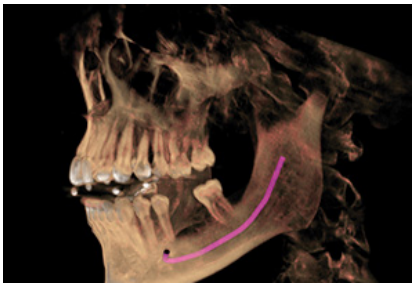
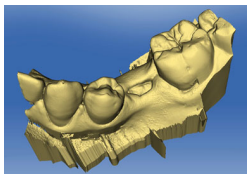
3D Implant Planning Software

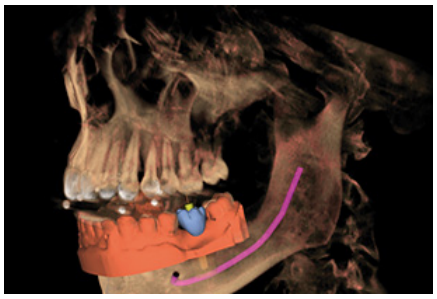
The DICOM file from the CBCT scan is combined /merged with the STL file from the tooth surface scan into the 3D Implant Planning Software. The prosthesis is designed and the dental implants are placed virtually in 3D CAD (Computer Assisted Design) software. Key structures such as nerves and sinuses are seen clearly. This upfront 3D digital planning of the implant placement and prosthesis design is the key to the confidence of the implant surgeon having predictable and successful outcomes for the implant placement, restoration, and most importantly their patient's health.



DICOM file from 3D CBCT scan



STL file from tooth surface scan



Merged in to 3D Implant Planning Software

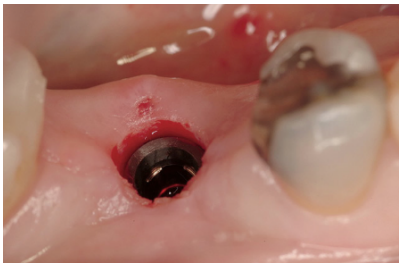
This can also be the most challenging and frustrating step for the implant surgeon in the 3D guided implant workflow. It takes time and repetitive practice to learn and master the 3D Implant Planning software.

Guided Surgery Implant Placement

The lab then fabricates a surgical guide using 3D CAM -Computer Aided Manufacturing- printing technology-based on the 3D Implant Planning CAD Software design. This guide has metal sleeves, or stents, that guide the surgical drills to the optimal angulation and depth.

Surgical Guide

A less invasive flapless "tissue punch" surgical procedure using no sutures can often occur with 3D guided implant surgery resulting in more comfort to the patient.



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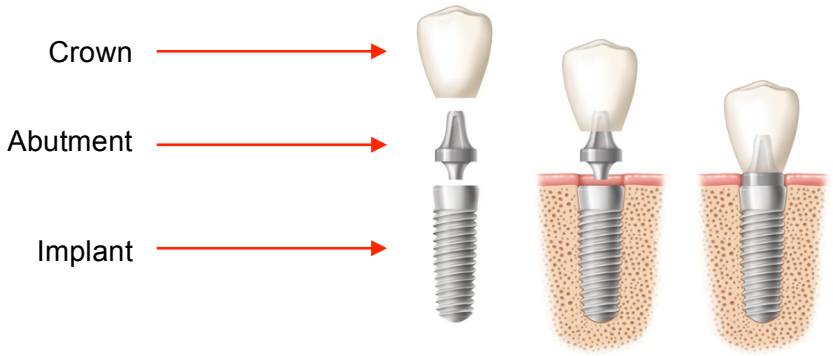
Restoration

An implant abutment is screwed into the dental implant. The crown (prosthesis) is cemented onto or screwed into the implant abutment.



The abutment and prosthesis can be designed and fabricated using 3D CAD/CAM digital technology. In the example below, the dental implant has been placed and fully integrated. A scan post and scan body is placed into the dental implant. This Scan Body is designed with a triangular shape on the top which, when scanned with a digital impression scanner, captures the orientation (depth, angulation) of the dental implant.

Integrated implant

Healing abutment on dental implant

Healing abutment removed

Scan Post & Scan Body

Scan Post screwed into dental implant

Scan Body placed onto Scan Post

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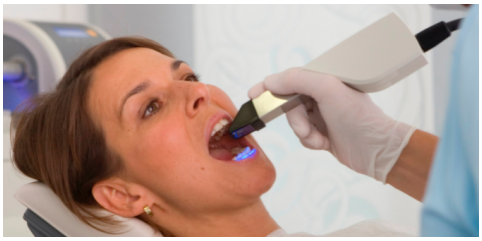
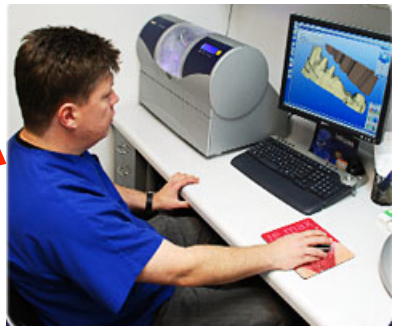
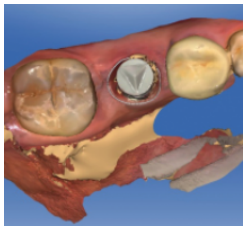
A digital impression is taken using a CEREC digital impression scanner. The Scan Body captures the orientation of the dental implant digitally in the computer software. The dentist now has the choice to design and mill the custom abutment and crown chairside using CEREC or to send the digital file to a dental lab where they will complete the design and manufacturing.

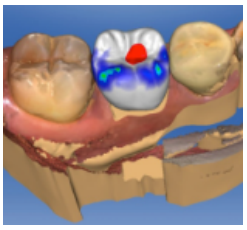


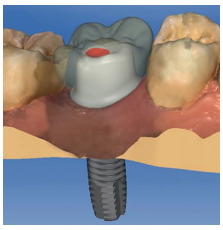
Chairside

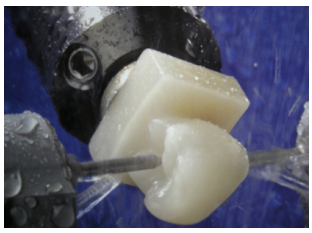


Lab









The completed CAD/CAM custom abutment is screwed into the dental implant. The final crown is cemented onto or screwed into the custom abutment.

CAD = **C**omputer **A**ssisted **D**esign
CAM = **C**omputer **A**ssisted **M**anufacturing

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Reinvent Yourself and Your Practice through Education

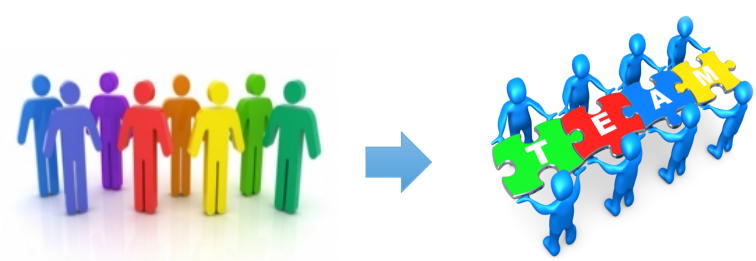
Everyone's dental TEAM will need education on dental implants and 3D guided technology and how to effectively communicate the value of this exciting treatment to their patients. Education is the key to reinventing the dental professional's career, realizing the dream dental practice, practice growth, and providing the best care for patients.

The implant specialist needs to proactively prepare for these changes by reinventing themselves by offering 3D guided implant placement for their GP referral partner's patients. And GPs and prosthodontists who choose to start placing dental implants will need a roadmap and education on choosing a dental implant system, a 3D cone beam, 3D implant planning software, and guided placement of dental implants.

The emerging technologies of dental implants and 3D guided CAD/CAM technology has created a paradigm shift in the dental industry. Dental professionals need to change and reinvent themselves and their practice to adjust to this change. But change is not easy! The right education can provide the dental professional with the solution they need to have confidence in providing 3D guided implant therapy to their patients.

The Dental TEAM

The dental TEAM is the most untapped resource in a dental practice. High functioning successful dental practices have a common thread: everyone in the practice performs not as a staff, but as a dental TEAM.



The ability of the dental TEAM to effectively and consistently communicate to patients a diagnosis and treatment to improve their health has become more important than ever for the practice with the emerging technologies of dental implants and 3D digital technology. How often has the dentist made a dental implant therapy recommendation to a patient only for that patient to then turn to the hygienist, dental assistant, or front desk and ask them: "What do you think?"

An impactful, educated consistent answer to that question by all the members of the TEAM can dramatically impact case acceptance for optimal treatment for missing teeth, and practice growth. To maximize this significant practice growth opportunity for the dental practice, it is imperative for the entire dental TEAM to consistently demonstrate proficient, consultative knowledge of dental implants and the 3D digital workflow.

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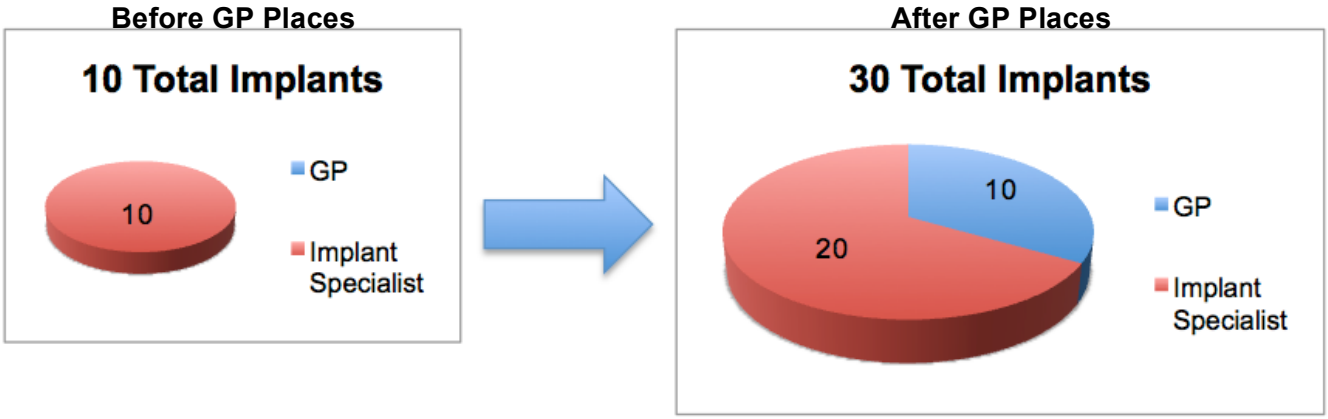
As the Market Grows Everyone Will Grow

Some implant specialists may feel their business is threatened by more GPs placing dental implants. They should not. Most GPs (**76%) will still refer their implant cases to their implant specialist partner. As the implant pie gets bigger everyone's dental practice will grow.

In the first chart below the GP referred 10 implant cases to the Implant Specialist. The Implant Specialist surgically placed all 10 dental implants and the GP performed the restorative procedures only. In the second chart the GP started placing dental implants and placed 10 implants themselves and referred 20 complex cases to the Implant Specialist. There was a net increase of 10 dental implants for the Implant Specialist after the GP started placing dental implants. When the pie grows everyone grows.



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Patrick Hayden, M.Ed
Principal and Owner,
Hayden Education

Hayden Education provides solutions for the Implant Specialist (OMS, Perio) and GP/Prosthodontist Surgeons through effective 3D guided implantology education.

For the Implant Specialist, a needs assessment is conducted and a tailored education plan is provided for the Implant Specialist so they can begin placing 3D guided implants. The team participates in comprehensive training so everyone can effectively discuss dental implant therapy to his or her patients. Then the focus shifts to the GP referral partners and their team, especially the RDH. If the GP referral and their team believe with conviction that implants are the best treatment for their patients, treatment presentation improves dramatically, case acceptance increases, and the Implant Specialist's practice grows.

GPs and Prosthodontists who chooses to place dental implants go through the same process: needs assessment, tailored education plan, and team training on implants and effective patient communication skills.

PatrickHayden@HaydenEducation.com
603/498-7589
www.HaydenEducation.com

Practice Growth Through 3D Guided Implantology Education