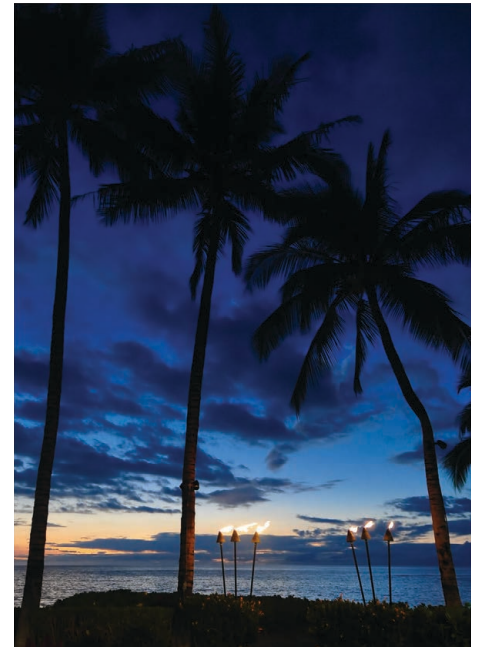


*UCLA Hawaii
Symposium
2019*

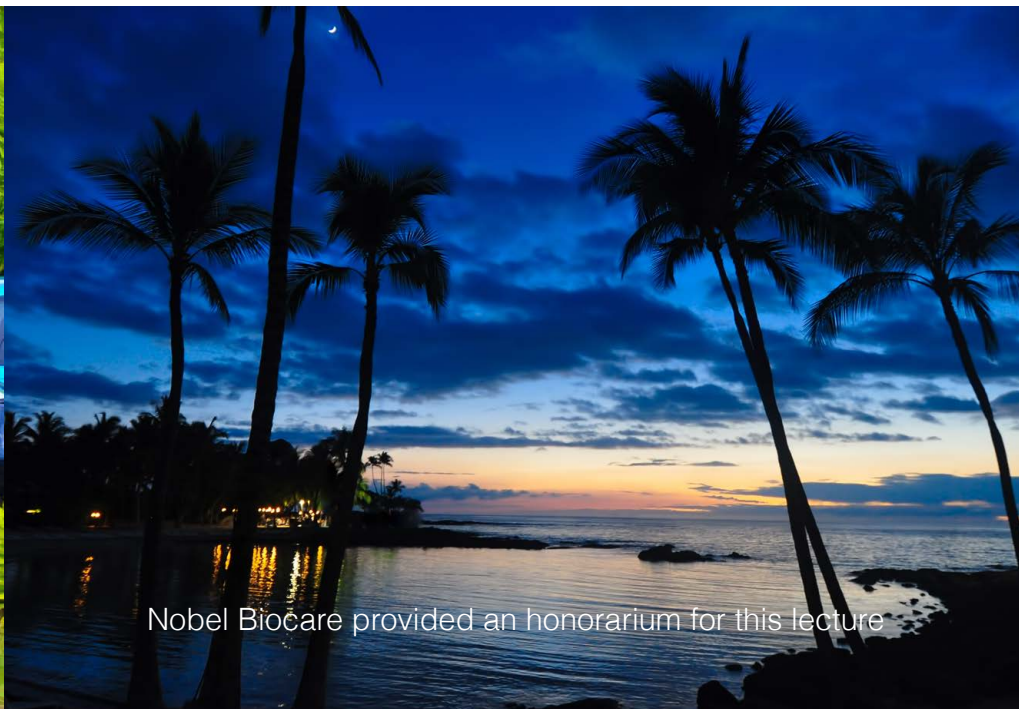


*Fairmount
Orchid*





Disclosures



Nobel Biocare provided an honorarium for this lecture

Sound off
In attendance?



General dentists, specialists, hygienists, staff



Happy July 5th



How many are placing Implants?



Hawaii is about Liquid Management



TRIBE

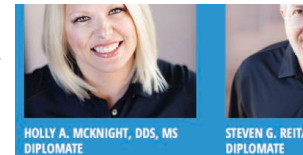
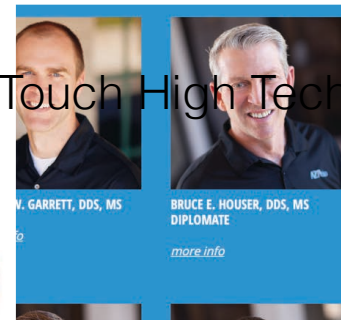
7 Locations in Arizona
 125 staff
 Doctor Owned Group
 Board Certified
 Periodontists
 Place 3500 Implants/Year

65-75% of implants are placed immediately after extraction

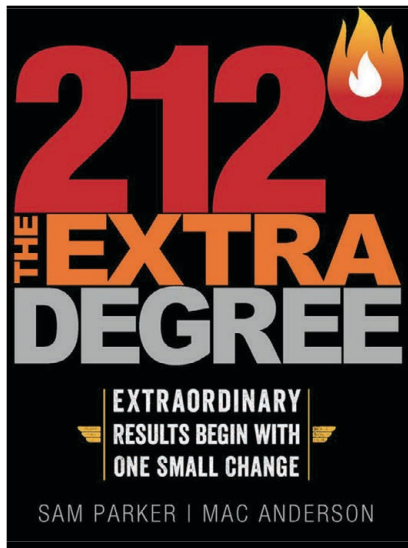
PIEZOSURGERY® touch




High Touch High Tech



TRIBE



ABOUT SERVICES REFERRING PRACTICES PATIENTS CONTACT ONLINE PAYMENT



At 211°, water is hot.
At 212°, it boils.
And with boiling water, comes steam...
And with steam, you can power a **locomotive**.

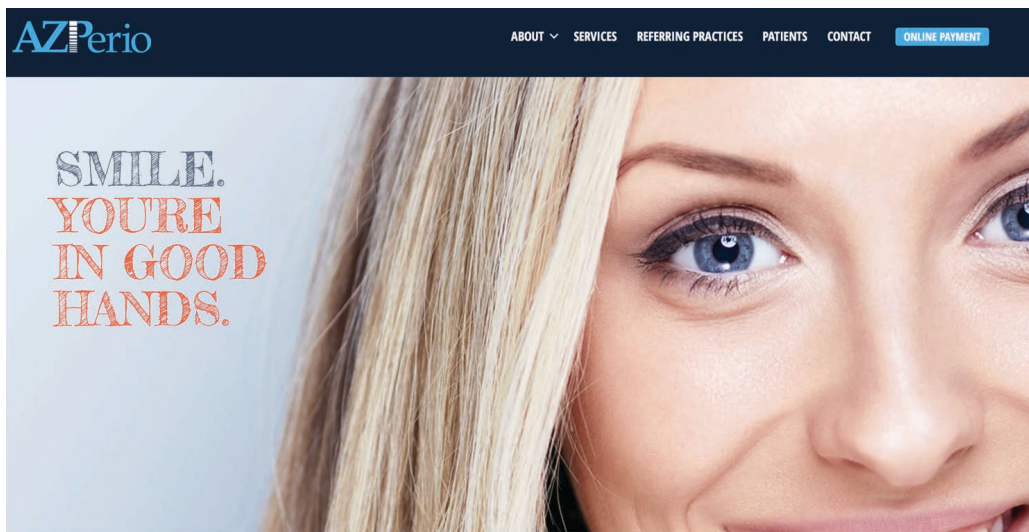
Customer Service

212 degrees from first call



- Doctor calls to new patients
 - Follow up calls
 - Send Flowers
- Personalized Handoffs
 - Personal Notes

TRIBE



Same Day Treatment

Benefits

- Patient convenience, one appt vs two
 - Decreases anxiety
- Increases case acceptance
 - Gets patients out of pain
 - Faster to final restoration

TRIBE

Immediate Implant Placement

Benefits

- Patient convenience, one surgery vs two
 - Less invasive
 - Faster to final restoration
 - Research supports it

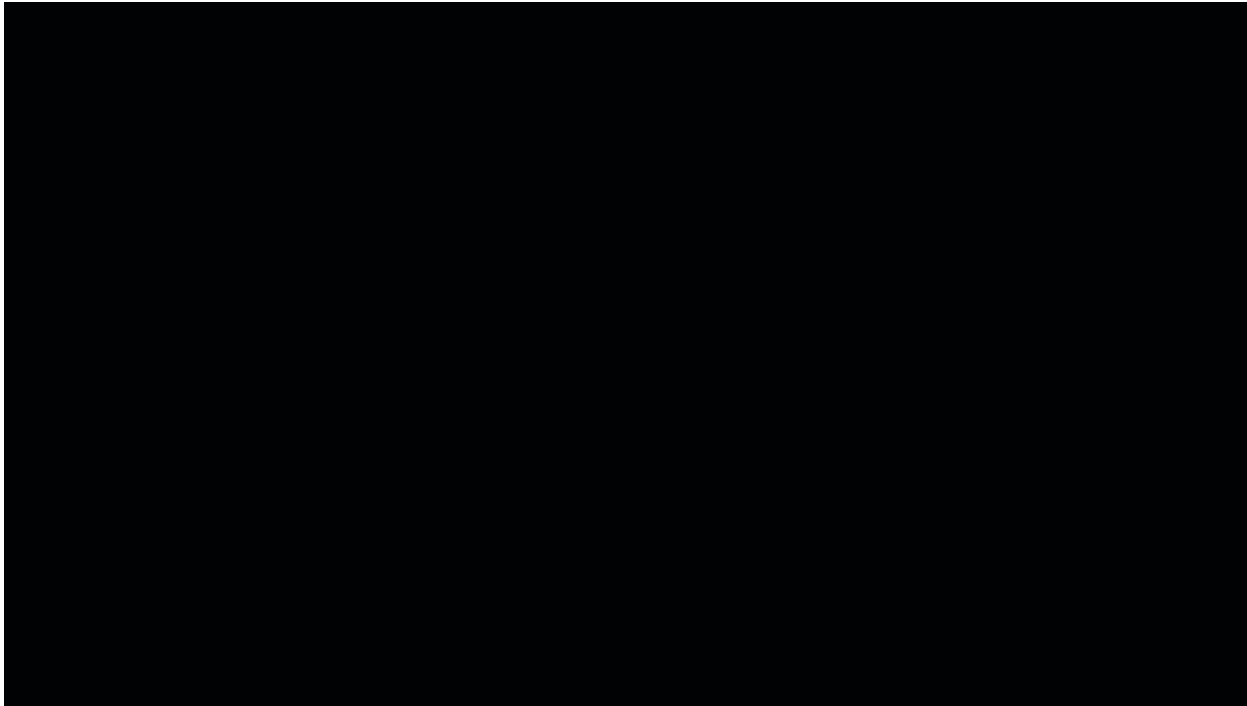


Technology for better Periodontal Outcomes

PIEZOSURGERY® touch

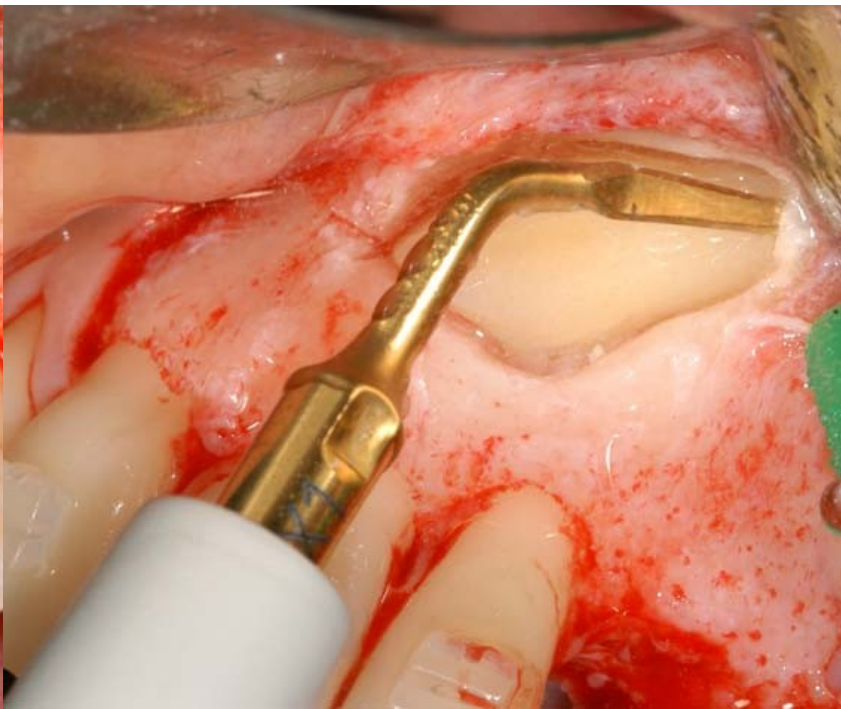


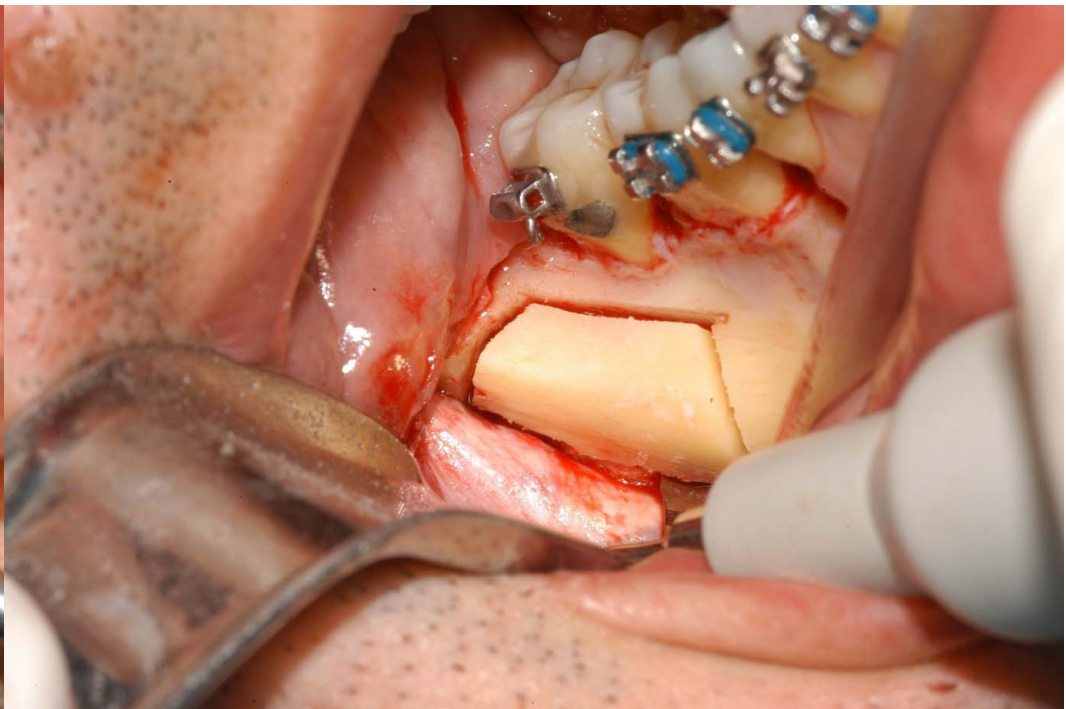
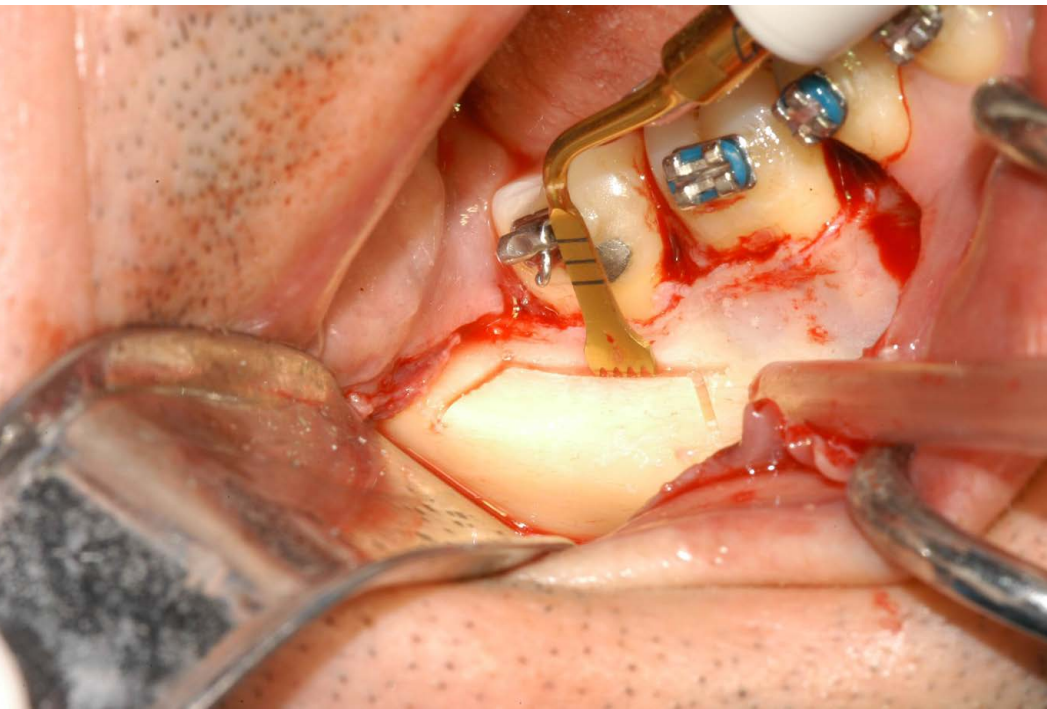
TRIBE

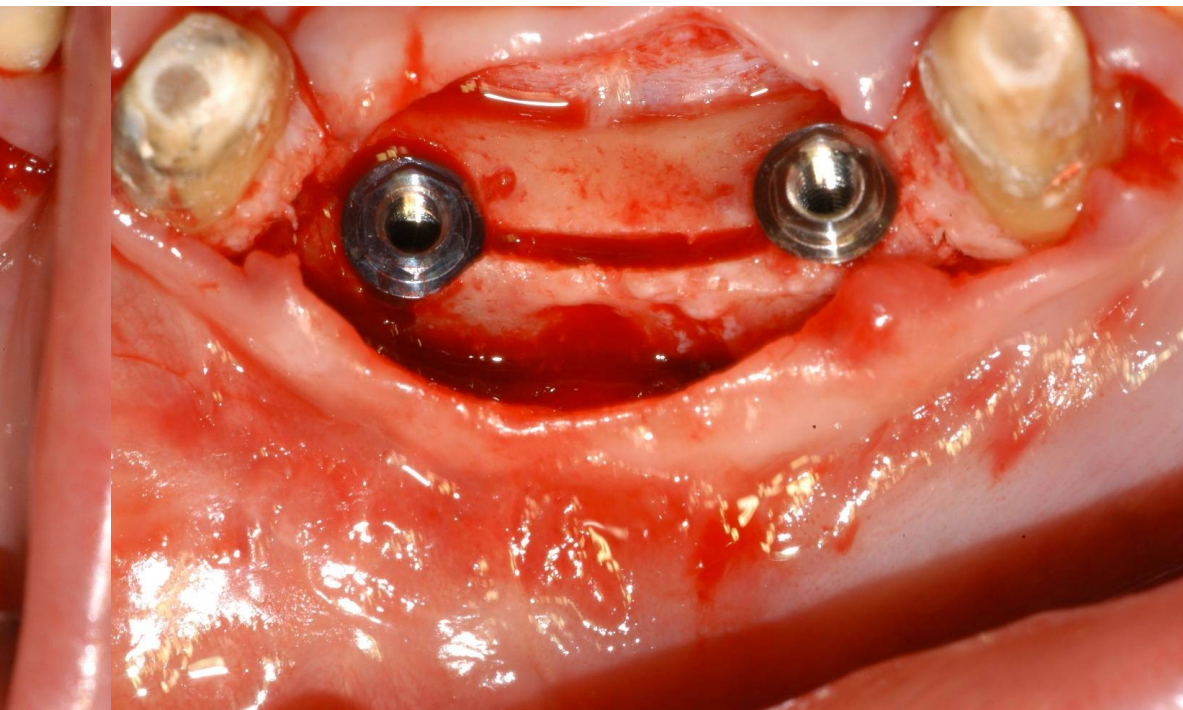
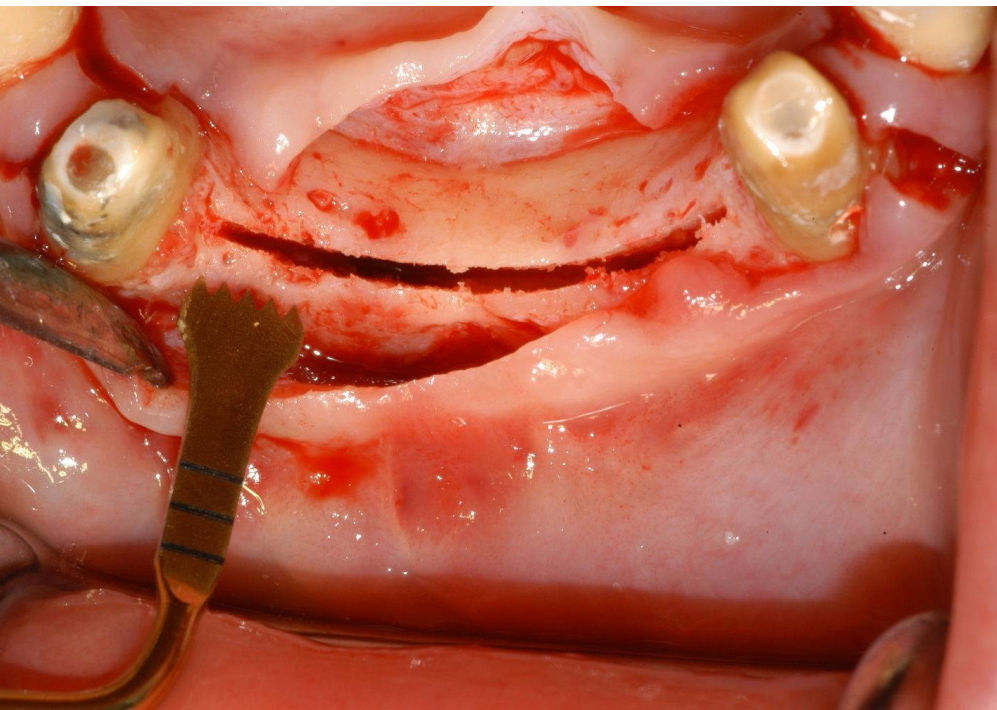


PIEZOSURGERY® touch



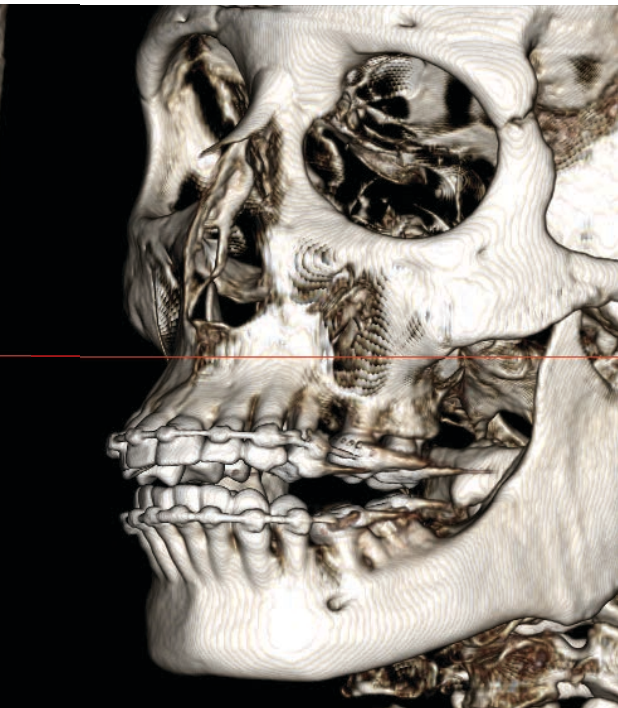
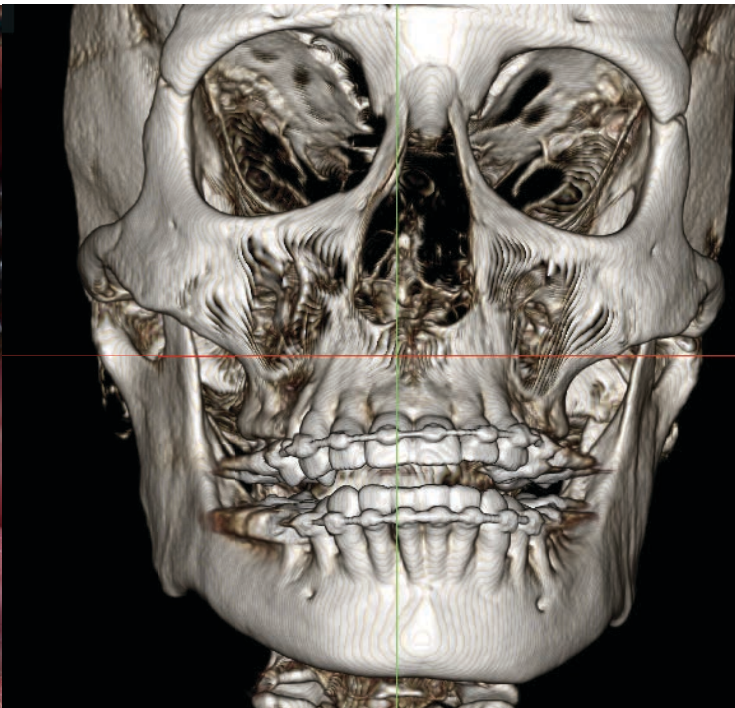


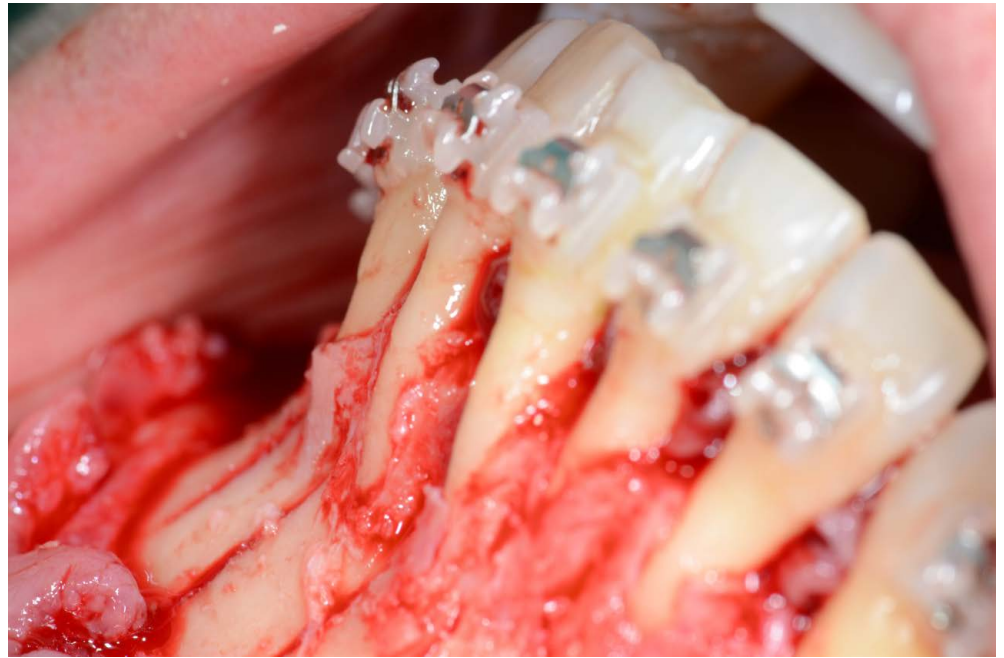
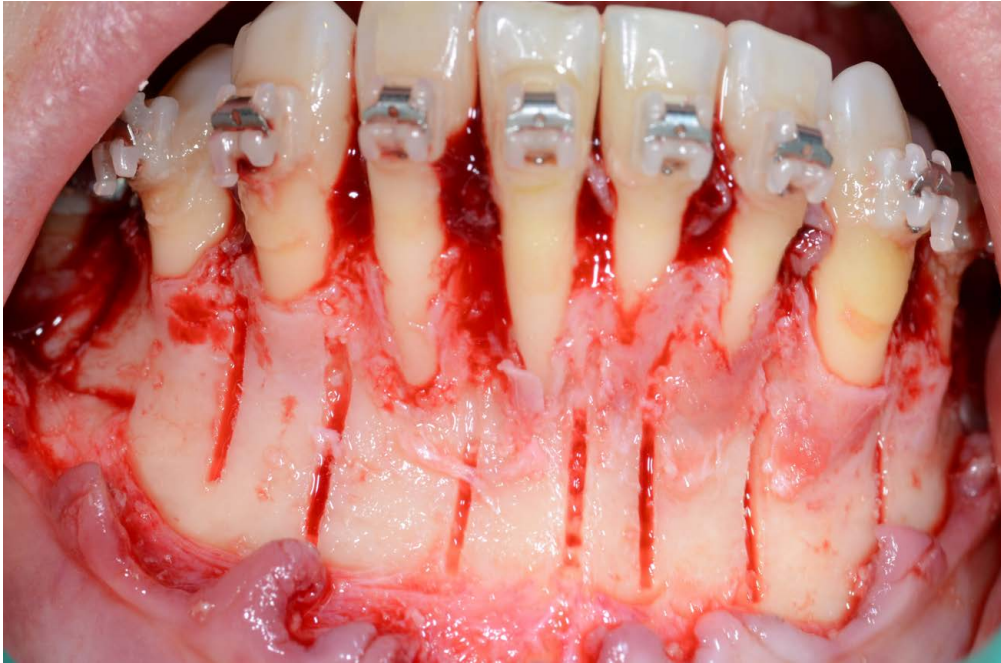




Periodontally Accelerated Osteogenic Orthodontic Treatment





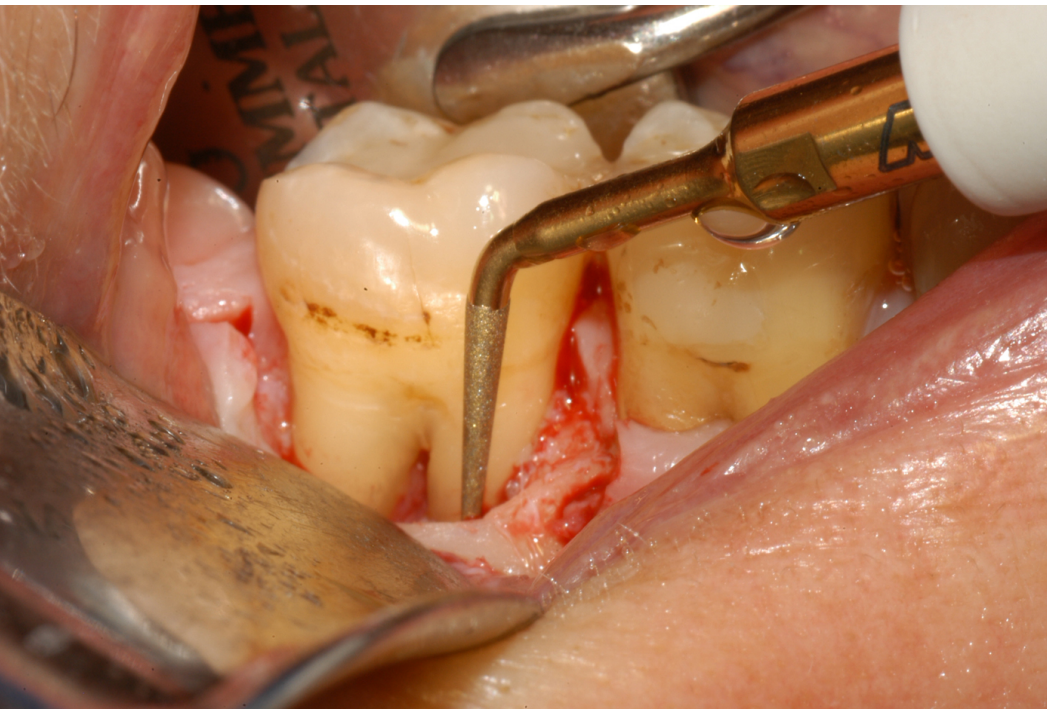


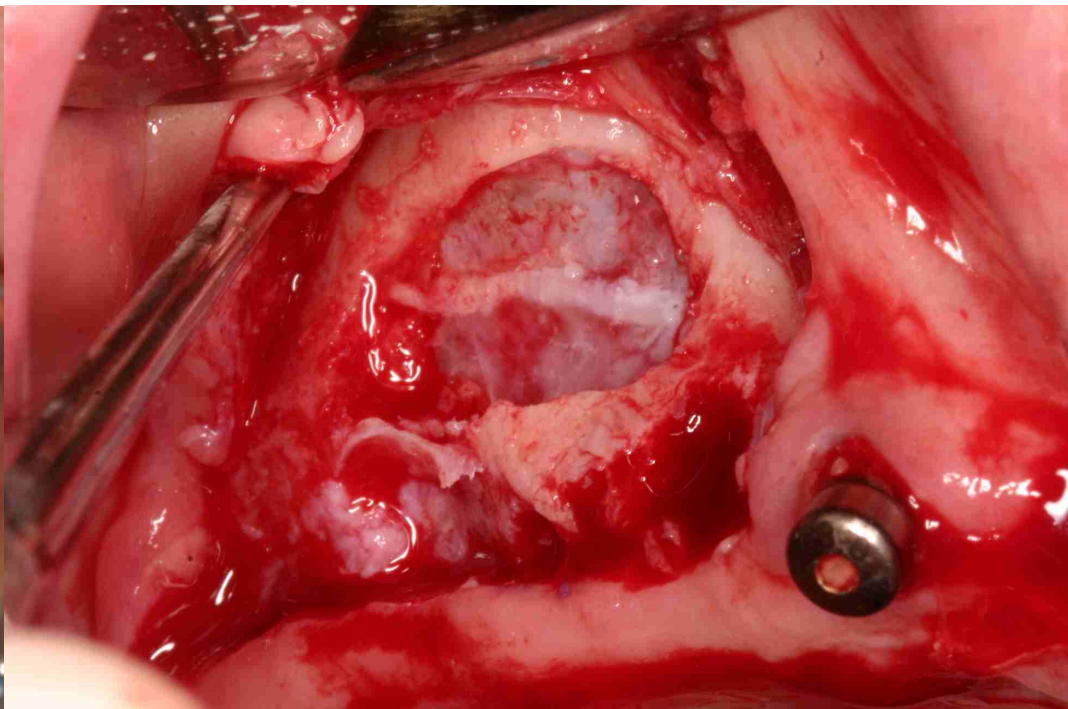
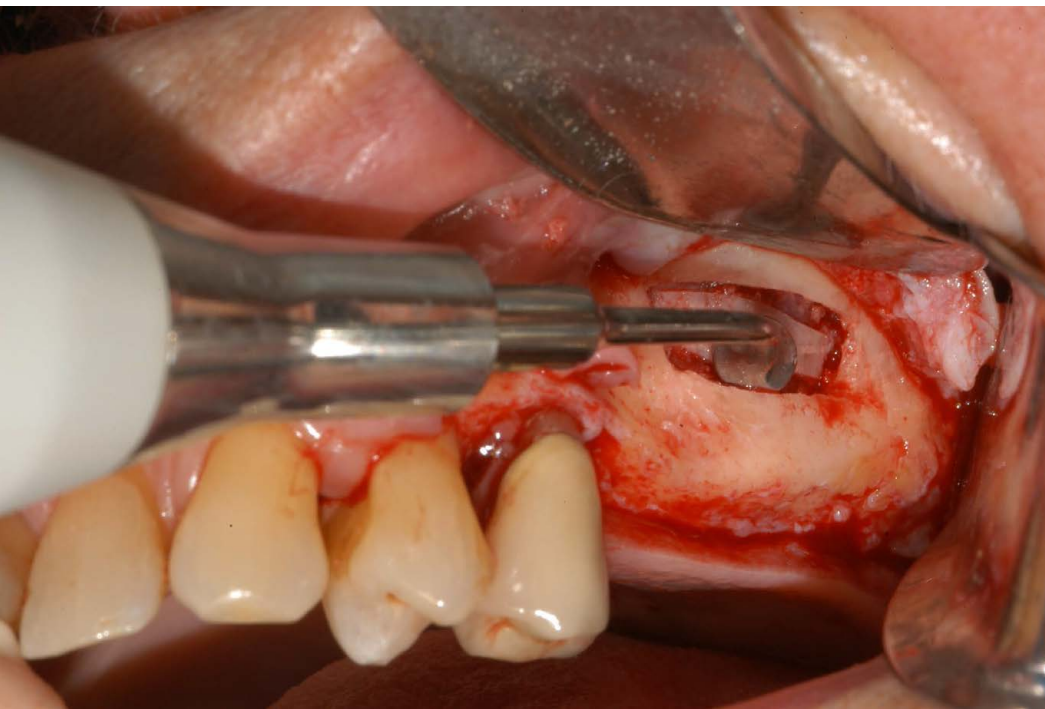


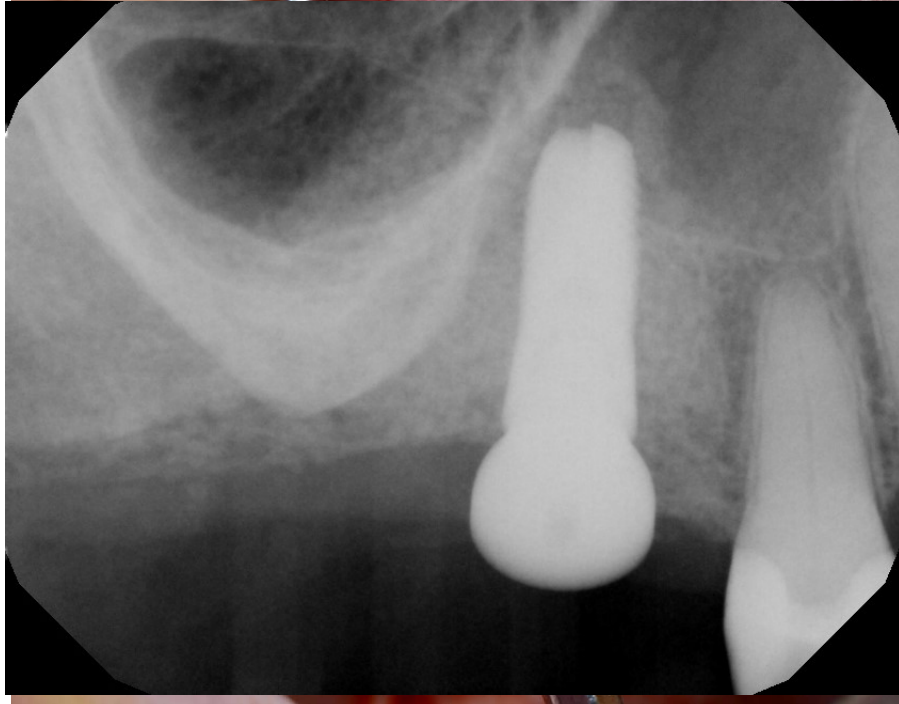
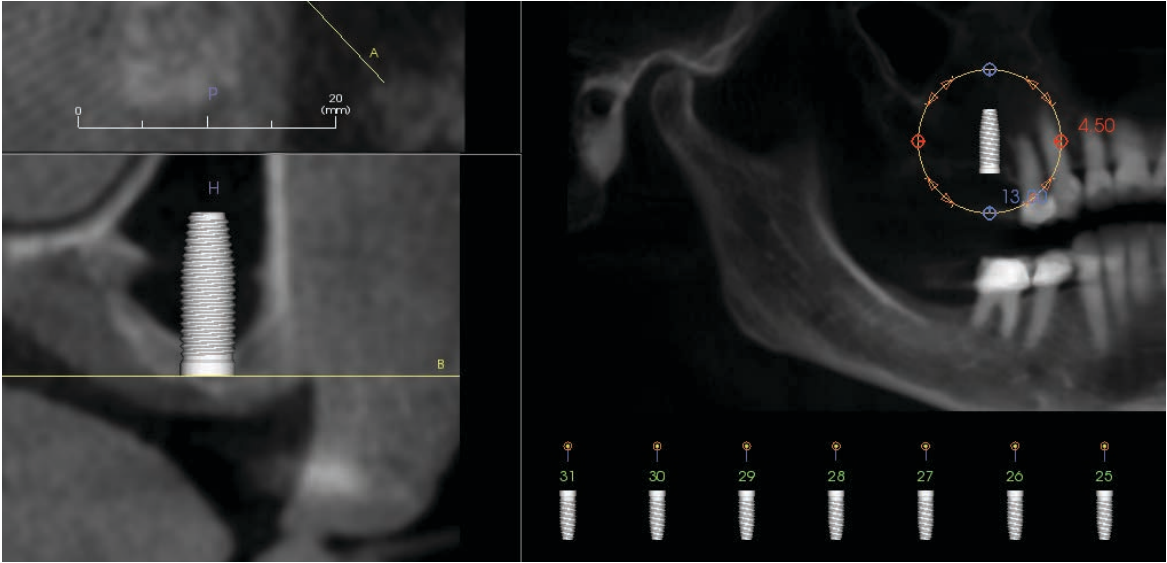


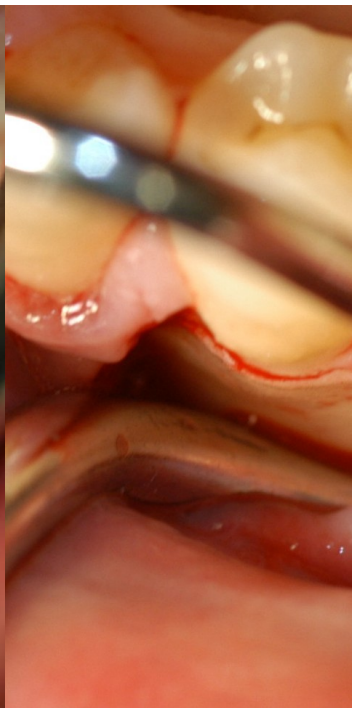




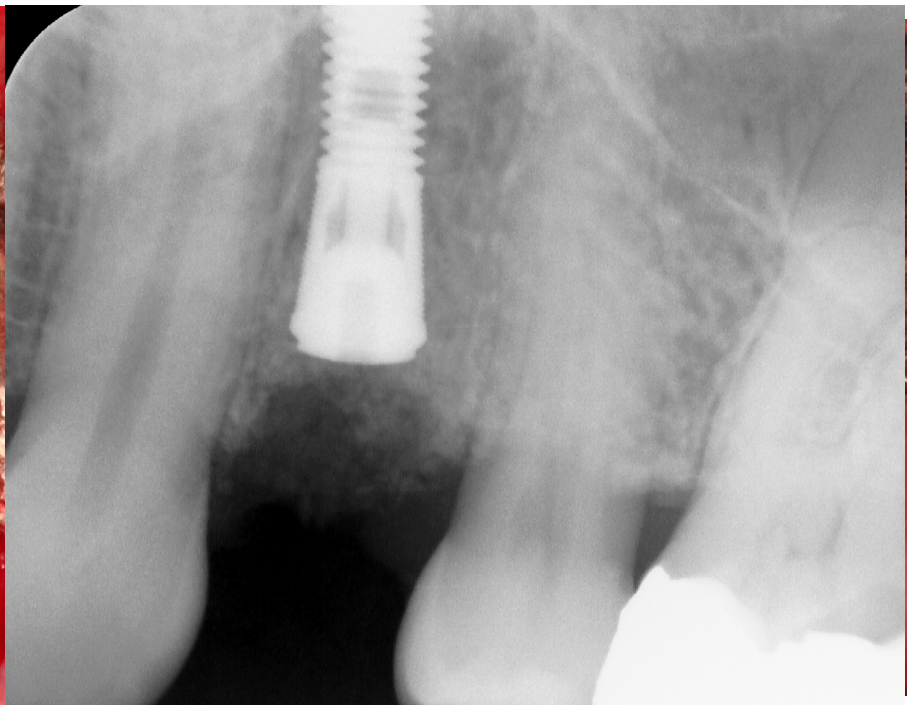
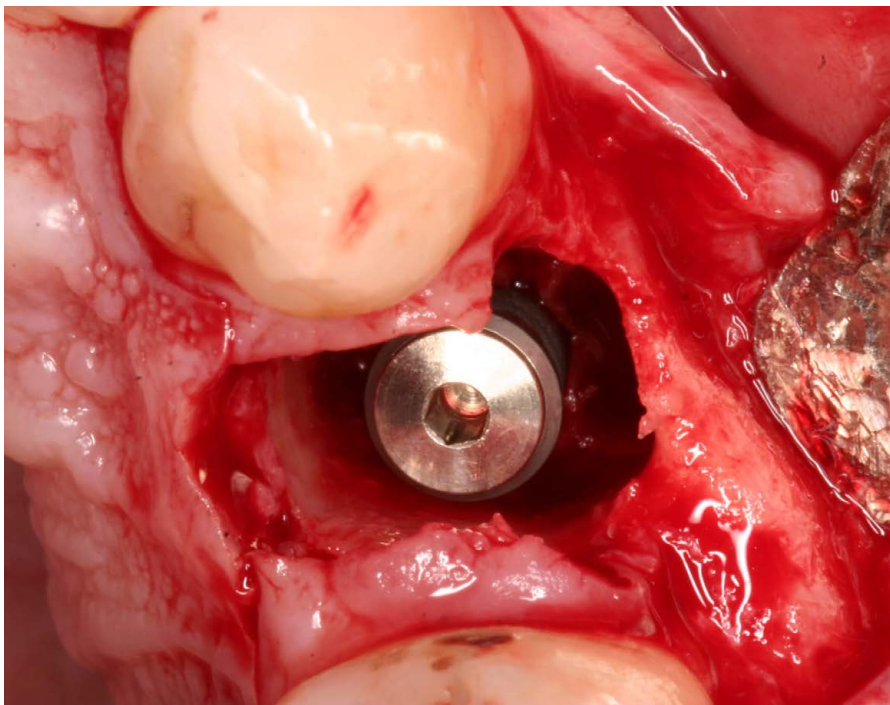






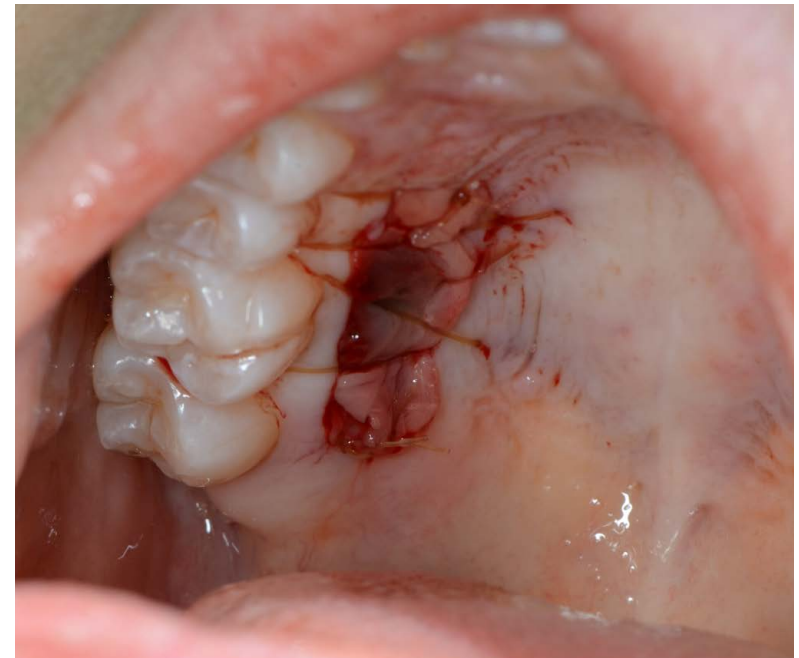








Platelet
Rich
Fibrin





Shifting Paradigms in Implant Osteotomy and Sinus Augmentation

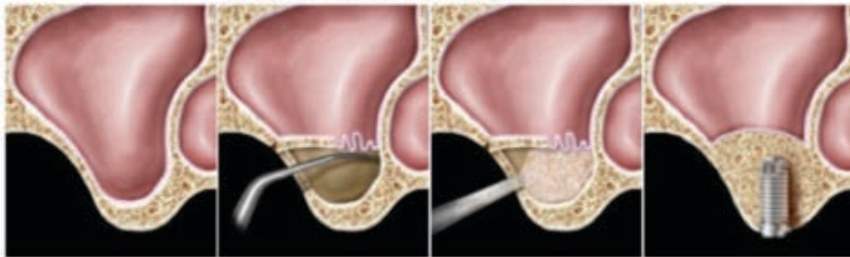


Sinus Elevation Approaches

Internal (osteotome crestal) approach



External (lateral window) approach



Osseodensification for osteotomy and sinus elevation

Reported Versah Benefits

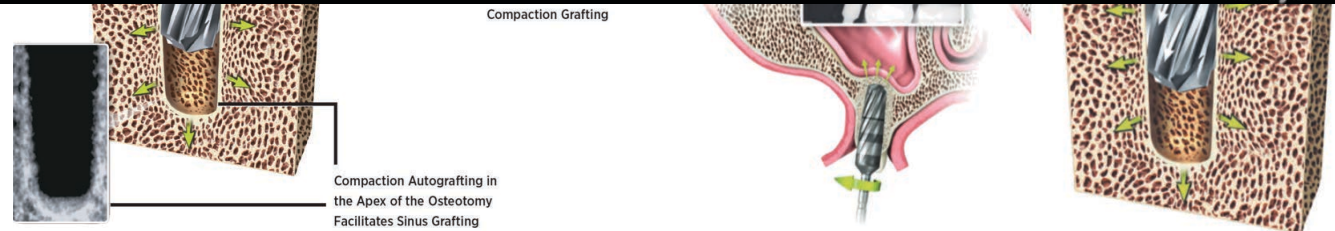
Densifies vs Resection of bone

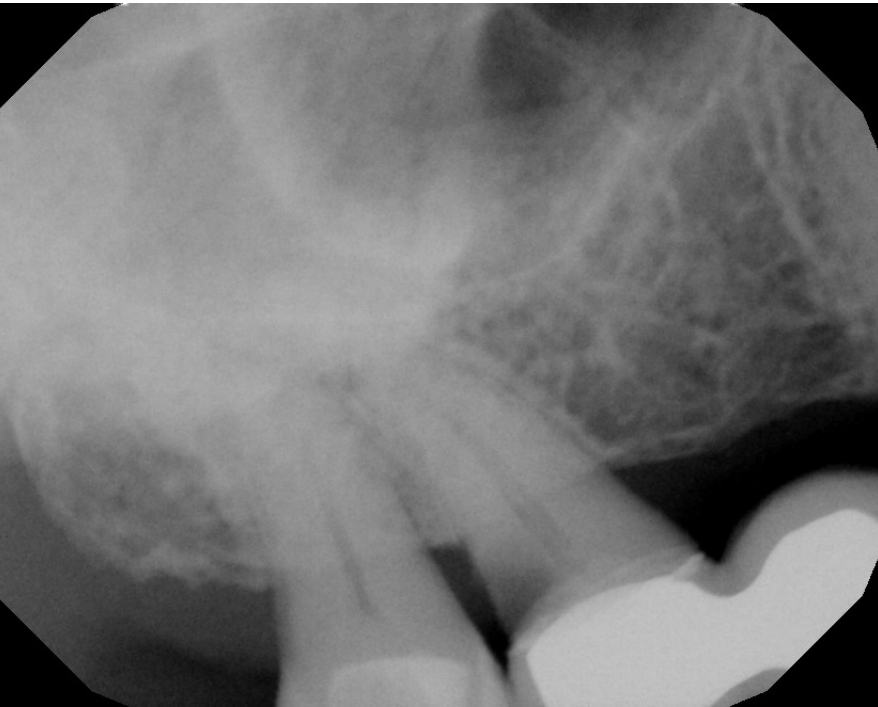
Hydrodynamic Pressure to Lift Sinus

Greater Bone to Implant Contact

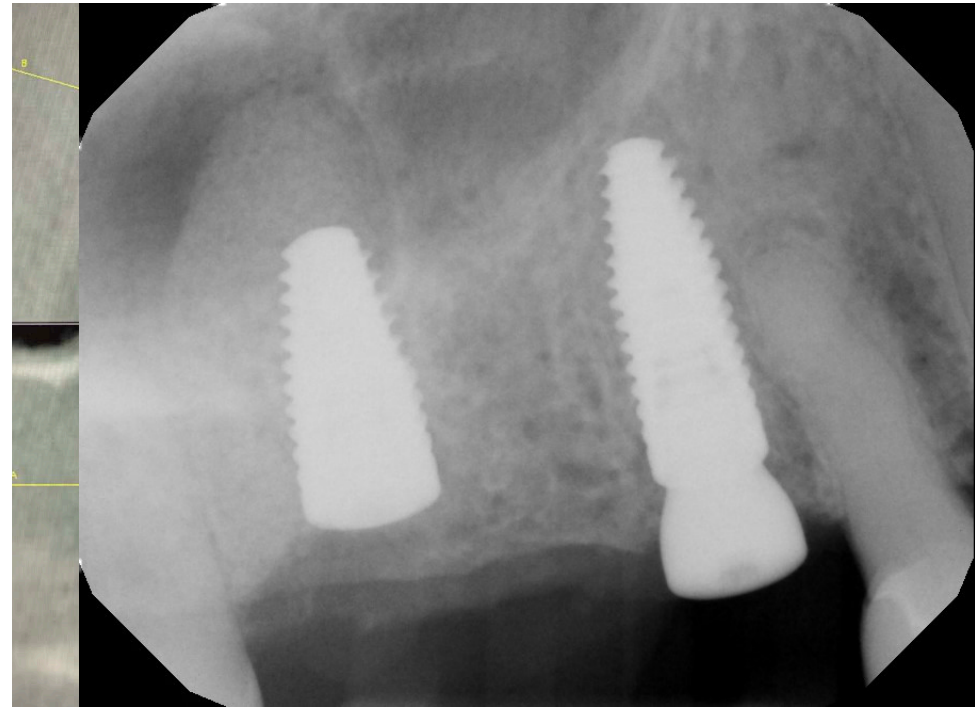
Greater Initial Implant Stability

# of sinuses treated	# of implants inserted	Residual bone height Pre Lift	Amount of bone height added	# of failures	Overall percent of implants integrated
231	272	5.5mm (2-8.5)	8.3mm (3-13)	7	97.9





Micheal Olson



Treating Periodontal & Peri-Implant Disease



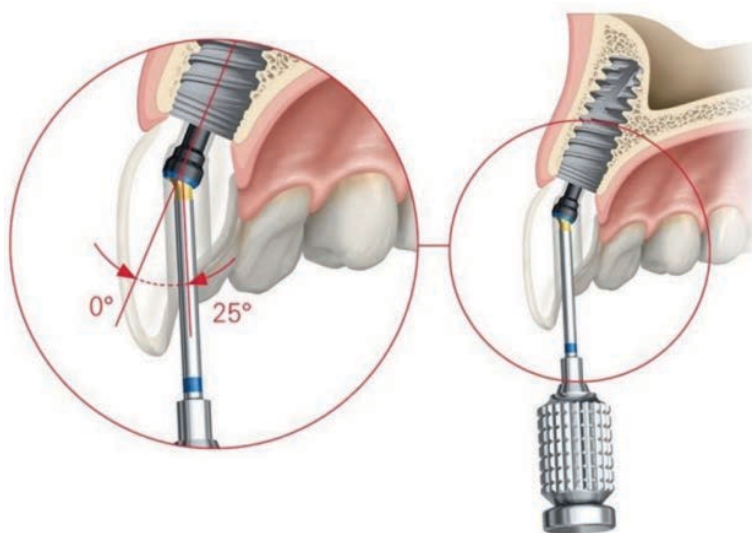


"Cement is a major contributor to peri-implantitis" Dr. Brahm Miller

Nike Says



"Just Do It"



Implant Dentistry



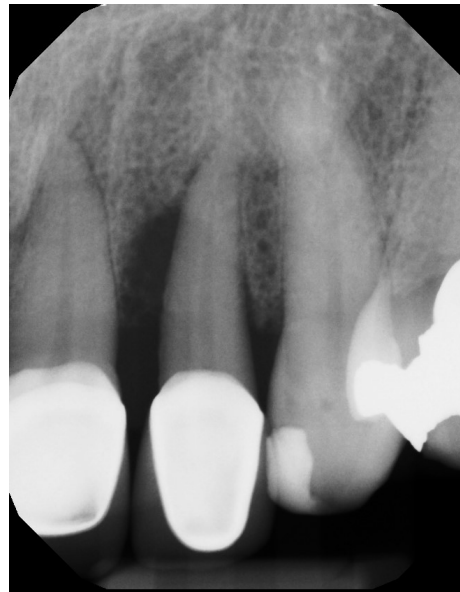
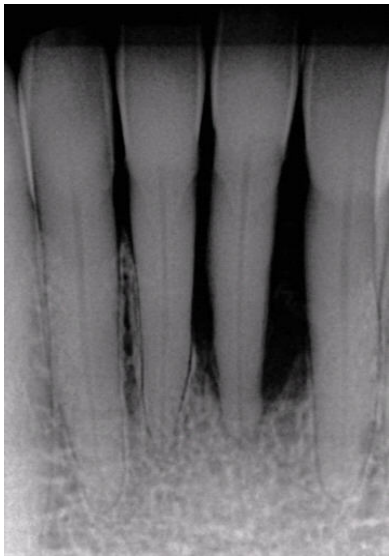
"Just Screw It"



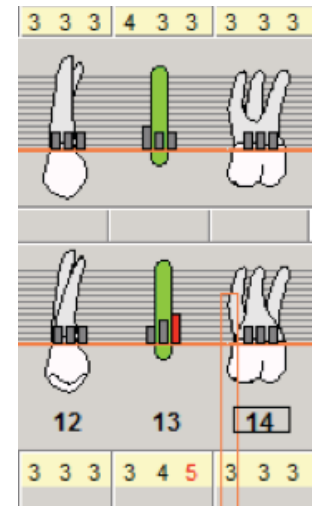
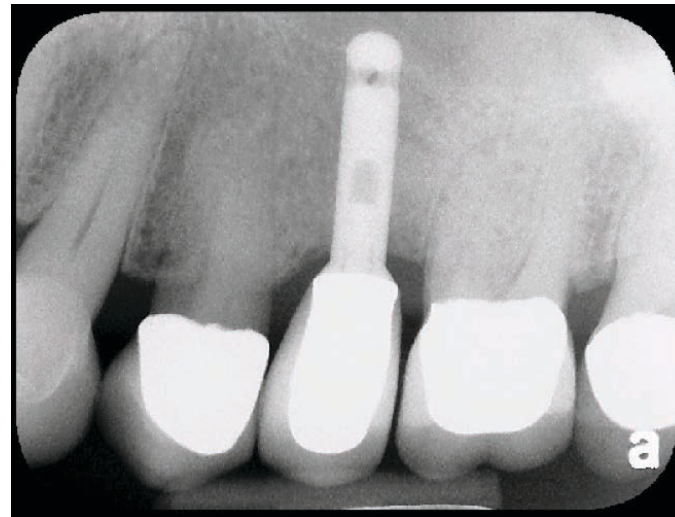
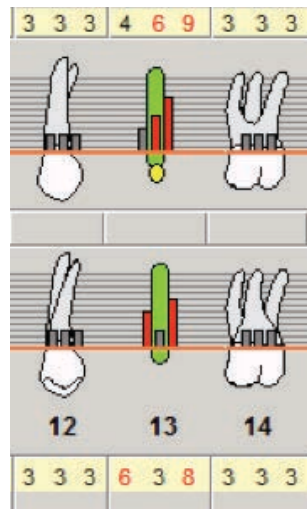
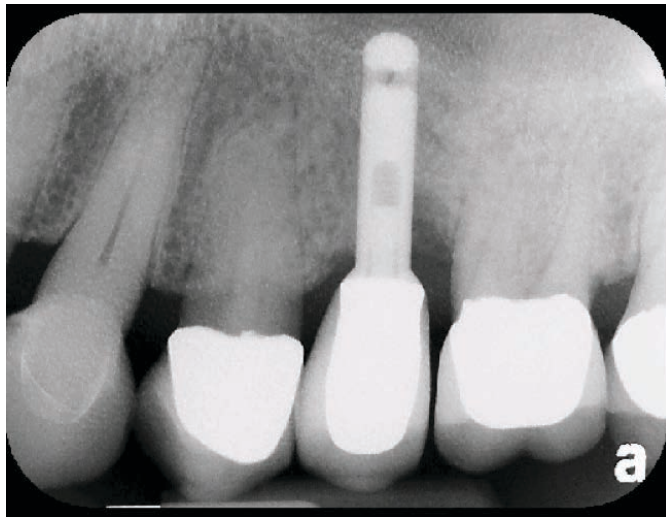
What about the laser for
Periodontitis &
Peri-implantitis

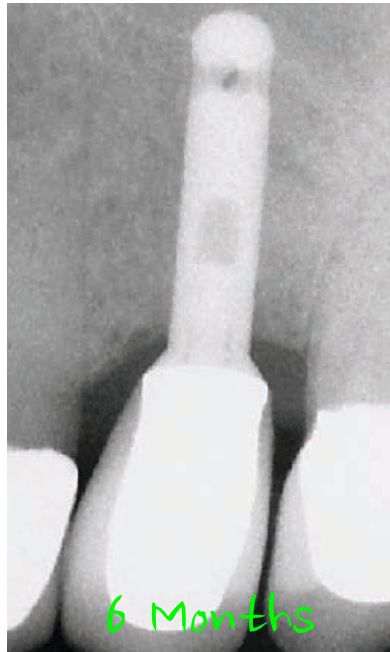
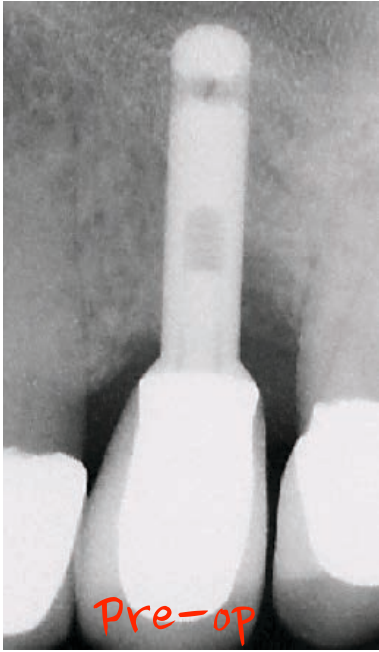


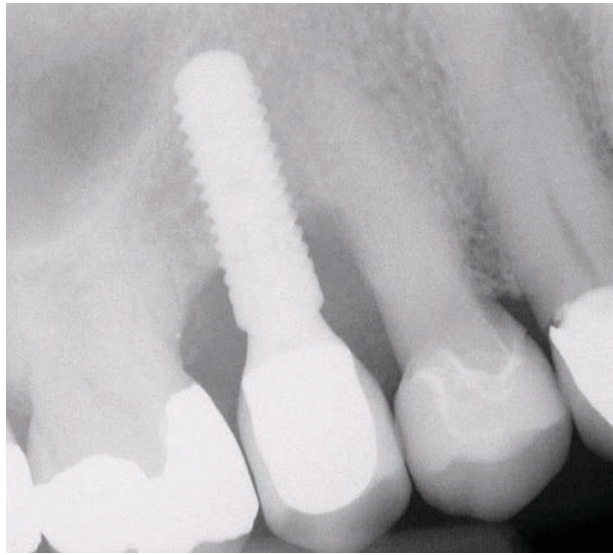
Lanap



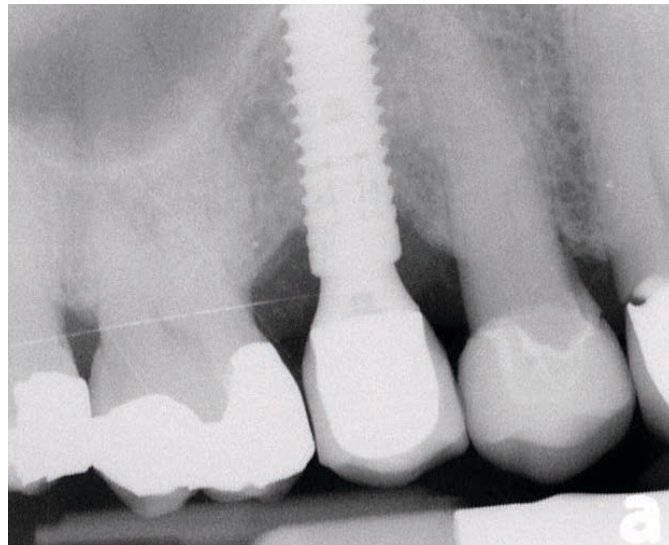
LANAP/LAPIP



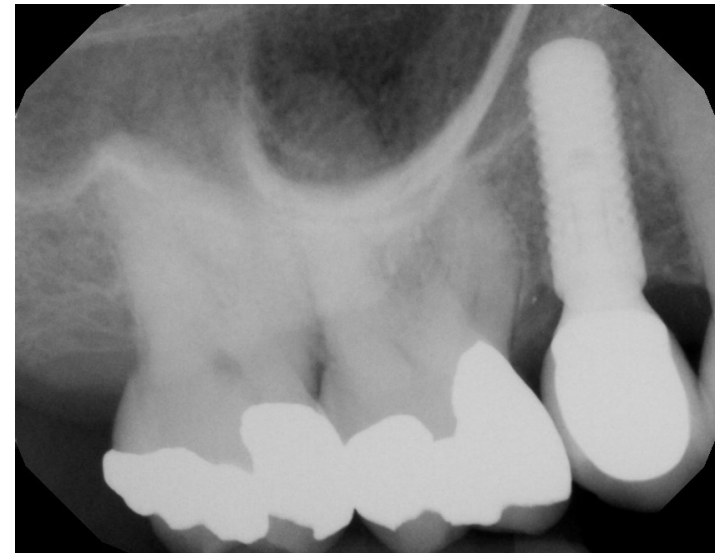




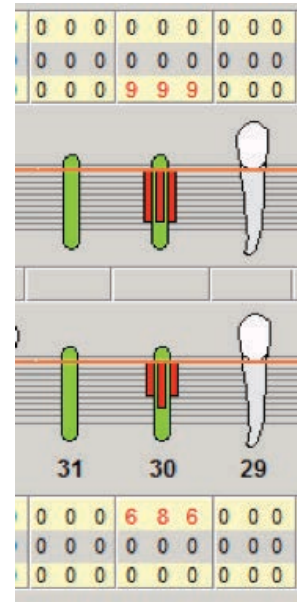
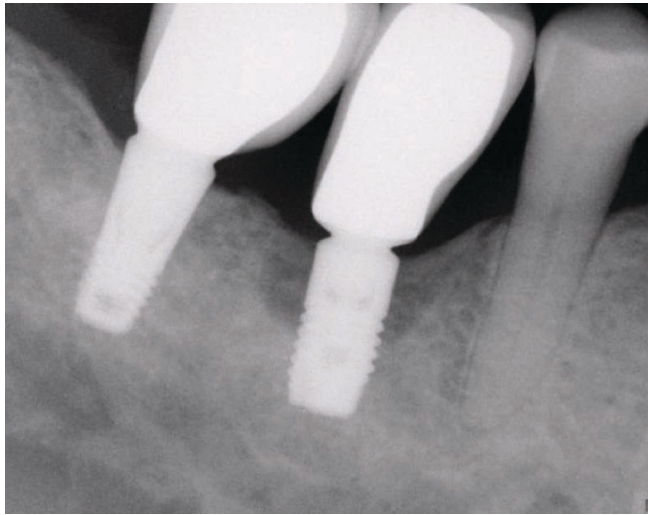
Pre-op 2013

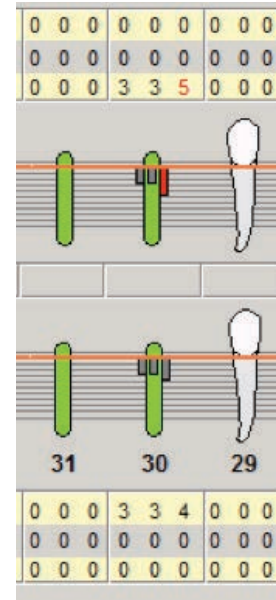
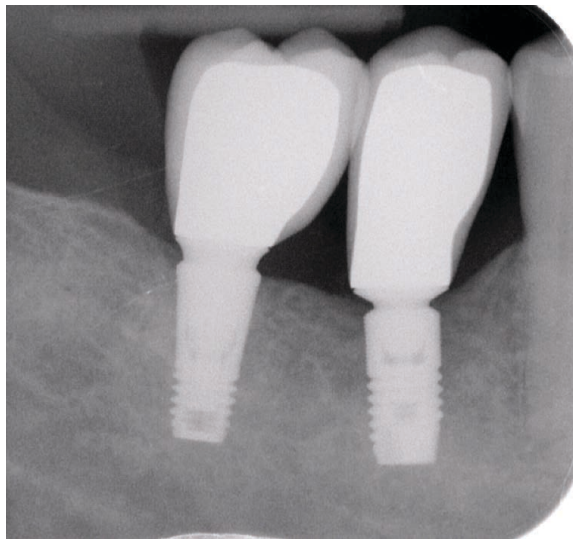


6 Months 2014

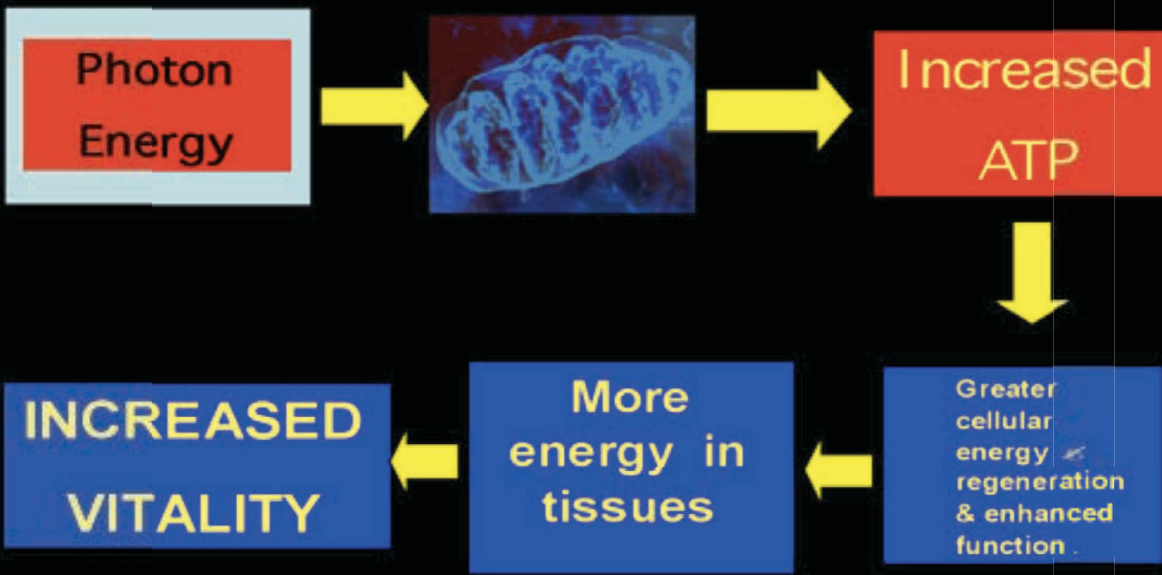


6 Years 2019



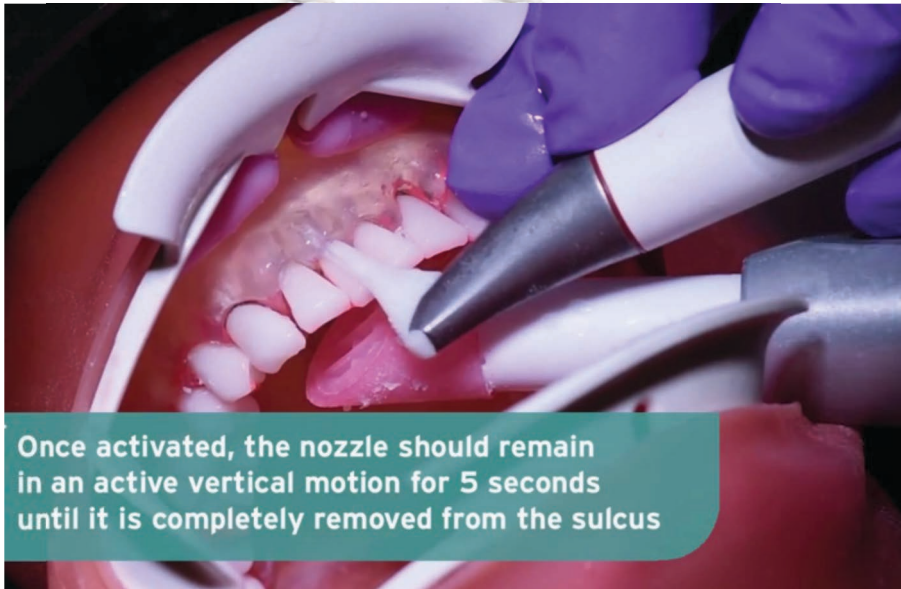


“Biostimulation”



New Technologies





Supra and sub-gingival cleaning to 5mm

Research

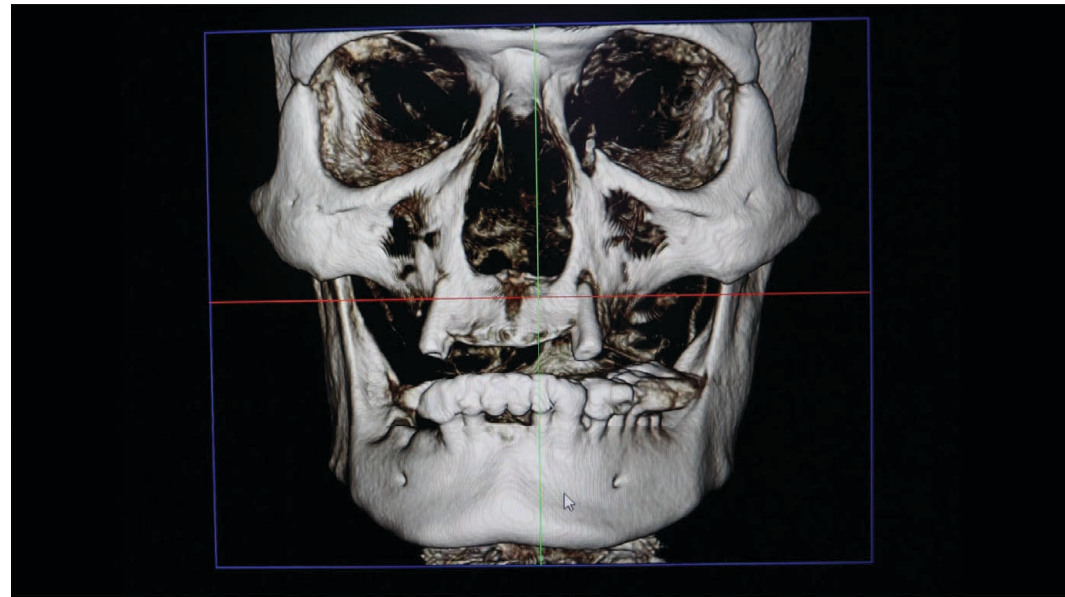
More effective than SRP at removing biofilm

More effective than a teflon scaler for implant maintenance

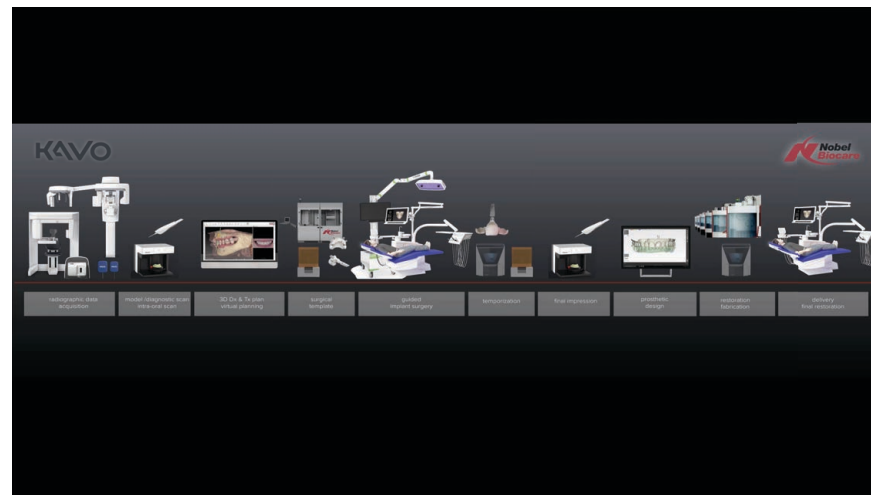
(Mussano, 2013)

Greater bacterial reduction than SRP

(Flemming, 2012)



Does anybody want to talk about implant navigation?



Dynamic 3 Dimensional Implant Surgery Navigation

Dental implant treatment: Demographics

Population: **7.2 B**

Prevalence of tooth loss (ca. 50%)

Affected people: **3.6 B**

Addressable market (60%)

Potential patients: **2.2 B**

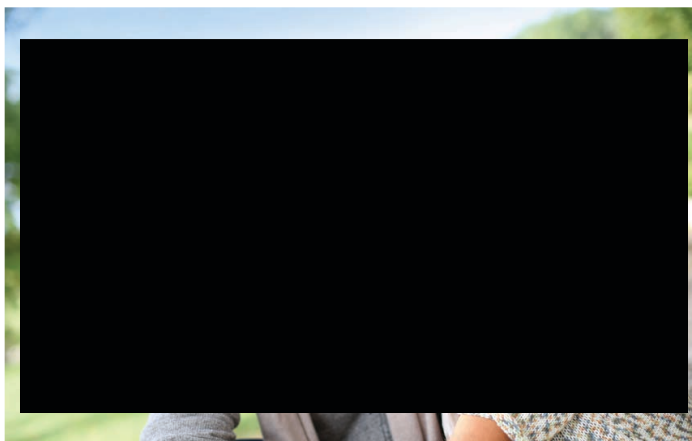
Seeking treatment (~10%)

People seeking treatment: **170 M**

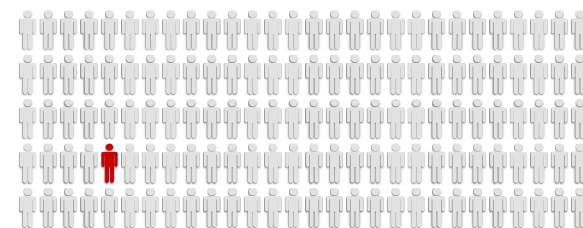
Exclusion for medical/other reasons (50%)

People eligible for implant treatment: **85 M**

Implant treatment rate (10-15%)

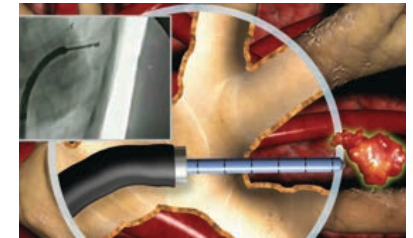
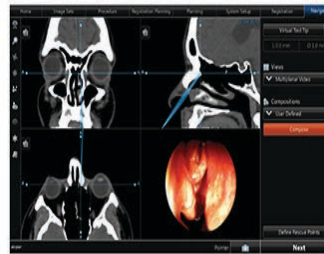
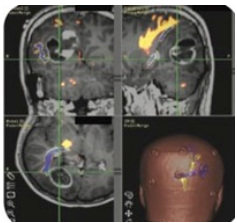


People treated with implants annually:
10 million



History of Navigation

- Navigation has been in medical field 20+ years
- Started in Neurosurgery
- Now used for ENT, Pulmonary, Trauma and Orthopedics



Who is X-Nav Technology?



Same Company That Brought you I-CAT

Dental + Medical + Technology

- Advanced optical CT guidance scientists
- Dental implant planning software experts
- Leading dental CBCT engineers

- 230+ cumulative years of medical/dental product experience

- 3 PhD medical engineers previously created a Guided Bronchoscopy/Lung navigation product



X-GUIDE



24 inch
Monitor

Custom super-
computer in base
2 "gaming" GPUs

Cart on wheels for
room-to-room
mobility



6-foot versatile arm
to keep out of
sterile field

Stereo cameras
with wide baseline
Violet LEDs for
accuracy

Cart size
2' x 2'

#5 is alive!



1986

What is X-Guide?

What is X-Guide?

- Implant placement navigation
- Gives real time feed back for position, angle and depth in microns

What is X-Guide? (To a patient)

- It's really cool technology! It's like GPS for the surgeon's drill
- Surgeon gets turn-by-turn instructions on where to place the implant



Why NAVIGATE?

Greater Surgical Accuracy



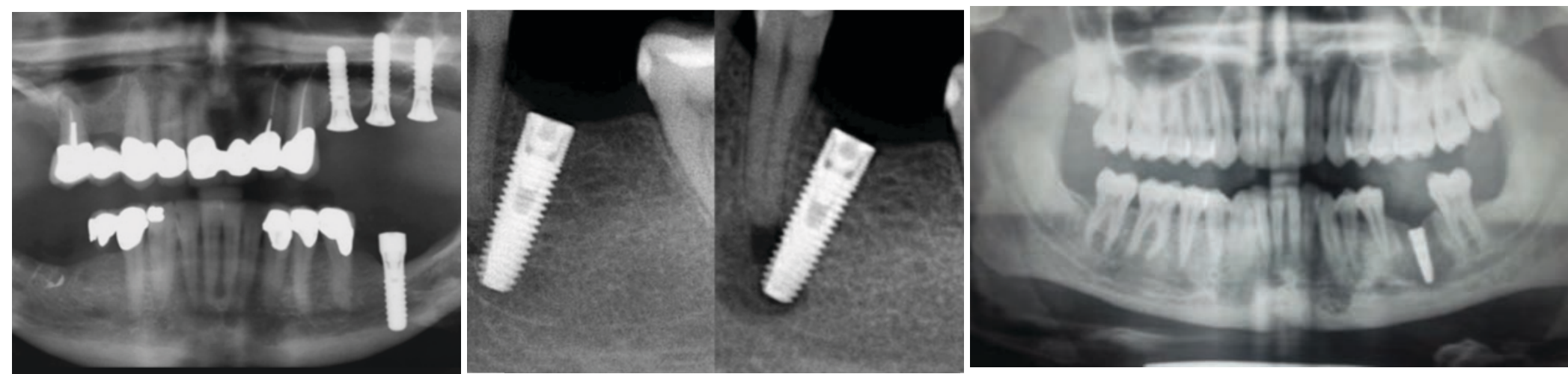
Navigation provides the accuracy of Guides, but solves the challenges associated with the guide process.

Precision Treatment w/o Surgical Guide

Safer
More accuracy
Faster to surgery- don't wait for guide
Facilitates Screw Retained Temps and Final Restorations
Less Invasive- Smaller incisions/Flapless surgery
Reduced operator stress



Why NAVIGATE?



Implant Nerve Injuries are a major cause of dental litigation



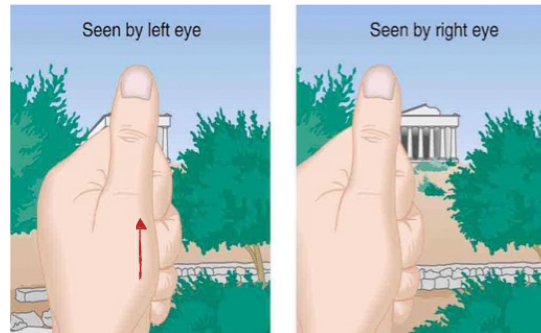
Why Navigate!



Why NAVIGATE?

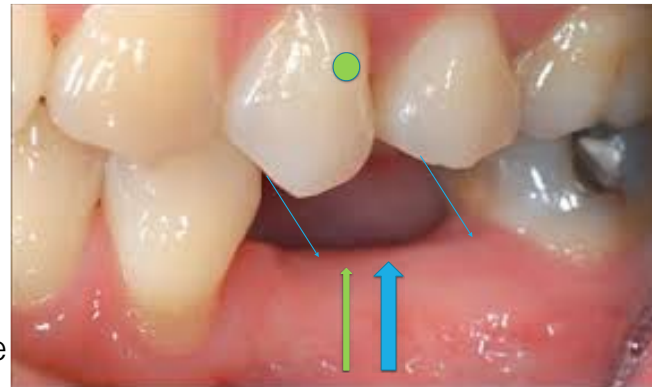
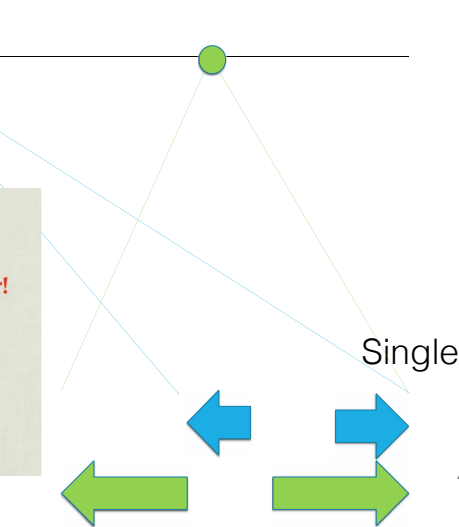
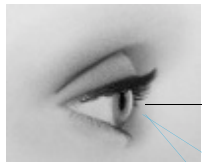
One reason for inaccuracies in freehand surgery

Parallax Error



The effect whereby the position or direction of an object appears to differ when viewed from different positions, e.g. through the viewfinder and the lens of a camera.

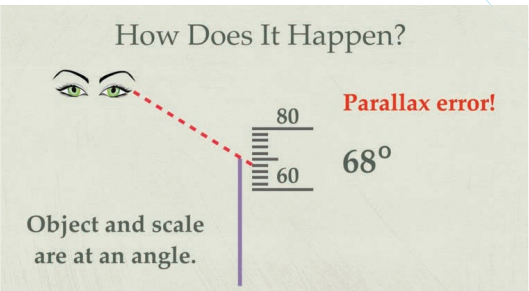
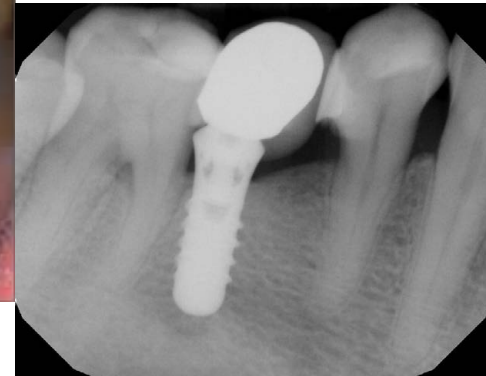
Parallax affects on posterior implants



VRS Visible Restorative Space

ARS Available Restorable Space

Posterior implants easily placed to distally



How Does It Happen?

Parallax error!

68°

Object and scale are at an angle.

Why NAVIGATE?

Accuracy of 220 Microns

Same accuracy as a surgical guide but without the template

ONLY Evidenced Base Navigation System on the Market

- 3 peer reviewed journal articles
- Largest patient based study over 700 implants
- 11 x more accurate than free hand
- Average free hand surgery deviates by 5-10 degrees

Published model based data

- 2D positional accuracy (b/l, m/d) .22mm (220 microns)
- 3D angular accuracy < 1 degree

How accurate is X-Guide?

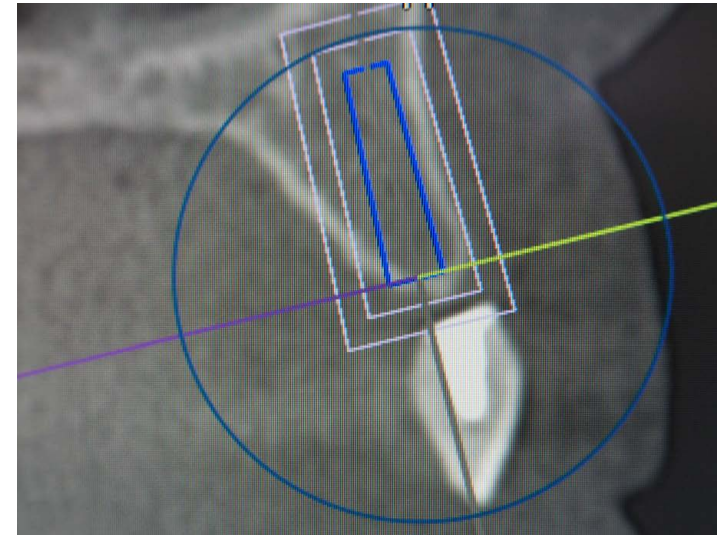


-Block MS, Emery RW, Culum DR, Sheikh A. Implant Placement is More Accurate Using Dynamic Navigation. American Association of Oral and Maxillofacial Surgeons J Oral Maxillofac Surg 75:1377-1386, 2017.
- Emery RW, Merritt GA, Lark K, Gibbs, et. Accuracy of Dynamic Navigation for Dental Implant Placement- Model Based Evaluation. J Oral Implantol 2016 Jun 6.
- Block MS, Emery RW, Lark K, Ryan J. Implant Placement Accuracy Using Dynamic Navigation. JOM. 2017. Vol.32.

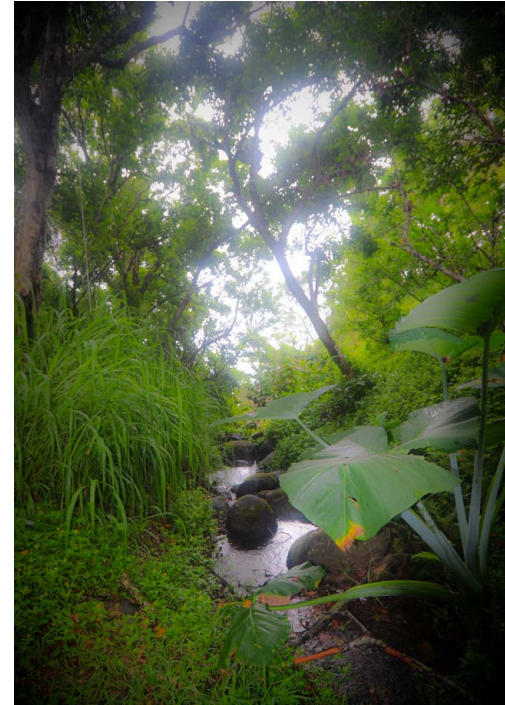
Benefits of navigation for implant surgery



- **Fast workflow** - No impressions needed, same day treatment
- **Cost per surgery lower** than traditional guides
- Ability to **alter the surgical plan during surgery**
- Reduced risk of issues of inaccuracy of fit
- No decrease of patient's surgical space
- Decreased risk of bone overheating
- Improves communication between specialist and restorative doctor
- Minimally invasive-smaller or no incisions



Process

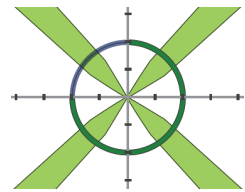


Precision

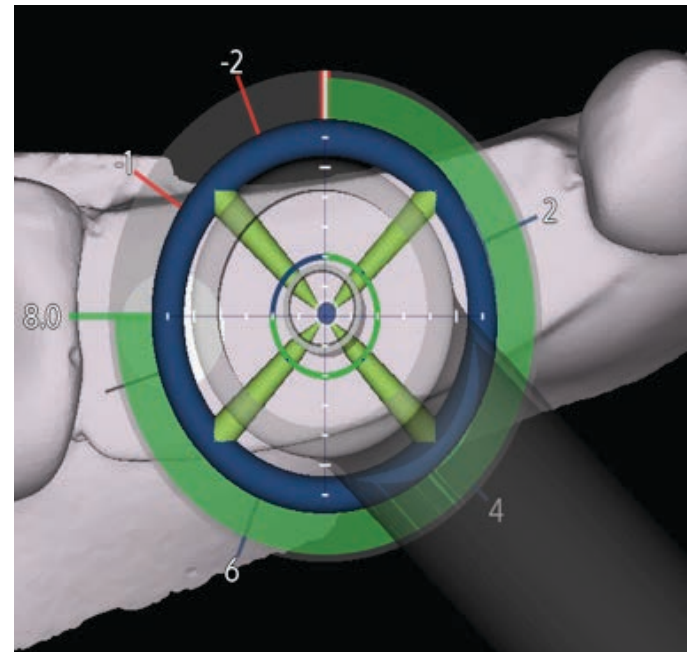
POSITION

ANGLE

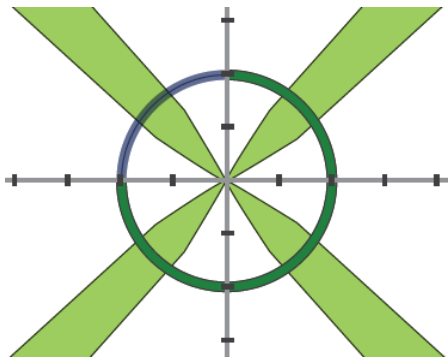
& DEPTH



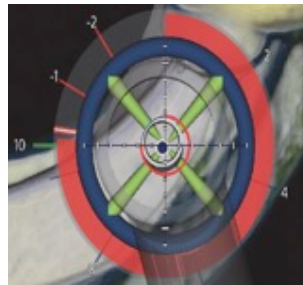
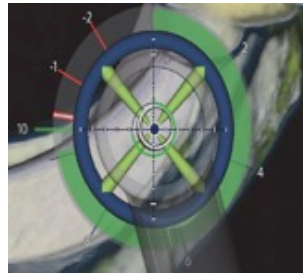
- Platform of the implant
- White measurement marks in millimeters
- Marks the center of the implant
- Tip of the drill
- Look down the virtual drill like a scope for angulation



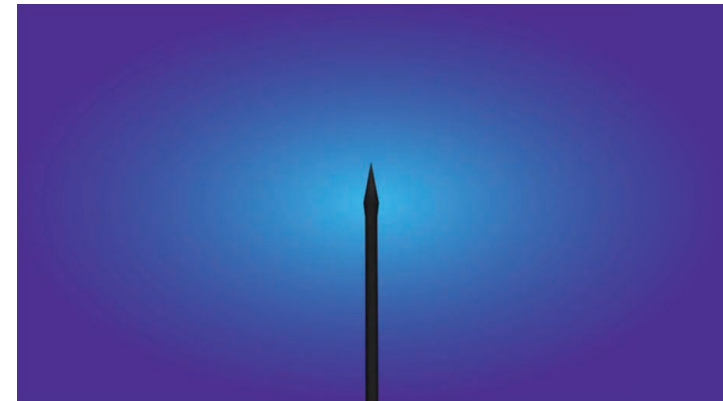
Precision



- Depth Gauge
- Depth mirrored on virtual implant to keep eyes focused on one spot
- Yellow starts drilling
- Green .5mm to plan
- Red means stop – you achieved plan



Pinpoint Accuracy



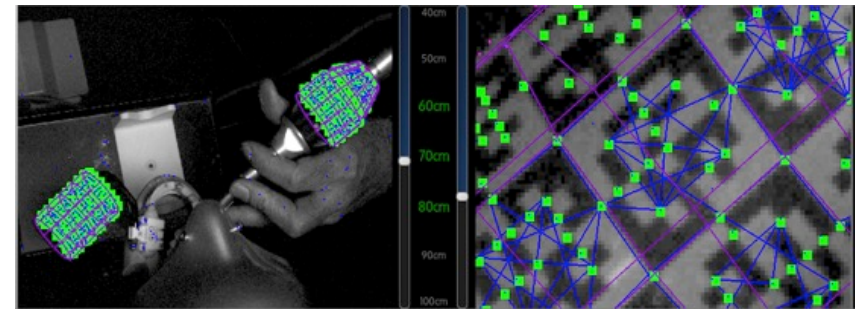
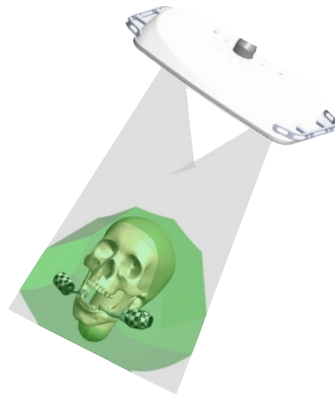
How does X-Guide work?

Cameras read proprietary patterns and over 300 X-Points

- Cover up part of the pattern and keep navigating
- Navigate steep angles with hand piece angle

Uses violet light

- Faster and more accurate wavelength than white light
- Violet light is safer than ultraviolet light (*no health issues*)
- Cameras not subject to wash out from surgical light which causes blinking or loss of navigation



Workflow

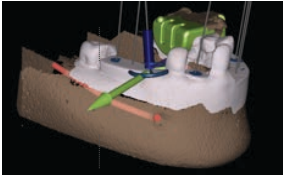
MORE ACCURATE
IMPLANT PLACEMENT
MADE EASY



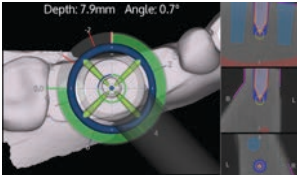
SCAN



PLAN



NAVIGATE



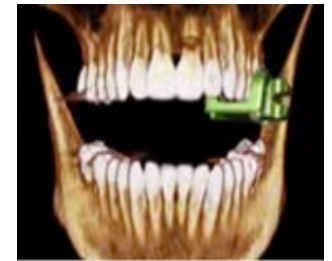
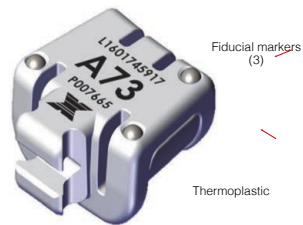
X-Guide workflow - Scan

Fit the X-Clip

(2 stable teeth, usually away from surgical site)

- Water bath
- Make impression
- Ice water
- Check fit

X-Clip



Take CBCT with the X-Clip

(CBCT volume 8x8 or larger, .3mm voxel preferred)

X-Guide workflow – making an X-Clip



X-Guide workflow – Set Up & Calibration

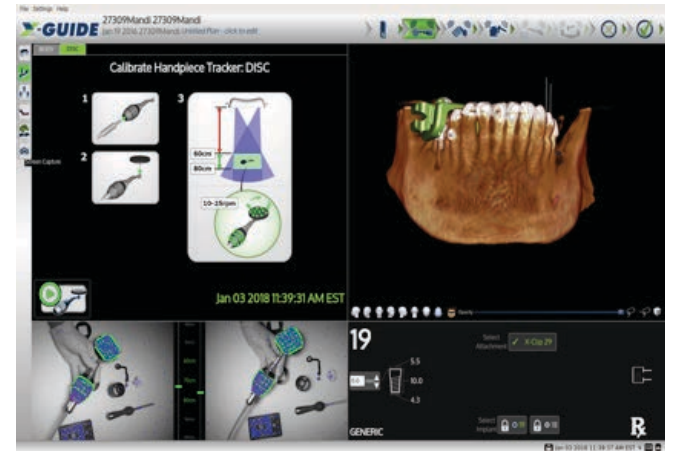
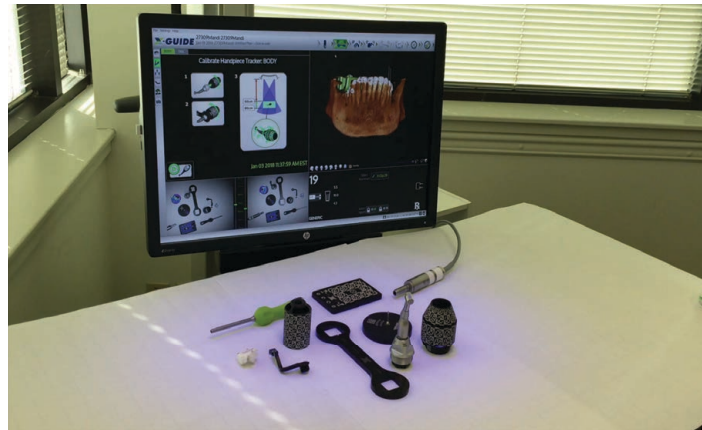
3 minutes of set up and calibration

- Hand piece tracker
- Patient tracker



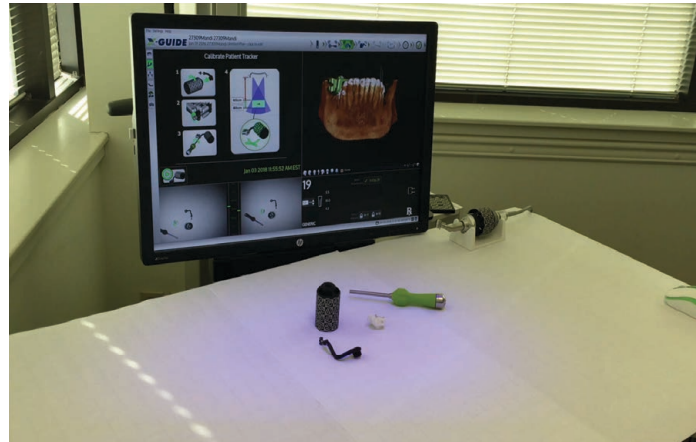
Set Up & Calibration – Handpiece

- Attach Hand Piece Tracker and Calibration Disc
- Cameras read angled patterns to cylindrical pattern (6 secs)
- Cameras read patterns on drill disk to patterns on drill (20-25 secs)



Set Up & Calibration – Patient Tracker

- Attach Tracker Arm to X-Clip
- Attach Patient Tracker
- Cameras read patterns on Patient Tracker in reference to fiducials on the X-Clip (15-20 secs)



Planning the Case



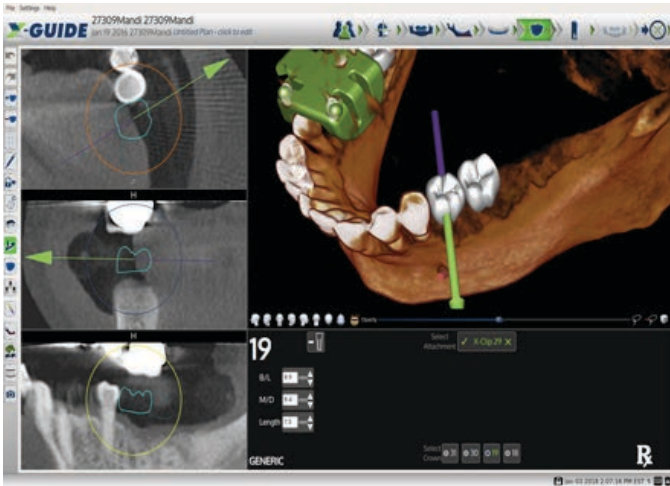
Kilauea Lighthouse

Kauai



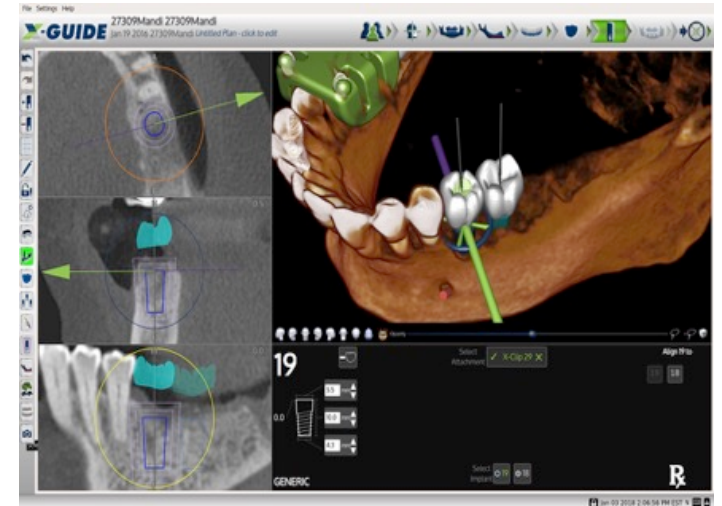
Hanalei Bay Pier

X-Guide workflow plan – Virtual teeth & implants



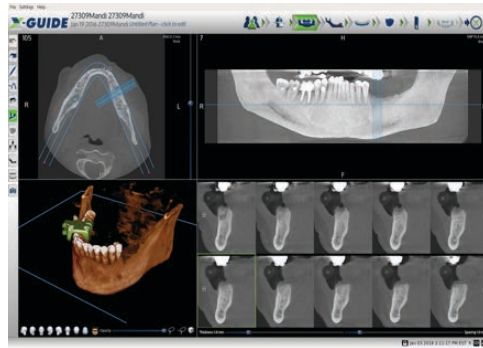
Add virtual teeth
Adjust mesial/Distal,
Buccal/Lingual and
Height

Generic Implants
Measurement halos
1.5mm & 3mm
Parallel button

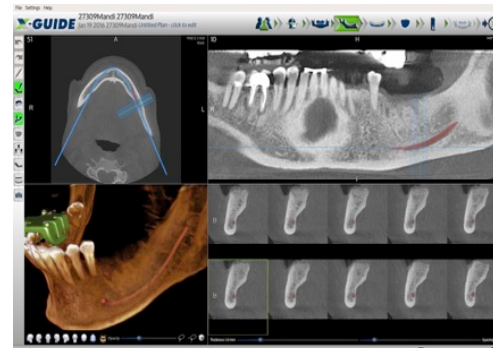




X-Guide workflow plan – Pan & Nerve



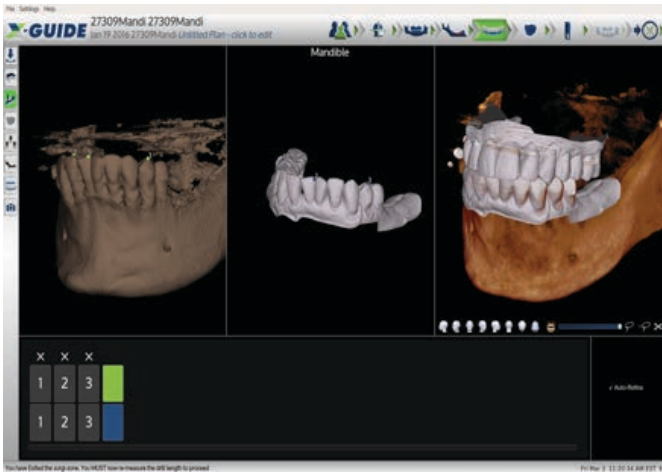
X-Clip found automatically
3 points to draw pan
Clipping and cropping tools



Mark Nerve in
Panoramic and
Cross Sections

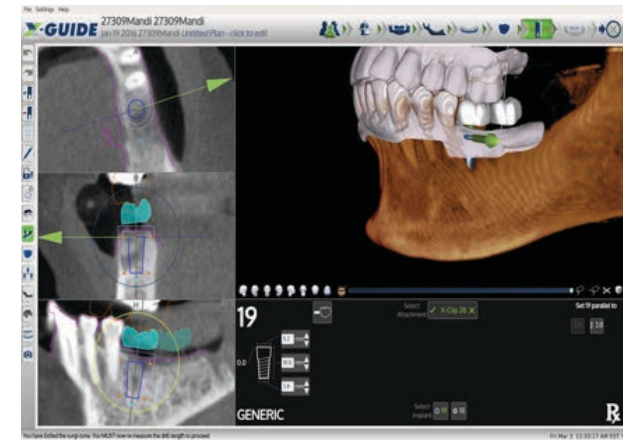


X-Guide workflow plan – Intraoral Scan (Optional)



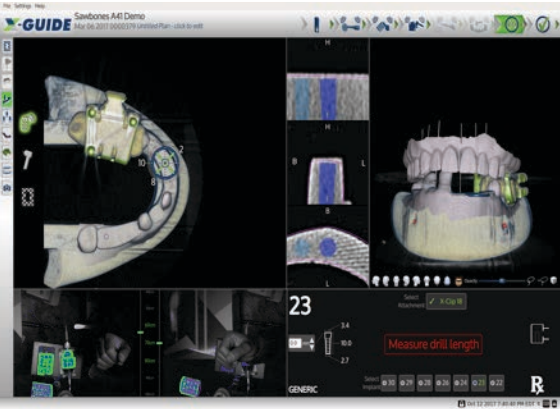
Import both arches and occlusion
3 point .STL attachment

Gives soft tissue information
Shows opposing tooth in occlusion



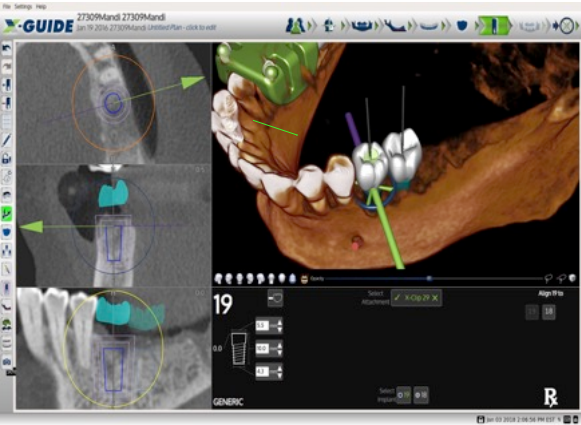
Change your plan during surgery – surgical flexibility

Click on the implant icon



Change (or check) the plan

Click back to navigation screen



Big Advantage Over Surgical Guides



X-Guide workflow plan – Planning

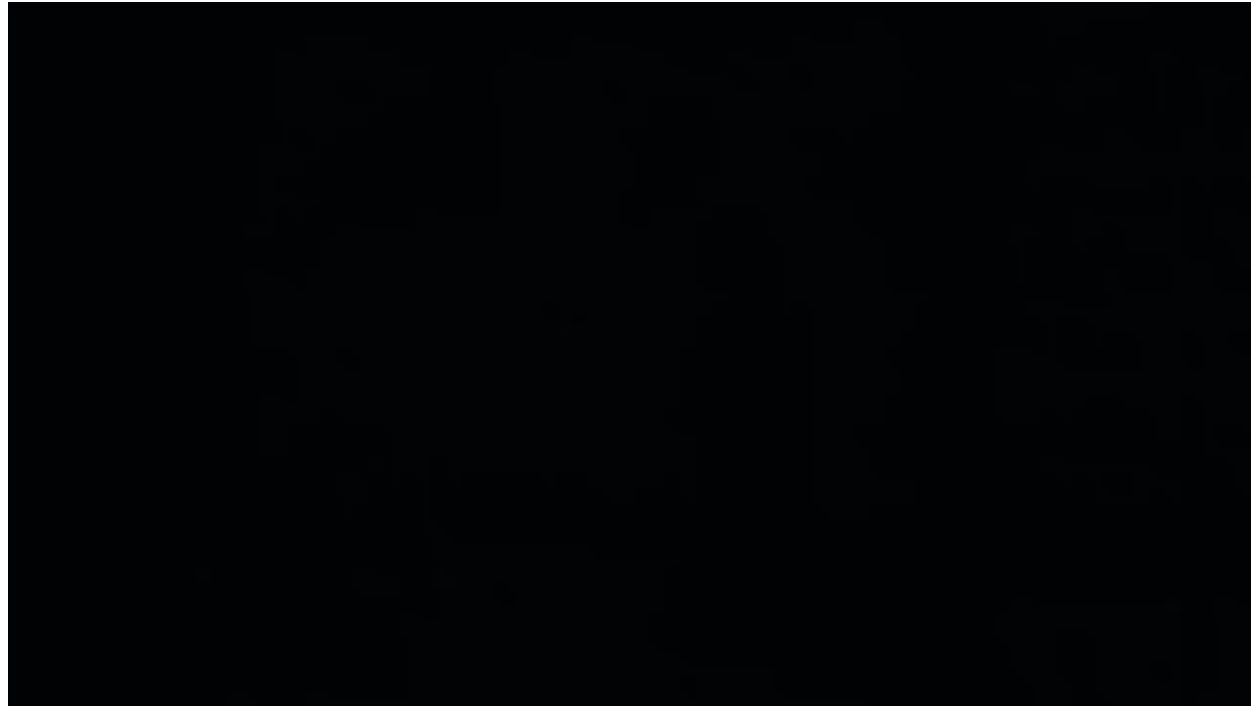


Staying Motivated in Life

Someone to look up to

Something to look forward to

Someone to Chase



Matthew
McConaughey

Something to look forward to....





Hide
&
Seek



Moab, UT





Sedona, 2006



Status: Still Aging (Could not find!)



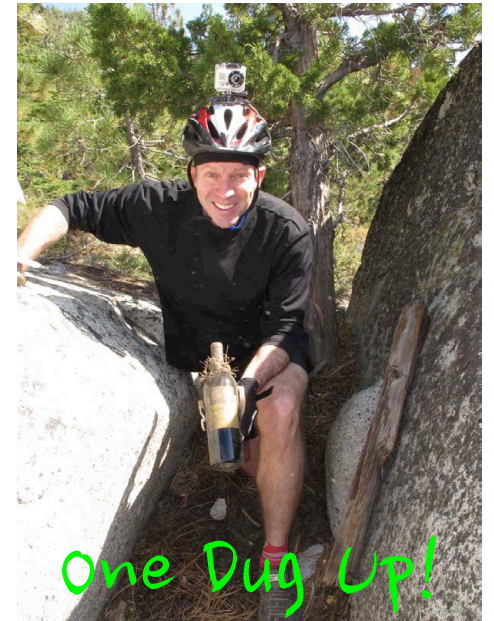
Lake Tahoe 2009



2011 Tahoe



One Going Up!



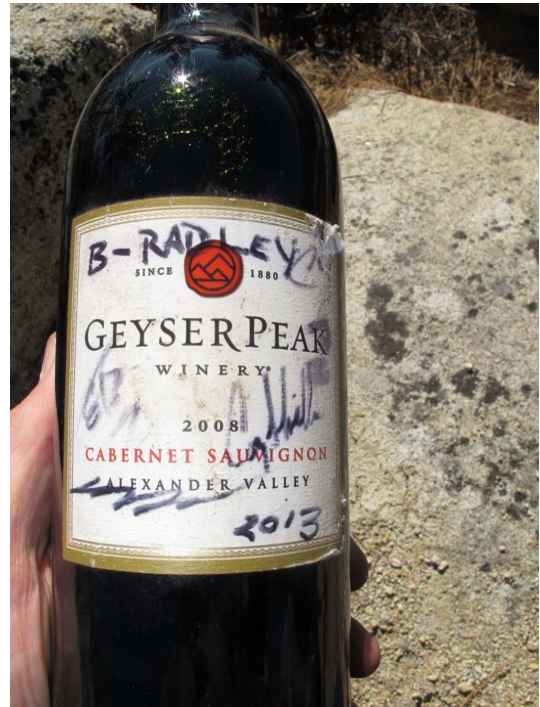
One Dig Up!



Lake Tahoe 2011





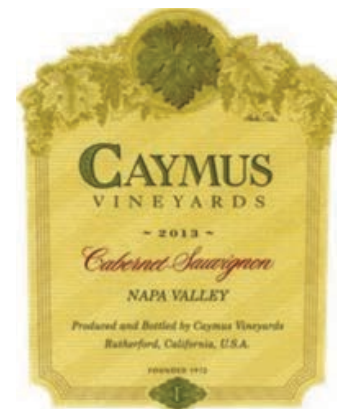
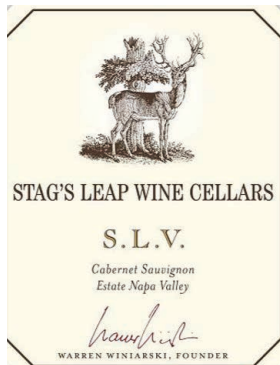




2015

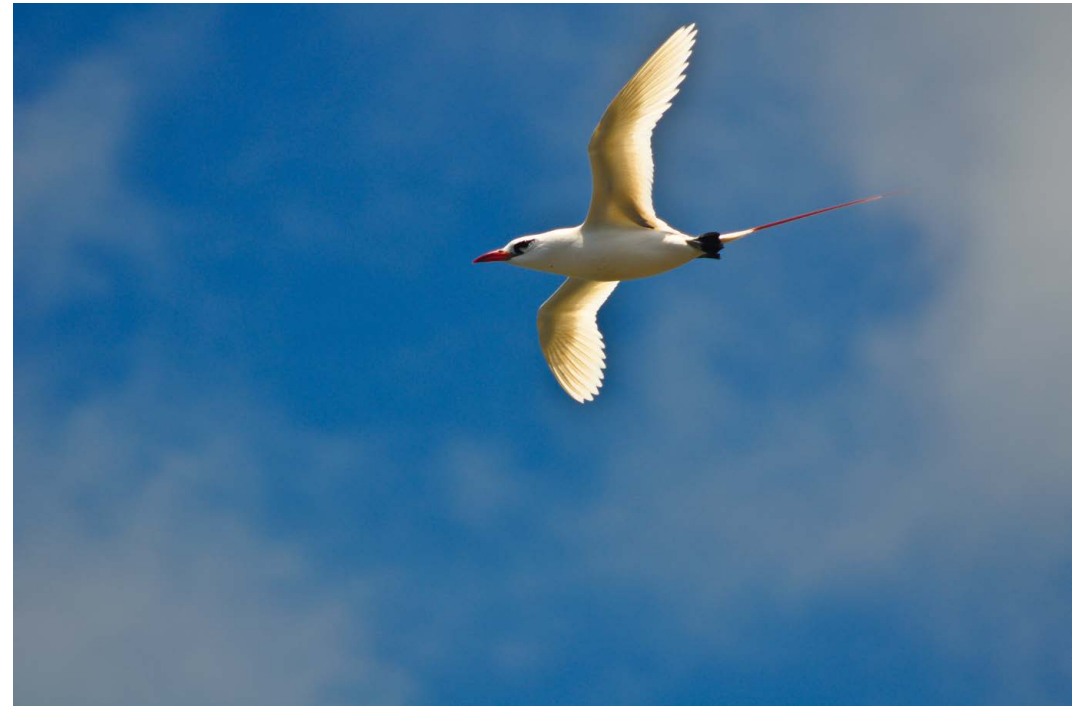
Sink one, Drink One





Okay, back to work

Let's look at some cases

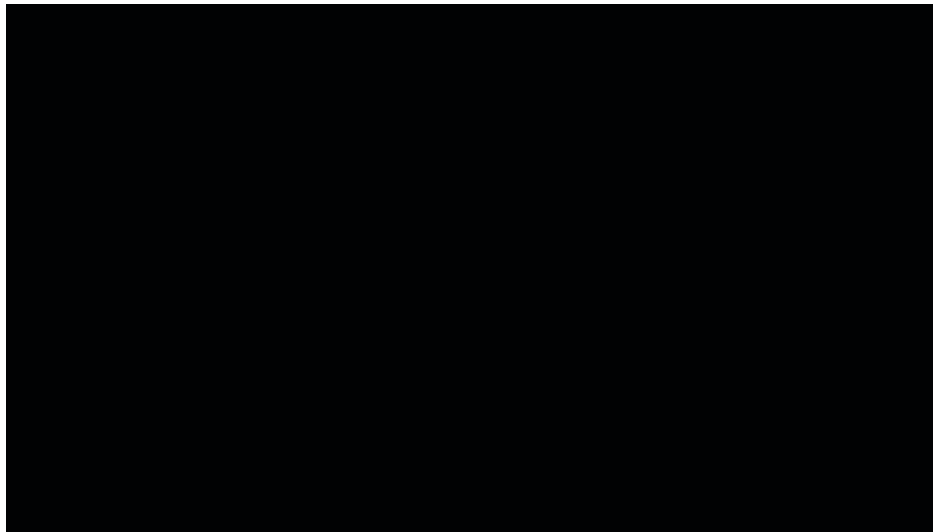


Touch “Go Plate” and Navigate

Touch “Go Plate”
to measure drill
length (2secs)

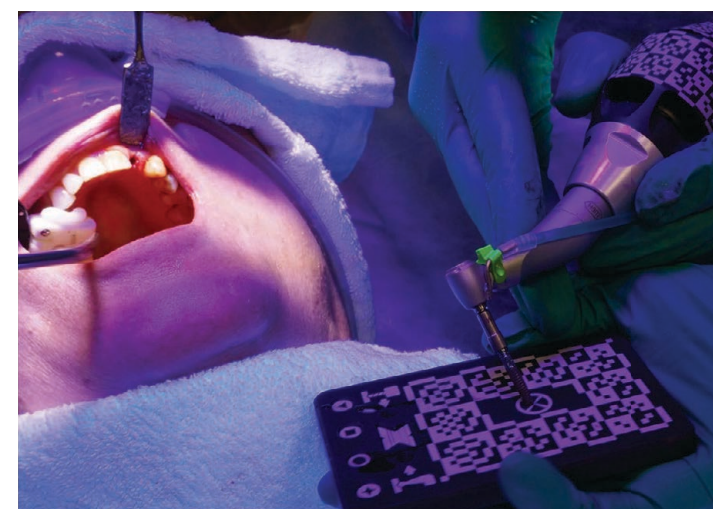
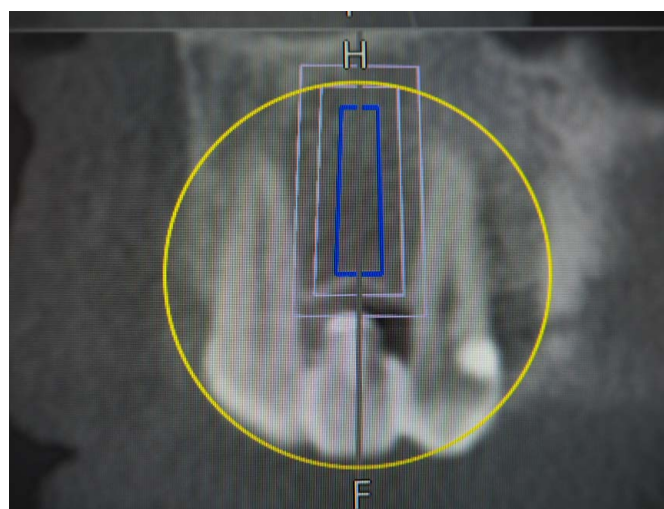
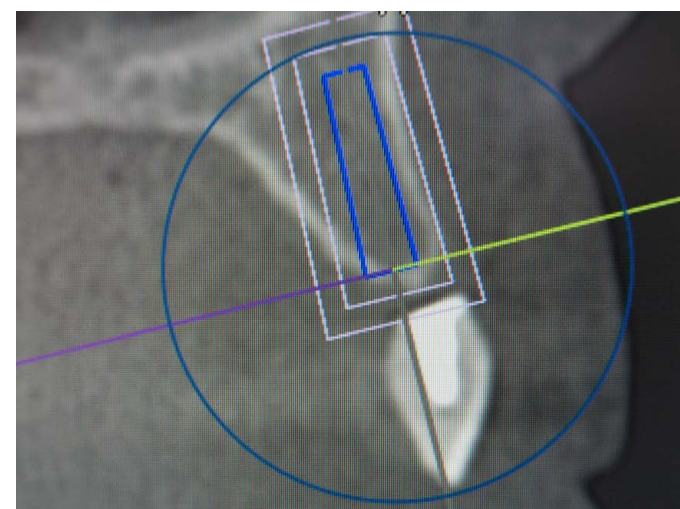


X-Guide Navigation – Dr. Robert Emery, DDS



Go Time!





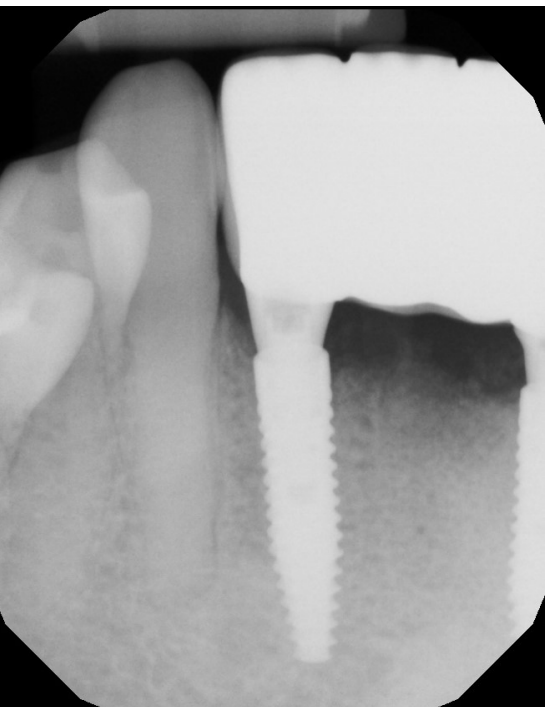
Planning and confidence to do flapless surgery



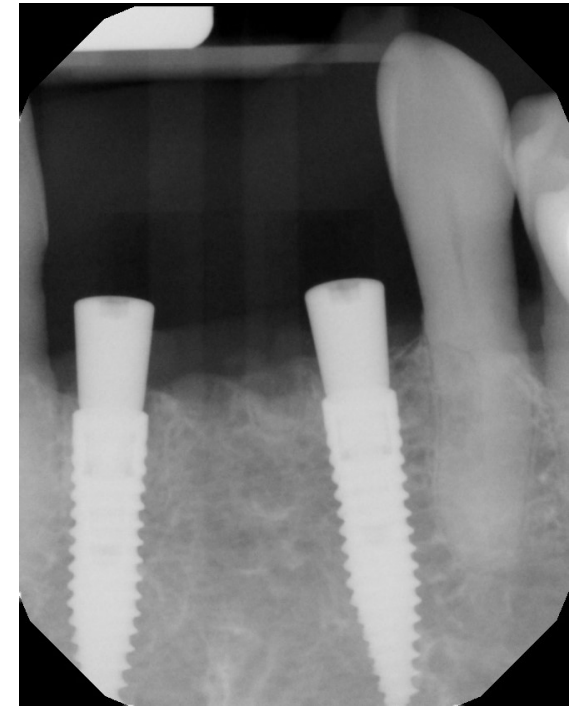
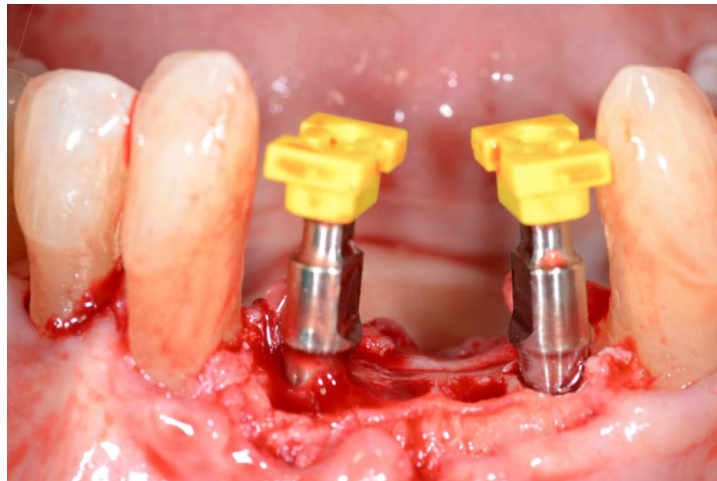


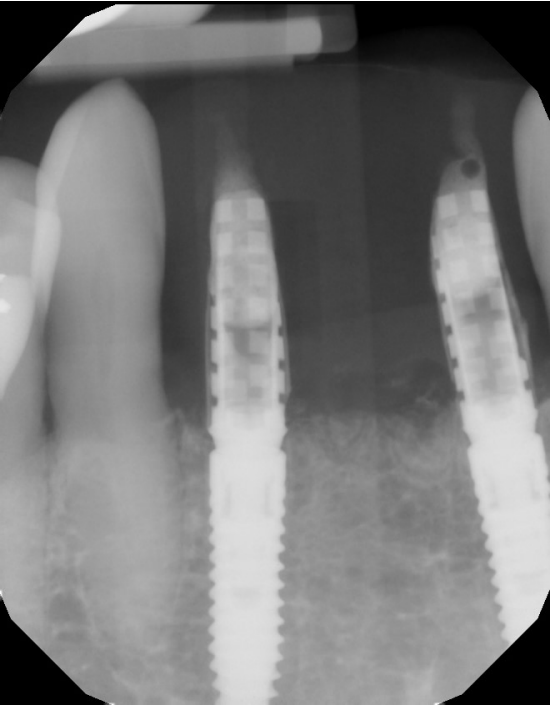


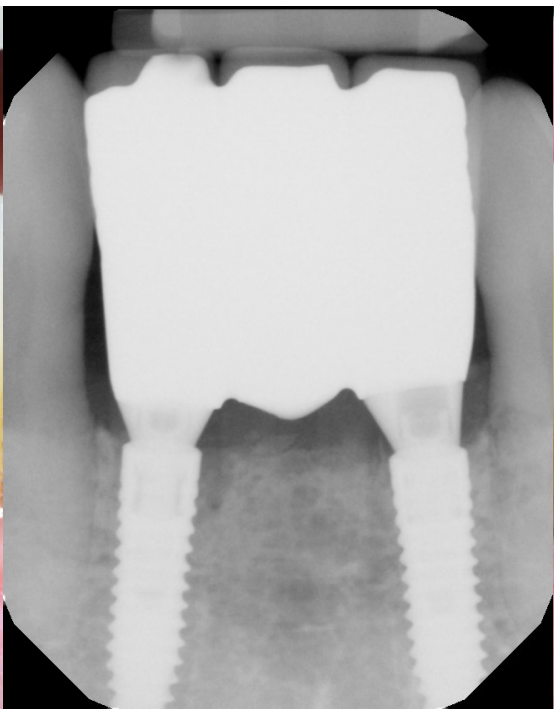




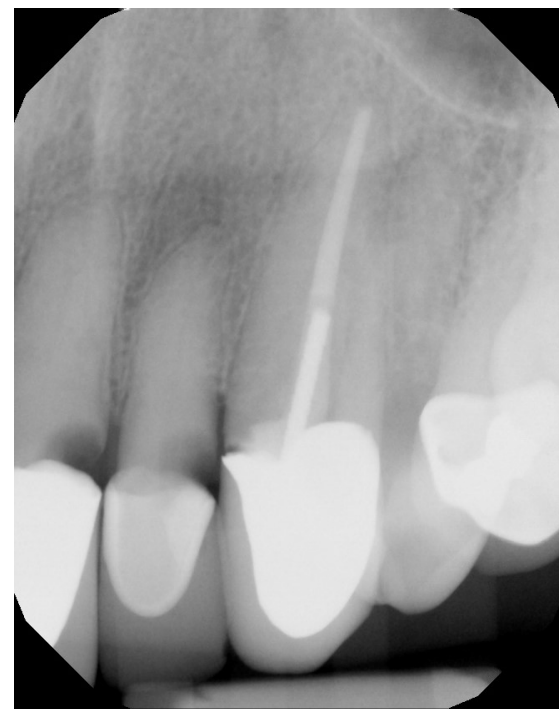
Beverly Hogshire case

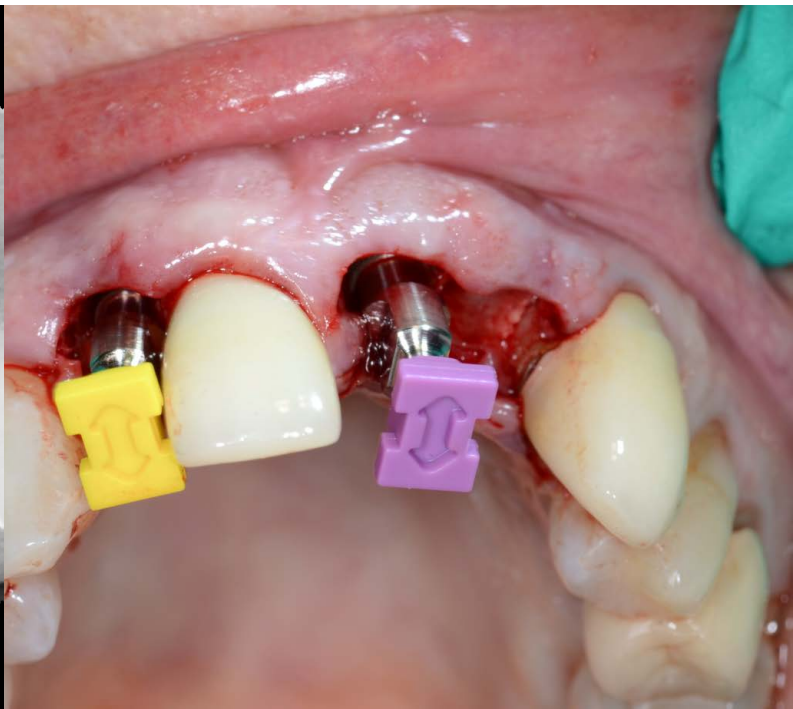
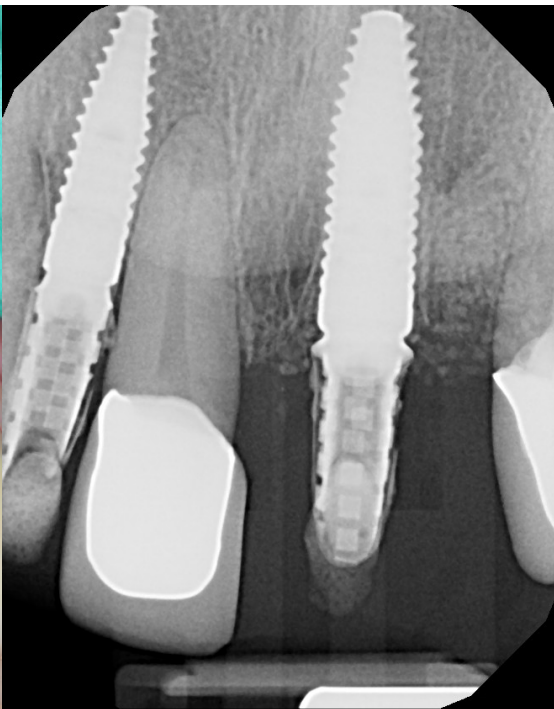
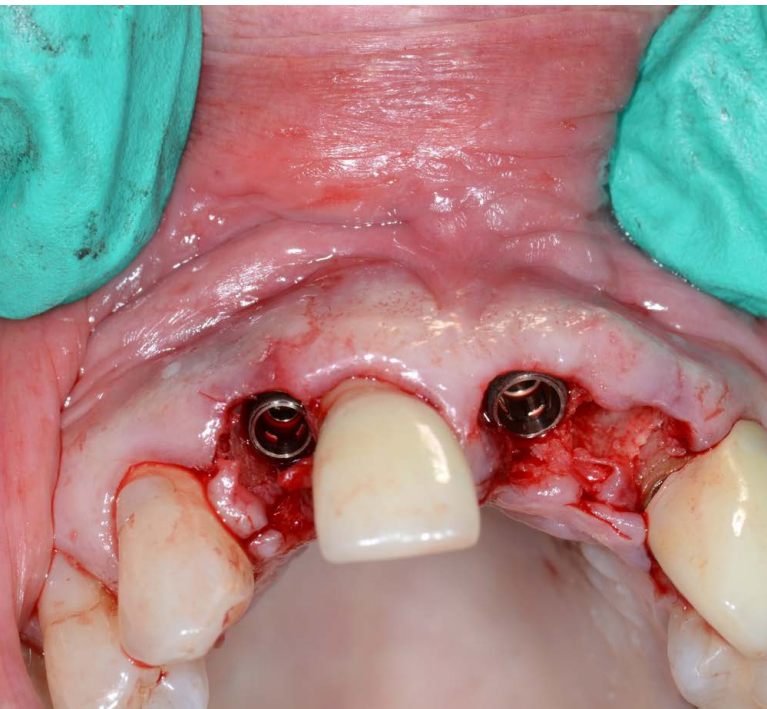


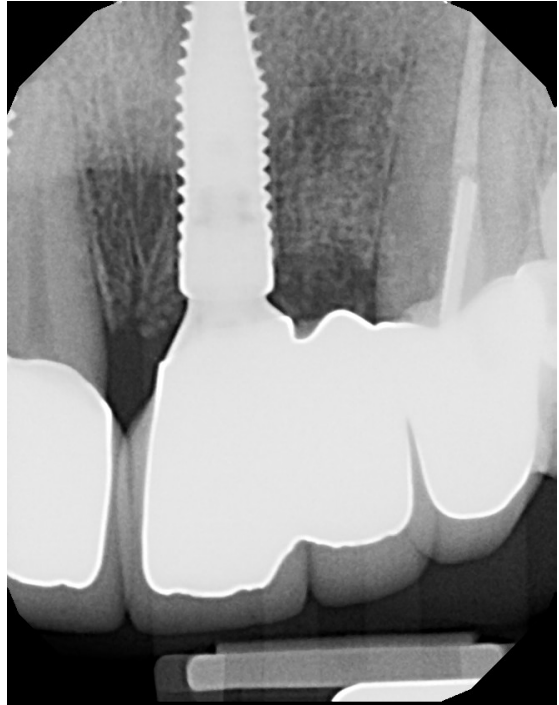












Edentulous workflow – Scan & Plan

- Place 4 or 5 fixation screws at time of CT

(Typically same-day surgery)

- Take CBCT (dual scan technique optional)

- Plan

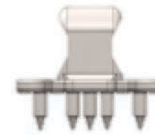


Edentulous workflow

- Calibrate handpiece & probe tracker
- Attach Edentulous Clip (flap-less or flapped)
- Navigate case



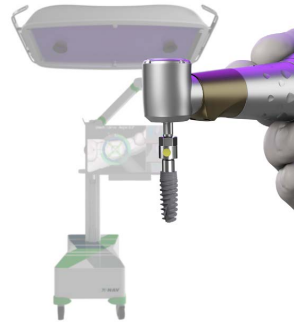
Edentulous clip for bone



Edentulous clip for soft tissue



What does X-Guide cost?



\$29,500*

- Installation
- 1 ½ days of in-office training
- 1 year manufacturers warranty (*extended warranty is \$1,500 per year*)
- 1 Navigation kit (*W&H WS-75 hand piece not included*)
- 2 Windows planning software licenses
- 10 Surgeries/X-Clips
- *Shipping and Tax not included

X-Guide handpiece

- W&H WS-75
- \$1,609

X-Clip Pricing

- \$99 per jaw (not per implant)
- Includes software updates and support (No yearly fee)

X-Clip and Surgeries

- Order 10 surgeries get a box of 12 X-Clips (\$990)
- 2 "spare" X-Clips every order free
- Surgery does not get charged until first touch of Go Plate
- If you need spare X-Clips, \$25 each

We charge \$250, our surgical guide fee

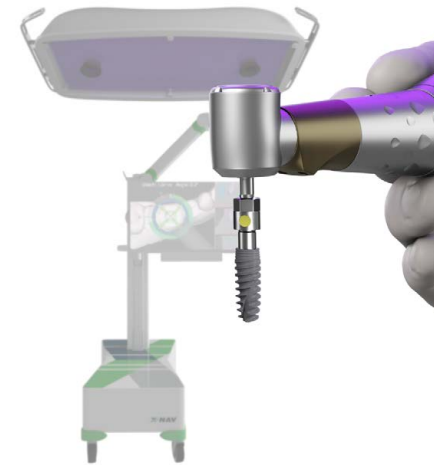
X-Guide Training

1 ½ consecutive days of training included

- Full-day of Training Doctor and Staff
- X-Clips, planning software, manikin navigation practice
- Half-day of assisted live surgeries

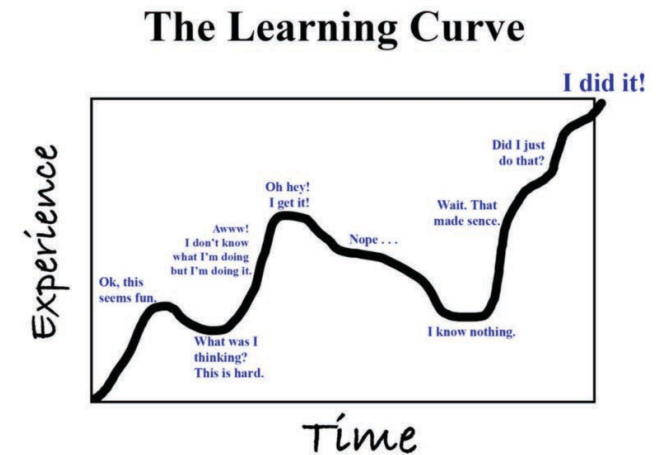
Learning Curve is 10-20 surgeries

- Accuracy your first surgery
- Trust is the real learning curve



Bottom line after 1 year of use

- Does it make you a better surgeon- ?
- Does it make you more accurate at implant placement- yes
- Can you do implant surgery faster- no, remember your first indirect class 2 restoration?
- Is it better for the patient- yes
- Does it replace surgical guides- yes
- Is it worth the investment- for our group, yes
- Is it cool- absolutely!



Learning Curve

More challenging on immediately placed implants

Depth control is more challenging

Need to use frequently to become proficient

Recommend starting on healed extraction sites

Must re-train your brain and trust the technology



The end is near!







In Conclusion

- Interactive, turn-by-turn implant guidance
- Real-time, 360 degree single-view of drill position and anatomy during surgery
- FDA cleared product
- Predictable outcomes through highly precise implant placement
- Real-time modification of the treatment plan possible
- Same accuracy as CAD-CAM surgical guide
- Same day guided surgery



Never stop looking, exploring,
growing, improving!

Inspire your staff and thrill your patients

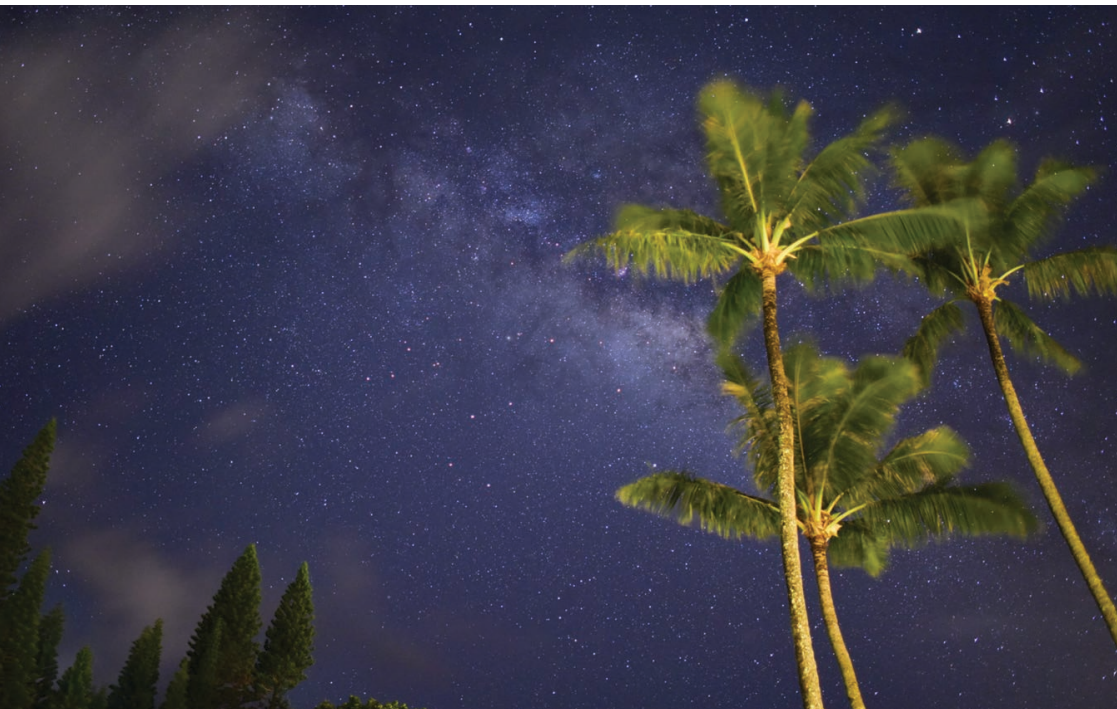
Go bury a bottle of wine!

Challenge yourself daily

Embrace your creativity

Be Grateful and Give Back





Join me at sunset if
you want to share a
Tripod

bruce@azperio.com

behouserimages.smugmug.com

