iMPLAGUIDE™

HELPING MAKE GUIDED SURGERY EASY

MANUAL
Version 3
2018

FABDENT™
fabulous products for dentistry

1300 878 336

Price List

The most frequently asked question is “What is the cost?”

This is the reason we begin the manual with a price list before you learn about our products and service. Our price structure reflects the simplicity of using Implaguide and represents great value.

Any questions please contact us by email or Tel **1300 878 336**

3D Printed Guide suitable for one implant site	**$249**
Each additional site, (includes drill tube)	**$49**
Assisted plan/setup	**FREE***
Software to create own plan/setup	**FREE***

GST and Freight are not included.
If a guide is manufactured setup fee is FREE. If a guide is not made a setup fee will be charged.
The maximum total charge per guide per arch is $399 +GST regardless of how many implant sites.
Bone pins extra charge. Some complex setups or guides may occur additional charges, eg bone reduction guides.

Reusable Pilot Drills can be purchased from us if needed at $125 each plus GST

What is Implaguide?

Implaguide is a proven system to accurately and easily help plan and place dental implants using a combination of computer planning software and custom made 3D printed surgical guides.

One of the best features of the Implaguide system is that it is an affordable solution- NO upfront fees. Allows you to start using the computer planning with surgery guides for all your implant cases – single, multiple and full arch.

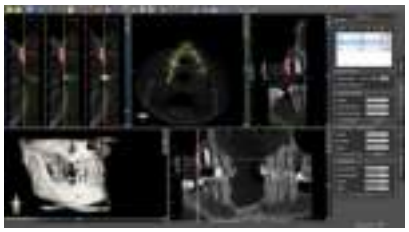
Computer 3D implant planning should always be done with the final restoration in mind, that is in other words, it is restorative driven, and now it can be done predictably and affordably with I**mplaguide**. With virtual visualisation of the bone, soft tissue, virtual waxups and adjacent and opposing teeth accurate computer implant planning is now available to everyone.

It's really is as simple as:

1 SCAN

Use any DICOM compatible Cone Beam Scan of the patient.

2 PLAN



Digitally plan your treatment for maximum accuracy and efficiency with our free fully featured software. Any Implant system is supported.

3 DRILL

Use digitally manufactured drill guides made by us from your treatment plan for perfect predictable implant placement.

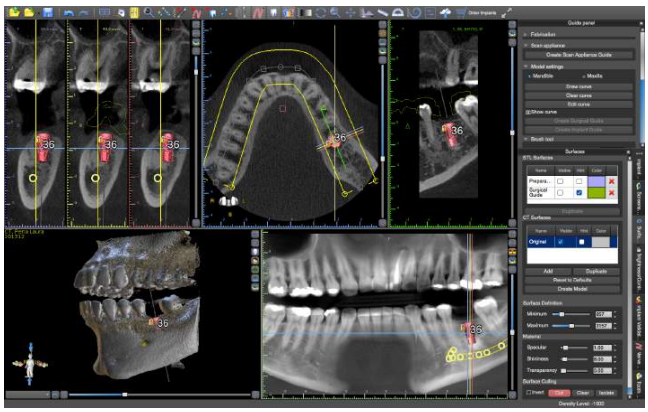
Planning based solely on osseous anatomy lacks the benefits of future tooth position planning and can lead to compromised implant positions in relation to the final prosthesis. Therefore, when fabricating **Implaguide** a comprehensive data set including bone, soft tissue, and adjacent and opposing teeth is imported into the planning software.

Now future tooth position can be planned virtually and, in some cases, derived from a combination of articulated models, models of patients with temporary bridges, or removable dentures usually eliminating the need for radiographic stents and wax-ups.

Advantages of Implaguide

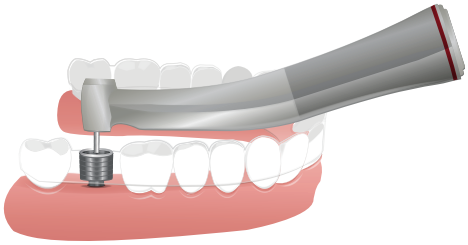
1. Free planning software, no upfront fees.

Fully featured software is yours to use at no cost and no upfront fees.
Accuracy assured and uses any DICOM compatible CBCT. Any implant system is supported. by the software.



2. Inexpensive, Accurate Fitting Guides

Guides cost $259 for single implant cases then only $50 for each additional implant site.(+GST)
Amazing accurate, perfect fitting guides. In most cases the setup fees are free.



3. Fast turnaround
Five working day turnaround, made in Australia using state of the art 3D Printing technology. We can also accommodate rush orders.

AUSTRALIAN MADE AND OWNED

4. Planning Service is available

We offer a planning service to setup the case for you in the software , perform the virtual wax-up align the tissue model and place the implants.You will need to check the implant position and refine if necessary and approve the case. We will then fabricate the surgery guide.
(Fees apply)

Work Flow Options

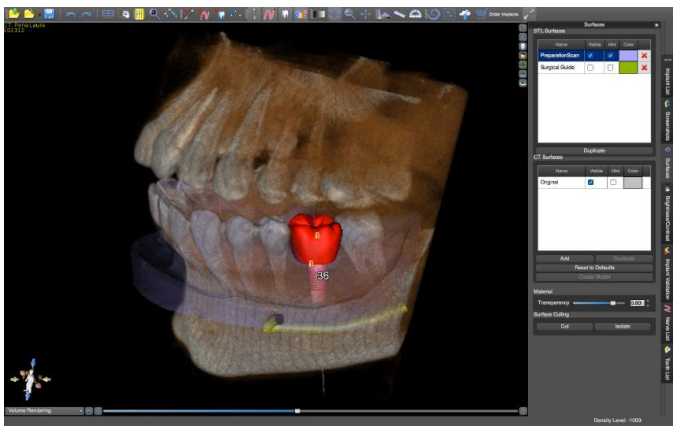
1. YOU PLAN THE CASE

- Patient CT Scan is taken by you or Radiology Centre
- Take impressions or Intra Oral Scans
- Dr sets up treatment plan in software
- Send Impressions/models or intra oral scans and plan DATA to us
- Surgery guide delivered within 5 days of approval

2. ASSISTED PLANNING … YOU APPROVE

- Patient CT Scan is taken by you or bureau
- Take impressions
- Send Impressions/models or intra oral scans and CBCT DICOM DATA to us
- We will set up the software plan and send it to you for checking
- You adjust, optimise and approve planning setup
- Surgery guide delivered in 5 days of approval

NB: Regardless if the plan is setup by us or by the Doctor all plans must be approved via email by ordering Doctor. This is a company requirement and is used a "double check" safety protocol.



Planning Software

We use a variety of software packages for planning and guide fabrication,
One of the software packages we use and recommend is **Blue Sky Plan.** This is a complimentary software package perfect for accurate guided surgery planning. It is available from their website. **www.blueskybio.com**

Features include:

1. Auto detect and load CBCT DICOM Data

2. Nerve tracing

3. Virtual tooth positioning and removal

4. Virtual implant positioning..any implant system

5. Virtual abutments

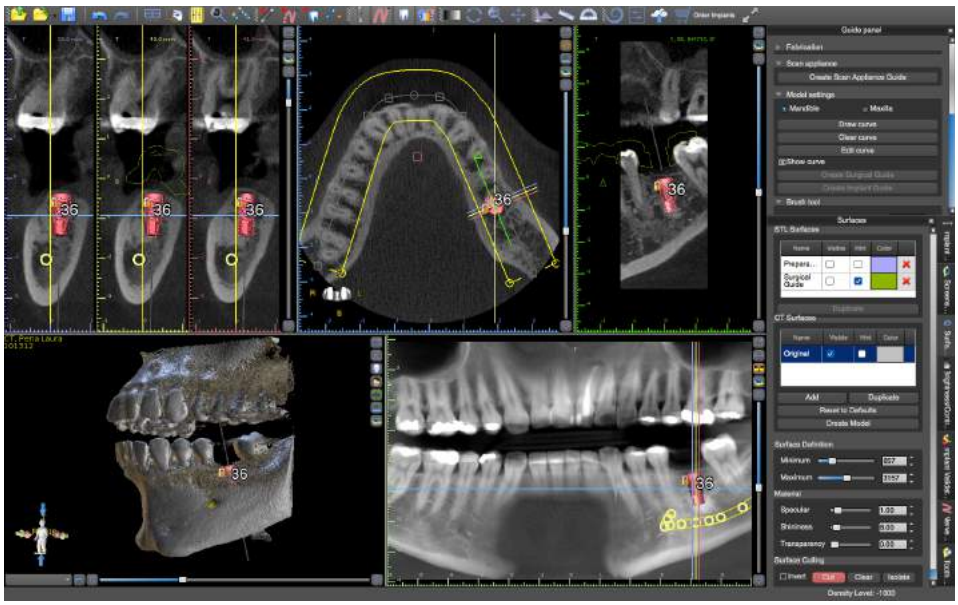
6. Superimposing Intra oral scan or model scan on CBCT data with great accuracy

7. Add scan appliance data or scanned diagnostic waxups

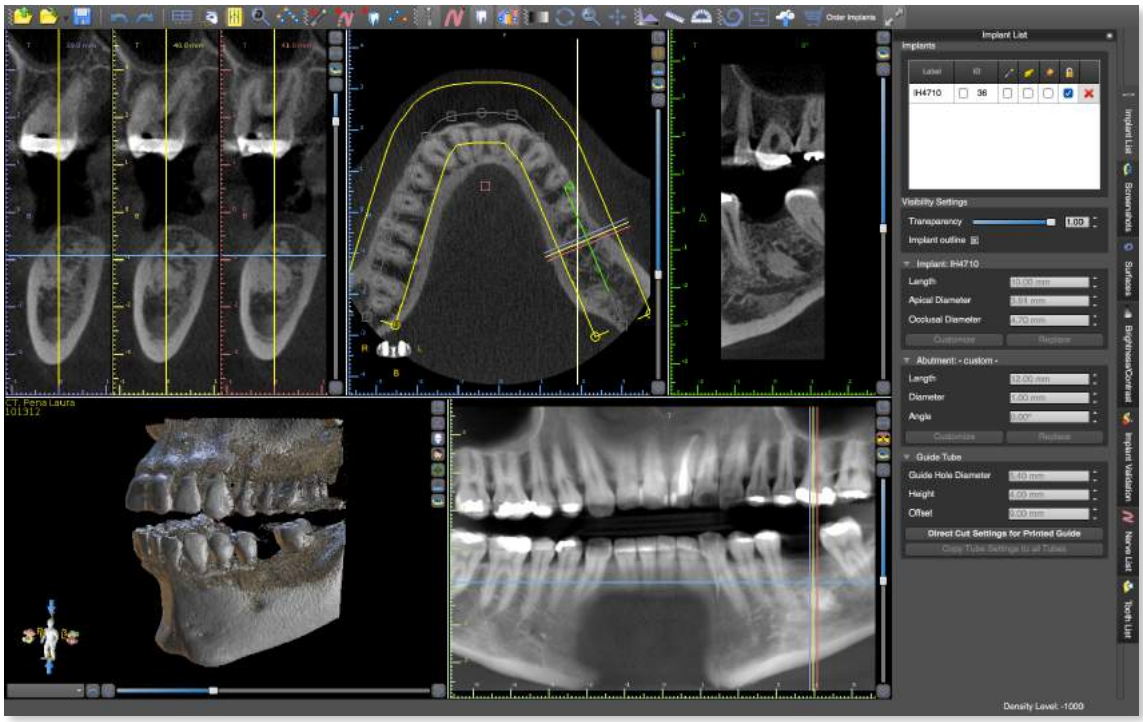
8. Calculate trajectory and Drill Length Value and transfer this data for guide fabrication for maximum accuracy.

Take advantage of the many great features available in Blue Sky Plan, the software is user friendly and yours at no charge.

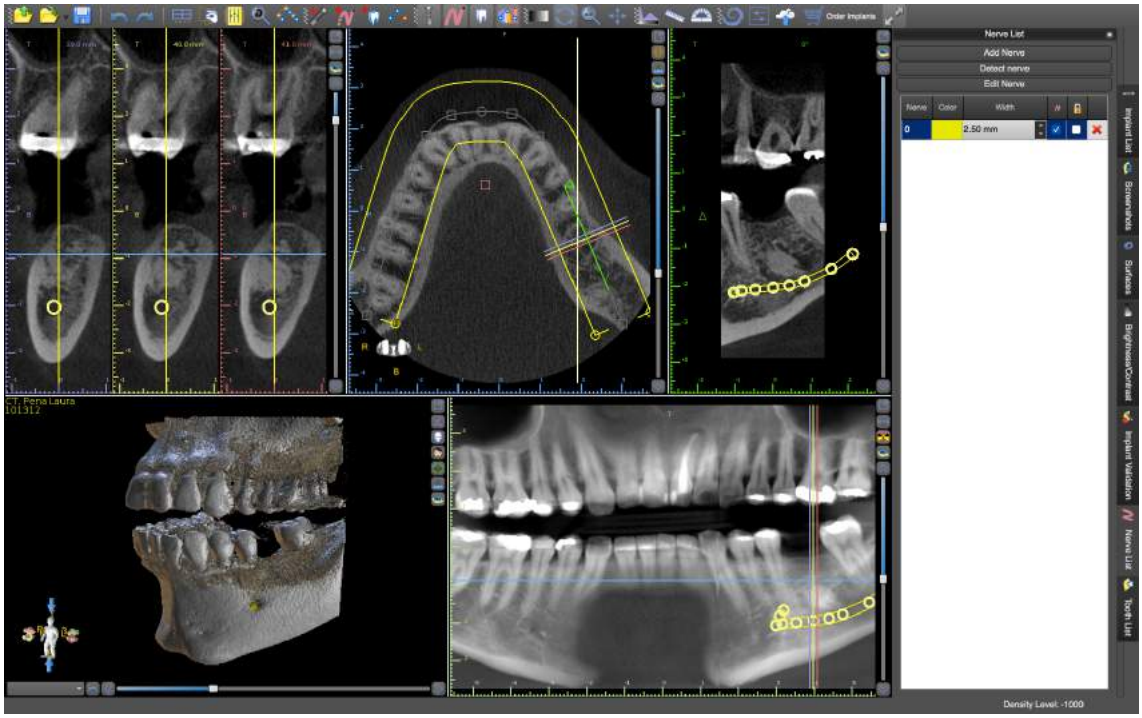
The software comes complete with a full manual and step by step training videos are available on You Tube



Planning Software in a Nutshell

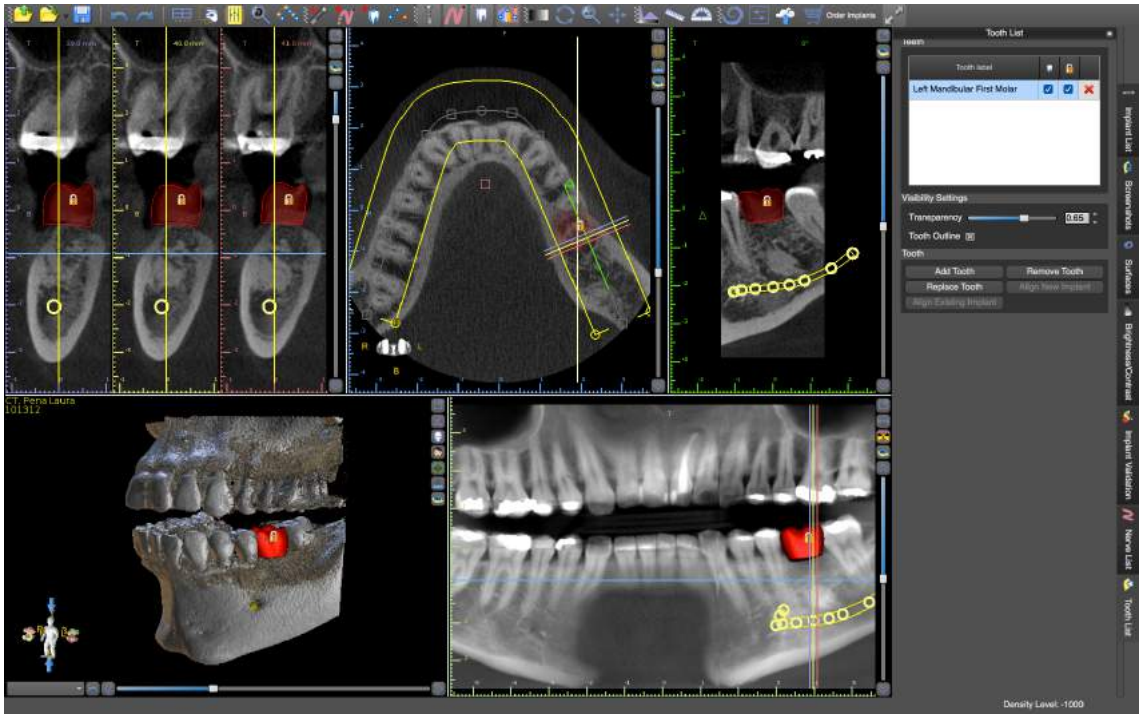


Import Standard DICOM File

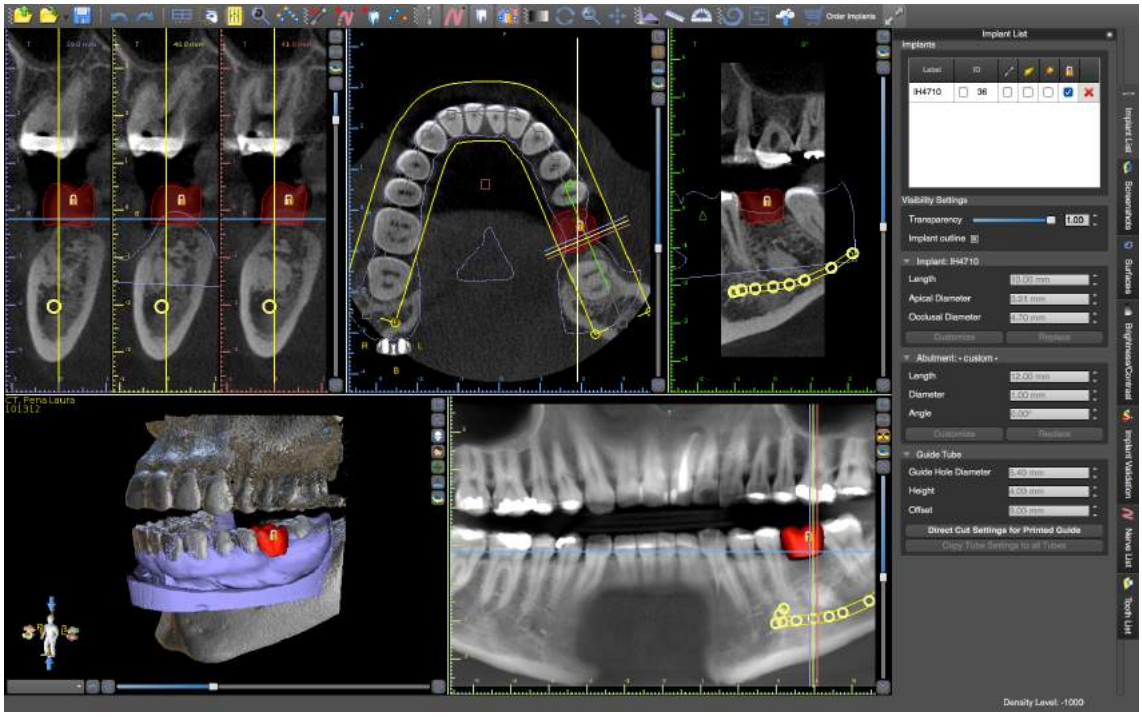


Automatic Nerve Detection

Planning Software in a Nutshell 2

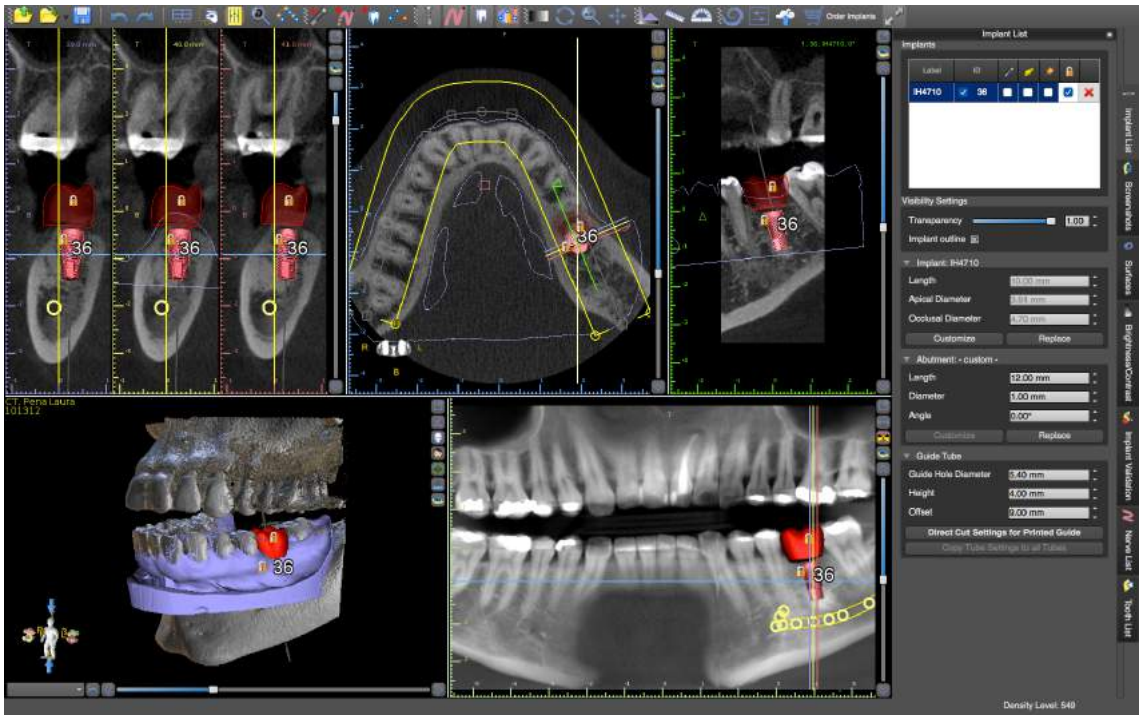


Virtual Tooth Placement

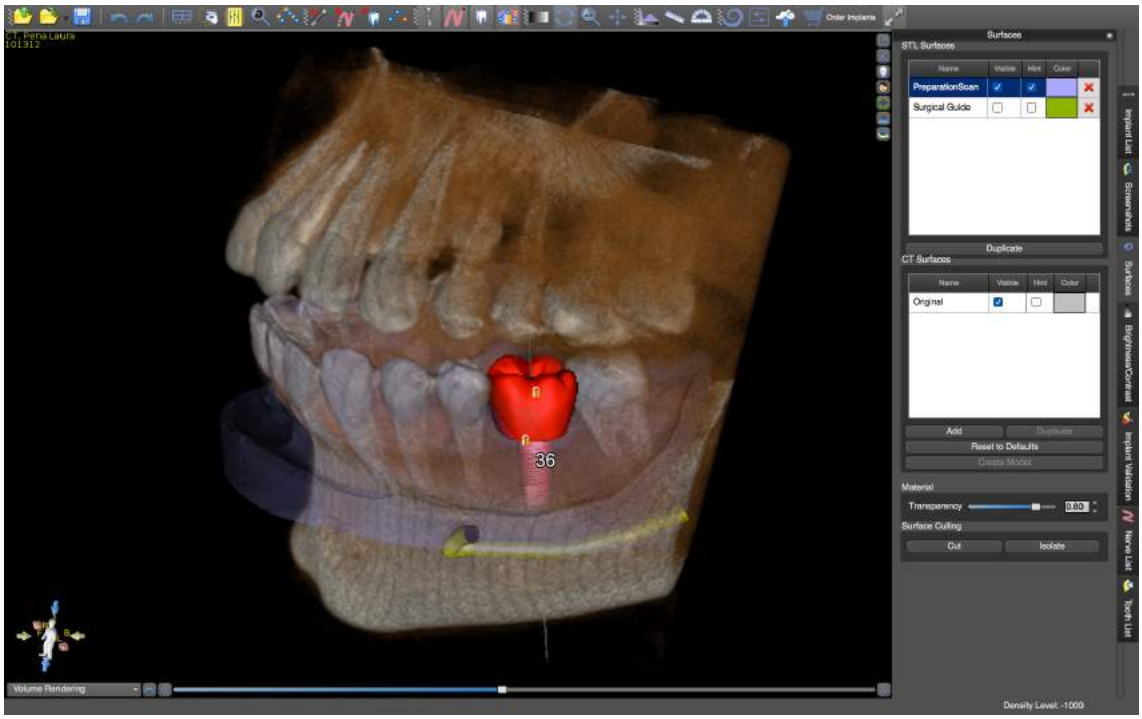


Import Model Scan

Planning Software in a Nutshell 3



Implant Placement



Plan Complete

The Surgical Guide

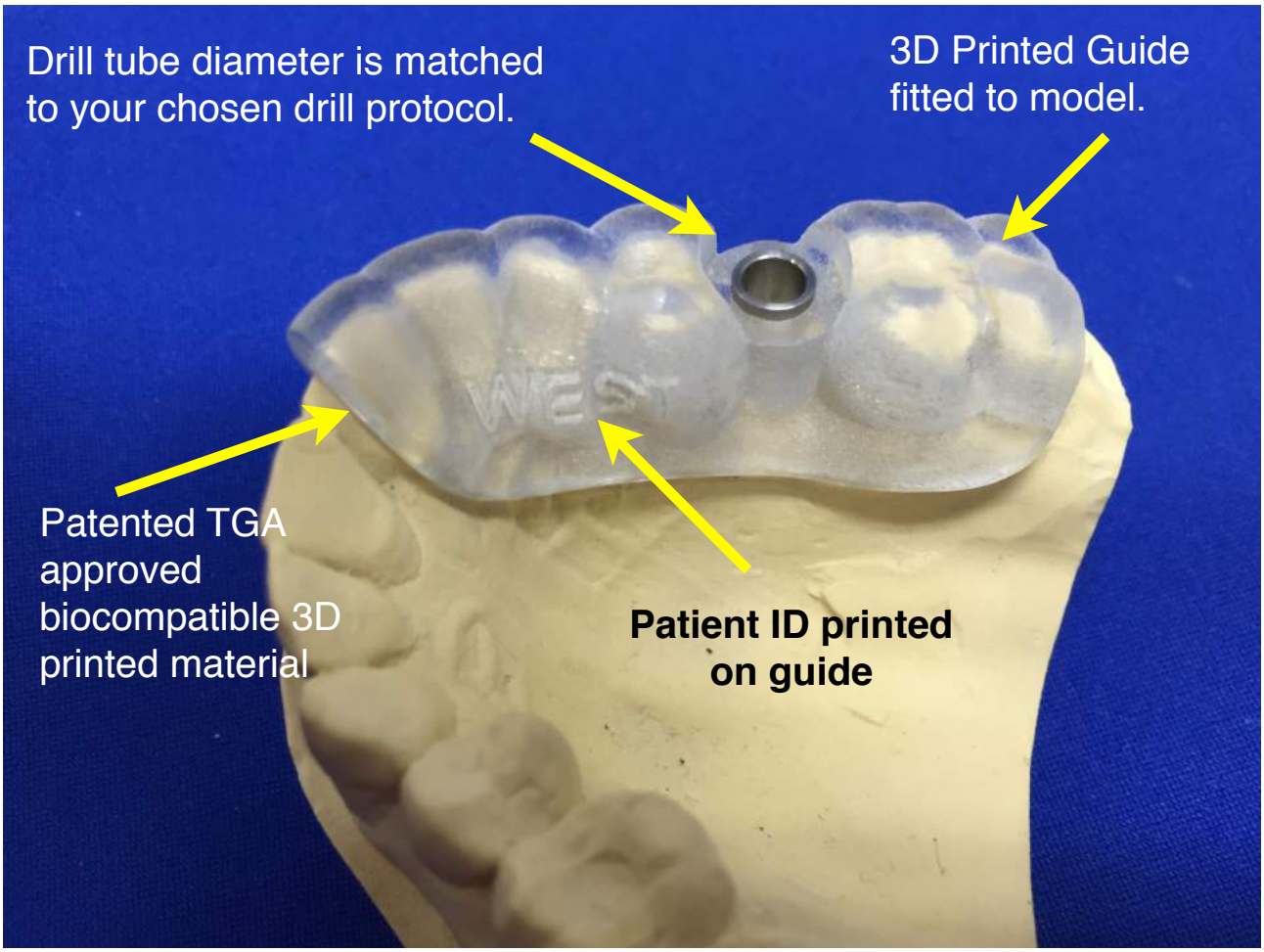
After the virtual treatment plan has been completed we will fabricate an accurate surgery guide for you directly from this plan. We use state of the art 3D printing with approved biocompatible materials to manufacture the guides.

All guides come with 5mm long drill tubes for drill stability and vary in internal diameter depending on what option you wish to take.

See the next page for guide options.

Metal Drill Tube

Anatomy of the Surgical Guide



Use our guides with a flap or flapless technique, the choice is yours.

Surgery Guide Options

Essentially we can fabricate three different types of guides to suit different circumstances and working protocols.

1 Pilot Drill Surgical Guide

We will supply the guide with the diameter of the drill tube to match your pilot drill only. After you use the guide for the pilot drill you will remove the guide and finish the osteotomy and placement following the trajectory made via the pilot drill.
For example if you use a 2.8 pilot drill we will supply a tube to exactly match this.

2 Final Drill Surgical Guide

We will construct the guide and with the diameter of the drill tube to allow for the final size drill to be used. For example if you are using a 4.5 mm implant your final drill size may be 3.7 mm, therefore we will use a 3.85 diameter drill tube. This will be an accurate fit for the final drill and it will not “grab”.

3 Fully Guided Surgical Drill Guide

We will construct the guide with drill tubes matched exactly to your guided surgery kit so the complete osteotomy and placement can be done with the guide.You will use the drill spoons supplied with the surgical kit.

We use genuine tubes where possible and generic exactly matched tubes where genuine tubes are not available.

Pilot Drill Surgical Guides - INFORMATION

1

This type of guide is designed and fabricated where you will only use the pilot drill with the guide for exact position and depth.

Metal drill tubes to match your pilot drill will be used, for example if you wish to use a 2.8mm pilot drill we will supply a 2.92mm tube. It is important to have the drill tube slightly larger than the drill otherwise the drill will bind and at worst not fit at all

Once the pilot drill is used the guide can be removed and the osteotomy can be continued with other larger drills or profile/shaping drills if necessary .

The implant is then placed without the use of the guide.

Final Drill Surgical Guides - INFORMATION

2

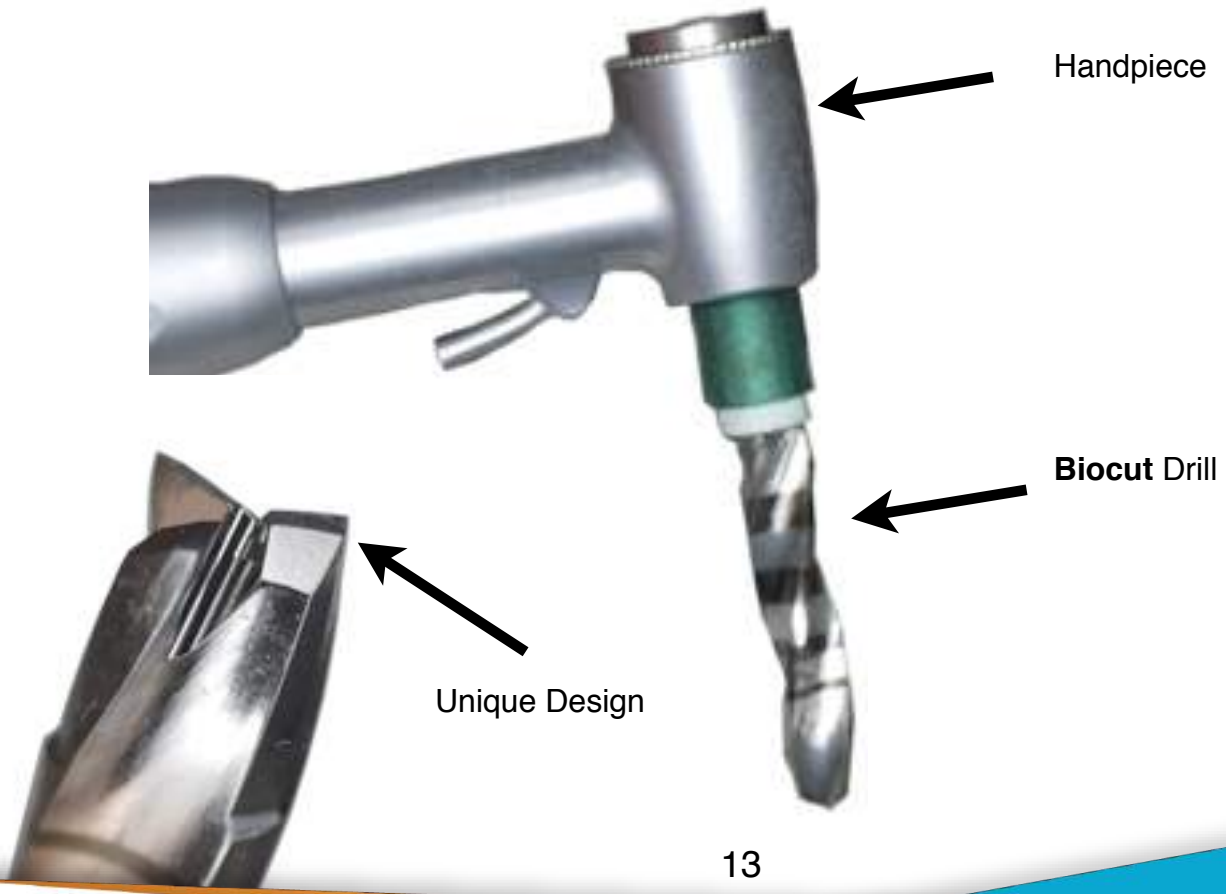
A lot of people will have a surgical kit designed only for freehand surgery, not guided surgery… there is a **BIG** difference.

Often the drills cannot used with surgery guides because some may be too short or have other issues such as built in stops that make them unsuitable for use with implant surgery guides.

The new **Biocut** drills from Blue Sky Bio are perfectly designed for use with with our Final Drill Surgery Guides and we recommend them.

The direct cut **Biocut** drills have a special design with vastly improved cutting efficiency. Sequential drilling with the use of multiple drills in guided surgery is not needed. Thus, only the final osteotomy drill is needed. **Biocut** drills improve the ease, efficiency and safety of the guided surgery procedure. They also eliminate the need for a special guided surgery kit or keys. If you have a guide made by us and a **Biocut** drill, that's all you need.

If you would like to use **Biocut** as a universal solution for any implant it is quite easy, just use the widest **Biocut** drill that is equal or less than the apical diameter of the manufacturer's final drill for the implant that is being placed. Use the final manufacturer's drill without the surgical guide to complete the osteotomy if need be.



One Drill Technique

It is unlikely anyone would ever recommend a single drill for guideless surgery, this would probably end in a disaster . However, using a combination of computer implant placement and an accurately fabricated surgery guide the one drill method is now possible. If requested we will fit the optimum drill sleeve in the guide for your BSB **Biocut** drill so you can be assured the drill will perform to perfection and with no excessive heat. Biocut drills have a single drill designed for all the popular implant types.

Can I use a pilot drill?

Some people like to use a small pilot drill to start. To help you do this successfully we can supply a small 3D printed disposable insert for the metal drill tube that matches your pilot drill size. You will need to tell us the diameter of the pilot drill you will be using so we can match this correctly. The metal drill sleeve in the guide will match the final drill size you are using. Please note you can still use the BSB Biocut drills if you like to use a pilot drill first.

1.Drill guide with printed insert for pilot drill.

2.Printed insert removed ready for final drill.

NB WE DO NOT make different plastic sleeves for multiple drill sizes for the same metal drill tube as space does not permit. However, using the pilot drill sleeve is usually enough and the trajectory will be maintained when using intermediate drills.

A recommended alternative to this method is the use of the fully guided drill guide option and the use of a guided surgery kit . Metal drill spoons are used with various different drill sizes and these can be accommodated via the same drill sleeve.
See next page

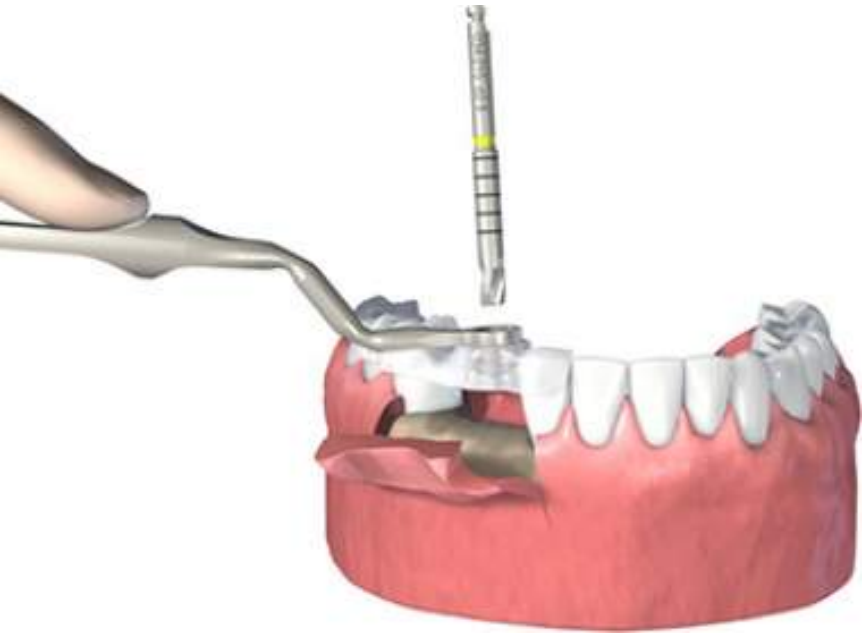
Fully Guided Surgery - INFORMATION

3

If you have a guided surgical kit regardless of brand that includes drill spoons (also known as keys or handles) then this is the type of guide to order.

We will make you a surgical guide with drill tubes to exactly match your surgical kit. In most cases we will use genuine manufacturers tubes, if we do not have these we will have high quality tubes that will fit your kit perfectly.

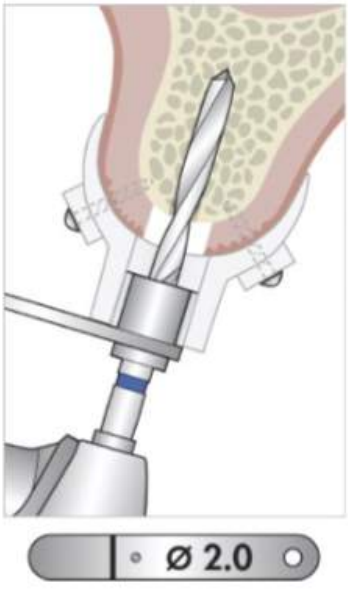
In most cases the implant can also be placed through the guide as well, hence the name Fully Guided Surgical Guide.

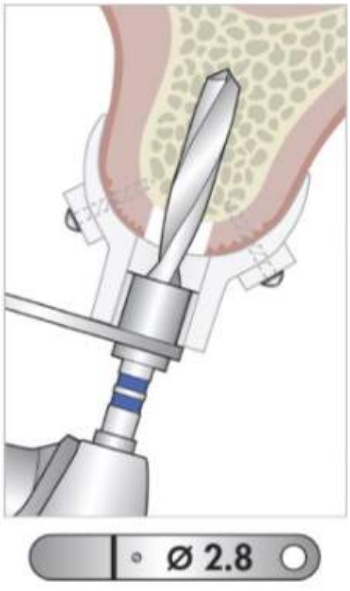


The use of drill spoons, (also known as handles or keys), are a great way to accurately use sequential drilling technique when using guided surgery.

The drill spoons fit into the metal drill tube in the surgical guide and allow you to use a range of drill sizes with precision by changing the drill spoon size.

Fully Guided Drill Guide





Drill spoons allow you to use different size drills with precision using the one size drill tube that is built into the provided surgical drill guide.

Fully Guided Surgery - INFORMATION

GUIDED DRILLS SURGICAL KIT

Another type of guided surgery kit uses Guided Drills. These drills have a skirt that fits into the drill tube.

We will make you a surgical guide with drill tubes to exactly match your Guided Drills Surgical Kit. Again, in most cases we will use genuine manufacturers tubes, if we do not have these we will have high quality tubes that will fit your kit exactly.

Skirt on drill

Example of a guided drill. The drill has a skirt built in that fits exactly into the drill tube of our fully guided surgical guide.

Matched drill tube

MIS, 3i and others use this type of system and we do make guides for all of these companies that use this method.

Some other companies eg Ankylos have slip on sleeves that lock onto the drill that essentially do the same thing and work very well.

CONTROLLING DEPTH

DEPTH CONTROL

If you are using a fully guided surgical kit depth control is simplified and if used correctly works automatically. Its still useful to understand depth control.

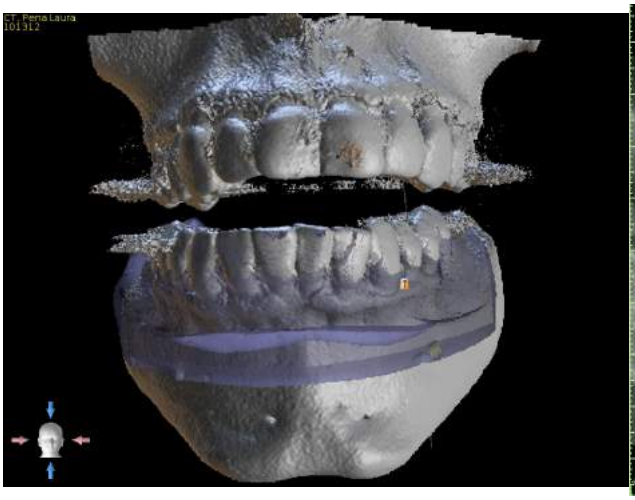
For pilot drill drill guides and final drill guides its very important to understand depth control as this will avoid second guessing when it comes to performing the osteotomy.

Refer to the example page below of a report you will receive and circled in red is the Drill Depth, also known as **Drill Length Value**.

IMPLAGUIDE PLAN

Patient ID: 101312
Scan Date:
Date: 6 June 2018 10:21:45 am AEST
Drill Kit: Custom Pilot

Implant	Catalog	Implant Diameter (mm)	Implant Height (mm)	Abutment Height (mm)	Implant-Abutment Angle (degrees)	Drill Depth (mm)
36	IH4710	4.7	10	-	-	19



What is the Drill Length Value?

The **Drill Length Value** seems confusing but it is actually very simple, and also very important if using the guide to help drill to the exact depth for implant placement . The Drill Length Value is the measurement from the top of the metal drill tube in the guide to the apex of the implant. If this value is known the correct drilling length and drill stop size can be calculated precisely. The drill length is always supplied in the reports we email you.

Using software it is possible precisely determine and adjust the Drill Length Value by measuring and if need be adjusting what we call the **offset value**. The offset value is the measurement from the top of the guide drill tube to the implant interface. This is exactly how we can calculate the Drill Length Value with precision. Using this Drill Length Value we can then calculate what length of drill to use.

OFFSET + LENGTH OF IMPLANT = DRILL LENGTH

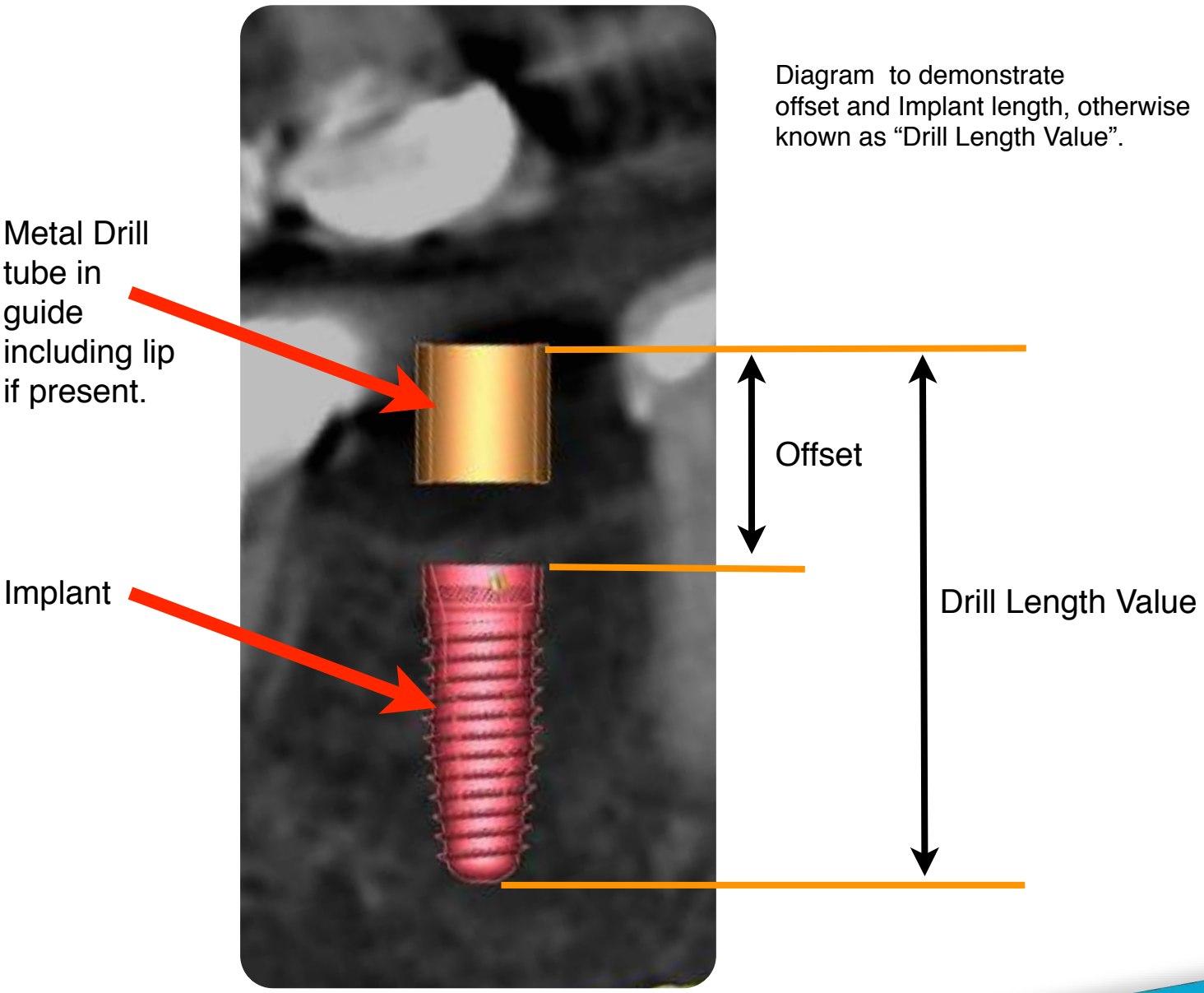


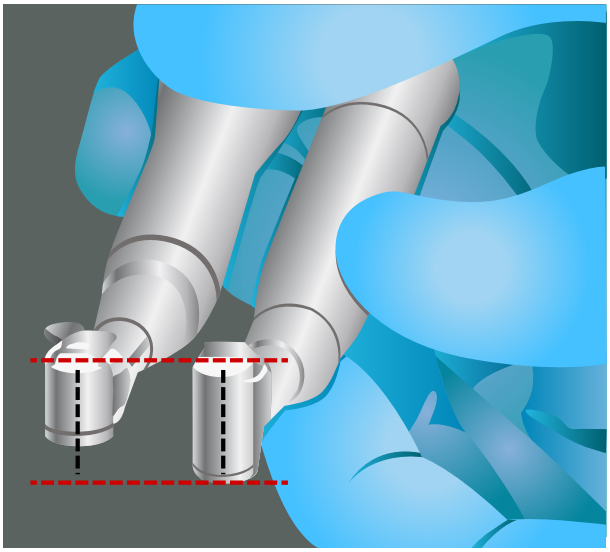
Diagram to demonstrate offset and Implant length, otherwise known as “Drill Length Value”.

What is the effective drill length ?

If you look at the illustration on the right you will see the two hand pieces have different sized heads. Different manufacturers have different heads of their handpieces and therefore different internal sizes.

When placing the same drill in each handpiece the length of drill visible will be different. This difference can be 1-2mm or more.

If we are to accurately use drill depth using our surgery guides this is significant and you will need to know the effective drill length relative to your handpiece.



Measuring your effective drill length

Use of vernier callipers recommended.

The diagram demonstrates the effective drill length measurement. Use callipers to measure this.

The effective drill length must be at least equal to the Drill Length value.

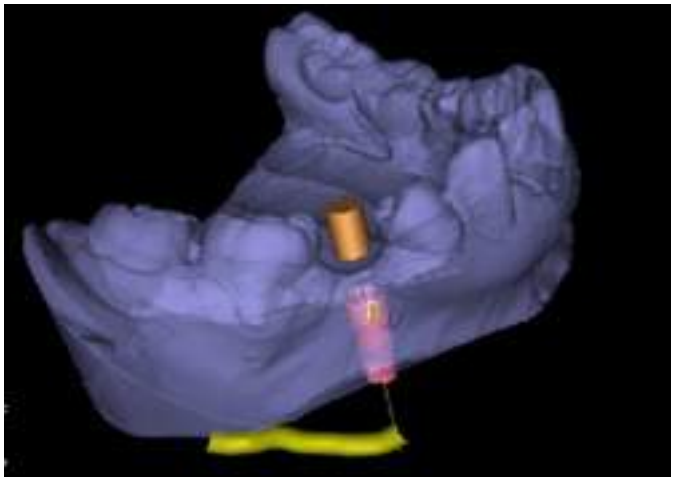
Ideally the effective drill length should equal the Drill Length Value. When it is too long we recommend the use of slide on drill stops. If it is too short it cannot be used with the guide successfully.

In some cases if access to the drill sleeve is inhibited by adjacent teeth your effective drill length will need to be longer than the Drill Length Value. We will supply on request a variety of disposable drill stops in each case to help maintain the correct drill length.

How can we be sure of accuracy?

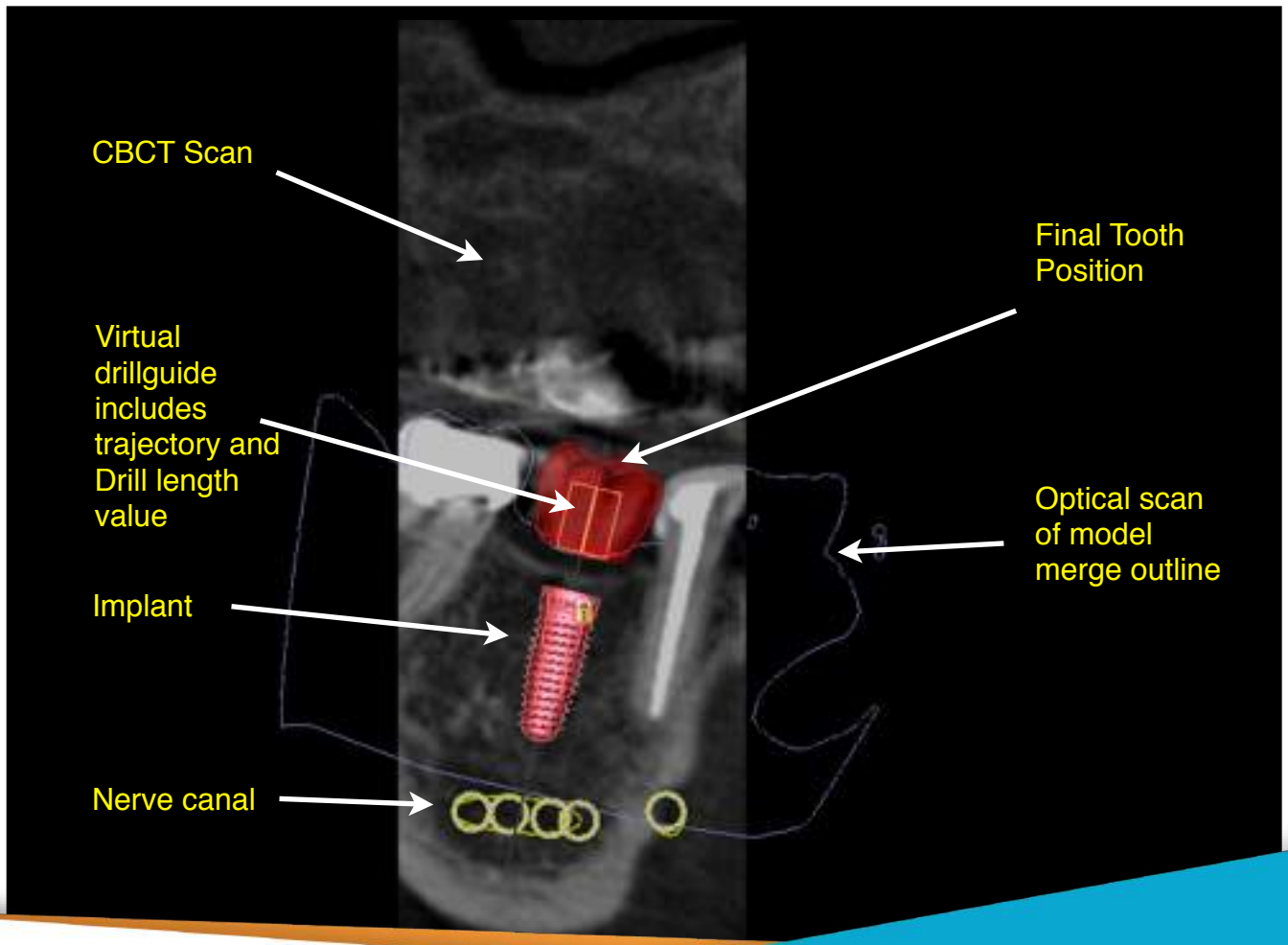
Implaguide uses a range of data to create an accurate surgery guide. With a better understanding of the method we use to fabricate our guides you will grow more confident and want to use them for every case.

1. **CBCT Scan with relevant anatomy position marked**
2. **Micron accurate optical scan of patient model or Intra Oral Scan**
3. **Final tooth position virtualised**
4. **Implant position virtualised**
5. **Implant drill trajectory calculated**
6. **Offset and Drill Length Value**



Drill trajectory transfer calculation

When this data is used correctly we have a great foundation to design an accurate surgical drill guide. We fabricate all guides using the latest 3D print technology. Merging the model scan with the CBCT scan increases the accuracy of the data over just using a CBCT scan only. You can rely on the the guide as it fits snugly. However, it is most important to have accurate impressions and CBCT scans.



What to send to us

Here is an easy checklist of what to send us to have your guide made.

If you plan the case...

1. Blue Sky Plan Data file
2. PVS impression or poured stone model

If we setup the plan - you approve it...

1. CBCT DICOM DATA STANDARD DICOM3 FORMAT ONLY
2. PVS impression or poured stone model
3. Implant sizes and position proposal

Normally we can process guides in
3- 5 working days after your approval.
Approvals MUST be emailed before the guide will be constructed.
Always consider delivery times may vary depending on your practice location and may increase the time it takes to get your guide.

A note on CBCT and DICOM Format

DICOM stands for Digital Imaging and COmunications in Medicine

It is *the* international standard for medical images and related information (ISO 12052). It defines the formats for medical images that can be exchanged with the data and quality necessary for clinical use.

When you send your CBCT to us it will need to be in STANDARD DICOM FORMAT.

Some imaging centres will not send this format to you unless you ask specifically for it. The reason is they will usually save it in their own format so that their supplied viewer can recognise and open it for you. Please ensure all scans are sent to us in STANDARD DICOM FORMAT only otherwise it will not be able to be read by our softwares.

You can send your DICOM file to us on a disk or a USB stick.

For this purpose sometimes it is referred to as DICOM RM (Removable Media) FORMAT

Please supply all scans on disk or USB stick, we will always return these with the completed guide.

Compare Implaguide for Quality and Value

	IMPLAGUIDE	Other Commercial Guides	Homemade Guides (prosthetic guide)	Freehand (without guide)
Upfront investment	$0	Up to $15,000 +	N/A	N/A
Fit, stability & retention	Yes	Maybe	Maybe	N/A
Site visibility and access	Yes	No	Maybe	Yes
Computer planning	Yes	Some	No	No
Modifiable in surgery	Yes	No	Maybe	Yes
Disposable drill stops	Yes	No	N/A	N/A
Uses standard drills	Yes	No	No	Yes
Any implant system	Yes	No	Yes	Yes
Standard delivery time	5 days	21days or more	N/A	N/A
Price	$259	$500-1000	Doctor/Staff time	Doctor/Staff time
Guaranteed	Yes	No	N/A	N/A

Other Helpful Information

You can send all your digital files directly to us using our own transfer portal called Dental Transmit. This is a fast and safe way to send us digital files especially Blue Sky Plan files and patient Intra Oral Scans.

Dental Transmit

www.dentaltransmit.com

CBCT DICOM files can tend to be quite large. The best way to send these is on CD or DVD or USB stick with the impressions or the models of the patient. The alternative is to open them in Blue Sky Plan, save the file and then send the Blue Sky Plan file via Dental Transmit as the result will be a smaller file to transmit.

Our Postal Address

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KENSINGTON NSW 2033

1300 878 336

www.fabdent.com.au

iMPLAGUIDE™

Implant Systems

Implaguide is compatible with every Implant system. Here is a list of some companies that we work with. If you don't see your favourite implant listed we can still surely assist you.

NEOSS

ADIN DENTAL IMPLANT SYSTEMS LTD

TRI dental implants

straumann

Implant Direct simply smarter.

OSSTEM IMPLANT

DENTSPLY IMPLANTS

BIOHORIZONS® SCIENCE • INNOVATION • SERVICE

BlueSkyBio

mis

ZIMMER BIOMET Your progress. Our promise.™

Nobel Biocare®

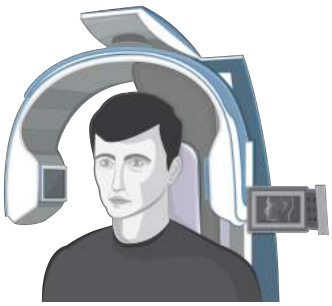
3M™ ESPE™ MDI Mini Dental Implants

IMPLANTIUM Dentium For Dentists By Dentists

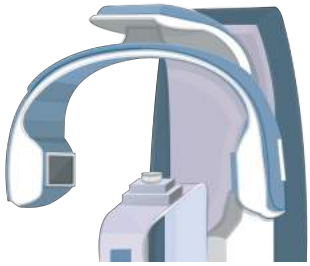
IMPLAGUIDE™

DENTAL CBCT SCAN PROCEDURE FOR EDENTULOUS CASES

The purpose of the dual scan procedure is to correctly orientate the optical scan of the plaster edentulous model with the CBCT as this aids the fabrication of the IMPLAGUDE drill guide. Also it helps to visualise the planned final tooth position in the CBCT. We will use a scan appliance that was fabricated usually from a copy of the patients denture/s. To ensure correct procedure please follow the steps below:



1. Take one CBCT scan of the patient with the scan appliance fitted in the mouth of the patient. If the appliance is loose please use a small amount of Polygrip denture adhesive supplied.



2. Take a second CBCT scan with the scan appliance fitted on to the stone model. Often this is done with the model and the scan appliance set up and placed on a piece of styrofoam in the CBCT device.
NB: The patient is NOT involved with this scan at all.

If the scan appliance has been made to our instruction the second scan is not needed. See appendix.

3. Send both scans, in STANDARD DICOM3 FORMAT only, plus the scan appliance/s as well as the plaster model/s back to us for processing in our laboratory. It is important we get all these items.

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Scan Appliances

Implaguide scanning appliance

Implaguide scanning appliance on model

Denture modified for use as a scan appliance

Appendix

References

Utilizing Digital Treatment Planning and Guided Surgery in Conjunction with Narrow-Body Implants
Timothy F. Kosinski, DDS, MAGD

Implant Survival after Preparation of the Implant Site Using a Single Burr: A Case Series
Raphaèl Bettach, DDS;* Silvio Taschieri, MD, DDS; Gilles Boukhris, DDS; Massimo Del Fabbro, BSc, PhD

Comparison of Heat Generation Between Internally Guided (Cannulated) Single Drill and Traditional Sequential Drilling With and Without a Drill Guide for Dental Implants
Scott E Bulloch, DDS, MS/Russel G. Olsen, DPM/Brandon Bulloch, BS

Factors influencing transfer accuracy of cone beam CT-derived template-based implant placement.

Behneke A, Burwinkel M, Behneke N.
Department of Oral Surgery, University of Mainz, Mainz, Germany.

The role of cone-beam computed tomography in the planning and placement of implants.
Worthington P, Rubenstein J, Hatcher DC.
J Am Dent Assoc. 2010 Oct;141 Suppl 3:19S-24S.

Reliability of implant placement after virtual planning of implant positions using cone beam CT data and surgical (guide) templates.
Nickenig HJ, Eitner S.
J Craniomaxillofacial Surgery. 2007 Jun-Jul;35(4-5):207-11. Epub 2007 Jun 18.

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Software Computer System Requirements

When working with large files like DICOM files it is important to have a computer that will cope with the demands of these files. Having an underpowered computer will just cause you big headaches. Simply put it really does matter what processing power, graphics Card and RAM you have as this will have a direct effect the ability to work with planning software.

Minimum System Requirements for Blue Sky Plan

-Operating system: Windows 10 , Windows 8, Windows 7
 Mac OS Sierra

- Processor: Intel Core i5 or comparable
- RAM memory: 8 GB
- Video Card. NVidia or ATI / >2GB Video RAM **(IMPORTANT)**
- Monitor: 14 inch / resolution at least 1440 X 900
- Hard Disk: 500MB of free space

NB: Unfortunately we cannot offer any support for software running any computer that does not meet these minimum requirements as it the BSP program will not run correctly. Computers vary and we can only offer limited unpaid support for hardware issues. Paid support is available at $180 Plus GST per hour.

For all support with software please install the Teamviewer program, available from:

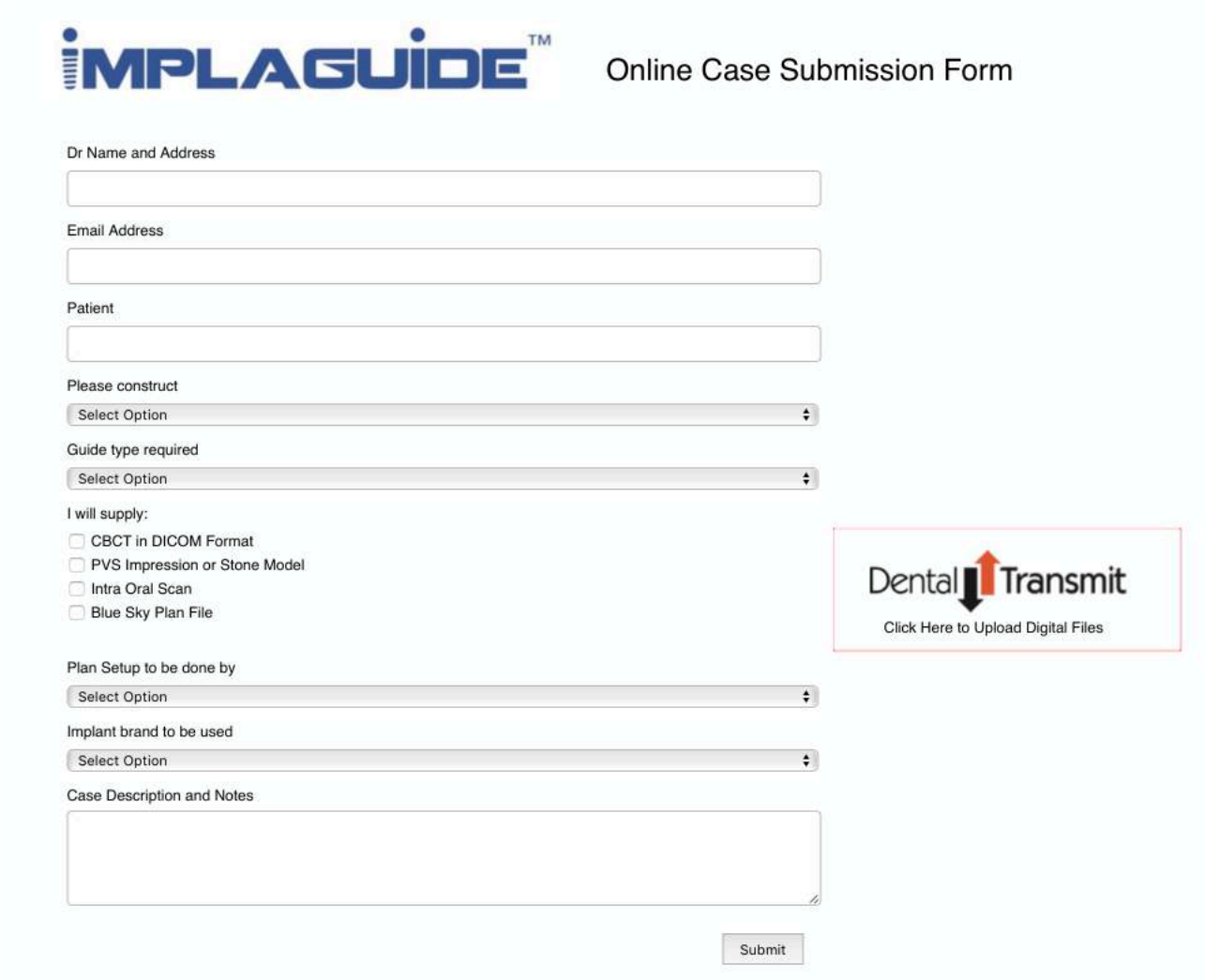
www.teamviewer.com

Once installed we can offer on-line real time support.

Online Form

Our online form is available here, click the link :

http://www.implaguide.com.au/implaguide_form/



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Date Required _____

Dr _____

Patient _____

Date Sent _____

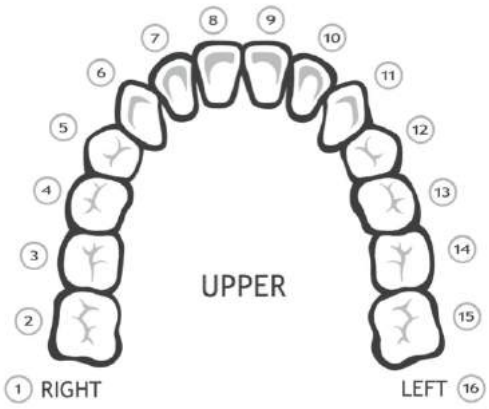
Please construct: Upper Guide ☐ Lower Guide ☐ Scan Appliance ☐

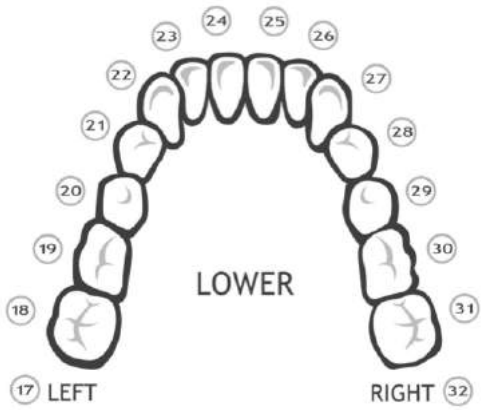
Please setup case in Blue Sky Plan for my review ☐

Provided with case:

Impressions/Models ☐ Blue Sky Plan Data ☐ DICOM Data ☐

Tooth Number	Implant Size	OFFICE USE	





Special Details

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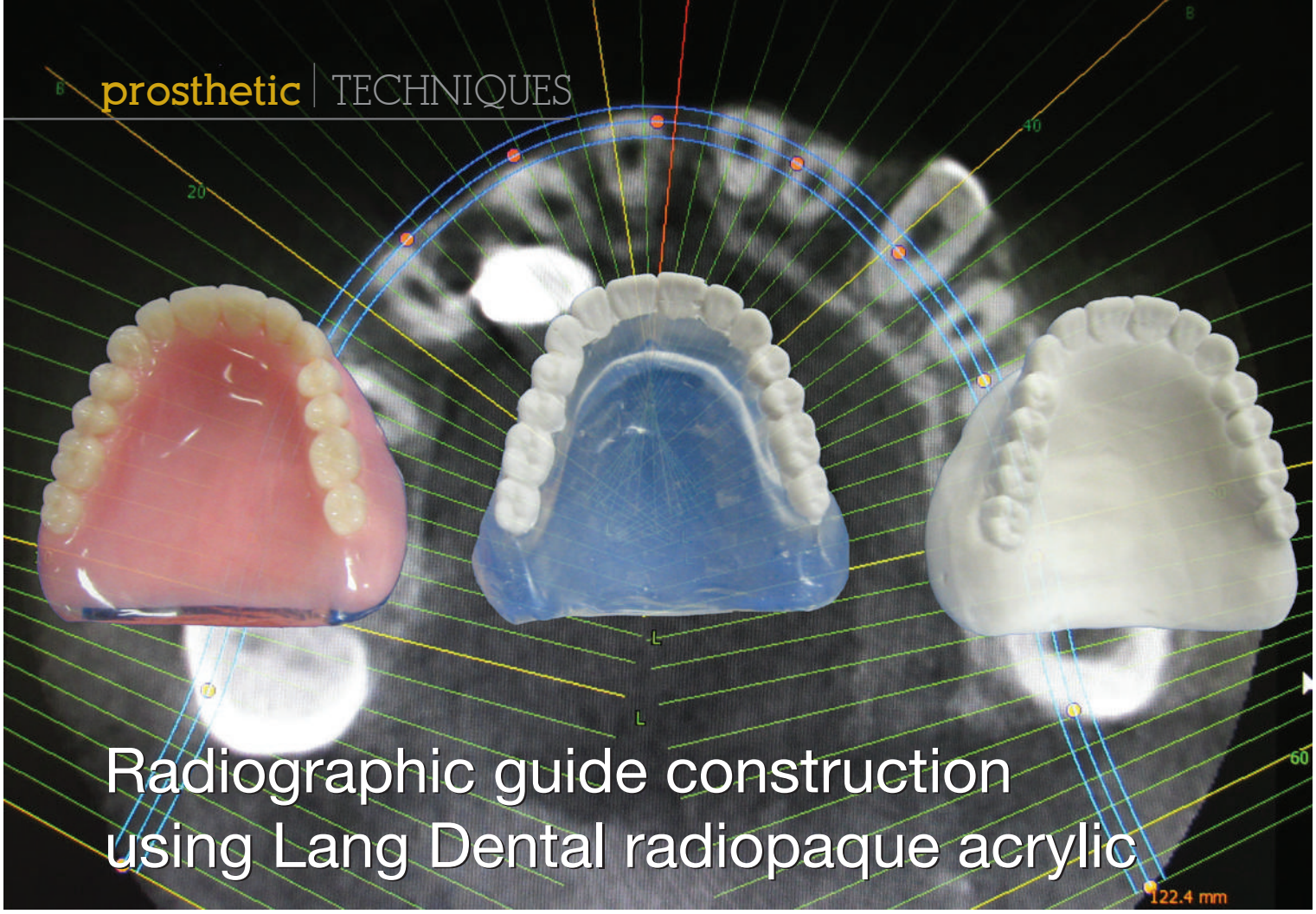

Radiographic guide construction using Lang Dental radiopaque acrylic

By Terry Whitty

"By utilising a scan appliance correctly, the case can be planned from both a prosthetic and surgical perspective prior to the implant surgery... making the process restoratively driven..."

One of the fastest growing segments of implant dentistry is the utilisation of Cone Beam Computed Tomography (CBCT) scan data in conjunction with treatment planning software to enable guided surgery for implant reconstruction cases. In the Jan/Feb 2014 edition of *eLABORATE*, I covered a brief introduction to computer-guided implant placement and described constructing a surgery drill guide using CBCT and a scanned model.

Often, to have a more complete understanding of final tooth position (FTP) in relation to the implant position, a specific appliance worn by the patient during the CBCT scan can complete the picture and help position all the digital data correctly in relation to the final planned prosthetic. This is known as a radiographic guide or more commonly a Scan Appliance. By utilising a scan appliance correctly, the case can be planned from both a prosthetic and surgical perspective prior to the implant surgery taking place, making the process restoratively driven. Focusing on the restorative outcome maximizes the strength, longevity and aesthetics of the restoration... and makes a technicians' life immeasurably easier!

The scan appliance is often critical to this process and to the success of digitally-planned implant cases. Its primary purpose is to show the ideal prosthetic positions of the teeth to be replaced in the digital plan. It also provides an invaluable diagnostic tool to detail the tooth-to-bone relationship. While "virtual computer teeth" are very useful for shorter spans, especially in partially edentulous cases, an appliance in which the teeth have been set in the ideal position and tried in the patient's mouth provides far greater accuracy. Hence, it is usually advisable for edentulous cases to have a scan appliance.

During computer planning and prior to the construction of the drill guide, the scan appliance also helps us sync the optically scanned model to the CBCT scan as well. After the scan appliance is utilised in the planning stage, it is also sometimes modified to create the drill guide, though in the author's opinion, this is not ideal.

There are generally two types of scan appliances in current use today - Single Scan and Dual Scan. The Single Scan appliance is generally made of an acrylic mixed with approximately 20%-40% radiopaque barium sulphate, depending on the application, that allows various structures

Figure 1. Lang Dental's Denture Duplicator Flask is very useful for making scan appliances.

Figure 2. Start by separating the internal flask - Vaseline or silicone spray works well.

Figure 3. Use a regular set alginate - it gives you a bit more working time.

Figure 4. Mix the alginate to a suitable consistency.

Figure 5. Fill the bottom half of the flask with alginate.

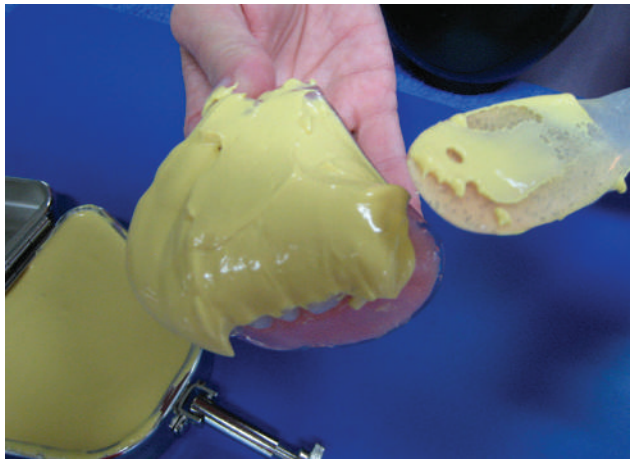

Figure 6. Cover the tooth side of the denture with alginate.

to be seen radiographically. Increasing the percentage of barium sulphate in the tooth portion of the scan appliance can allow this section of the scan appliance to be better identified in the resulting scan.

The Single Scan appliance is worn by the patient during the CBCT scan and will show up in the scan to assist implant placement.

The Dual Scan appliance is often used when scatter from neighbouring metal restorations can obscure the view of the teeth in the scan appliance when using Single Scan appliances. Barium sulphate from Single Scan appliances can also cause issues and obscure the view of potentially vital structures, especially when it is not mixed correctly in the acrylic.

Figure 7. Position the denture into the bottom side of the flask about two-thirds down.

Figure 8. When the alginate is set, trim to remove excess.

Figure 9. Use Vaseline on the alginate to separate the two halves.

Figure 10. Mix the alginate and fill the upper half of the flask.

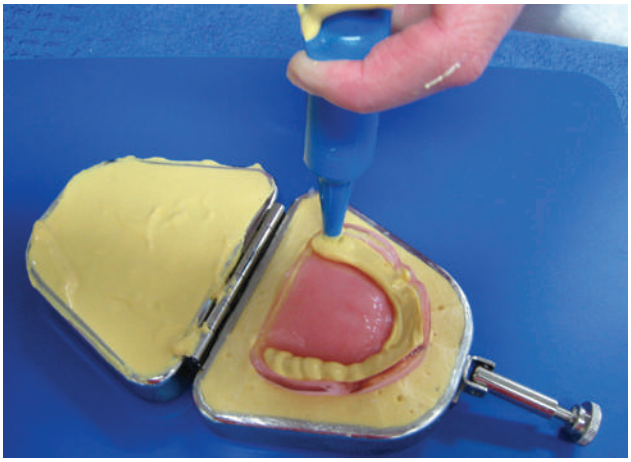

Figure 11. I like to use an alginate syringe to fill the fitting side.

Figure 12. Cover the denture with alginate.

Commercial acrylics are now available to help solve this issue such as Lang Dental's JET XR™ Radiopaque Acylic (Figure 16). Opinions on adding of barium sulphate vary, some say it may affect the quality of the scan, however one could argue when scanning partially edentulous cases that any radiopaque material in the mouth does likewise, such as a crown or other restorations. The optimal method is to always use a good quality cone beam scanner at high resolution.

Dual Scan appliances can also help merge the accurate relative position of the scan appliance, cone beam CT scan and scanned model.

The key to constructing a dual scan appliance is placing what is known as

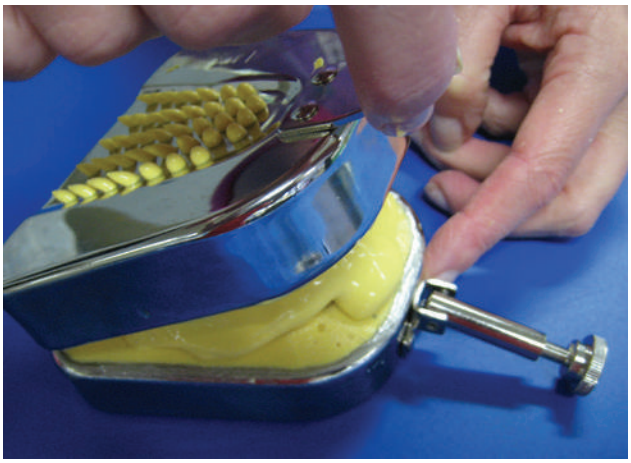

Figure 13. Close the flask and secure the clamp.

Figure 14. Clean up excess.

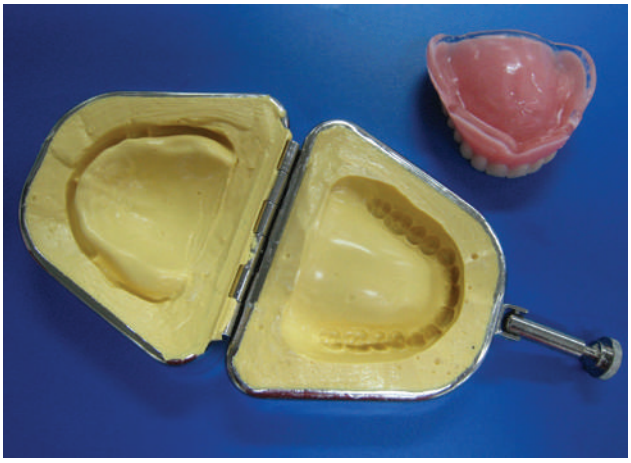

Figure 15. When the alginate has set, carefully open the flask and remove the denture.

Figure 16. Lang Dental's JET XR self-curing acrylic with Barium Sulphate; this is opaque with 40% Barium Sulphate.

Figure 17. Mix the acrylic to manufacturer's specifications.

Figure 18. Use an instrument to dispense the acrylic into the tooth section of the mould.

radiopaque fiducial or reference markers into the scan appliance. Often gutta-percha used in root canal treatments is used but other radiopaque materials are suitable too. Taking a CBCT scan with the patient wearing the scan appliance and another with the appliance on the stone model is the procedure of choice. By doing this, a software merge of the stone model, the scan appliance and the CBCT scan can be accurately achieved by aligning the fiducial markers.

Sometimes, the patient's existing denture can be used as a scan appliance but it will need modification and possible repair or maintenance after the scan is done. An easier way to make either type of scan appliance is by duplicating the patient's

Figure 25. Trim and polish guide.

Figure 26. Mark areas for gutta-percha fiducial markers.

Figures 27-29. Drill small holes approx. 1-2 mm wide, 1mm deep; Heat gutta-percha and push into holes. You can cover with cold cure if you wish. Alternatively, there are radiopaque filling materials that bond to acrylic.

Figure 30. Denture and two different types of guides. The middle one uses clear acrylic for the base and Lang Dental's JET XR for teeth. The one on the right uses Lang Dental's JET XR 40% for the teeth area (opaque) and 20% for the base (Shadow).

About the author

Terry Whitty lectures nationally and internationally on a variety of dental technology and material science subjects and runs a busy laboratory in Sydney's Eastern Suburbs, specialising in high tech dental manufacturing. Using the latest advances in intra- and extraoral scanning, CAD/CAM and 3D printing technologies, most specialties are covered including fixed and removable prosthetics, orthodontics and computer implant planning and guidance. He also specialises in the latest injection systems for traditional and CAD designed removable prosthetics and various associated dental appliances. His articles appear in various international journals. He can be contacted on (02) 9313-7971.

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