Restorative Steps

Managing Complications

Surgical Steps

Implant Ninja's

LITTLE BOOK OF IMPLANT WISDOM

Toolbelt

CBCT Evaluation

Tx planning

Failure

This book is dedicated to **you.**

Although you might not have known, my oldest daughter, Olivia was born with some medical issues.

And we've had more than our fair share of hospital adventures.

Now, because of some recent complications, Olivia will have to start an experimental medication in Seattle to help her. So we're packin up and relocating.

Your support allows us to keep our little business growing AND tackle our family's medical adventures with greater peace of mind.

Family first! And as a ninja fan, you are part of mine.

Now, on to the goods...

Warning:

This is NOT your mommas dental school textbook. There is no citation-heavy, mamby pamby, philosophical rambling.

This is a hardcore, highly irregular, highly ridiculous, method of learning as much valuable implant information with as little time and effort as possible.

Prepare to be entertained, and somehow along the way, you'll soak up everything you need to know.

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So let me guess…

you want to learn more about implants…

But everywhere you turn,

courses are charging major stacks of 

to teach you.

Dental schools and Implant Industry be like:

You’re probably thinking:

And are those courses any good?

Will they be boring?

Will they drone on about this literature and that study?

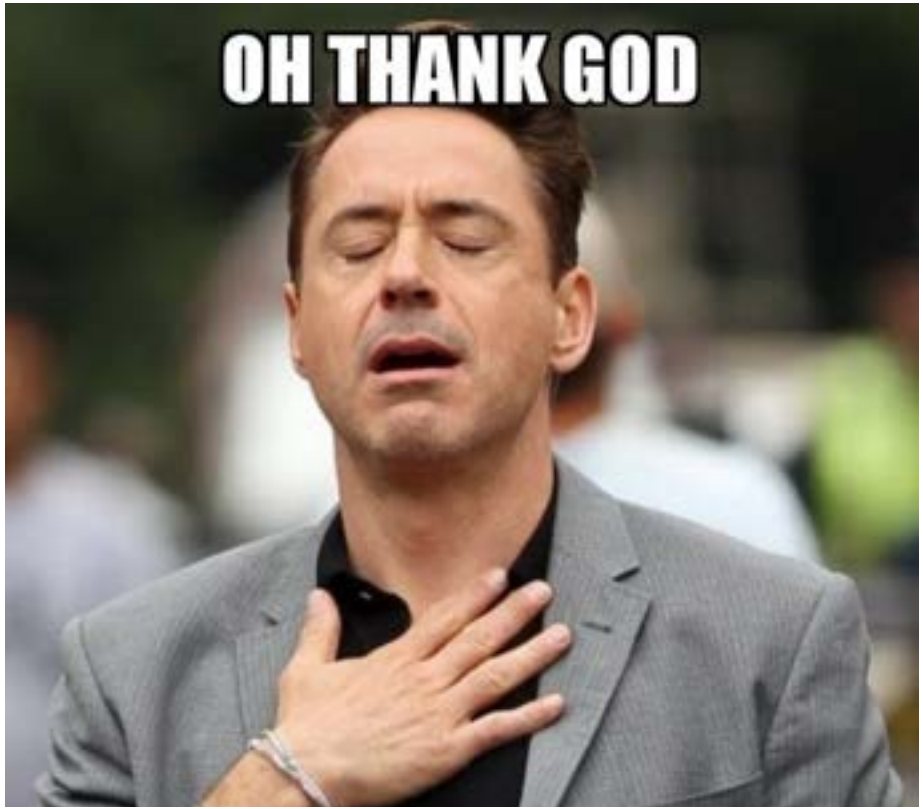
Will it be like...dun dun duuuun

…. DENTAL SCHOOL??

Well, you can forget all that. We’re Implant Ninja.

And we’ve got your back.

In this little book, we're going to explain everything you need to know about implants.



BTW:
Throughout the text,
I included QR codes and links to helpful videos and articles and literature about the subjects covered.

Its my way of cramming as much useful info in one place for ya.

Ready Player One?

Implant Design

Ahh the mighty dental implant.

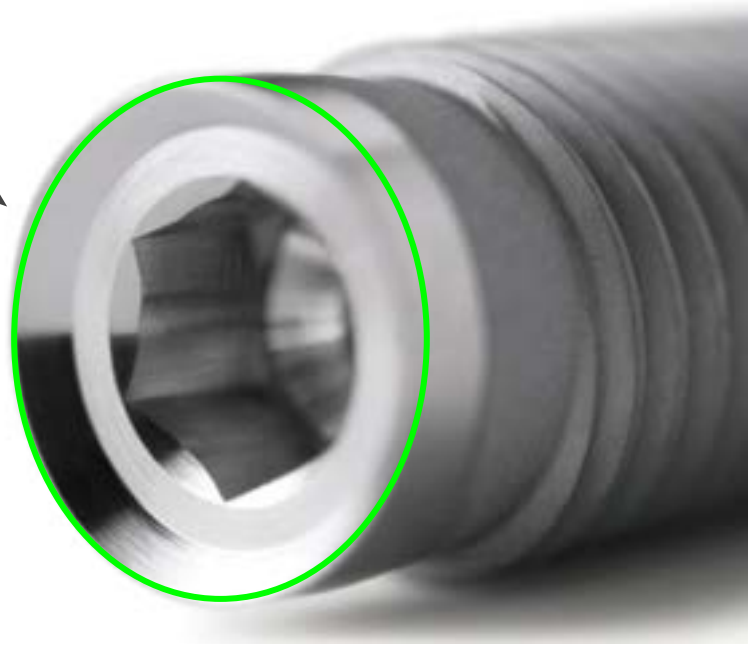
Sleek and sexy with its perfectly milled titanium body.

Let’s take a closer look, shall we?

The modern implant design is called a **“root-form”** implant. Because it’s sorta shaped like a tooth root.

But it’s basically a screw milled from titanium.

This part right here is called the platform.

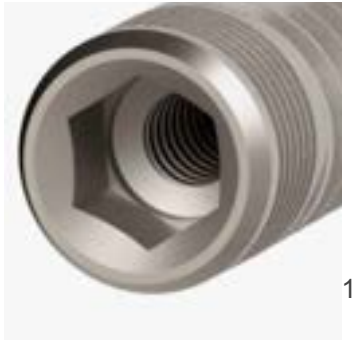


There are soooo many different types of platforms.

But the one shown here, is the **internal hex.** It's a classic. Introduced in 1986. It's probably the most universal implant platform in existence.

The internal hex is used by a lot of the implant manufacturers out there today. This one is handy because all the labs have parts for it and there are so many compatible prosthetic components.

And it is widely published, proving that IT WORKS.



But, like I mentioned. There are a lot of platforms out there.

External hex

Friction fit taper

Trilobe

Conical connection

Some crazy proprietary connection
(By Neoss)

Notice that the surface is sorta bumpy.

That's because of something that is pretty standard that is done to implant surfaces.

It is sand blasted with large-grit particles (250 -500 microns) and

then acid-etched at the surface. (using strong acids such as hydrochloric, sulfuric, and nitric acids)

This surface is said to be **SLA** treated.

(**S**and Blasted with **L**arge grit, and **A**cid etched.)

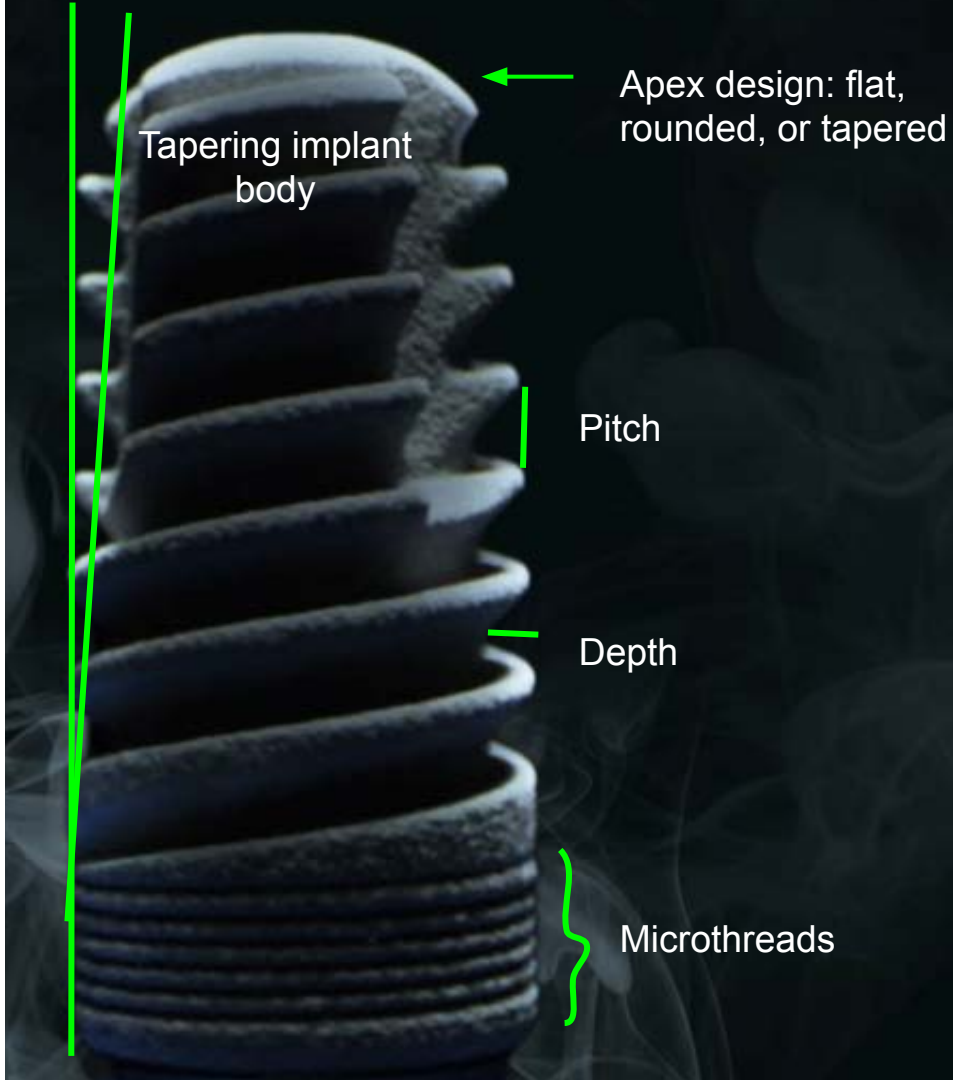
Here's an article if you want to read more about this.
https://tinyurl.com/y5f432mh

So if a salesman says,

“Buy our implant because it has an SLA surface!”

You know they’re full of it.

The SLA surface is standard by now.



There are many different design considerations for dental implants.

Here are some of the basic things to look for:

An implant apex that will not tear a sinus membrane.

Microthreads near the coronal aspect to relieve pressure at the cortical plate.

Tapering implant body to help get more predictable primary stability

The widest aspect of the implant should be the coronal portion to help seal the prep.

Rough surface of the entire implant body.

The various companies will try to convince you that THEIRS is the best.

And if you don't use theirs,

you will be in deep 

If that were true, why are implant success rates so high?

When it comes to the implants on the market,

It is more likely that an implant fail to integrate because of a clinical or patient factor,

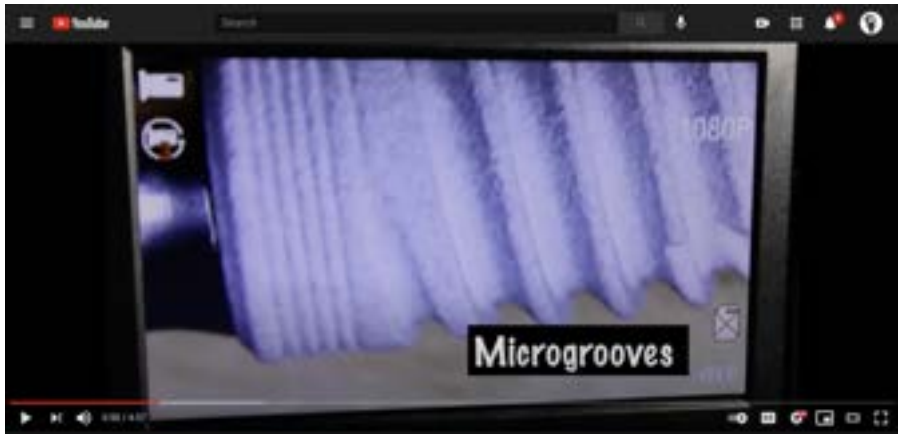
than because of its design.

Here’s a 5 min video in which I describe some of the important design features.

The video is specific to this implant, but REMEMBER there is no magic implant!

You don’t need magic powder. Anyone trying to tell you that their implant is the absolute best, is full of 💩

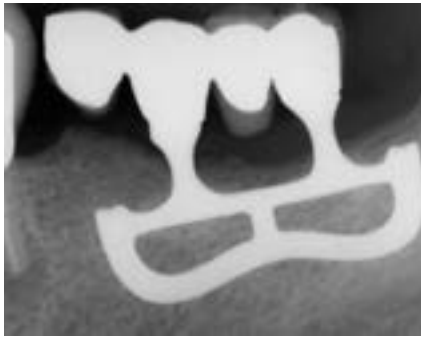
...including me! lol



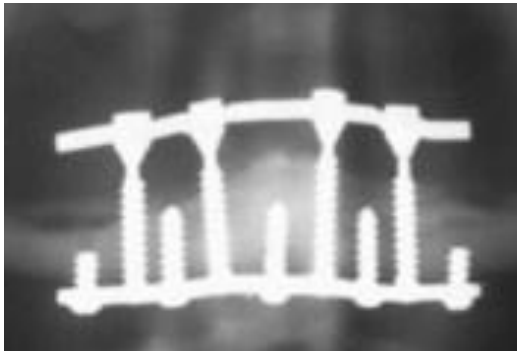
https://tinyurl.com/y2xmpe5x

Granted, there have been some crazy ass designs...

(Blade)

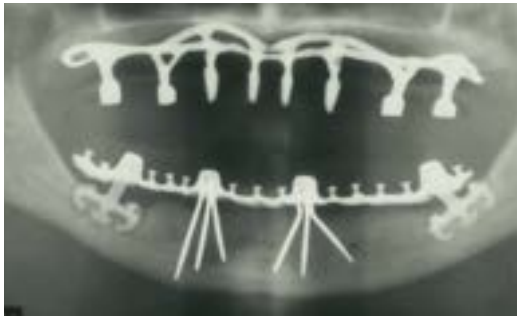


(Transosteal)



(Subperiosteal)

(WTF)

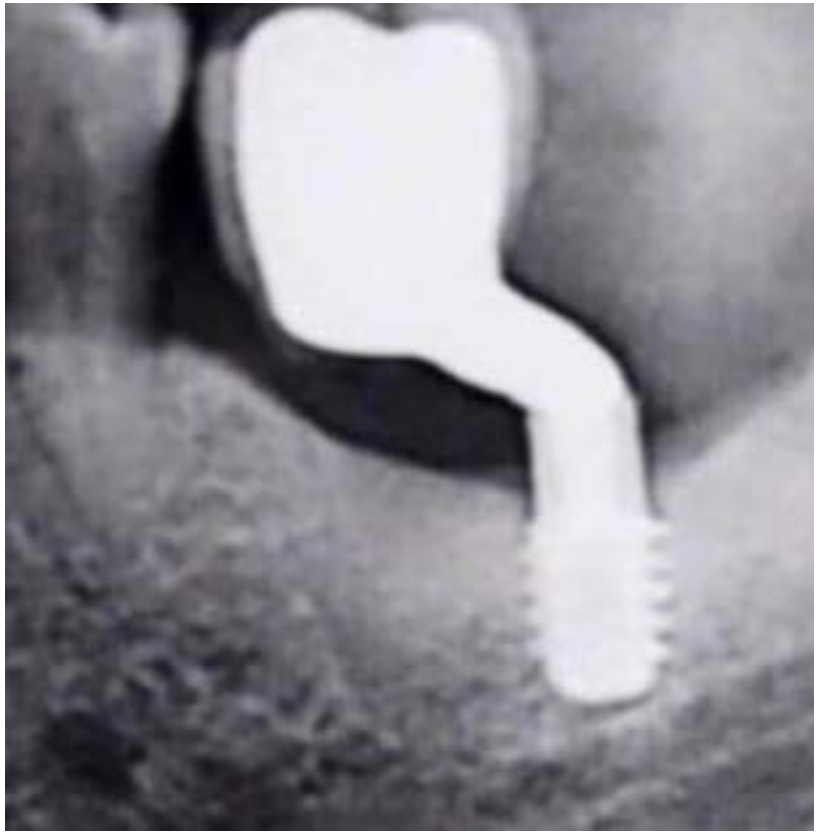


Luckily we've weeded most of those out by now...

It will be far more important for you to understand how to choose an excellent candidate for implants. (I'll show you how)

And to place that thing like a ninja.

But I mean, just don't do crap like this.




So with a little bit of background,
let's dive in...

Super Simple
Implant Treatment Planning

Treatment planning single implant procedures can be quite simple.

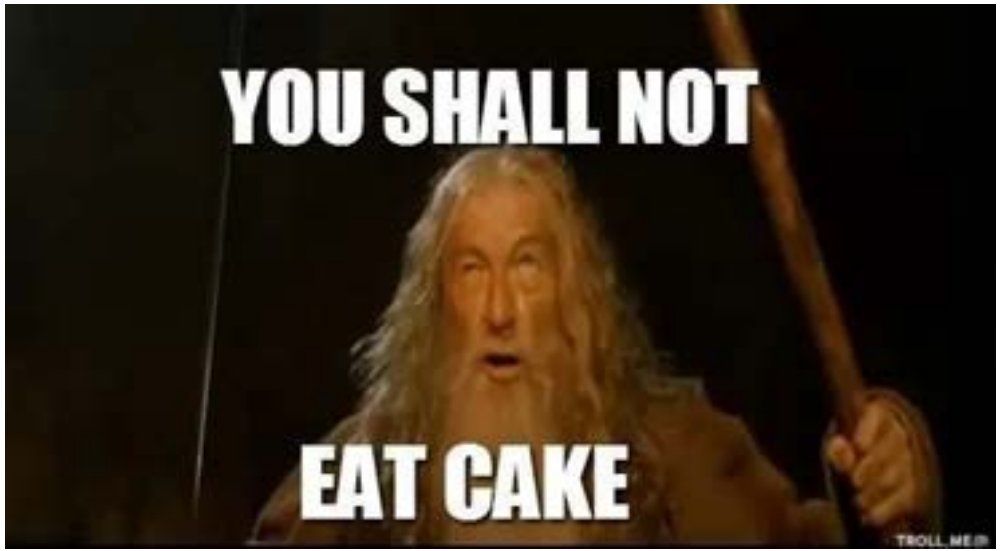
Unfortunately, it's not usually explained simply, so we end up thinking that there is some mystical, next-level, Harry Potter patronus-like power that goes into it. That we need to know more. That it cannot really be that simple.

"<u>*YOU*</u> want to place an implant??"

- Big shot implant surgeon

Well, the truth is, that it ***IS*** simple.

Sure, some implant topics are complicated but single implants in areas where there is enough bone and low risk factors, is a **piece of cake.**



Watch, I'll show you.

I’m going to take you through **5 levels of questioning** that you can use to pretty much plan any single implant case.

No fluff.

Let’s get er done.


1
BONE
HEIGHT

“QUESTION: How much bone height do i need?”*

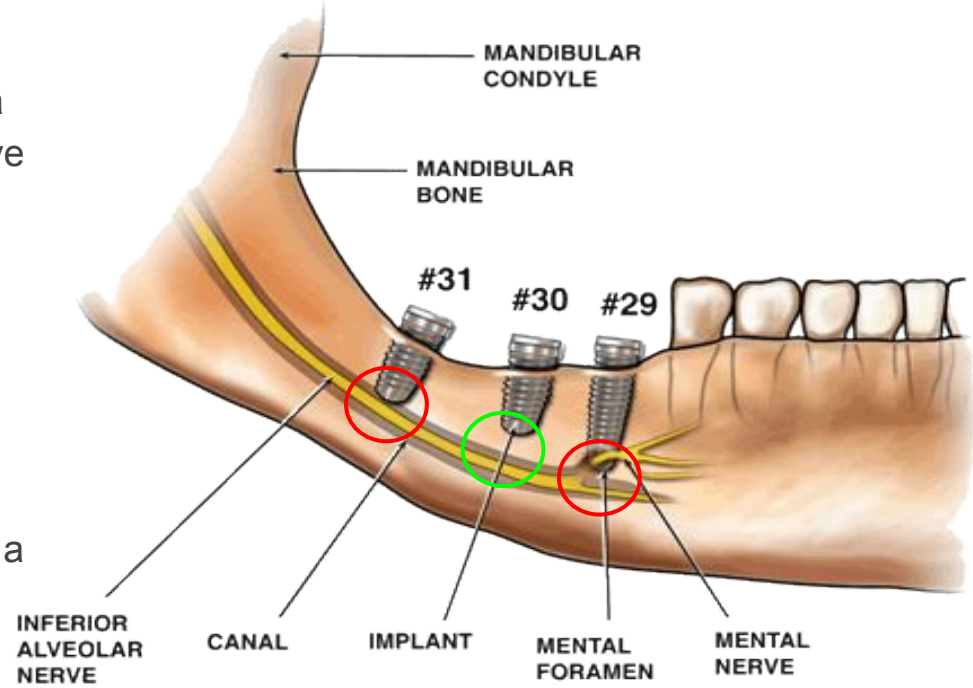
Answer: 8 & 10mm

Why 8 & 10?

To be on the safe side, **8mm** of bone height is a good minimum requirement. As long as you have 8mm, you're good.

EXCEPT at the posterior mandible. In the posterior mandible, I look to look for **10mm** because we need to stay **2mm away** from superior border of the IA nerve canal.

So, we're still just using 8mm of bone height as a minimum, but we're just trying to keep our 2mm safety distance.



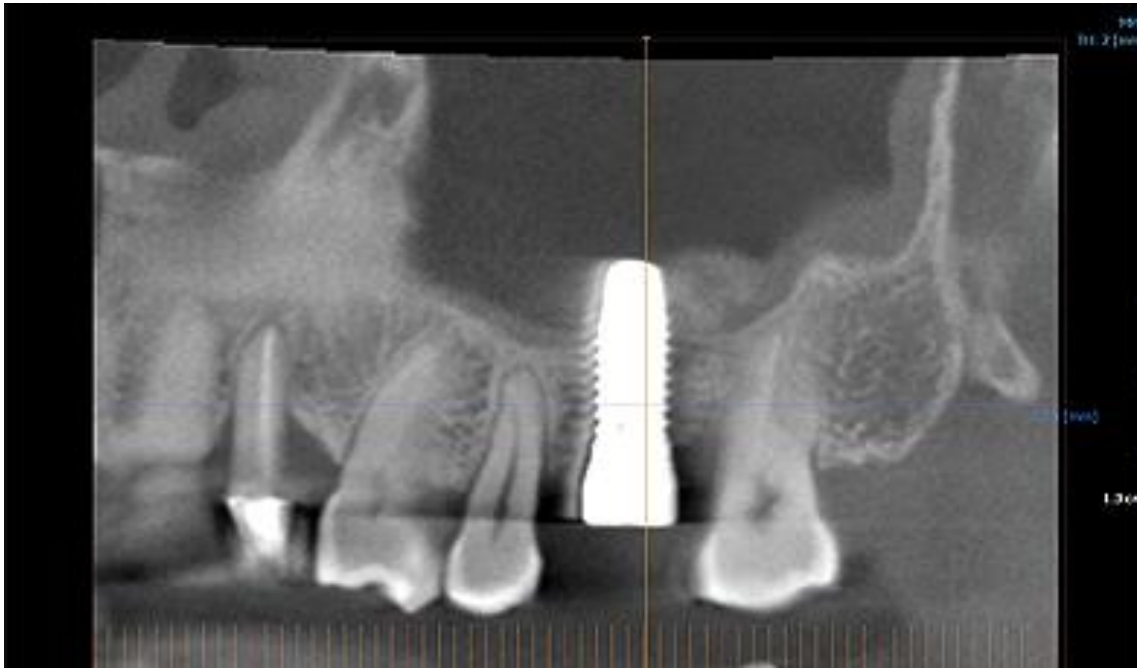
How does this height look?

I know you don’t know the exact measurements right now, but you should try to get good at estimating heights based off of adjacent teeth roots.

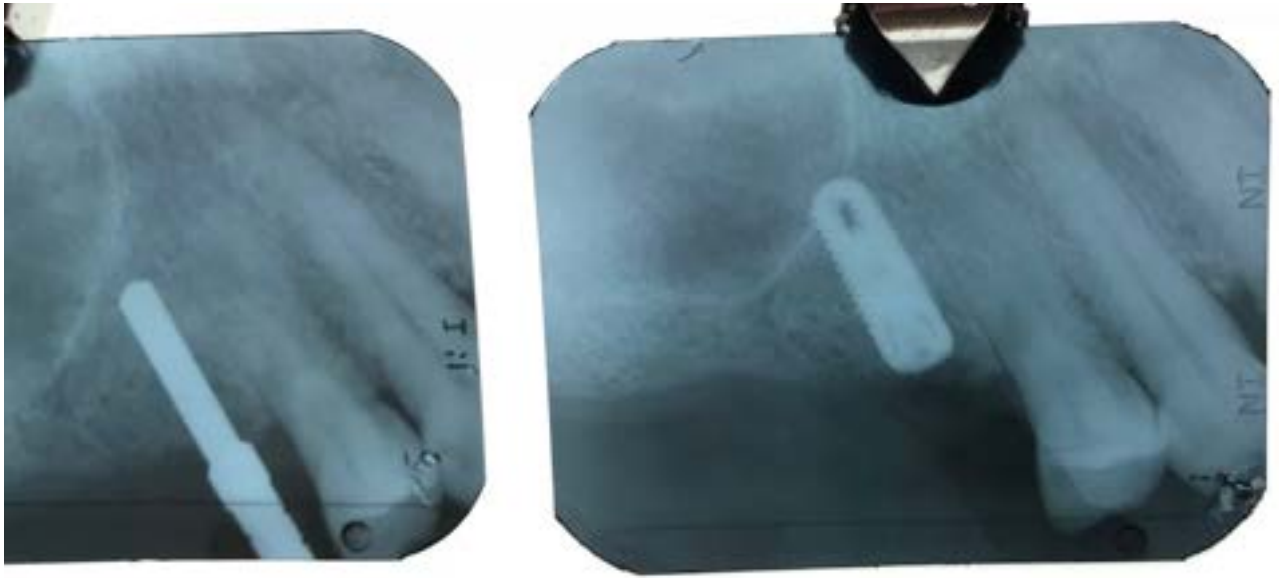
This will help you work-up the case quick fast.

See how deep this one is?

Totally unnecessary. A shorter implant could have been placed.
8mm in length is sufficient.



Now THAT'S better. We had only 8mm in length. I placed an 8mm implant and allowed it to engage the floor of the sinus.



Engaging the floor of the sinus is beneficial because the floor is very dense and helps to provide primary stability. (More on that later) However, you can usually get enough stability without engaging the sinus floor. I just did it for bonus points.

Can I go shorter?

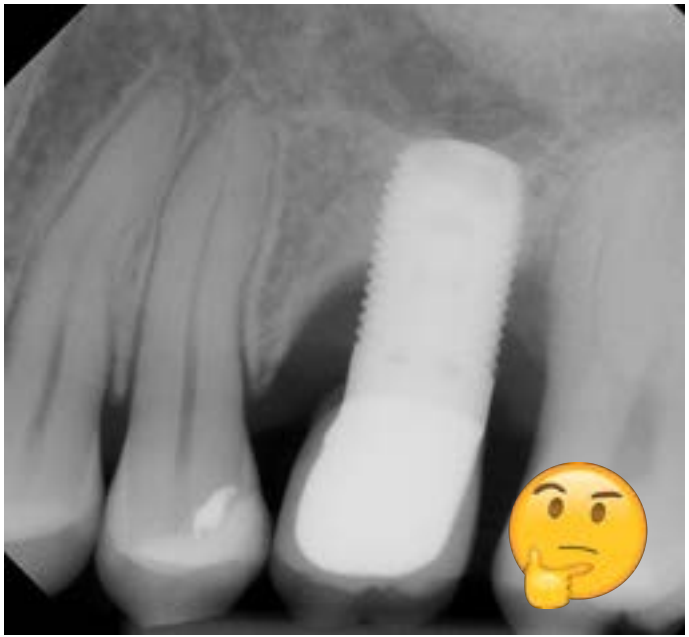
Shorter implants can sometimes be a good alternative.

In fact, a study from the University of Michigan (Go Blue!) shows us that extra short implants (less than or equal to 6mm) within a 3 year follow up, work just as well as conventional (10+mm) length implants.

Here's the study! 🤓

https://tinyurl.com/y4kfns64

And another study shows that short implants can even be effective for full arch!
(link below)



But ANY implant can get bone loss.

Look at this one.

It looks like it is a 10mm implant. And it has about 60% bone loss.

Yet, as far as the patient is concerned, their tooth is still there and it works! It's not in good shape, but they can still eat their steak!

What if this implant was only 5mm long?

https://pubmed.ncbi.nlm.nih.gov/31605405/

While short implants are not a panacea, they do work!

However, in this guide I will give you **solid rules of thumb** that will help you land in a predictable and safe zone. Sure, you can push the envelope if you want. But use these basics as a safety reference and then use your own judgement.

And, yes, I do use the occasional 6mm implant. If for some reason I can’t or don’t want to elevate the sinus.

But what if...


“You don’t have enough bone.”


OH SNAP!

Your options if you don't have enough bone height:

1. If you're in the Posterior Maxilla: sinus lift

(That's pretty predictable and easy to recommend)

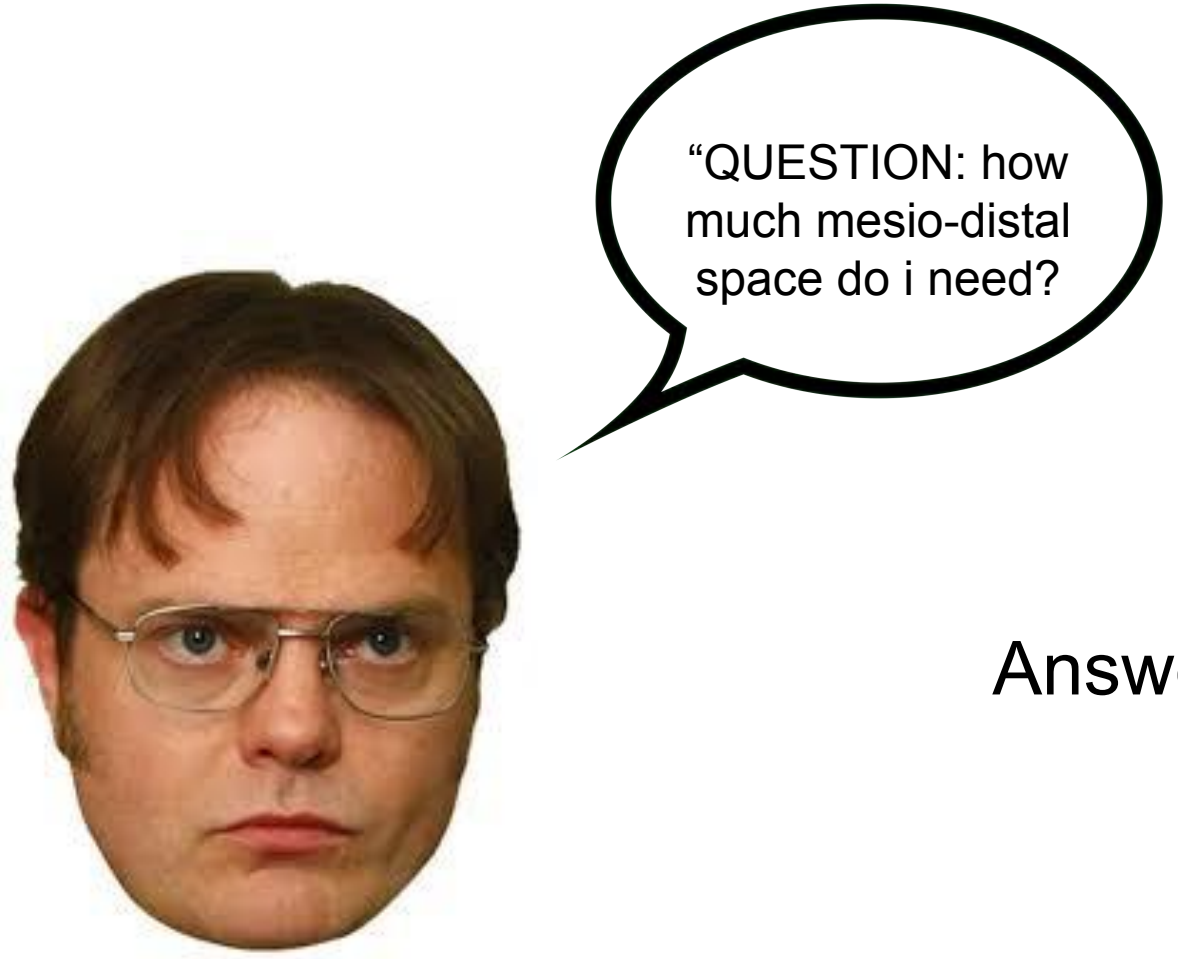
2. If you're in the Posterior Mandible: vertical augmentation.

3. If you're in an Anterior tooth site: vertical augmentation

4. Short implant?

Options #2 and 3 are less predictable. Vertical bone augmentation is not easy. You should recommend alternatives (bridge & partial) to implant therapy in this scenario as well.

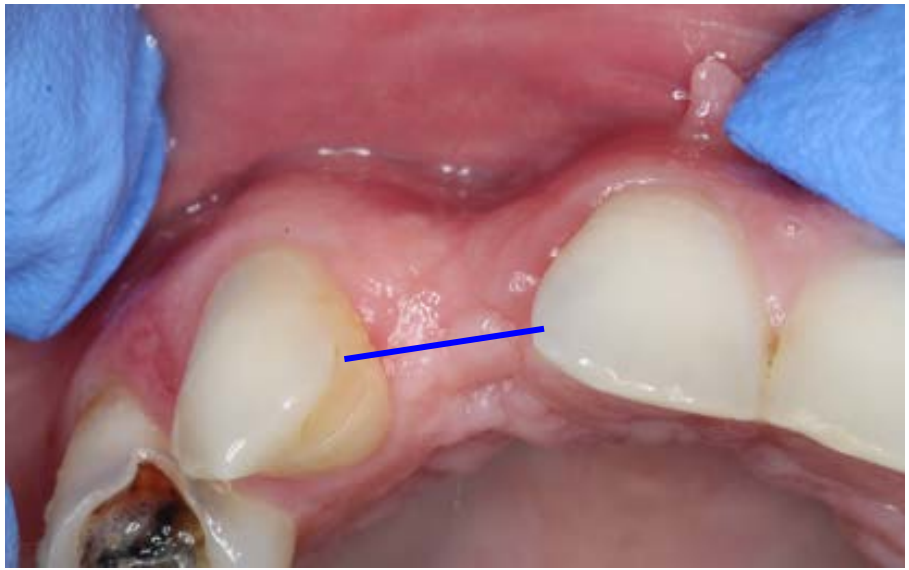
MESIO-DISTAL SPACE



Answer: 7mm

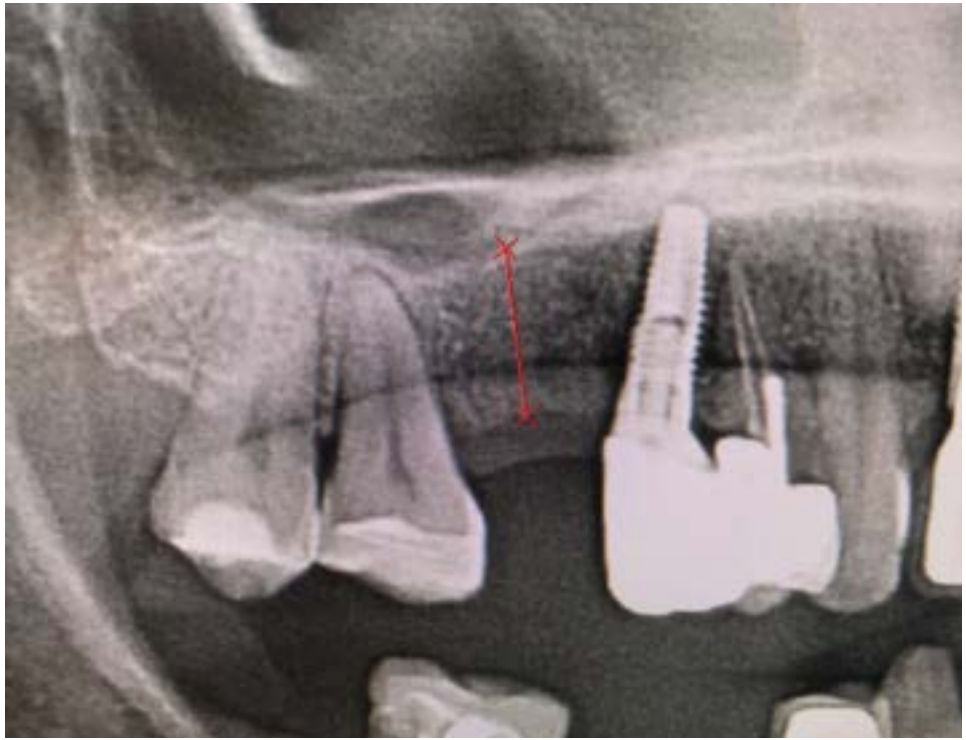
You'll want to measure this at the adjacent teeth from **contact to contact.**

But you'll also need to measure the distance from **root to root.**



This one is a little tricky because there is definitely enough bone between the root and the implant but it is a bit narrow between the crown and the adjacent tooth.

Remember 7mm is still your minimum. Stick to the rules of thumb and you'll have an easier time planning these.



But what if...

Your options if you don’t have 7mm of mesiodistal space:

1) Refer to ortho to open up the space or…

2) You can lightly adjust the adjacent (enameloplasty) teeth crowns if its a minor adjustment

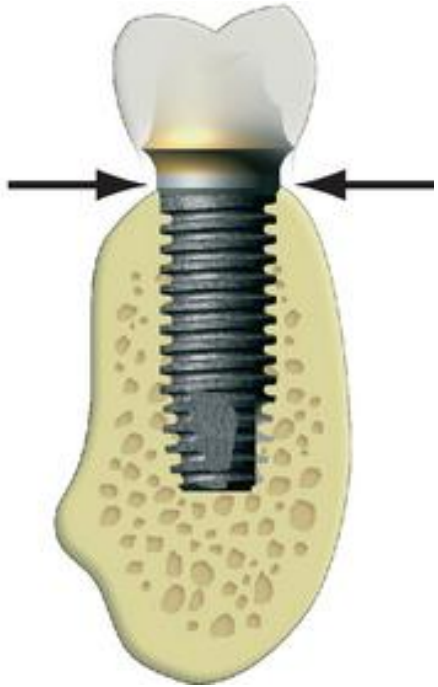
Exceptions:

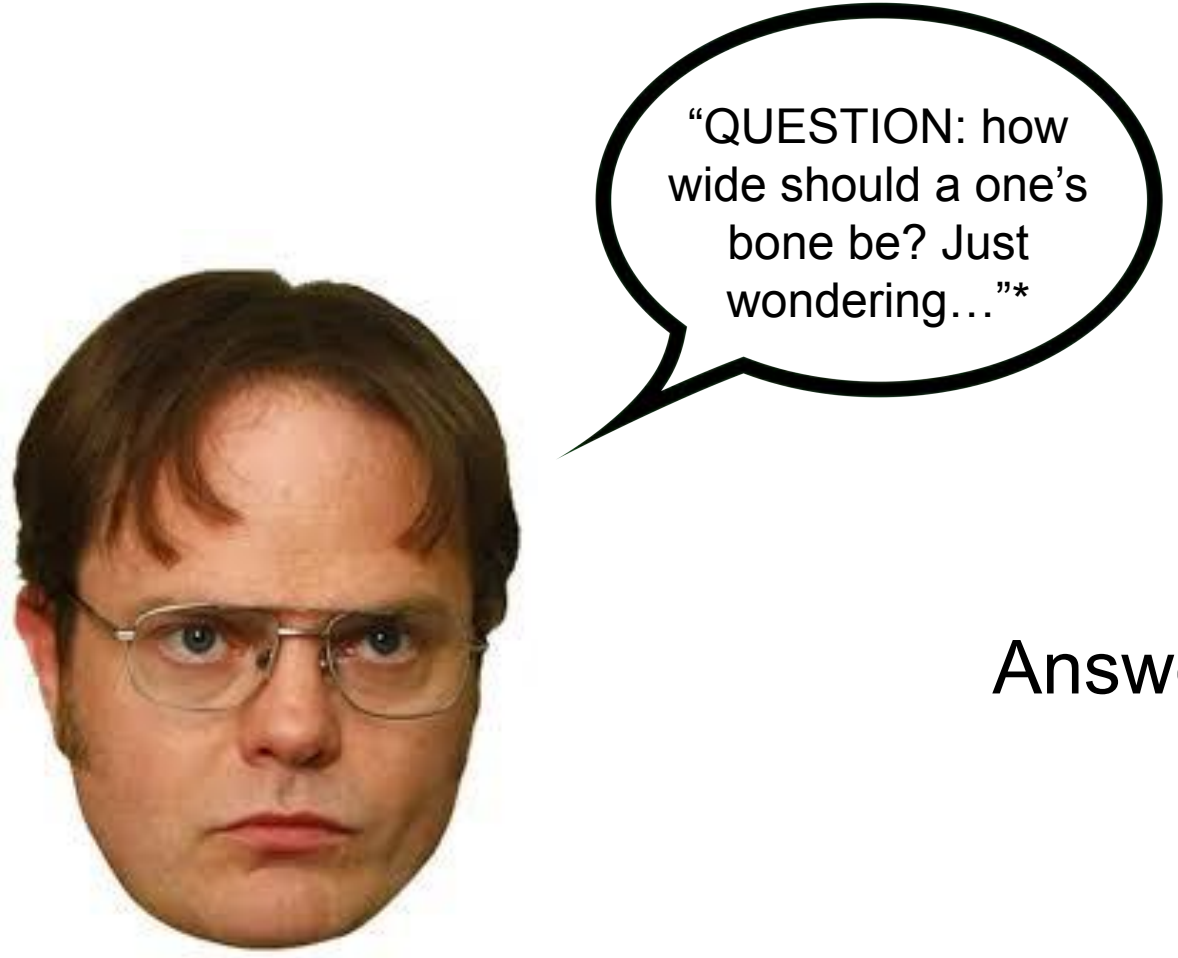
Its okay to have 6mm of mesio-distal space for **Maxillary laterals, mandibular centrals** and **laterals**.

For these sites you can use 3mm-ish diameter implants.

I say 3mm-ish because some companies make 3.0mm implants, while others make 3.2mm and so on. Honestly I don't think it really matters that much.

3 BUCCO-LINGUAL WIDTH





Answer: 7mm

When it comes to bucco-lingual width, looks and even “feels” can be deceiving.

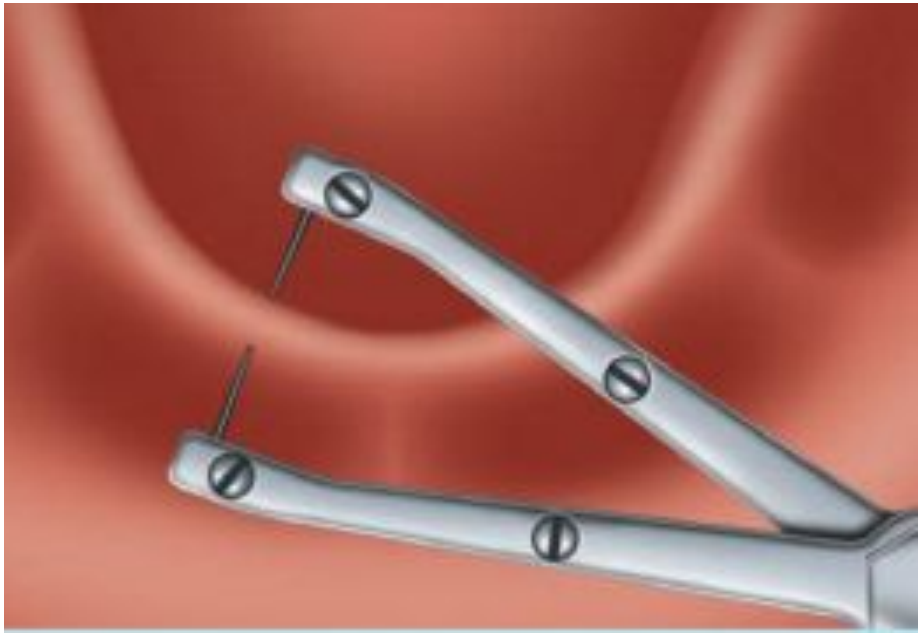
Always anticipate there is less bone than it feels like there is.

A cone beam will give you the most accurate read. But to be an implant ninja, learn to use your thumb and index finger to be a good predictor of width.

Bone Sounding

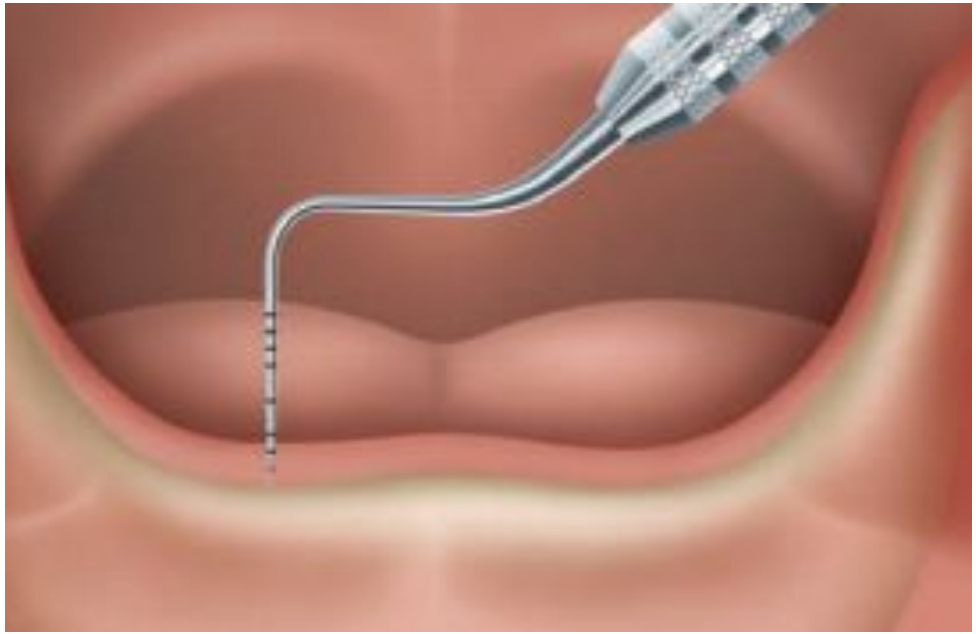
There are “bone sounding” instruments you can use to pierce the gums and measure how wide the ridge is.

Of course, you’ll have to get your patients numb before doing this!



Bone Sounding

You can also bone sound with a perio probe. Although this is really only useful to probe for vertical height, not really that useful for assessing width.



If you’re new to implant surgery, I’d recommend starting with a mandibular first molar like this one. See how nice and thick that ridge is?

Another easy site to start out with is a maxillary premolar that has enough vertical height. 10mm + of vertical height would be awesome.

Those are good starter cases!

But what if...

Your options if you don’t have 7mm of mesiodistal space:

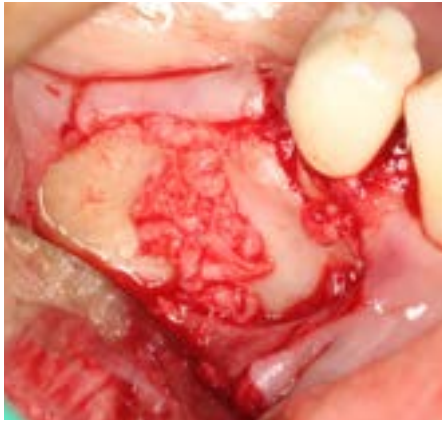
1) Guided Bone Regeneration with delayed implant placement or...

2) Ridge Split with immediate implant placement

Just in case you didn’t know, Guided Bone Regeneration (GBR) is where you add bone to the side of a ridge.

You first make some perforations to the cortical plate, then here I added some autologous bone shavings, and then layered allograft over it.

Finally, a membrane is layered and immobilized (using tacs or sutures) before closing the flap.

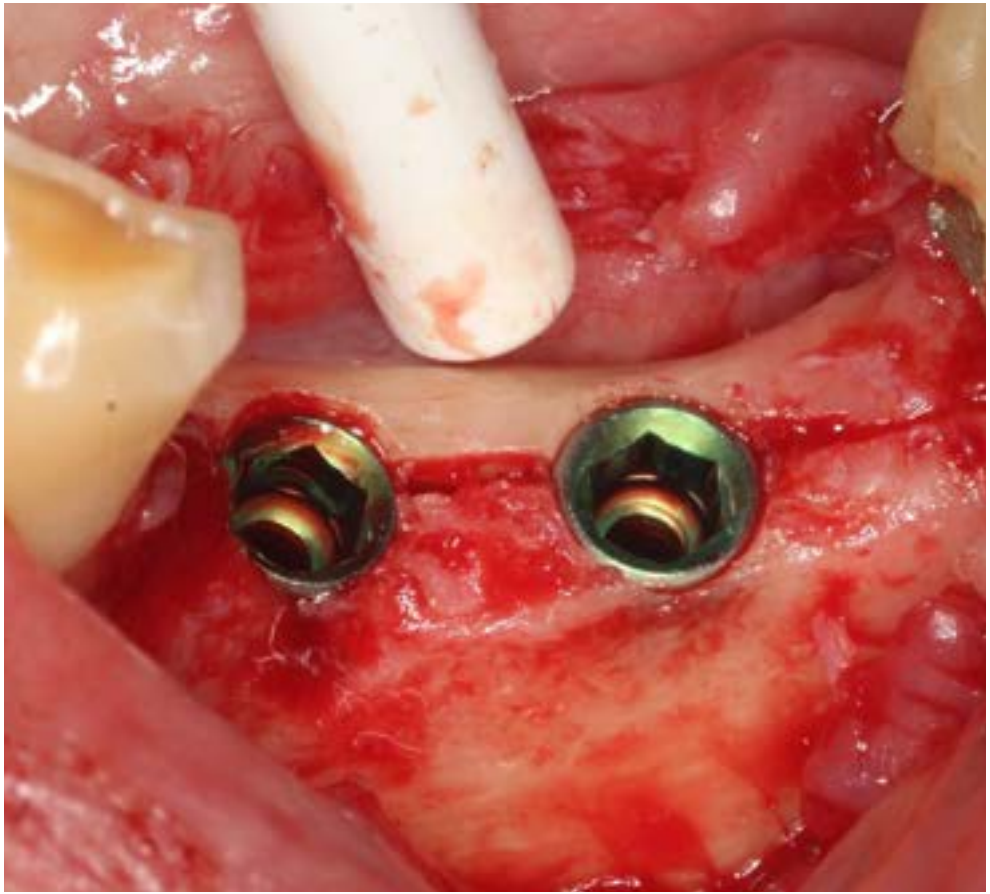


Ridge splitting is a technique in which...well...you split the ridge lol

Using a saw or a piezo you slice the ridge and do minimal implant preparation and then you use bone expanders to push the ridge apart.

This has to be done carefully so that you don’t crack the ridge.

Also using the saws to do the splitting can be quite dangerous.



Exceptions:

It’s okay to have 6mm of bucco-lingual width for **Maxillary laterals, mandibular centrals of laterals**.

For these sites you can use 3mm-ish diameter implants.

Think that was too easy?

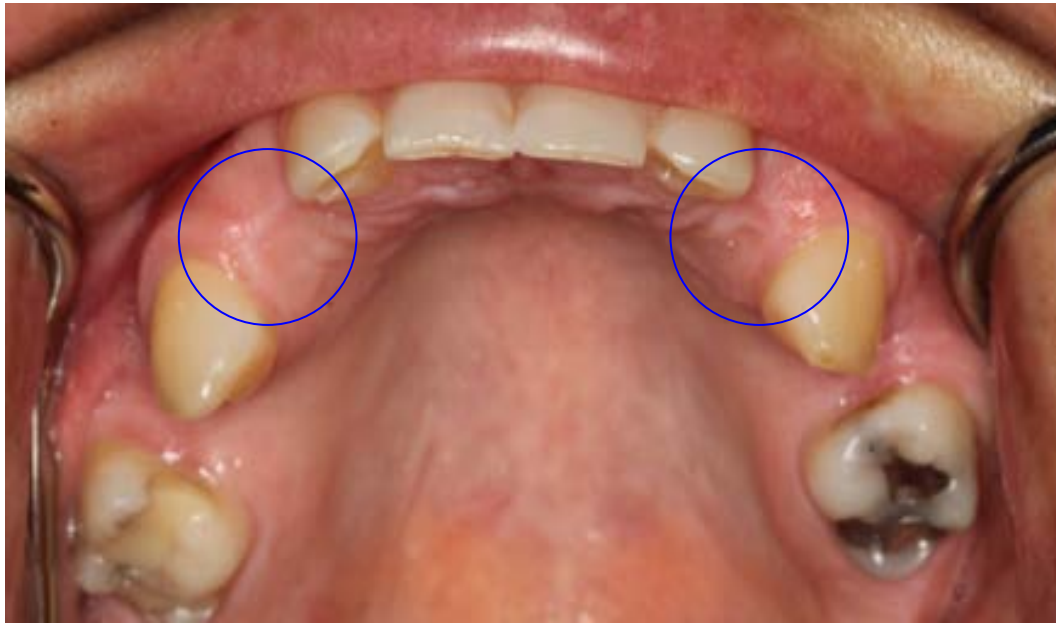
Alright cool guy, let's take a look at a case.

Would you place implants here on this patient?

They came in saying,
"I want implants here at my canines."

Let's assume there is enough height.

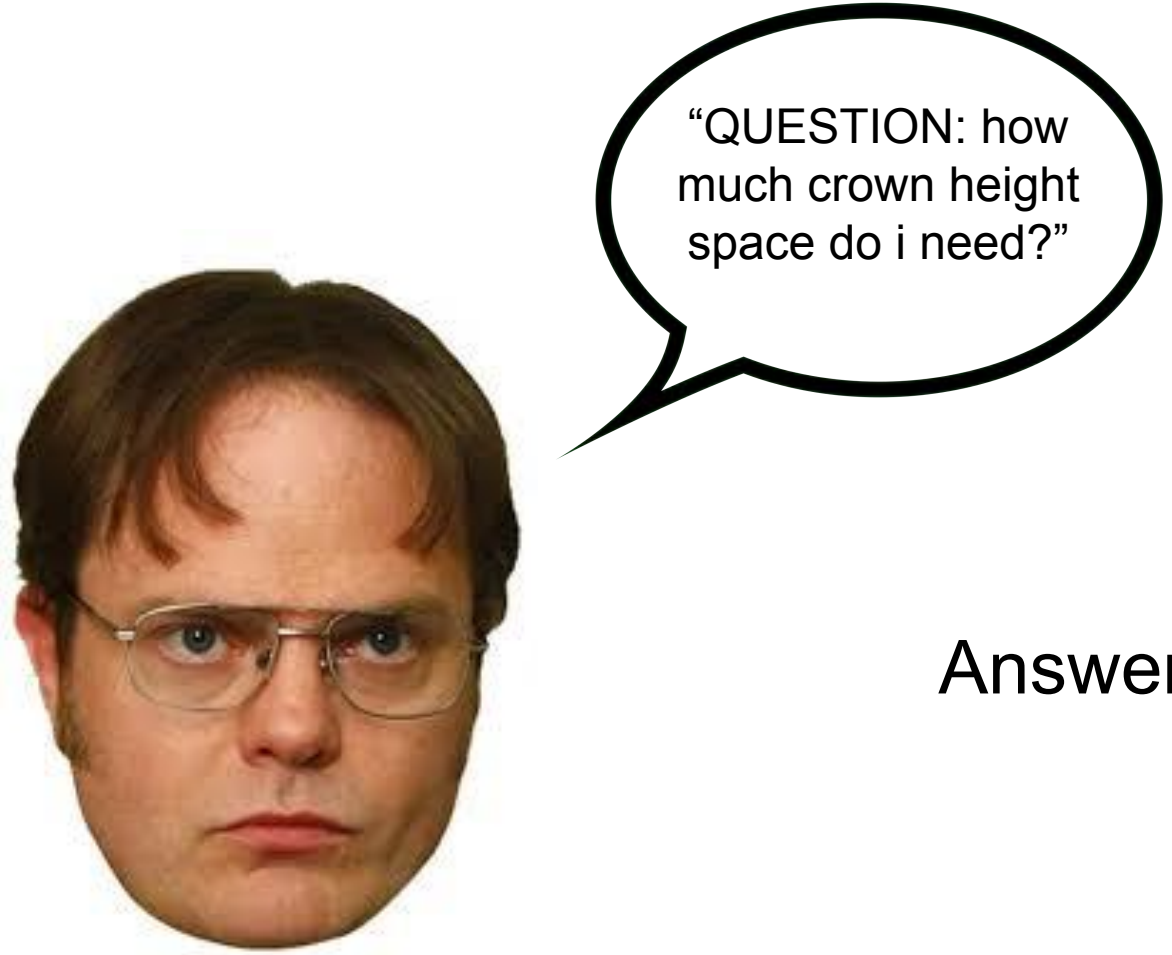
Looks easy right?



Not so fast pal...

See? This one was a trick question. I still have to share with you the last measurement to look at when planning these cases.

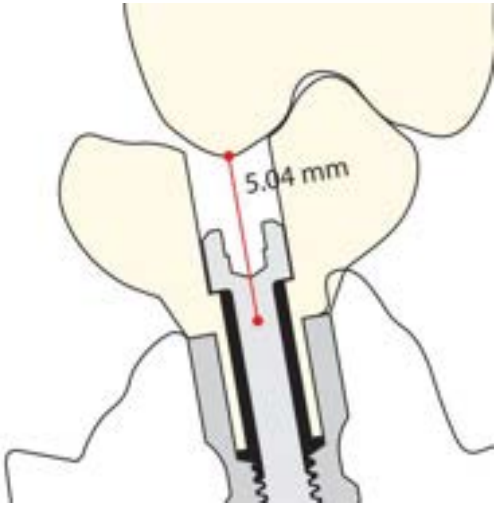
4 CROWN HEIGHT SPACE

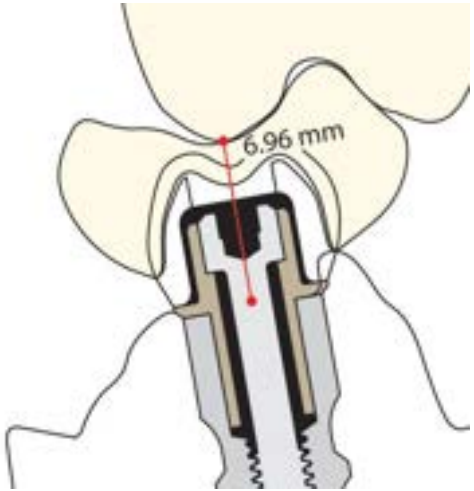


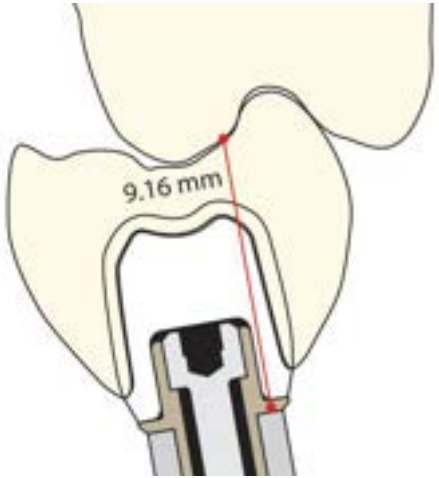
Answer: 8-10mm

You need enough clearance so that you can fit all of those components inside of your implant crown.

8-10 is the perfect amount of space for single crowns.



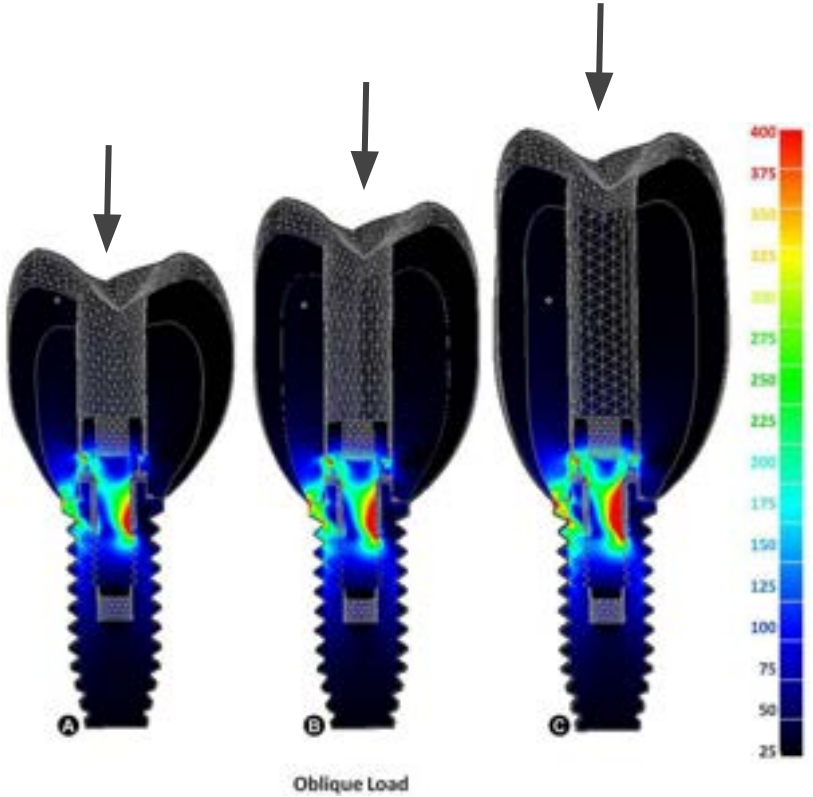




But bigger is not necessarily better.

For stresses applied like this. (axially aka straight up and down)

There is no difference in stress distribution for different crown heights.



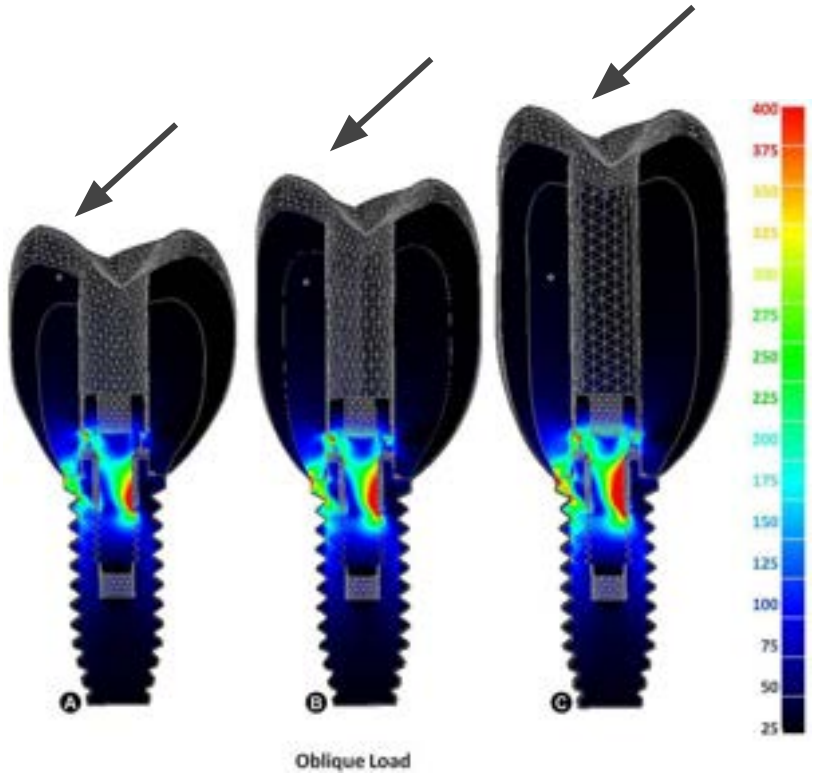
Moraes, S et al 2013

Stresses applied like this (non-axial aka oblique load) lead to different stress distribution in the different crown heights.

The stress concentration in oblique load for 15mm crown is almost double of a 10mm crown.

That can lead to:

- Screw Loosening
- Screw Fracture
- Abutment Fracture



Oblique Load

http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-64402013000600635&lng=en&tlng=en

In this case we essentially had NO crown height space. That implant would have gone unrestored and the patient would have been pretty upset to say the least...

But what if...

Your options if you don’t have at least 8mm of mesiodistal space:

1) Refer to ortho to open up the space or...

2) Adjust opposing tooth if it is just a small adjustment


5
STABLE
OCCLUSION

So, once upon a time…

I worked at an office that was super fast paced. (You know what i'm talking about)

They sat a patient in front of me and quickly wanted me to place an implant at #11 because he had already accepted treatment and paid (before ever seeing me).

The treatment planning coordinator rattled off some things about insurance and patient is taking a vacation or whatever. *(I hate it when these external factors confuse the true clinical decisions…)*

Anyhow, I quickly assessed the site and decided that there was enough bone height and width and mesiodistal space.

So I proceeded to place the implant in 20 minutes like a boss.

The implant healed no problem and I was worry free for 4 months. The patient came back to restore the implant and easily took impressions.

That’s when the trouble started...

The patient came back with the abutment/crown broken in these two pieces.

What happened?

Well, this what what the patient looked like.

This is the crown
I had made

Here’s a closer look.

It is the ONLY tooth that is occluding in his entire mouth!! OMG I can’t believe that happened! It was a hell of a restorative appointment. But that’s what I get for not being thorough.

Some of the best advice I got was from an old prosthodontist was,

“Hurry up and slow down.”

Slow down, you must…

If ninja, you will become.

When you’re trying to do things well, doing them slow ends up being faster than doing them in a rush and having to redo your work.

...anyway to have a successful outcome,
you must **first properly assess the remaining dentition.**

Is there a stable occlusion that will allow your implant to succeed?

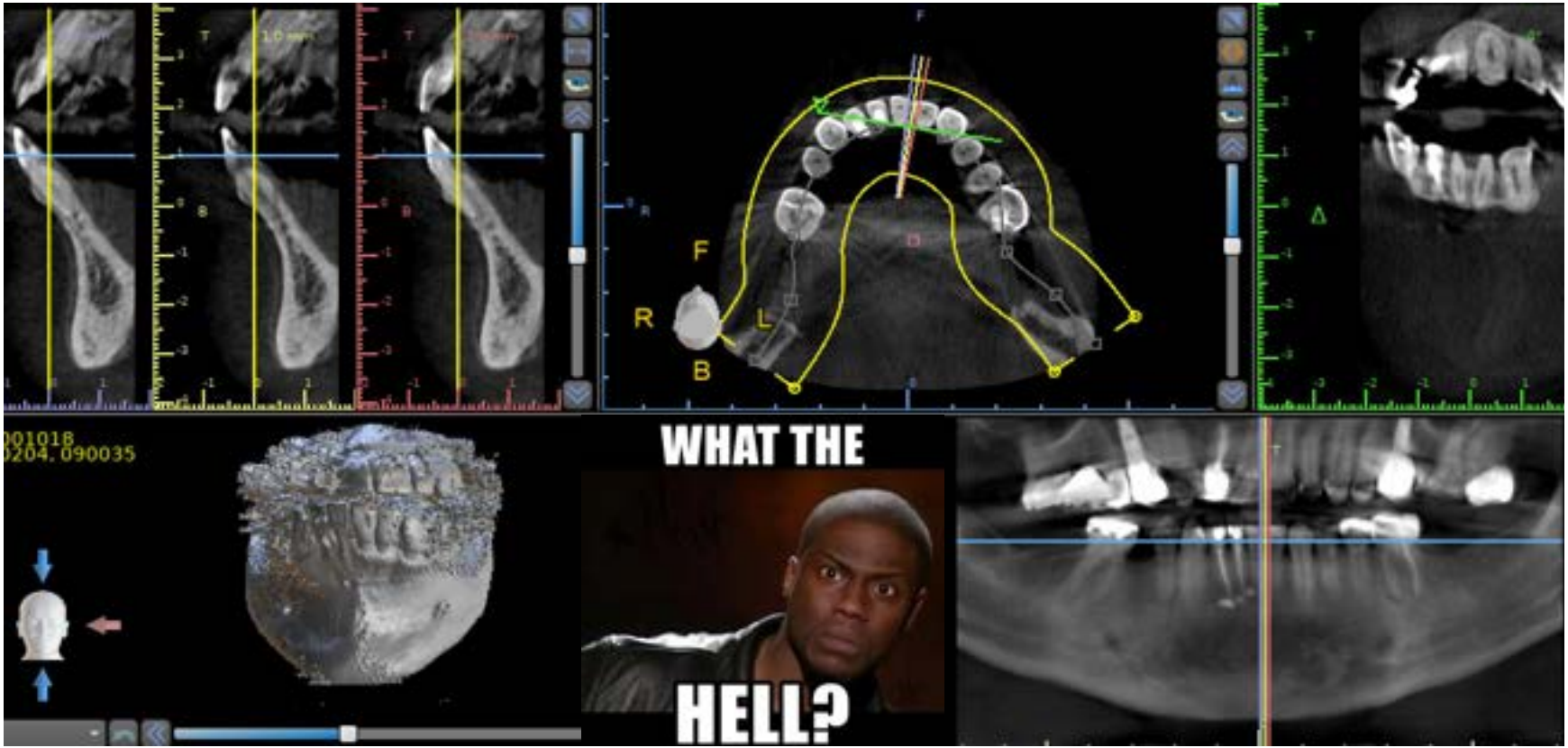
That is a definite prerequisite for placing an implant.

CBCT Evaluation

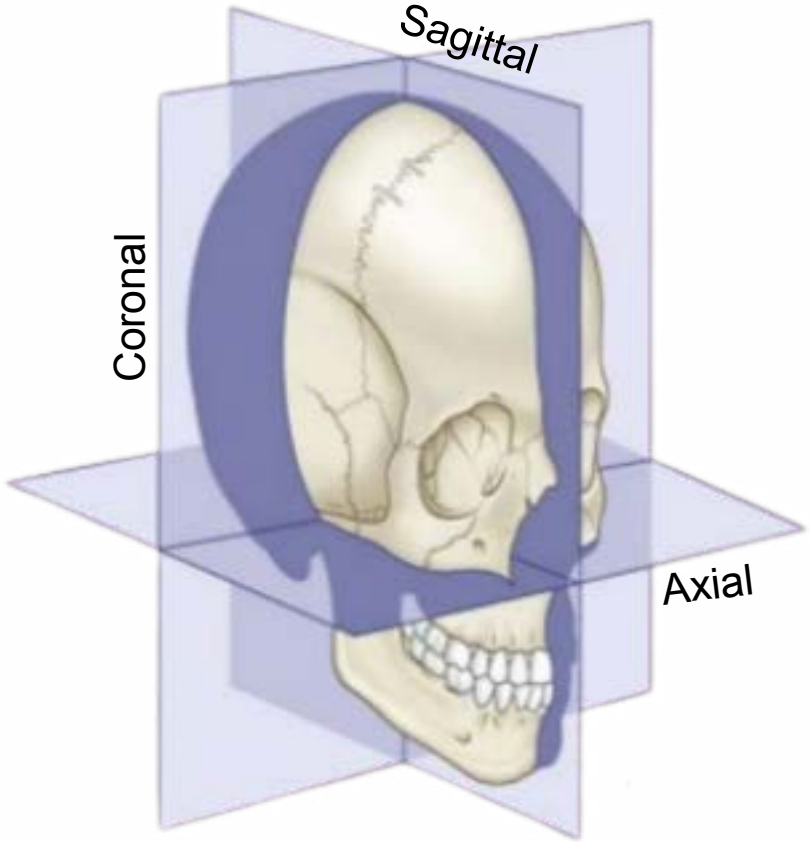
Now let’s pretend you **DO** have access to a fancy CBCT.

Docs who don’t use CBCT.

The first time you (try to) read this, I know what you're thinking...

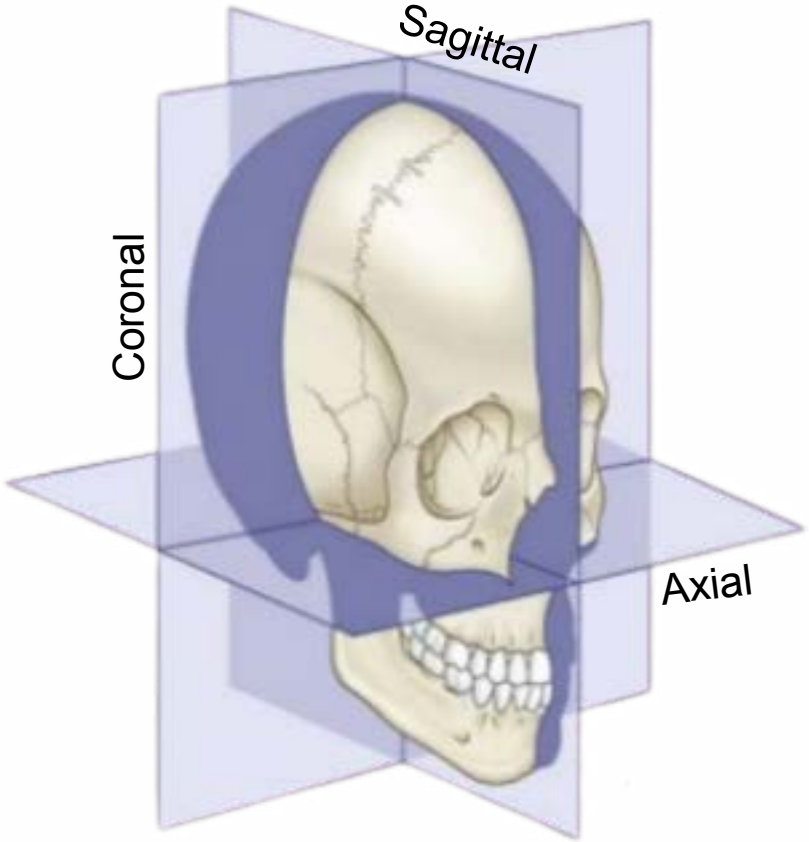


CBCT shows you stuff in 3 planes:



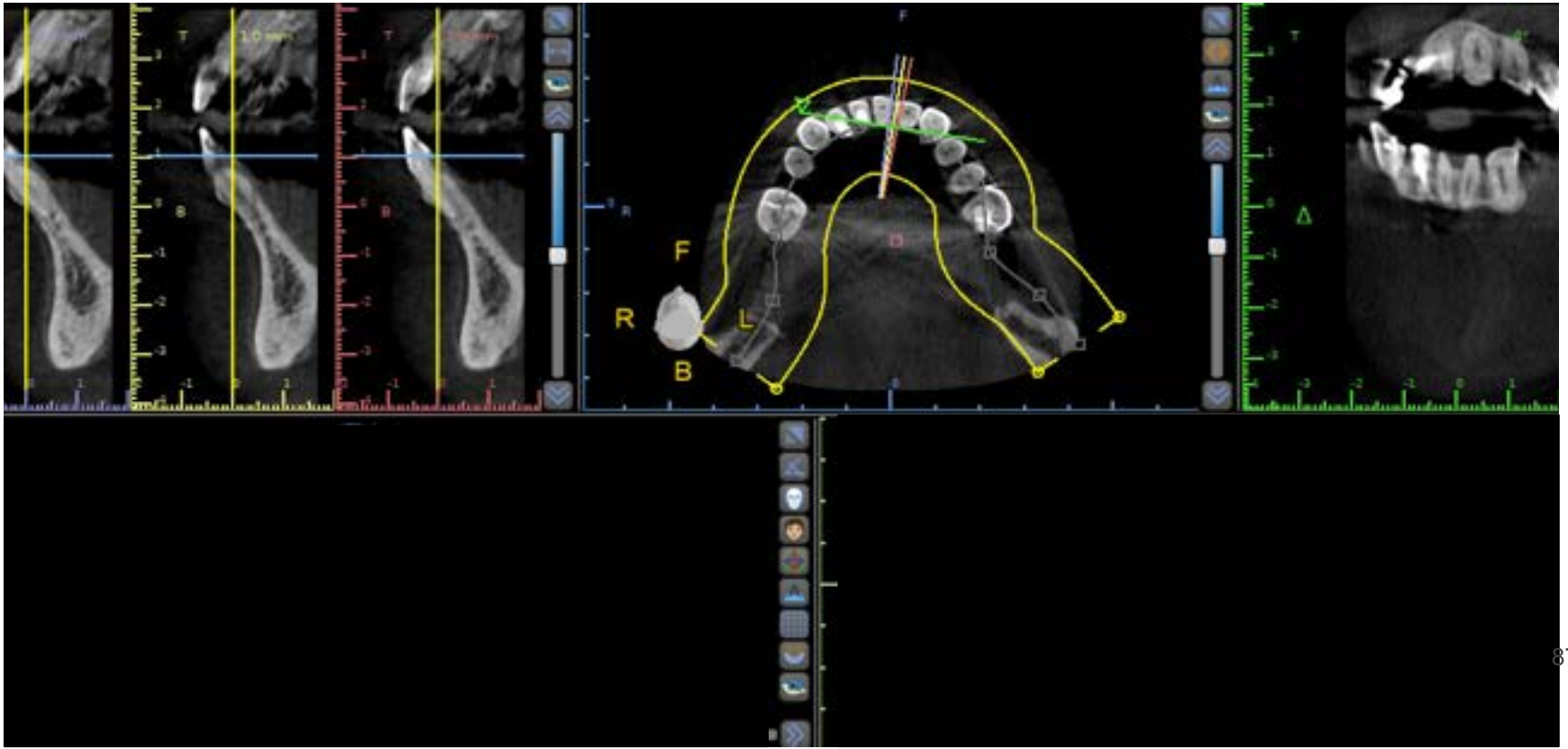
A picture in a plane is often referred to as a “slice”.

So with that in mind, let's go back to that crazy CBCT picture...



See? These 3 views are the planes I showed you...

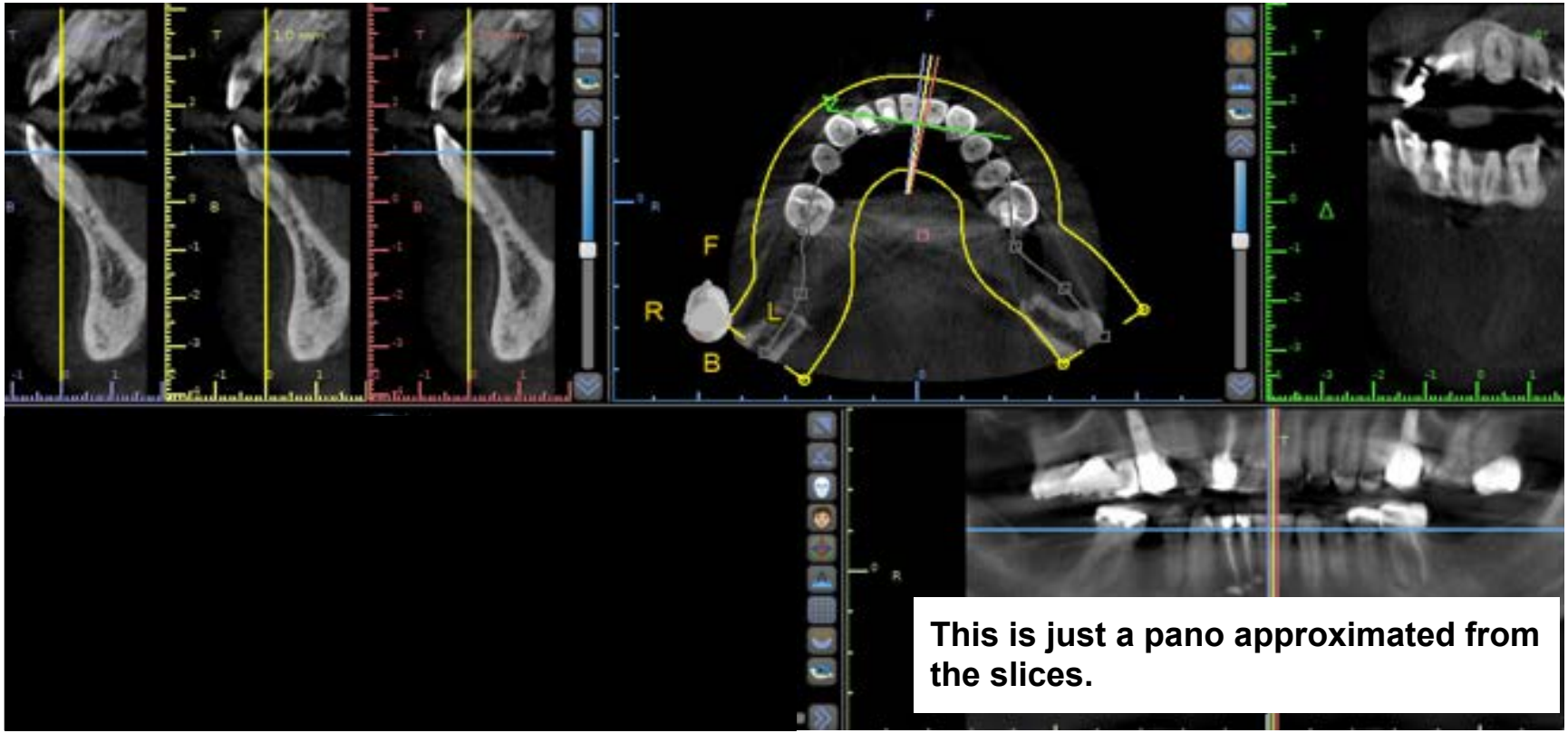
Sagittal **Axial** **Coronal**



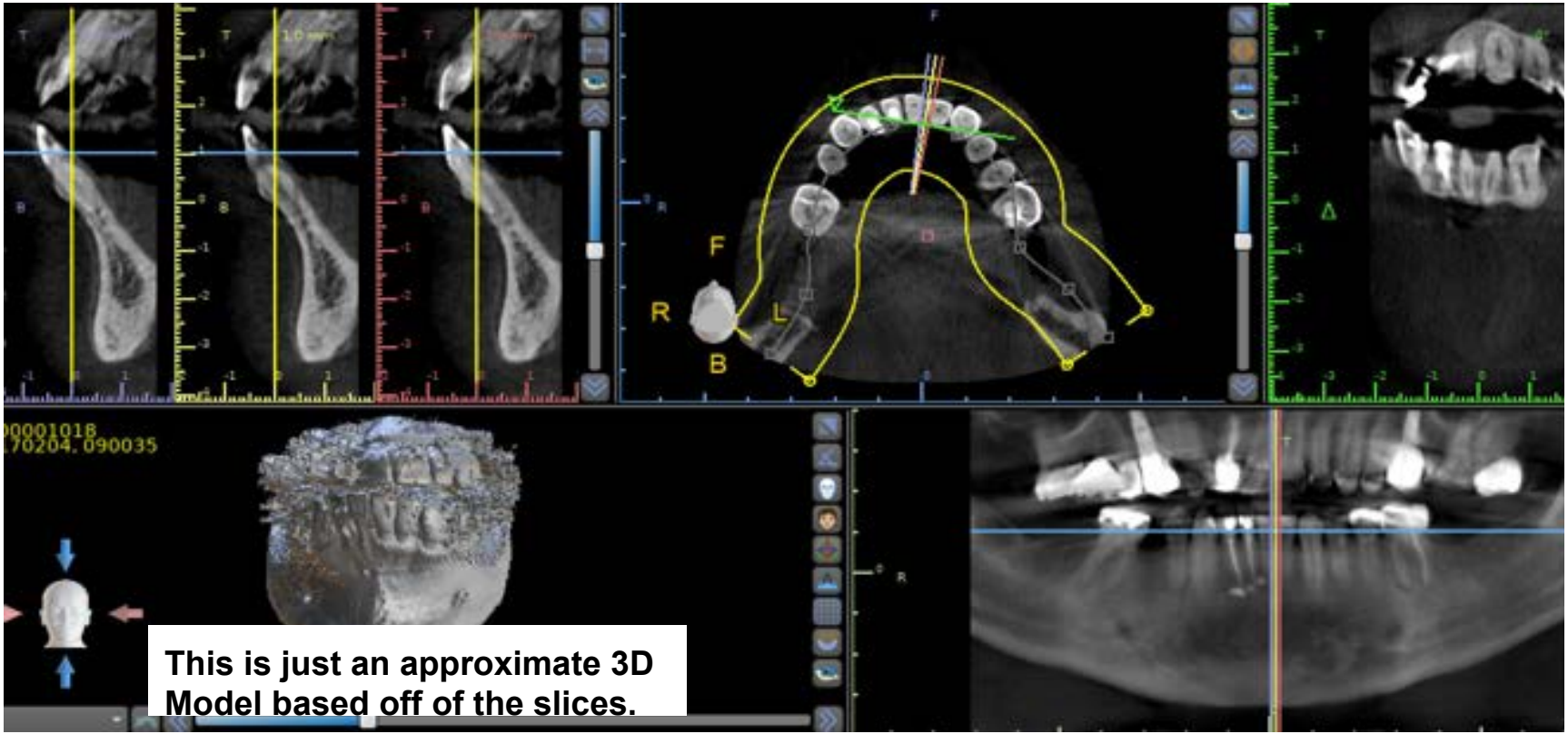
Sagittal

Axial

Coronal



Sagittal **Axial** **Coronal**



By the way, the software that I am showing here is Blue Sky Plan because it is free. It's a great software to learn on. When you have your next case, feel free to follow the steps here.

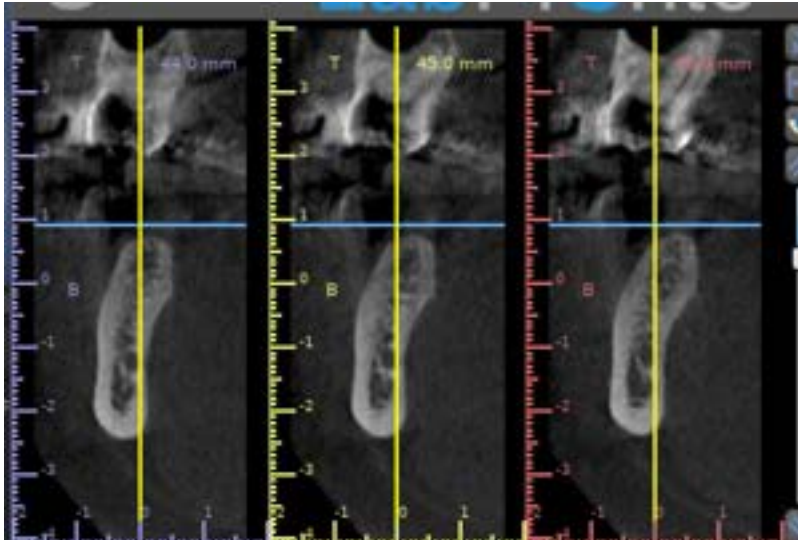
No, they don't sponsor or pay me in any way.

(Money can't buy this stud muffin.)

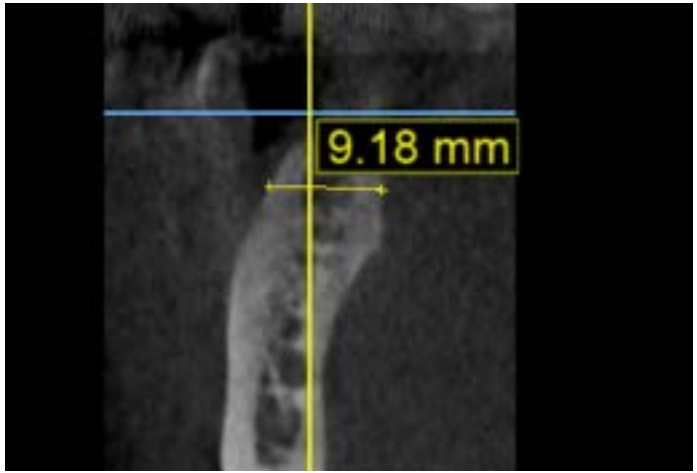
You can click on the region of interest on the Pano rendering and it will automatically bring all of the plane views to focus on that region. There is a little yellow railroad track thing that keeps the area relevant to dentistry. You can always adjust these parameters.

Then I focus in on this one.

The square that shows a cross section of the alveolar ridge.



Click on the ruler tool. 



And then select the buccal and then lingual borders of the bone that you want to place an implant into.

That’s your bone width.

Remember what our criteria was for bone width?


TODAY I LEARNED....
FALSE.
I ALREADY KNEW THAT.

Okay, one more thing cool guy.

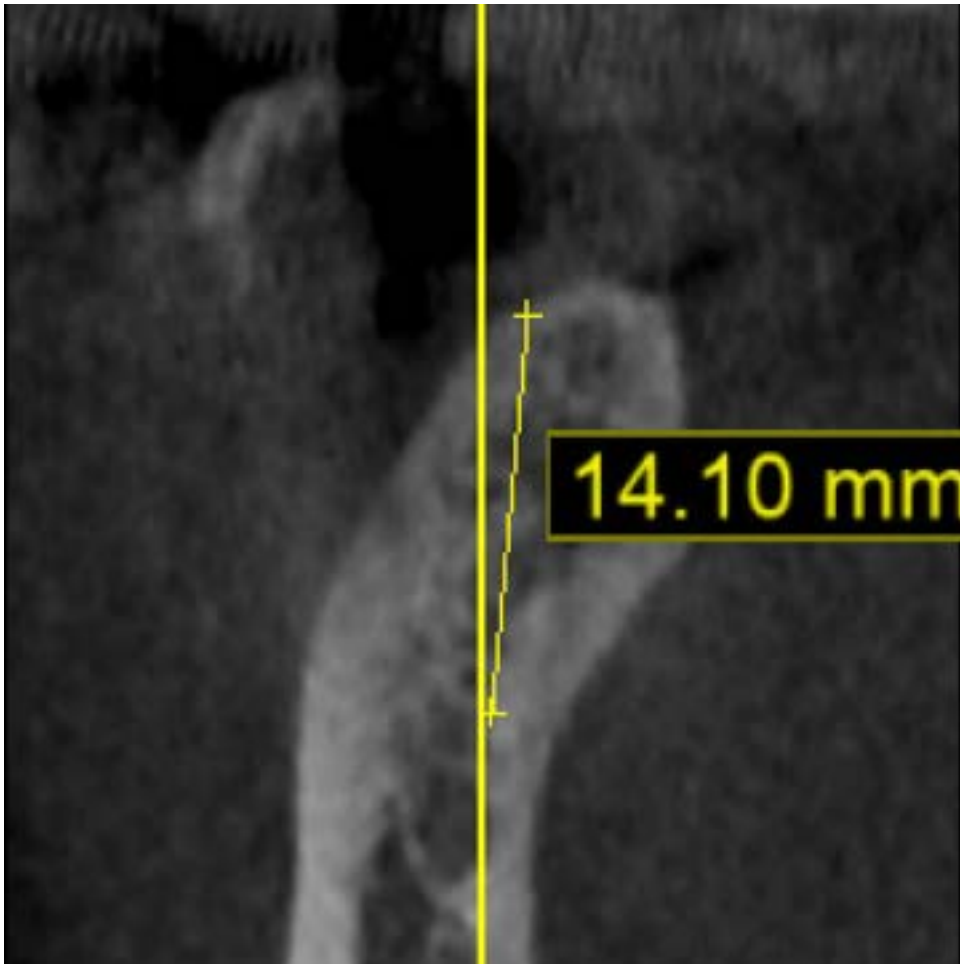
See that shadow?

You know what that is.

We have to avoid that IA nerve canal, right?

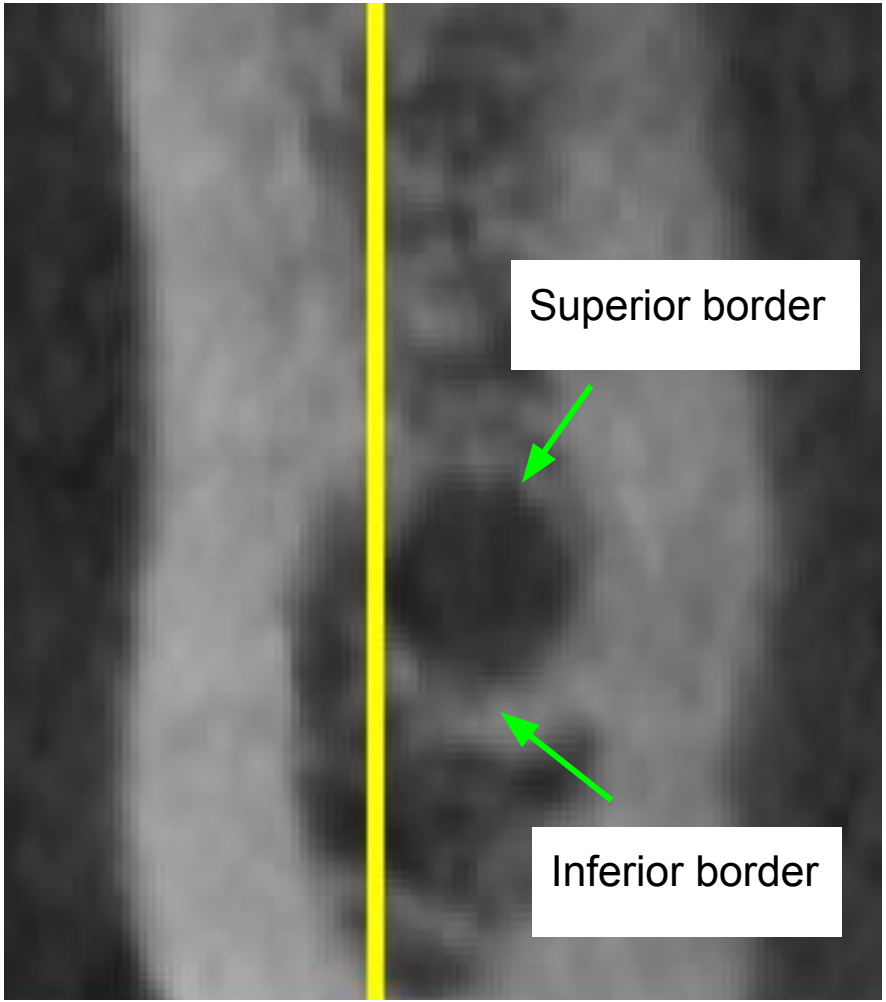
And it has some weird little bubble thing at the top, so to stay safe, let's avoid all of that radiolucent stuff.

Use the measurement tool to go from the crest of the ridge all the down to the superior border of the nerve canal



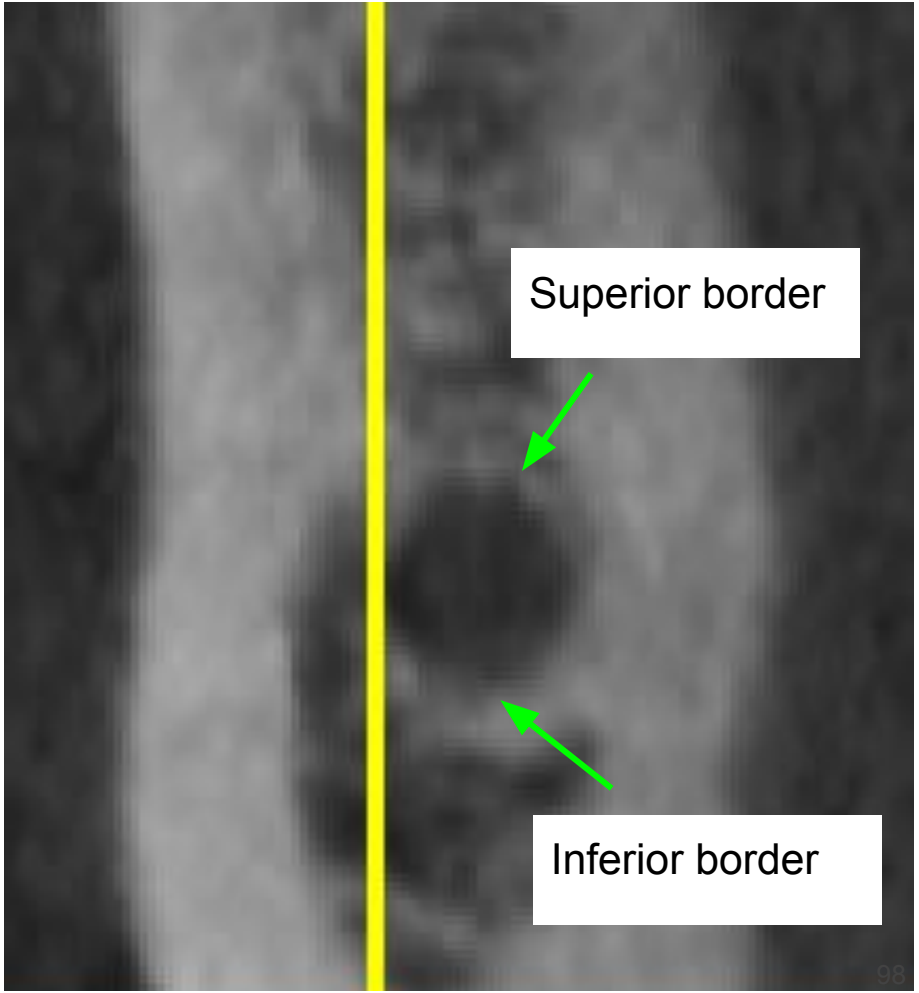
The IA nerve canal, is not always going to be super obvious and clear.

In this picture, on the right, it is pretty clear where the borders are.



When in doubt, you can scroll to the anterior a bit and to the posterior a bit.

Examining the adjacent areas helps paint a better picture of what is going on with the canal.



Let’s look at another case, this time in the popular software:

Anatomage

Nope, they don’t pay me either…

Damn,
Now that I think about it...

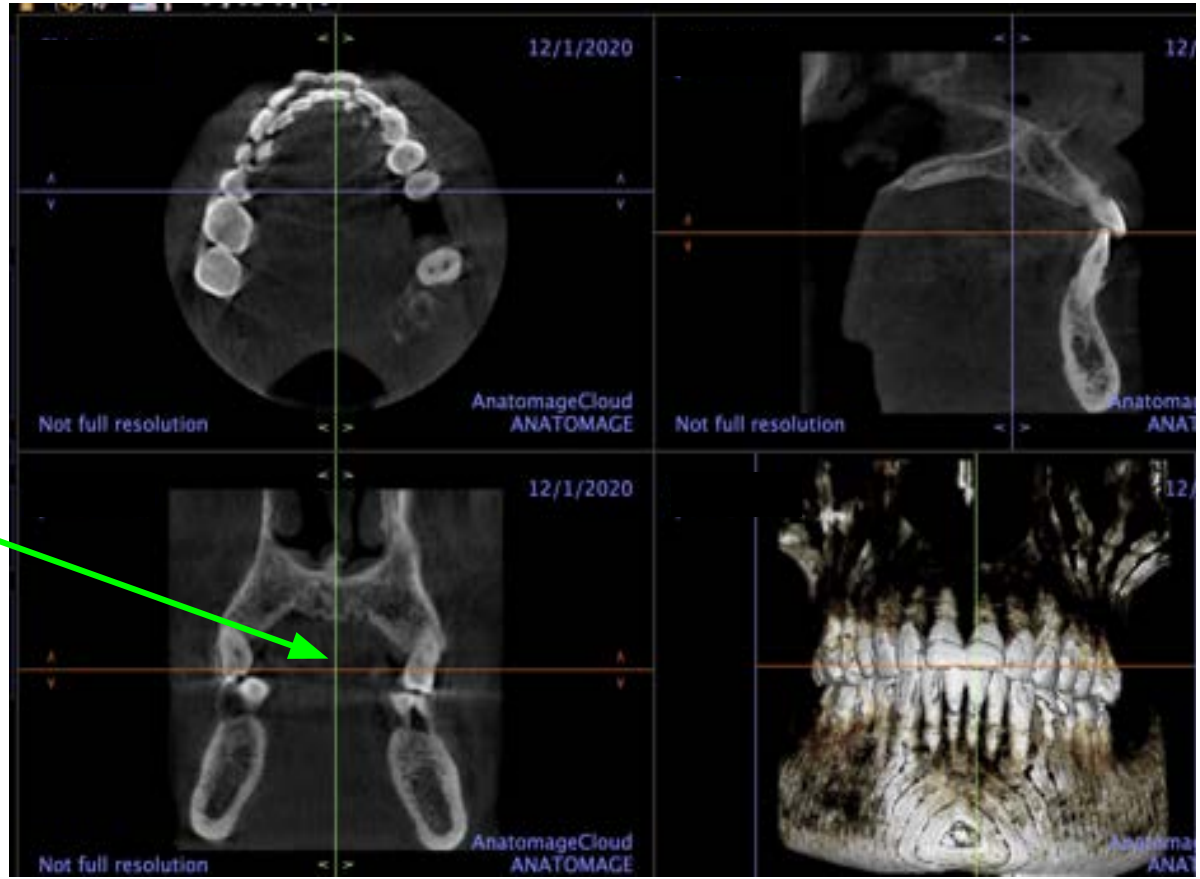
Anyway...

Again, you see all of the standard CBCT views.

What were they again?

Notice that the crosshairs are not in the right position in each view. (blue green and orange lines)

You have to drag all the lines to the place you want to evaluate.

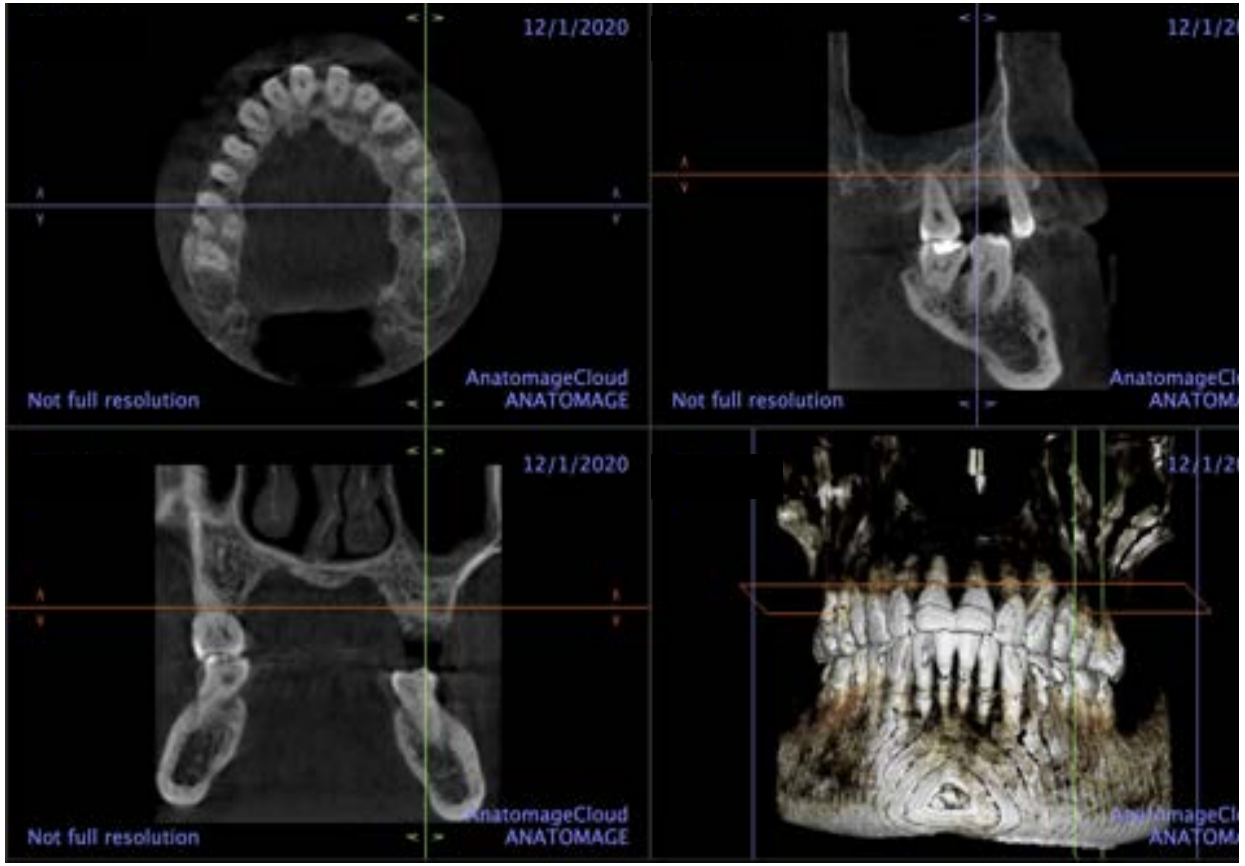


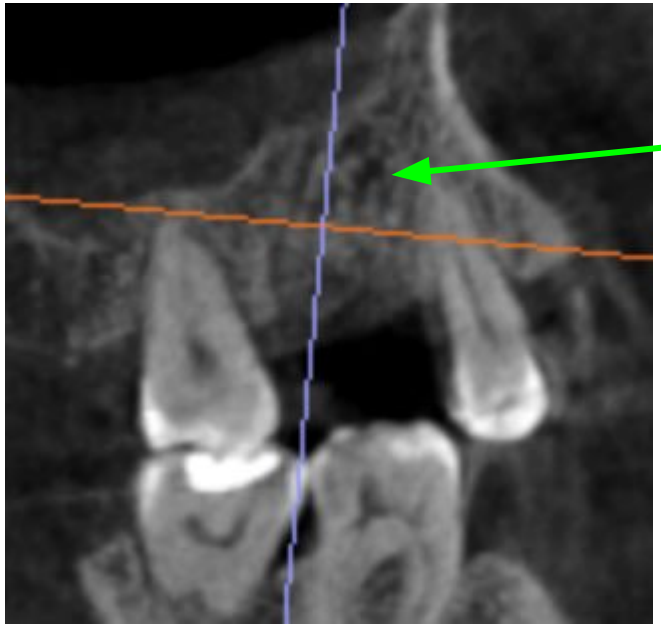
See?

Now they’re all lined up at #14. (The left maxillary first molar.)

CBCT’s can be disorienting. Look at the 3D rendering to help orient yourself.

Now we’re ready to see some shiz.

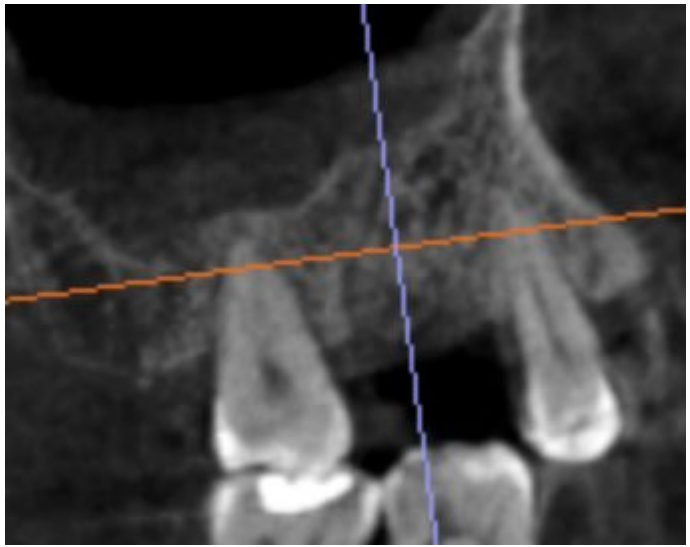




A minor detail about setting up your view. Make sure your crosshairs are properly angled.

In this picture they cut across the area of interest diagonally. That is going to give you an inaccurate reading.

See, here I rotated the crosshairs so now they are parallel too and perpendicular to the future implant.

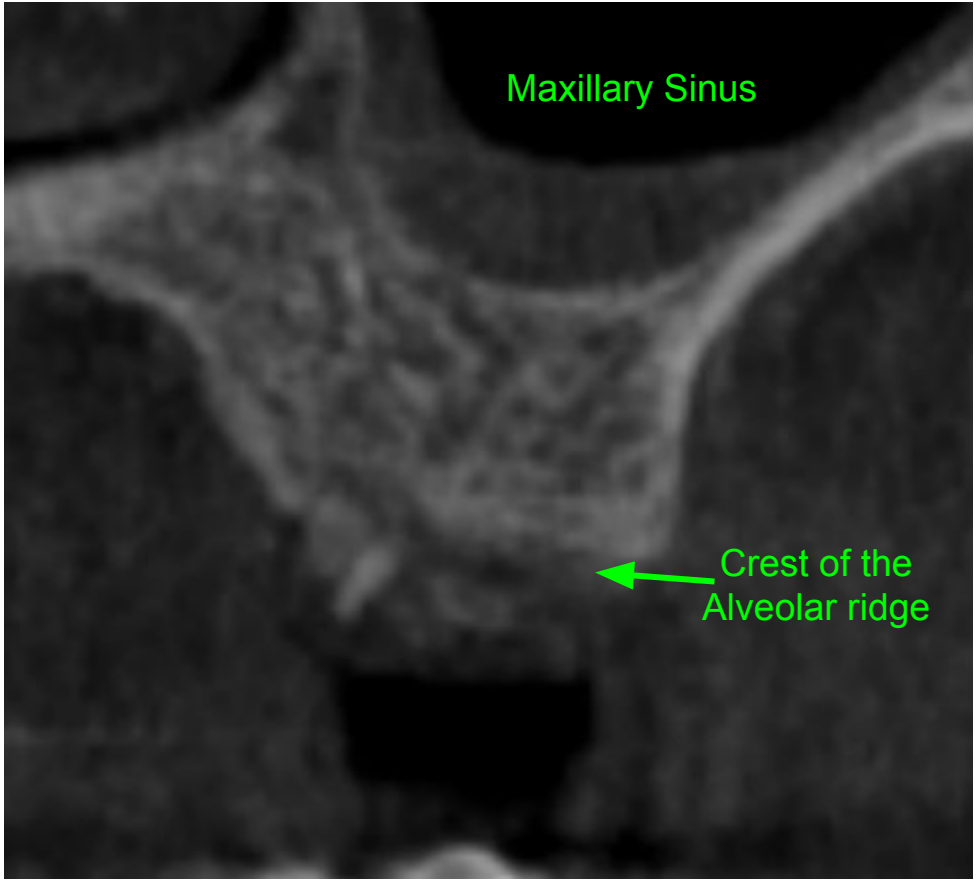


This is the cross section at #14.

When treatment planning for implants, the first thing to do is decide **where are the boundaries?**

Here, the lower boundary is the crest of the alveolar ridge.

The upper boundary is the floor of the maxillary sinus.



The upper boundary is easy. See? It's right there?

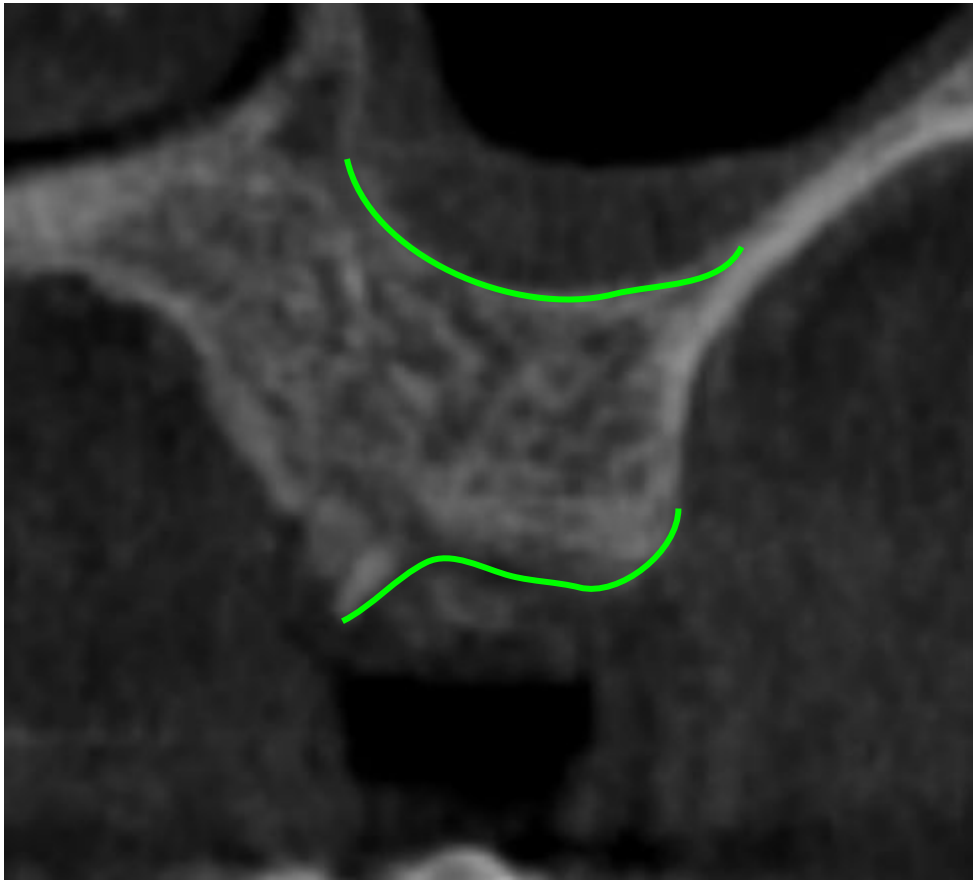
But where is the lower boundary?

Due to the porous nature of the maxillary posterior bone, the surface is irregular.

See if you can determine where you should draw the line..

I just approximated it right there.

Let’s take a closer look...

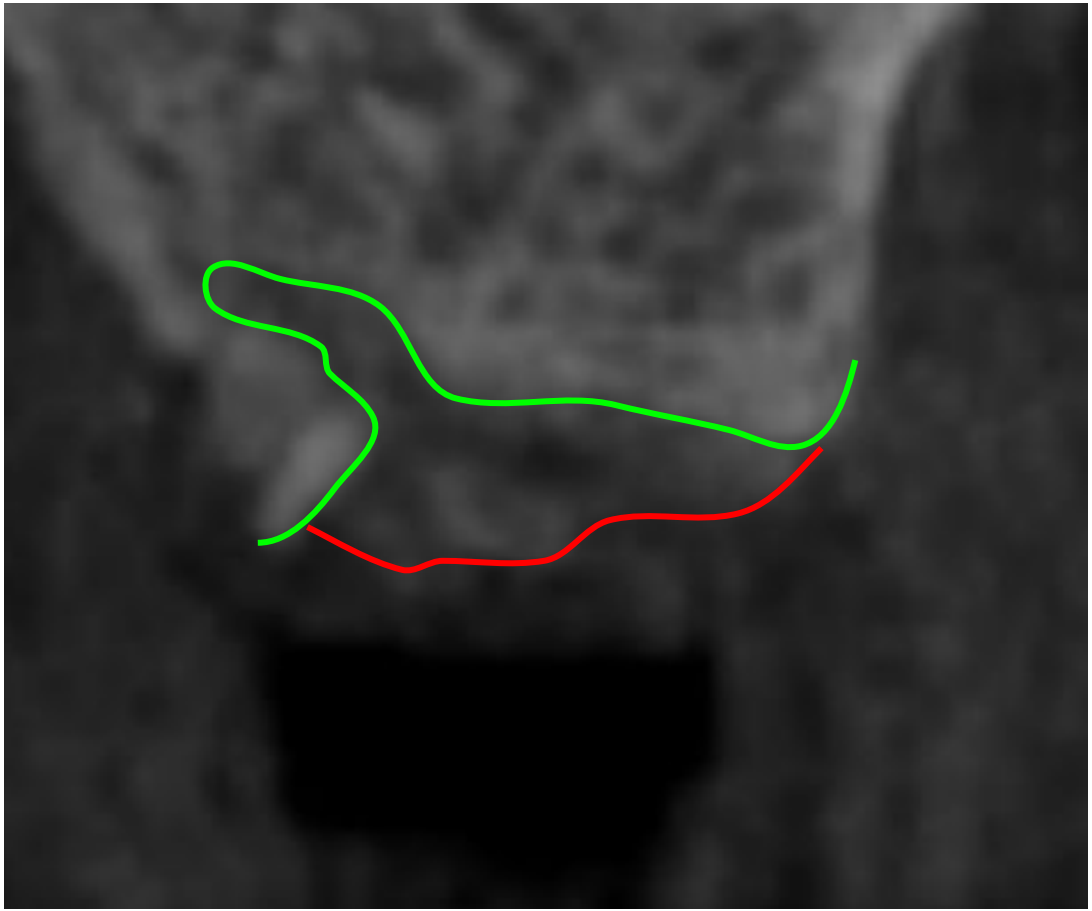


The green line marks where I think above that point looks pretty solid.

The area between the green and red line can fool you--don’t let it.

It looks sorta grey like there is bone there, but I bet if you flap that open you will find nothing but granulation tissue.

Don’t trust that area between the green and red.

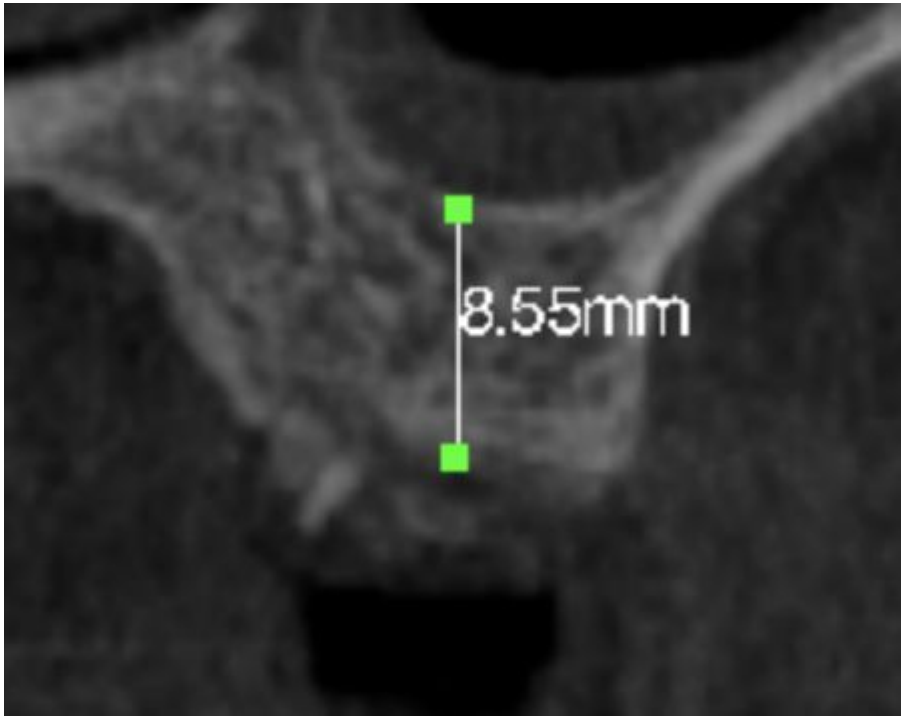


Now use the ruler tool to measure the distance between the upper and lower boundaries.

When approximating these boundaries and then taking measurements from them, it's better to err on the side of caution.

So let's say we have 8.5mm of bone to work with. So looks like we can place an 8mm implant there.

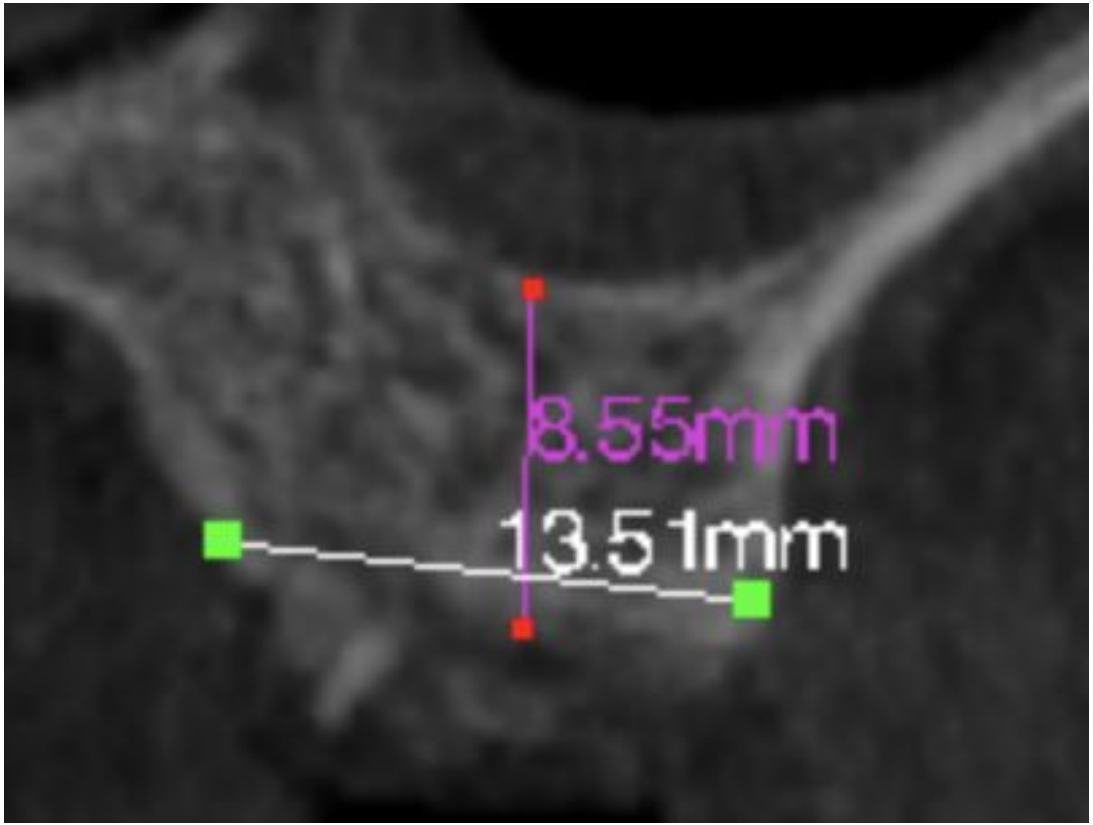
Just note that it might communicate with the sinus.



Now we measure the width. The width is measured from the horizontal boundaries.

This has 13.51mm of bone width.

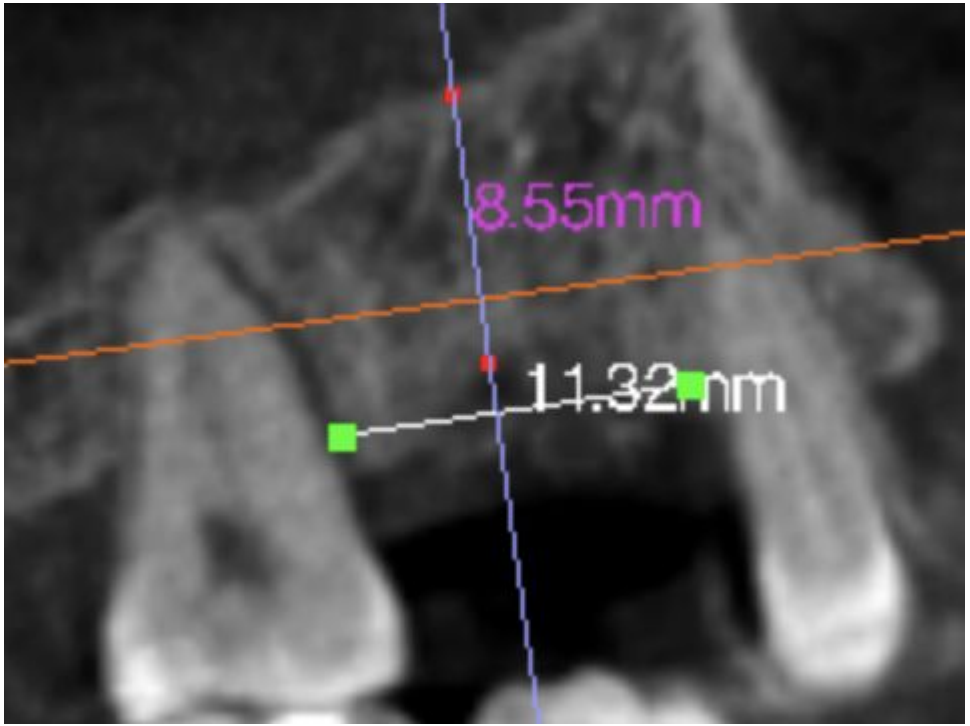
That means we will have no problem with placing any of the standard width implants there as long as we have enough mesiodistal space as well.



Now in this view, we can see that the mesiodistal space in between the two roots is about 11.3mm.

This means that we will have no problem using the standard size implants.

For molars, I like to use implants wider than 4.0 mm.



CBCT give you 2 sets of information useful for implant planning:

1. **Quantitative**: You can see if your site meets the space requirements for placing an implant.

2. **Qualitative**: You'll get a heads-up about the bone "quality." Let's talk about this for a quick second.

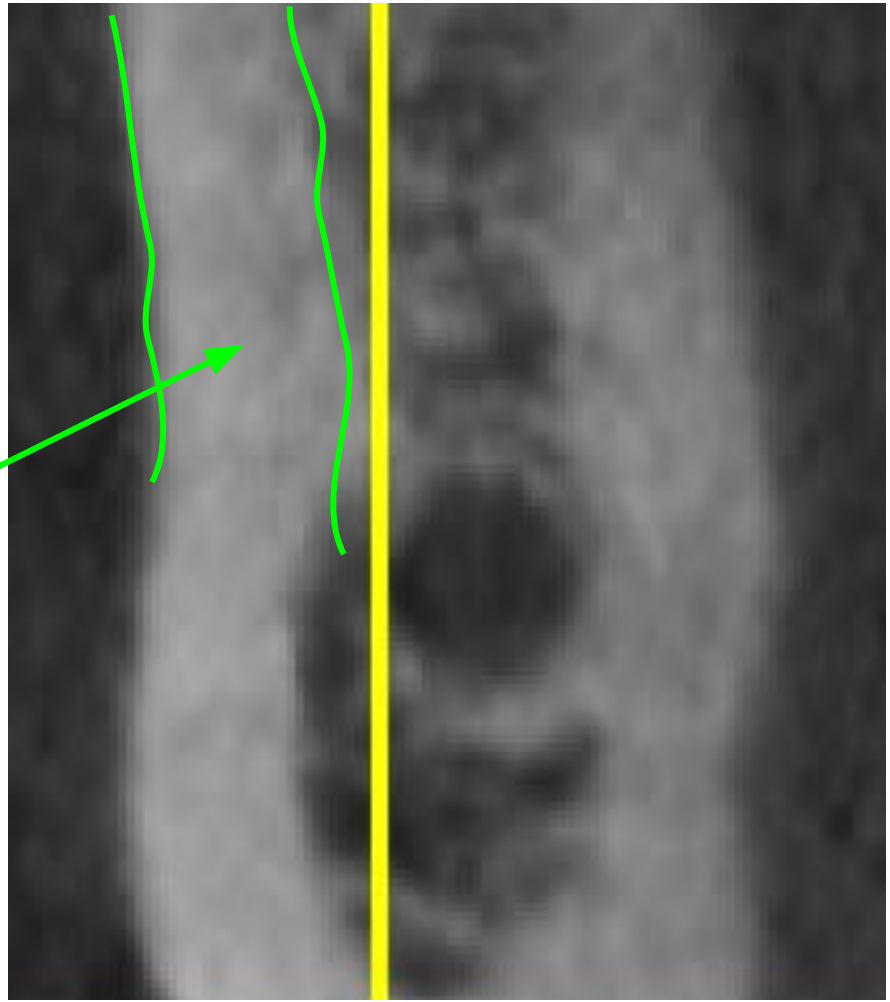
A CBCT can show you where there is hard bone and where there is soft bone.

Hard bone is more dense, hence it shows up more light colored.

Softer bone looks more porous.

See this bone?

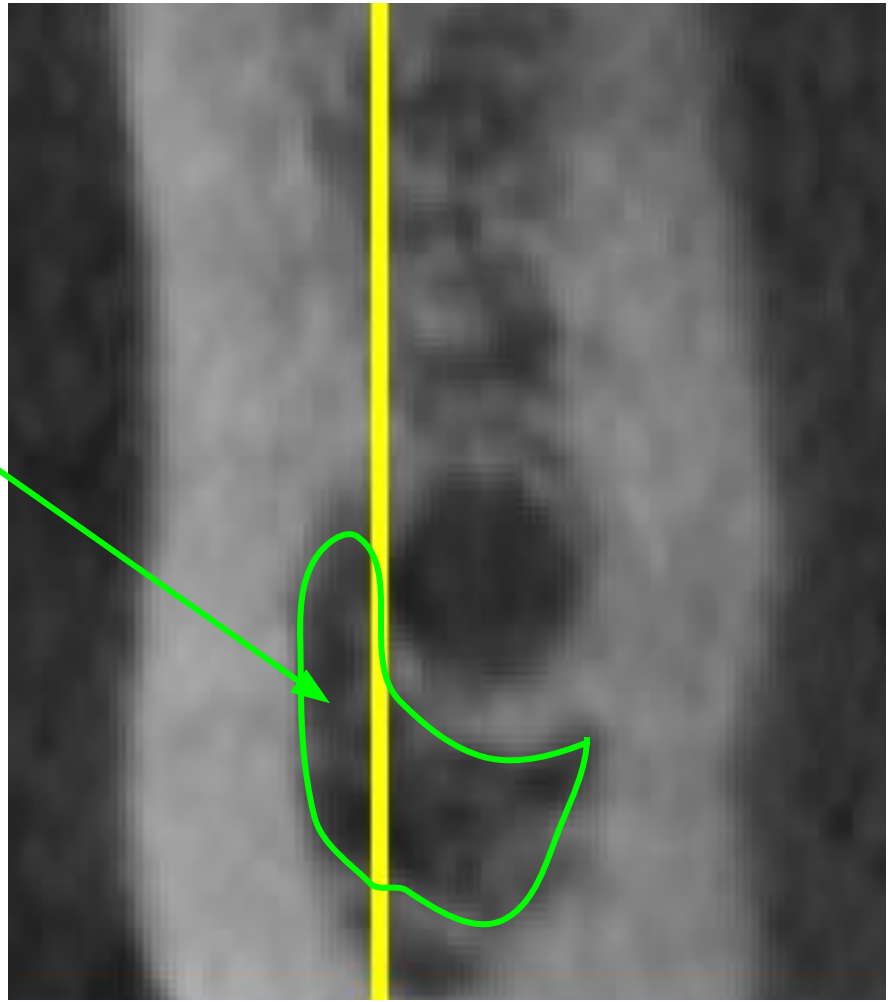
Its is hard as hell. Hard enough to deflect your drill!



Now, see this pocket?

That area is ultra soft.

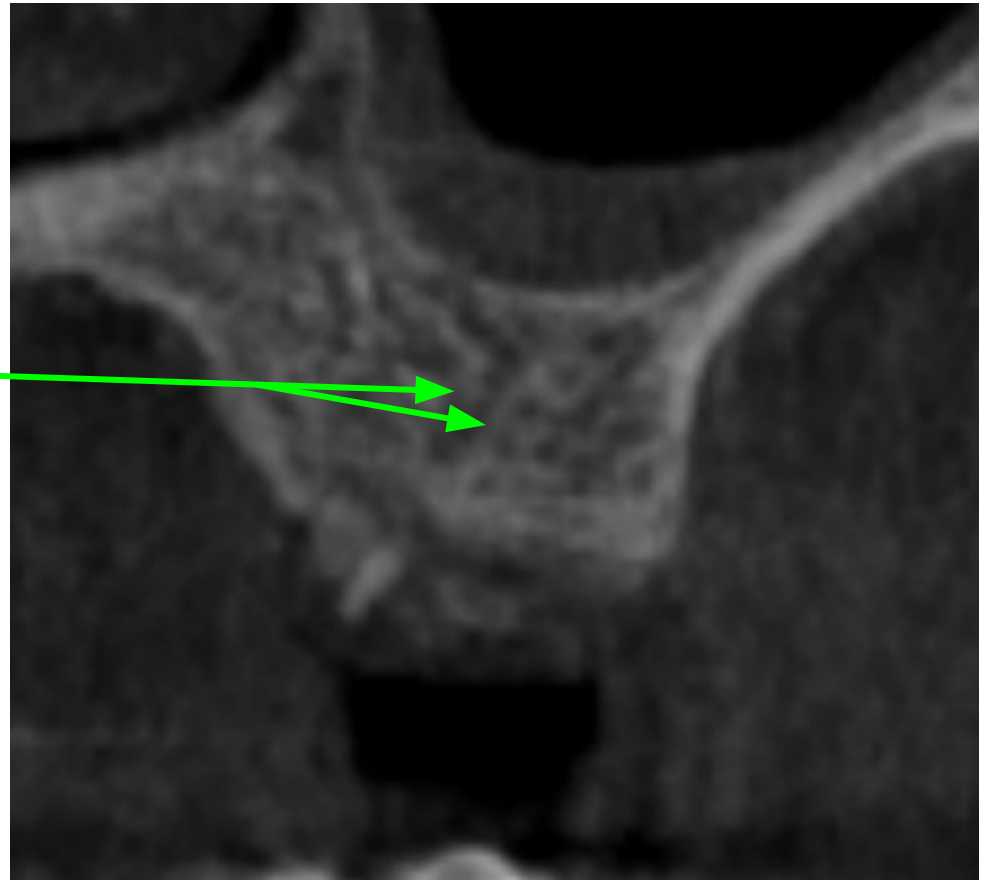
You wouldn’t be placing an implant there anyway, it’s below the IA! Just showing it for comparison of density.



Now back to this guy.

You can see all those little bubbles of space within the bone.

Also, this is posterior maxilla, you can expect this to be soft.



Practical Application of Bone Quality:

When you have soft bone, you should undersize your prep.

When you have hard bone, you will go wider with your preps and may even have to use a “tap.”

How much to undersize your preps? Skip ahead to the **“Golden Rules”** explained on page 144!

So here’s a list of all of the items we covered. Keep them top of mind when treatment planning implants and you’ll avoid a lot of potential issues!!

#1 Bone height: 8 & 10mm
#2 Mesio-distal space: 7mm
#3 bucco-lingual width: 7mm
#4 Crown height space: 8-10mm
#5 Stable occlusion!

Actually you know what, here's a solid checklist you can refer back to.

Bookmark it, hang it on the wall and show your friends.

(You know the nerd in you wants to…)

The Routine Implant Checklist

- ☐ Bone at least 8mm high or 10mm above IA
- ☐ There is at least 7mm root to root and contact to contact
- ☐ There is at least 7mm of bone width
- ☐ There is at least 8mm of Crown Height Space
- ☐ The Surrounding teeth are healthy and stable and have a solid occlusal stop

☐ Does not say the word perfect, hasn't sued anyone, doesn't trash talk other dentists, not rude

Ready to Check out the Surgery?

You:

I gotchu, Pikachu

Implant Surgery

Just in case, here's an overview of some of the parts you might be using at this point:

Cover Screw

It's placed on the implant during the healing phase.

Healing abutments

They can also be placed on the implant during the healing phase. They come in various sizes and sometimes are anodized (colored)

Implant Driver

This is the tool that is used to tighten or loosen the prosthetic screw. (aka the screw that holds the abutment and the implant together)

Torque Wrench

The implant driver attaches to this. This wrench is used to tighten the screw to a specific torque value (tightness).

There was a point where I was working out of 8 different offices. I would drive in, place 5-10 implants and drive out.

To keep things simple, I packed light but I made sure I had the essentials.

So, I picked out some of my must-haves and carried these little kits around with me.

Prodent (the company I buy them from), decided to name the kit after me! You can get the kit here:

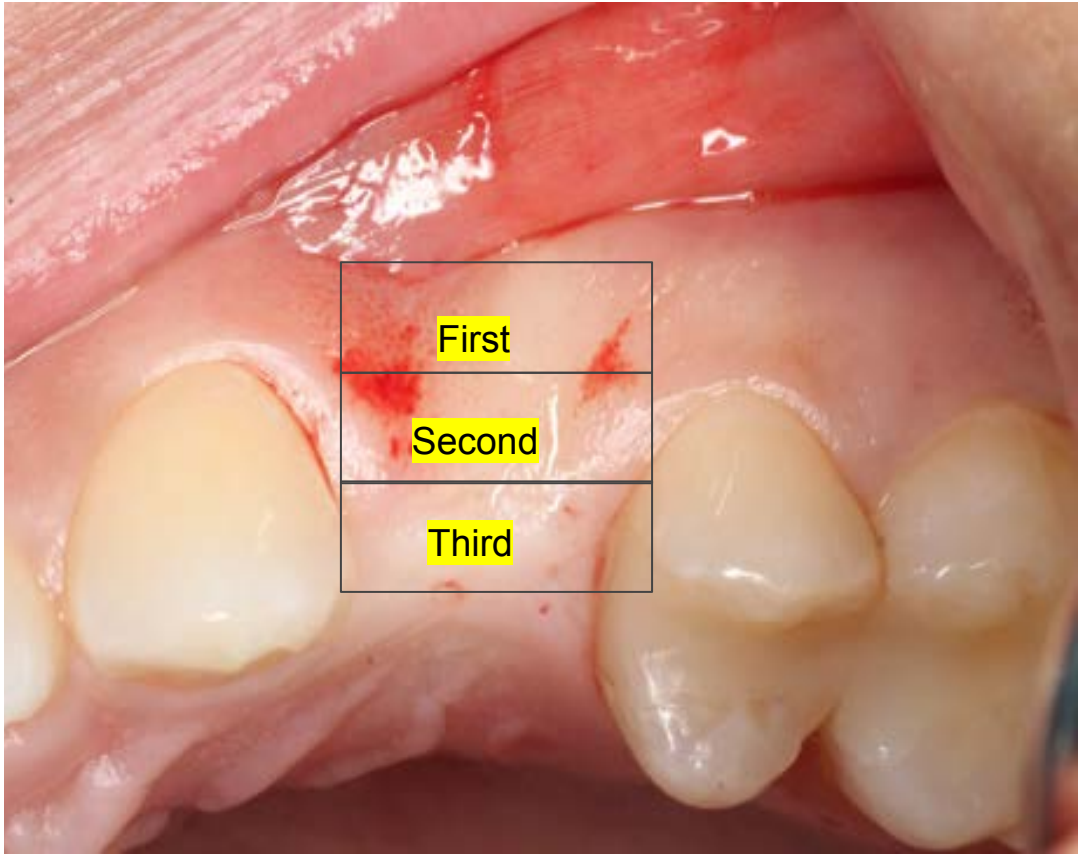
https://tinyurl.com/yxkry5zt

So let’s look at this fresh site:

It’s #12.

It meets all the criteria we covered earlier in the guide.

Let’s get it.



Get the patient numb!

I like to make sure my tissue is all nice and blanched.

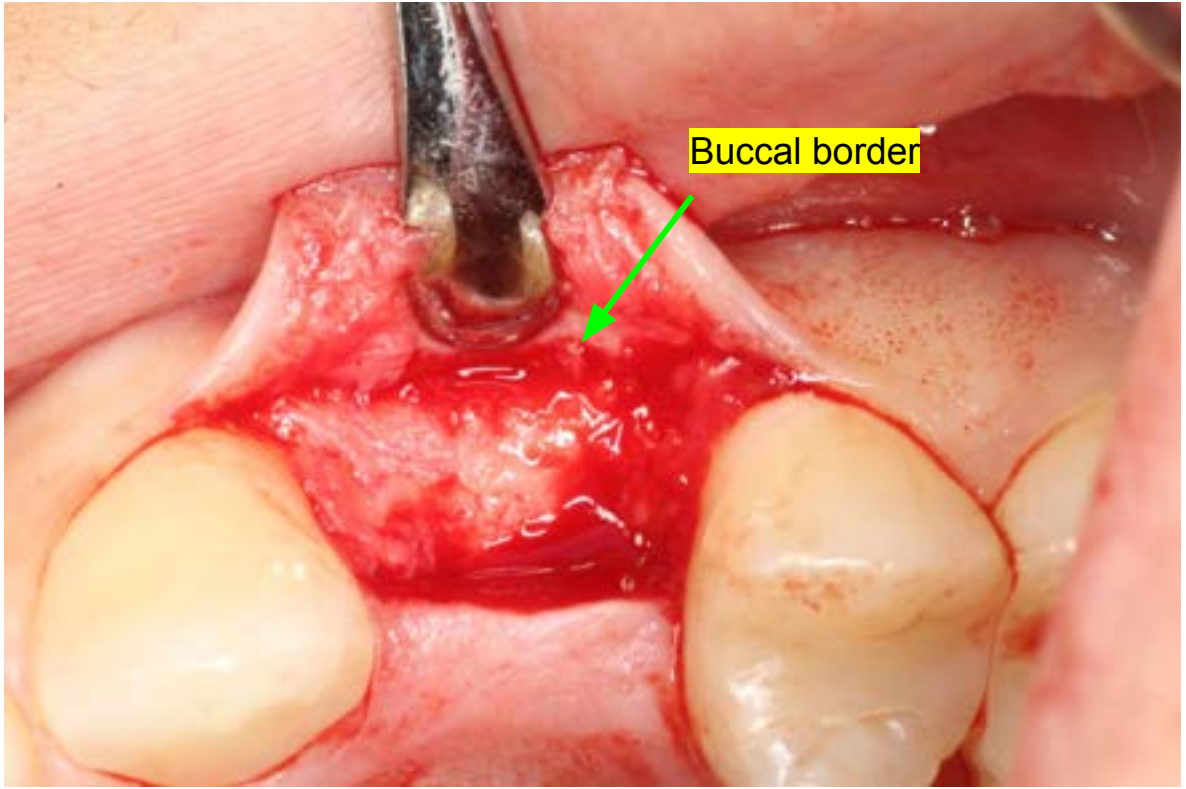
I use septocaine with epi. I do local infiltrations starting near the vestibule.

I give several tiny injections working my way up to the crest and then the lingual area.

Cut the Flap

I cut a flap from tooth to tooth and then continue with intra-sulcular incisions.

You can also do a triangular flap by creating releasing incisions.



Make sure that you can see the buccal and lingual borders of your site.

That way you can find the correct midpoint to start your implant site.

Check your angle

Use the **pilot drill** to mark your initial site.

Some people choose to use their pilot drill and place it into the osteotomy to **check the angle** and to take an x ray.

You can also do this with a parallelling pin.

Actually before we go further, let’s talk about drills.

Implant kits come with a lotta shit:

Let me simplify it for you.

The following applies to all kits. Universally.

If a company tells you they have something special that ONLY they provide and you NEED it,

Don’t believe it. They’re selling you snake oil.

Have you heard

this one before?

These are your starting tools:

Lance pilot drill

The first drill you use for starting your prep for pretty much every site.

Round pilot drill

You can use this instead of the lance pilot drill for molar sites. This helps create a starting point if your ridge is a little sloped.

Lindeman Bur

You can use this as a side cutting bur to correct your angle AFTER you have already made your prep with the other burs.

Paralleling Pin

Place this into the initial prep to see if your angulation is good.

These are the tools that help finalize your prep:

Osteotomy Drills

You use these drills sequentially until you reach the desired width. (More on that in a second)

The only big variation in these with various types of implants is that some are parallel and some are tapered.

Drill Tap

This is used to pre-carve threads into the implant preparation. This is useful when the bone is very dense and insertion torque is too high.

Countersink Tool

This one is not as common. Basically if the implant is fatter near the platform than at the apex, you might need one of these to make the prep a little wider at the coronal portion.

Some other essentials:

Drill extender.

You can use this to make your drills longer. This is often helpful in the maxillary anterior. Basically it keeps adjacent teeth from blocking your drill.

Insertion tool.

This one often looks different for almost every system. It is basically just used to attach to the implant and insert it into the bone.

Okay, let’s get back to the bloody stuff...

Take an X Ray!

Make sure to take an x ray to confirm proper angulation.

You’re basically checking that the tip of the drill is not pointing at adjacent roots.

Also you want to see how far you are away from hitting a vertically limiting landmark such as the maxillary sinus, the IA nerve canal or even the nasal floor.

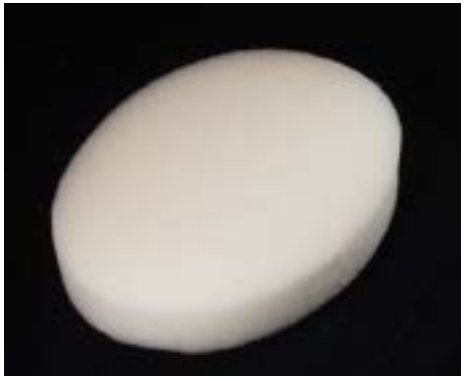
Use a Throat Pack!

I’ve implant parts go down my patient’s throat before. If you’ve never had that happen to you, consider yourself lucky!

Trust me, you want to be safe rather than sorry here.

So, fold up some large gauze and place it into the patient's mouth to catch anything that might fall. Or better yet, something that works amazingly well is this little sponge thing:

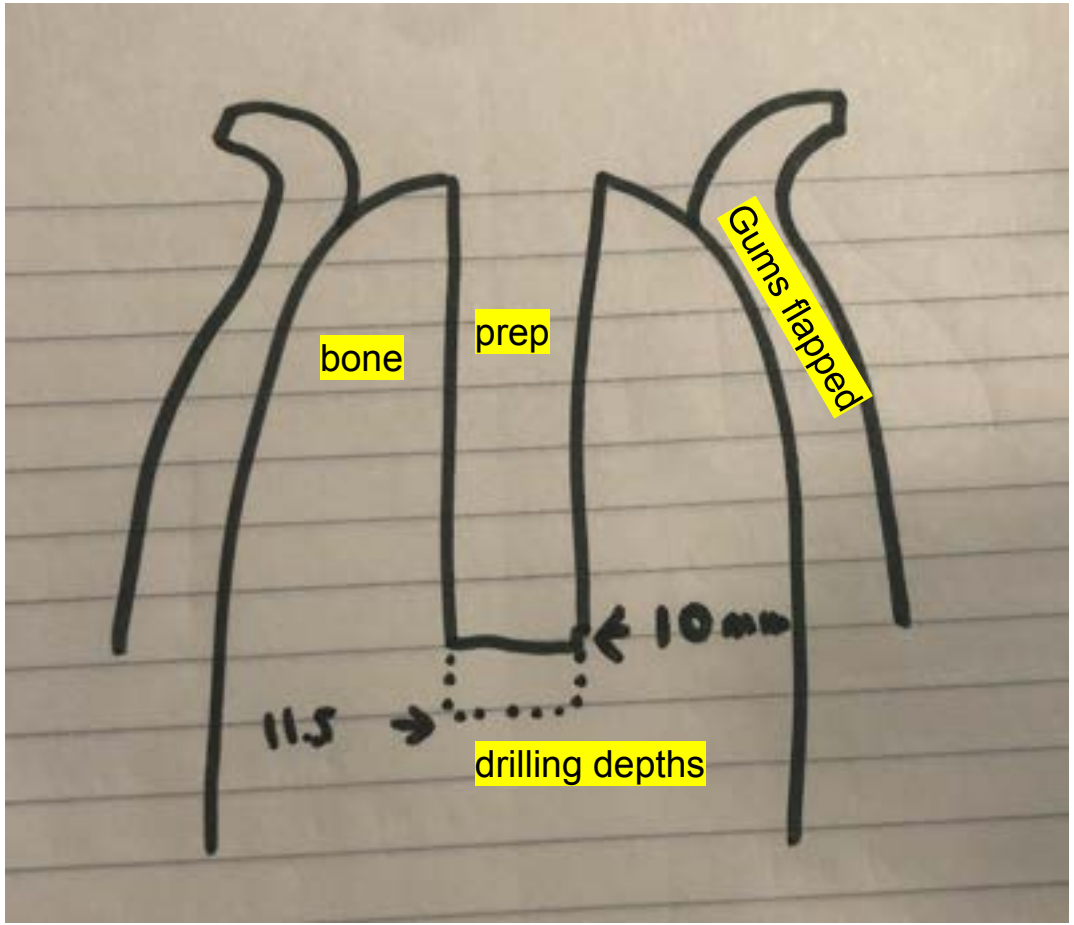
It’s called a C-Sponge. You can find many suppliers if you just google it.



If you’re happy with how the drill looks in the x ray, move on to your osteotomy drills.

Start with the 2.0 drill.

Take that to **1.5mm BEYOND** the length of the implant you will place.



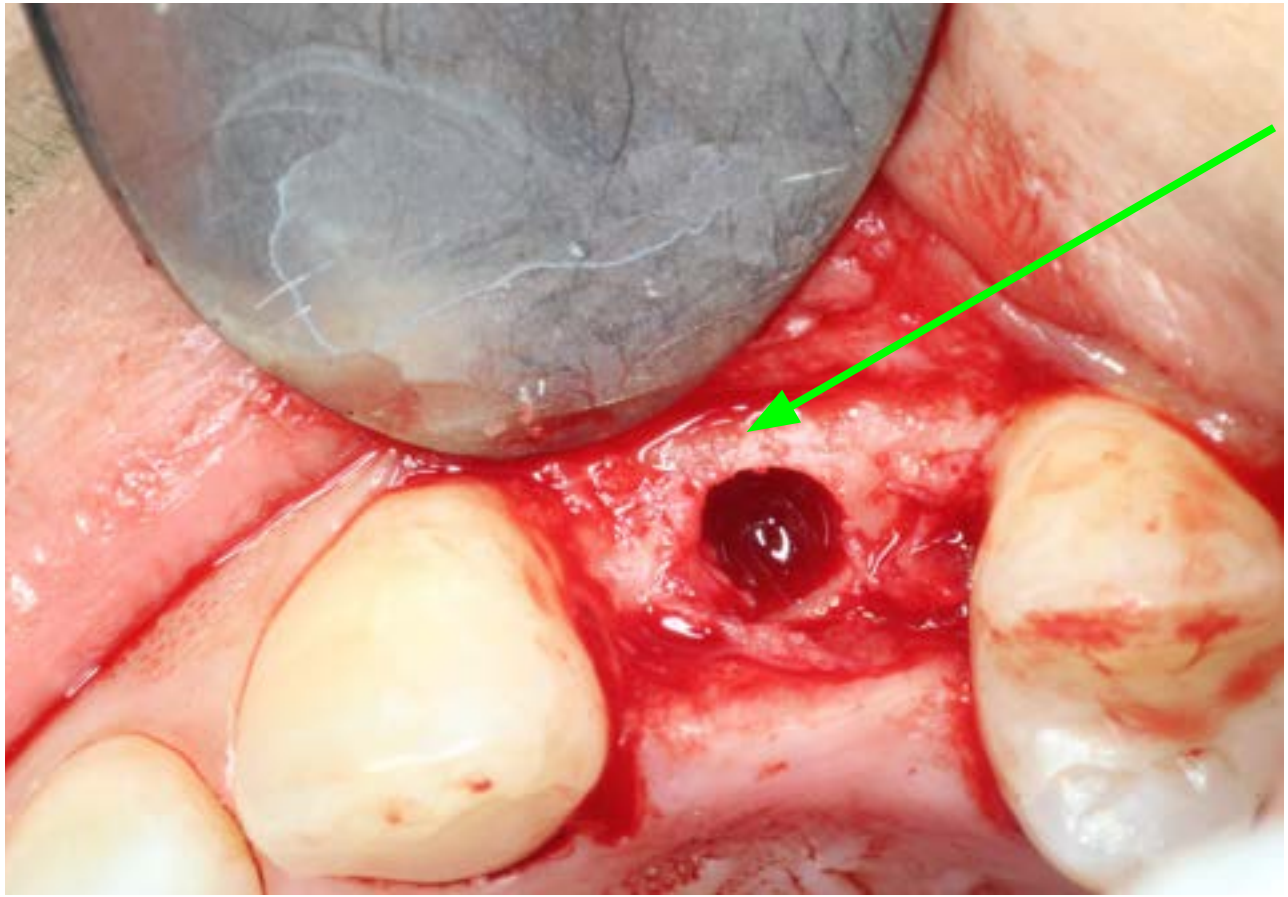
So, if you want to place a 10 mm length implant, drill to 11.5mm!

If you want to place an 11.5mm implant, drill to 13mm.

This allows you to submerge your implant between 0.5-1mm.

And it makes it less likely that your implant will be blocked from reaching full depth.

(Often, out of being nervous, we don't drill as deep as we are supposed to.)



Make sure to keep an eye on your buccal bone as you're drilling!

You want to make sure you preserve **at least 2mm** of bone thickness!

After you have drilled with your 2.0mm drill, move on to the next drill.

Again drill 1.5 mm DEEPER than the length of your intended implant.

Then, move up to the next drill size, and then the next,

and then the next,

And....

Get ready, this part is important ;)

I am ready master Shifu

THE GOLDEN RULES

For Hard bone, go to the drill that is a similar width of the intended implant.

(For example, if you're placing a 3.2mm implant into very hard bone, go up to the 3.2 mm width drill. In some extreme cases you might even have to use the next size drill just for the first couple of millimeters.

For Medium Bone, go to a drill width that is about 0.7mm NARROWER than the intended implant.

(So if you're placing a 5.2mm width implant into medium bone, drill up to the 4.5 width drill.)

For Soft Bone, go a drill that is 1mm NARROWER than the intended implant.

(So If you're placing a 4.0 implant into soft bone, use either the 2.8 or the 3.2 drill.)

! If you drill a little too narrow, and the implant is going in too tight, you can go back and prep a little wider. If you drill to wide, that is a more difficult problem to fix!

Those guidelines are general and approximate.

They can be applied to ANY implant system. They have to be general because implant systems often have different widths for drills!

Okay back to this guy.

Flush out the socket with sterile saline, and then you're ready to place the implant.

I like to do the initial insertion by hand.

For example, this system has a thumb grip on the implant transfer so it is convenient to use that.

Otherwise, for other systems you can simply use the hand driver to insert it.

This is matter of personal preference. Some clinicians like to use the handpiece to insert the implant.

I personally feel like I can exert a greater amount of control over the implant with my fingers.

Primary Stability defined:

When there's talk about implants, you'll often hear the term **primary stability.**

You might already know what that is, but for shits and giggles, let's say you're not 100% clear on it.

The **Glossary of Prosthodontic** terms describes it as *"contributing factors of mechanical stabilization of a dental implant during the healing phase"...*

Now, what in the hell does that mean?….See? that's why you're not reading THAT. And you're reading this instead.

Primary Stability ACTUALLY defined:

Primary stability means that your implant is not loose immediately after you place it.

Like after you inserted it into the bone, if it is tight within the bone and would not move if you were to push on it--it is stable.

Immobile = Primary Stability.

Simple as that.

Why does that matter?

When you place your implant, you want it to be **IMMOBILE**. It should not have “macro-movement.”

(Basically you should NOT be able to move that sucker with light instrument pressure.)

Why? Because if it does move, you’ll end up with an implant that does not have bone around it. Instead, it will have soft tissue encapsulation. AKA: a failed implant

Okok, there is some debate as to “how immobile” the implant should be when you place it. So let’s go a little further into this...

Measuring “how immobile”

Let’s say you set your driver to 35Ncm and you placed it in the implant and tried to turn it.

If it turns, then this means your **“insertion torque”** is lower than 35 Ncm. 35Ncm still overcomes the implant and forces it in.

Then, you change the setting to 25Ncm, and again you are still able to turn the implant and make it go deeper. That means your insertion torque is lower than 25Ncm.

Then, you change the setting to 20Ncm, and now finally the implant doesn’t turn anymore. It goes no further. That means that 20 Ncm is your Insertion Torque.

That’s “how tight” the implant is stuck in the bone.

Placing an implant that has **NO primary stability**, meaning it's swimming around in the implant prep, often **leads to the implant not integrating**.

Because it moves, it does not allow bone to encapsulate it and join it to the prep you just made.

So, originally people thought, if loosy-goosy implants are bad, well, let's just place em really tight!

But, it was found that, super tight didn't necessarily equal great outcomes.

Actually, at a certain point, compressing the bone can damage it and weaken the bone-implant interface.

How low can you go?

So it is thought that maybe there is an optimal threshold. Implants integrate fine when they insert at 35 Ncm. Let's try 25. Okay they work fine at 25Ncm, let's see if they work finat at 15Ncm. Okay they work fine at 15Ncm.

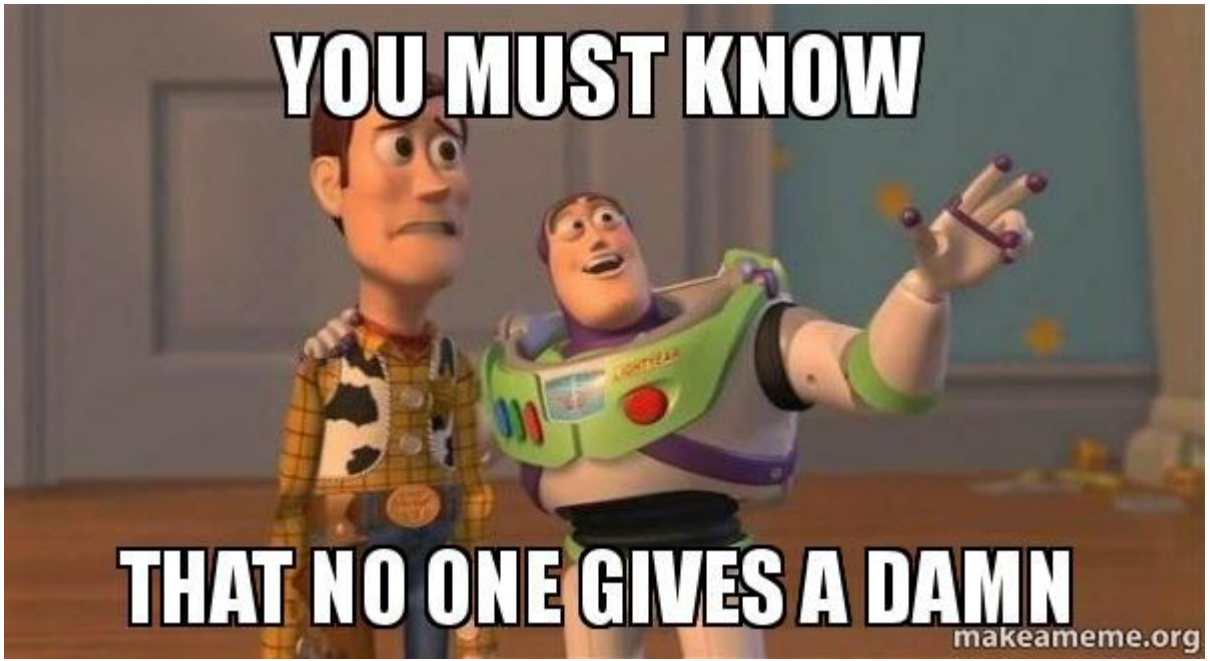
And anecdotally, I've placed some that can spin freely inside of their preps. And they've often healed fine! It wasn't my intention but, hey, sometimes it happens!

As a matter of fact, Michael Norton, who was a past president of the Academy of Osseointegration, has done some research that shows that implant with low insertion torque and even spinners, do quite well.

Here is a link to his literature: https://pubmed.ncbi.nlm.nih.gov/28708918/

“But EXACTLY how loose can your implant be?

Answer...


YOU MUST KNOW
THAT NO ONE GIVES A DAMN
makeameme.org


Processing...
Attempting to give a damn...
Cancel

To be a predictable implant placer you don't need to worry about the specific threshold of insertion torque at which the implant will not integrate. Why toe the line? We know what works, why screw around to try to find out just how flimsy we can make our implants?

For simplicity,

how about we just establish that there is a range between "**mobile"** and **"very tight"**

At mobile--your implant may fail.

At very tight --your implant may have some bone loss.

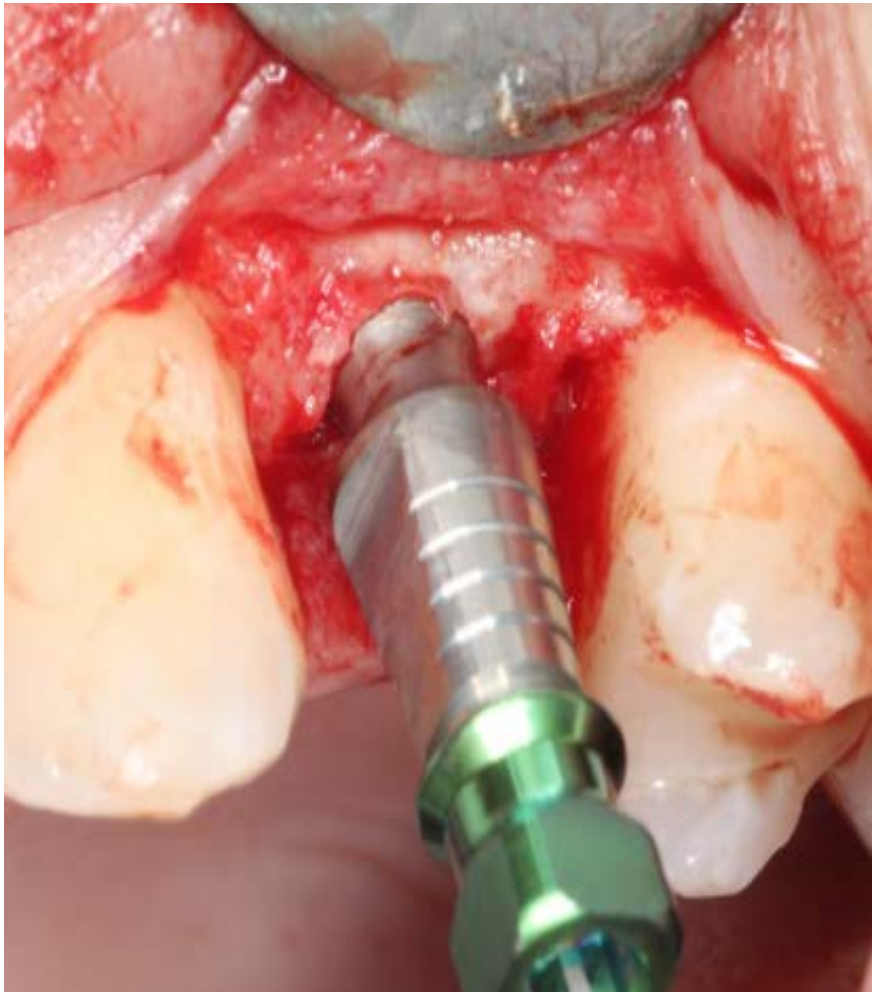
Since some minor bone loss is "more acceptable" than a non-integrated implant, let's err on the higher torque side.

I personally like to aim for 35Ncm. If it goes in a little "less tight" than that, I know I'll be okay. Now if it goes in a little "too tight"...

If it goes in a little “tighter” than that, you can:

- Give it a little prep with the **next size drill**. Then insert your implant.
- Or, you can **use a drill tap** to reduce the insertion torque.
- Or, give the implant 2 turns in, and one turn back. Then 2 turns in and one turn back. This helps slowly expand the prep but still may be compressing the bone more than ideal.

If you DO give a damn about insertion torque and want to read more on this topic, there is a thorough study published in the Journal of Oral and Maxillofacial Implants. You can download it for free here: https://www.researchgate.net/publication/333301778_Relationship_Between_PrimaryMechanical_and_SecondaryBiological_Implant_Stability



Ok! Sorry for the detour, back to this guy!

Take it the rest of the way with a driver. And in a perfect world, I have prepped the site with the drills that will have gotten me around 35 Ncm of primary torque.

Is it cool if we got 20Ncm? Sure

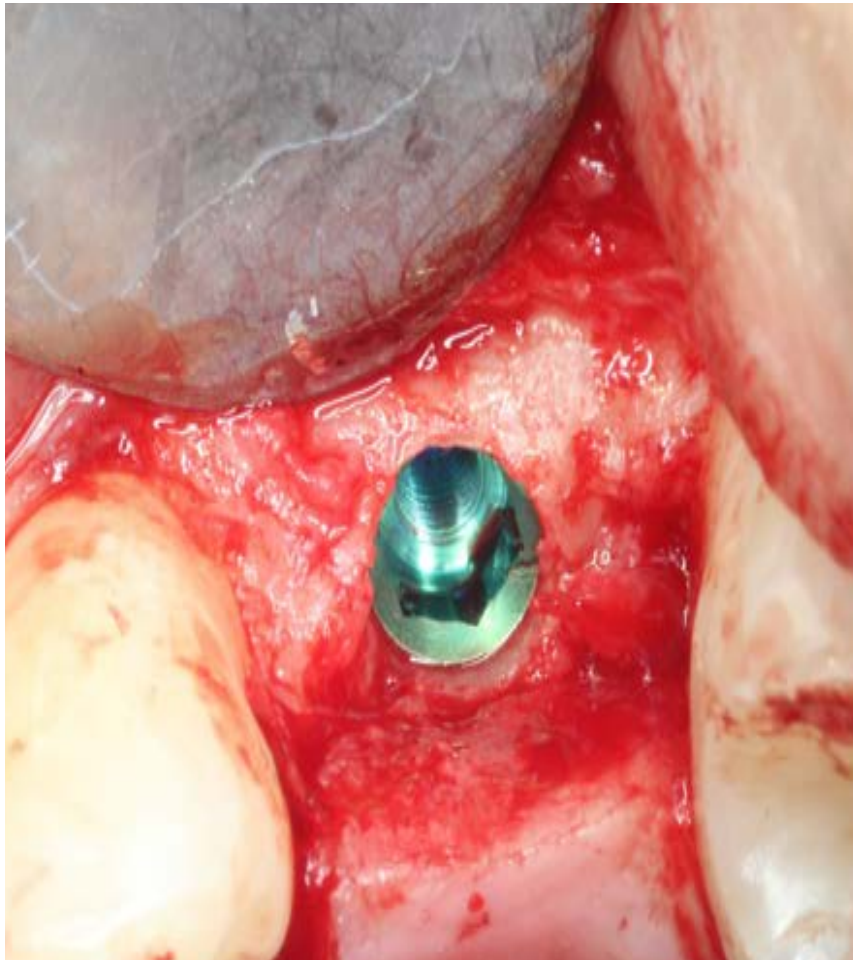
Or 40 Ncm? Sure why not!

Pat yourself on the back, that looks ballaaaa!

Well, I guess this was my surgery, wasn't it.
So I'll pat my own back then.

Look at all those dolla bills! That's your entire paycheck going to MYFEDLOANS.com

How did I know, right?



Make sure the implant is submerged .5mm-1mm below bone. Make sure to check the entire platform.

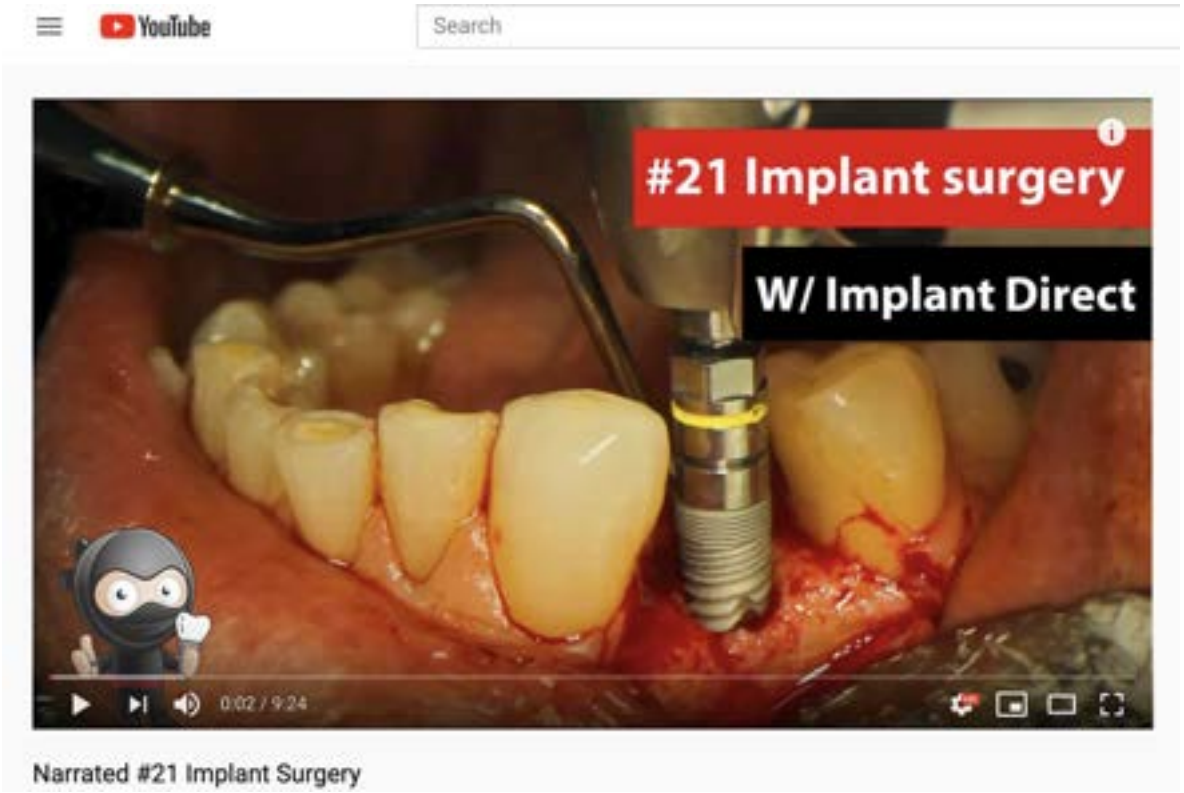
Place a healing abutment or a cover screw and take a final x ray.

You’re done!

I thought you'd like to see a video play-by-play so

Here ya go!

https://tinyurl.com/yy5bfcvp




Question: Should I take x rays during the surgery?

Answer: Hell yes.

I thought I was a cool guy for a while until I saw some x rays on my own implants that looked eerily close to what you see here.

Don’t be a cool. Be safe.

Photo credit: @nehavaish15

Healing Abutment or Cover Screw?

Placing a **healing abutment** on the implant right away can make your life easy. It can simplify the process considerably.

I’d recommend using it in most cases, unless...

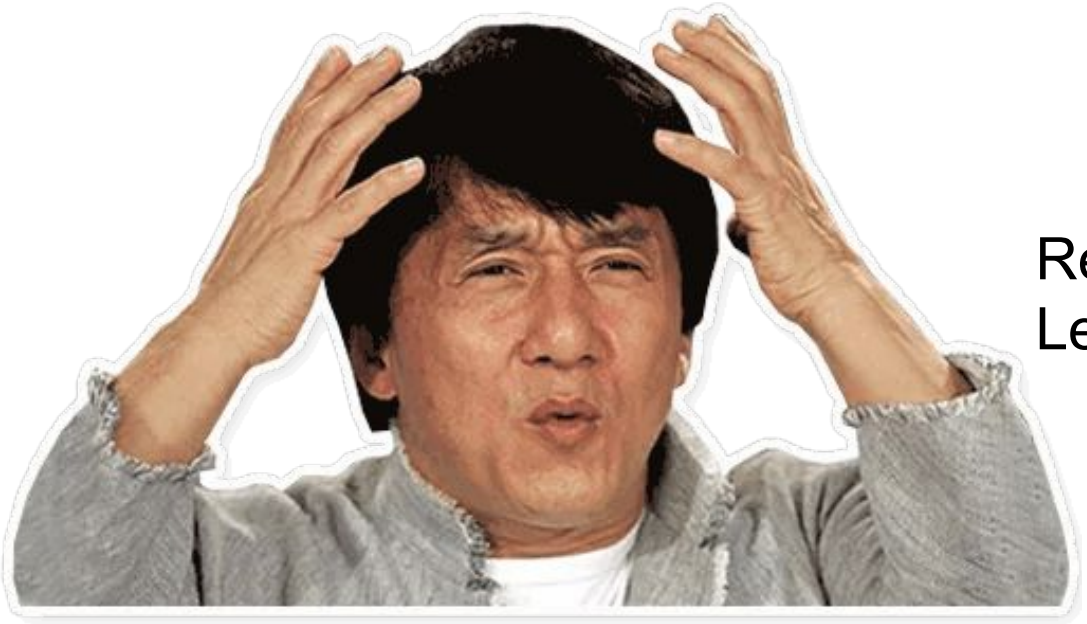
- Implant did not achieve at least 20Ncm torque for primary stability
- Membranes are used
- Removable prosthesis would exert pressure on the healing abutment.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6494529/

- Or if periodontal pathogens will invade the area.
  (For example, if you did a full mouth ext on periodontally involved teeth.)

In which case you'd want to avoid healing abutments, and use a **cover screw** instead.

But those aren’t the only options...



Relaaax,
Let’s have a look shall we?

Let’s look at this beautiful case.

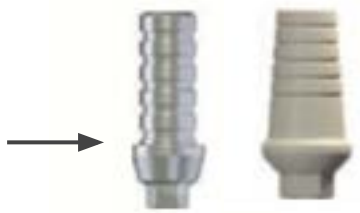
First, that molar is looking shady AF, let’s pull that sucker out.

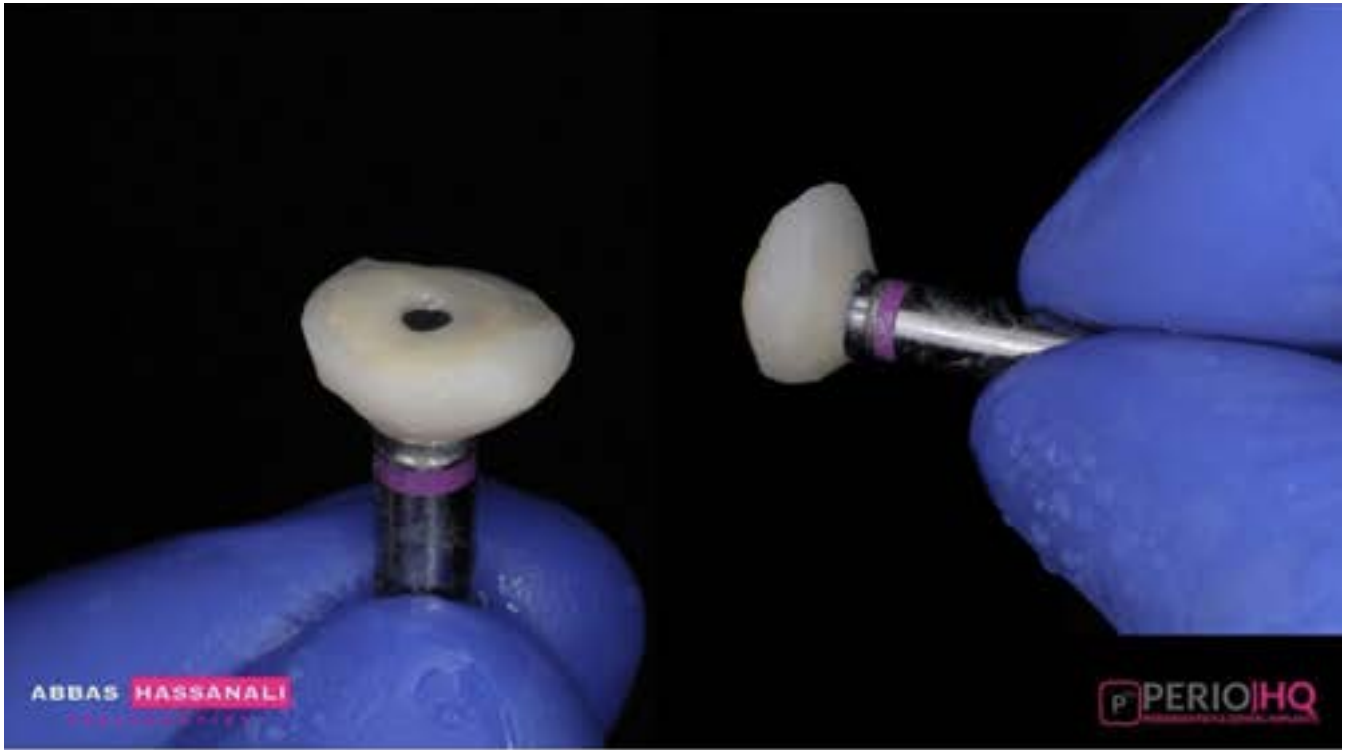
Next, an implant was placed immediately into the socket. That’s called an “immediate placement”...

This part is super cool... ready?

A ring of flowable composite was attached to a **temporary abutment.** This flowable outlined the shape of the tooth.

(Btw temporary abutments look something like these)





The voids were filled with more composite outside of the mouth. This is the finished **“custom” healing abutment.**

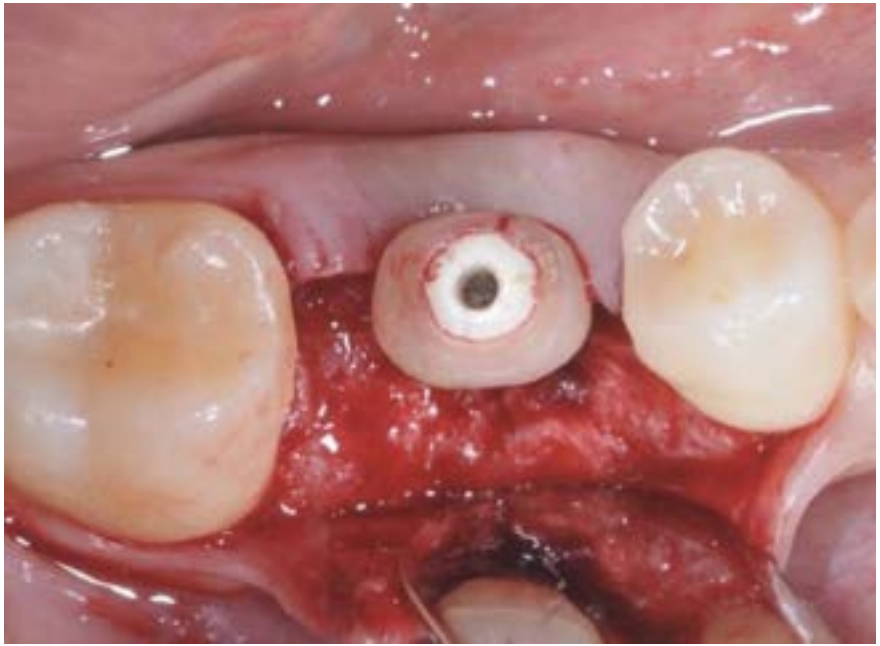
A **custom healing abutment** can help the tissue develop a more natural **emergence profile** for the future crown.

It remains on the implant until it is time to take an impression.

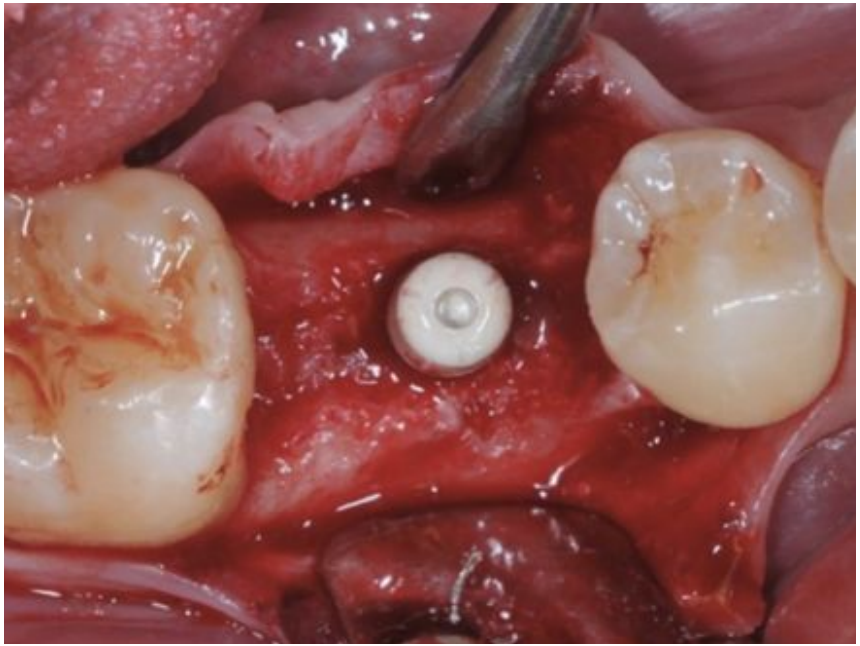
FYI this beautiful case was done by **Dr. Abbas Hassanali.** 👏

Does a custom healing abutment really make a difference?

See for yourself...



A custom healing abutment was used on this site.



And a regular healing abutment was used on this site.

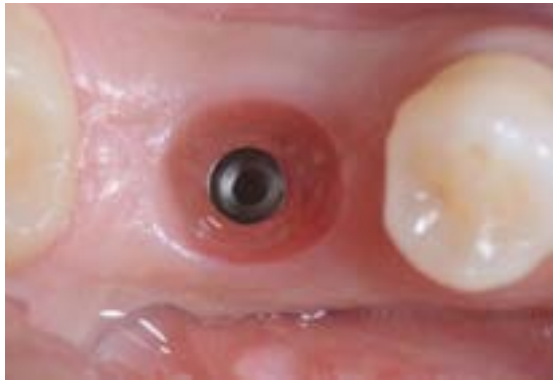
Beretta M, Poli PP, Pieriboni S, et al. Peri-Implant Soft Tissue Conditioning by Means of Customized Healing Abutment: A Randomized Controlled Clinical Trial. *Materials (Basel)*. 2019;12(18):3041. Published 2019 Sep 19. doi:10.3390/ma12183041

After healing...

This site has a beautiful emergence.

And this site, not so much...

Beretta M, Poli PP, Pieriboni S, et al. Peri-Implant Soft Tissue Conditioning by Means of Customized Healing Abutment: A Randomized Controlled Clinical Trial. *Materials (Basel)*. 2019;12(18):3041. Published 2019 Sep 19. doi:10.3390/ma12183041



While it would be really easy to seat a crown on this site, because the tissue does not have to be moved out of the way...

On the regular healing abutment site, the tissue gets squished during crown delivery and may not heal around the crown the way that you might want it to.

Here's the link to download the PDF of this case :
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6766291/pdf/materials-12-03041.pdf

Uncovery

Alright, so the implant is done!

….. now what?

It’s time to restore!!

Not so fast, Spongebob.

Make sure you waited long enough before you mess around with the implant...

How long is “long enough” you ask?

Here's a good rule of thumb:

- In the Mandible, wait **3 months** before restoring.
- In the Maxilla, wait **4 months** before restoring.
- If the patient is a smoker or diabetic, or has a wound healing disorder, **ADD an extra 2 months**.

Those are the traditional healing times

But, research suggests that under ideal conditions, implants can be successful whether they are restored immediately (within 1 week), early (1 week - 2 months) or after 2 months.

Here is a link to the cochrane review that shows that all of those options can be successful. There is no hard & fast rule for when to load!
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7156879/

After the waiting period, you're ready to restore!

...so now what?

Let’s review some of the tools you’ll need in your belt for this stage.

Impression Copings

Used to take an impression of the implant.

Open Tray impression coping

Impressions for bridges or off angle implants

Closed Tray impression copings

Impressions for single units. (some come with plastic snap on pieces)

Scan Body

Used to take digital impressions with an intraoral scanner.

Analog

Used as a replica of the implant in a dental model.

You're going to be using these guys again:

Implant Driver

Torque Wrench

BUT the implant industry overlords, the fat cats, have decided to make this INSANELY difficult for you.

In an effort to keep you trapped within their system, they have crafted non-compatible tools. ie, you can't use a Nobel driver with a Straumann part and so on.

This is one way to make a product "sticky," or in other words, makes you feel like you should stick with it instead of evaluating other options.

Well screw that.
(see what I did there?)

To break free of the corporate powers, you need to educate yourself on screw heads.

If you know the designs and sizes, you can restore any implant.

Let me clarify everything for you in one simple chart...

THE MIGHTY SCREW HEAD REFERENCE

Up here is the common name for the head

ITI

Straumann

Here is the system it is compatible with

1.25mm/.050 inch Hex

Implant Club, Zimmer, Biohorizon, Astra, MIS, Implant Direct, Camlog

Trilobe

Zest locator abutments

Down here are pictures of the drivers

Torx

Nobel, Neodent

1.20mm/.048 inch Hex

3i, Megagen, Hiossen

There are a lot of restorative kits out there. But I never really found the optimal one.

Because this was such a pain my ass, I decided to create the most BADASS restorative kit that could restore almost any system out there AND to be able to retrieve any broken or stripped screw.

I humbly present to you...

The Implant Ninja Restorative Kit

It’s my version of the most “ready for anything” restorative kit. It can be used for virtually any system out there.

https://theimplantclub.com/ninja-restorative-kit/

Okay, now onto restoring!

If your site looks something like **THIS...**

(See how it has the healing abutments on the implants already?)...you're in luck!

It's going to be a breeze to take impressions on this.

I'll walk you through this later. If the site looks like this, skip ahead!

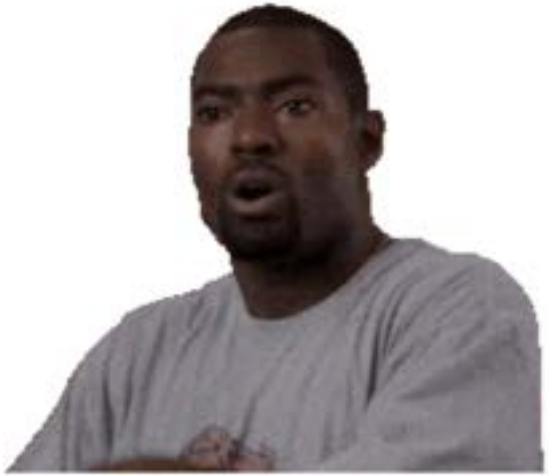
Okay, looking back on this, there isn't much **keratinized tissue** on the buccal part of this implant site.

That is a little troublesome because the site will accumulate a bit more bacteria and be harder for the patient to clean.

(Basically, **it's not the end of the world** if you don't have keratinized tissue here but it's certainly better for long term maintenance & health.)

But what if you can’t see the implant?

damn son...



You’re going to have to do some digging and “uncover” the implant.

(this is often called a “phase 2” appointment.

Not to worry, let me help you out.

Here are the possible UNCOVERY scenarios:

Difficulty level

1. Cover screw is showing through the gums → NOOB
2. Everything is fully buried → INTERMEDIATE
3. Everything is fully buried and bone has grown over the cover screw →

LEGENDARY

Let’s look at the first scenario:

Cover screw is showing through the gums

The cover screw can be seen through the tissue so you know exactly where the implant is.

This is pretty easy peasy...lemon squeezie.

Word of caution: if the cover screw is showing through the tissue, maybe there is some bone loss around the implant. Make sure to take an x ray to check.

In these cases where you can actually see the cover screw, you can simply apply local anesthesia and cut a little window with a 15 Blade.

Remember, this is what a cover screw looks like, just FYI...

After removing the tissue, and the cover screw, place a healing abutment onto the implant.

This is what a healing abutment looks like, just FYI...

Sometimes you can remove the cover screw without doing any cutting.

But it’s usually better to cut a little to release the tissue because the cover screw will often stay stuck under the tissue if you don’t do any cutting.

Some minor tissue removal is often all it takes to access the cover screw. This picture isn't pretty but it got the job done...

You can also use a narrow platform tissue punch to remove the tissue quickly.

Let’s look at the second scenario

Everything is fully buried

In these, the gingiva has grown over the implant and you have to find it. Sure, you have to cut the gums and reflect a small flap, but it’s not very difficult to do.

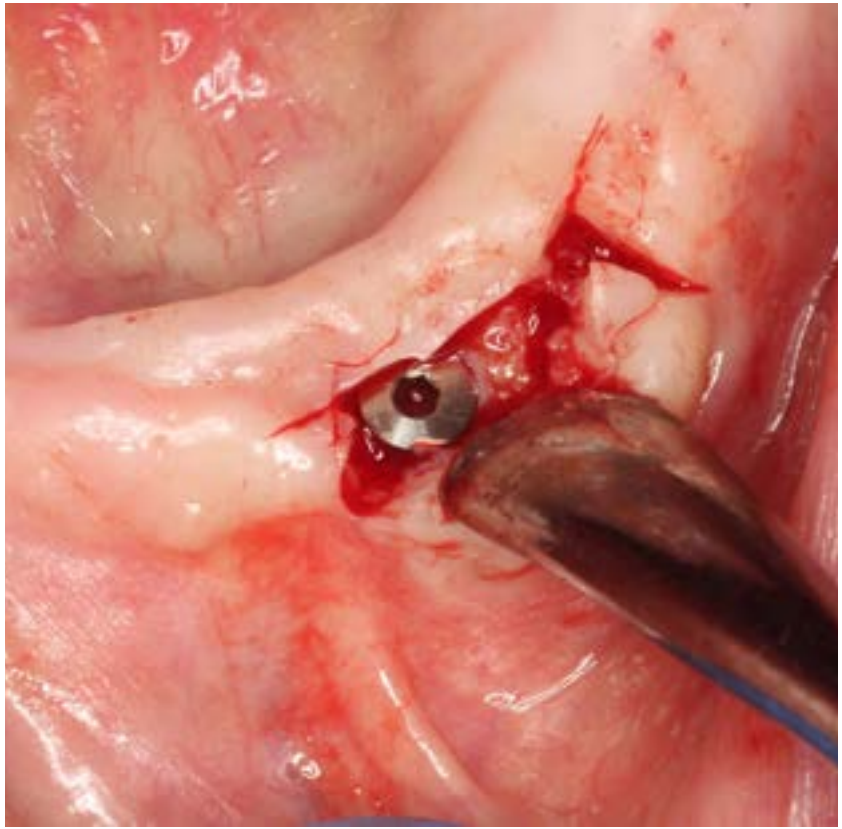
Finding the Implant Site

I like to first get the patient numb and then probe around into the tissue with a **perio probe.** You can often feel the hardness of the cover screw so you'll know where to cut.

If you're 100% sure about where the implant is, you can use a **tissue punch.**

(But keep in mind, using a tissue punch removes some of that keratinized tissue we discussed!!)

You basically just have to flap where the site is and you'll find the cover screw of the implant peeking at you.



Then you take the cover screw off, put a sterilized healing abutment on and then wait 2 weeks before taking the final impressions.

Now, let's look at the final scenario:

Everything is Fully Buried and bone has grown over your implant!

Now that's intense...

(Terry Crews level intense)

OK OK in all seriousness, it's not THAT hard.
It's still totally doable.

You just have to have the right tools and have enough time and patience to remove some of the bone that's covering the implant.

I'll show you an example...

First, give some anesthetic at the site where the implant was placed. I use septocaine and I inject all along the ridge.

YouTube

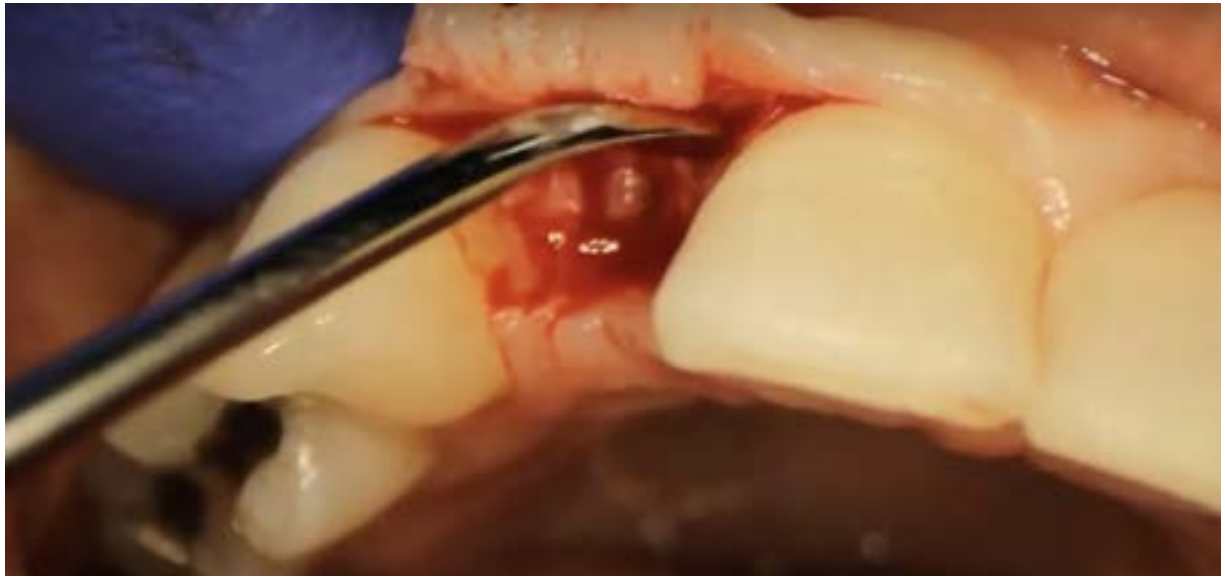
By the way, I have another video on this on this on youtube. Check it out here:

https://tinyurl.com/y4zuwxgw

Then I make a crestal incision from one adjacent tooth to the other. There are a few different designs for flaps. In this case I am going all the way to the adjacent teeth and then...

I am cutting into the sulci of the teeth. You can also choose to do a papilla sparing design to help preserve the papillae. I didn’t have much mesio-distal space here and I didnt want to cut the adjacent teeth’s papilla to thin and risk losing it.

Then I reflect the flap to the buccal. I do this carefully. The more conservative I am with the tissue, the less I disrupt the vasculature and less changes I make to the papilla.



Sometimes bone grows over the implant. My go-to, is to use the periosteal elevator to scrape some of that bone off from the cover screw. However, in this case, there was too much bone overgrowth so...

I had to resort to using the handpiece to carefully remove some of the bone that was blocking the cover screw. You have to be **SUPER GENTLE** here as you can damage the implant platform. You can also use a smaller bur on an electric handpiece to have better control.

Once the cover screw has been removed,
<u>make sure you can secure a healing abutment</u> on the implant.

You have to make sure the healing abutment can go all the way down because if the healing abutment does not seat properly, that means your impression coping <u>might not seat properly</u> when it's time for impressions.

If it does not go down all the way, evaluate your site and gently trim a little extra bone so that there is nothing blocking your healing abutment. But make sure you still keep your cover screw on the implant while you adjust!

Take your time to make sure everything fits well at this point because you don't want to flap the patient and drill again! Make it fit now, and next time you'll be able to restore!

Okay, so now your implant is placed (and uncovered) and it's ready to restore!

This is totally you...am I right?

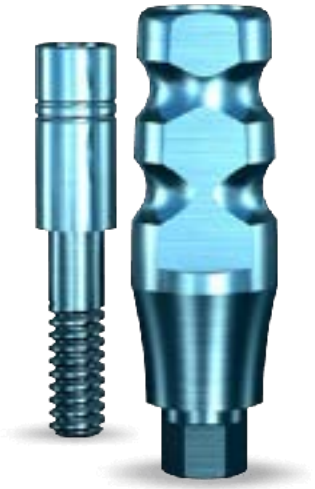
Impressions

Impressions are impressions...right?

Why is there this **“closed”** tray and **“open”** tray business?

Which do I use? Does it even matter? What am I doing with my life? Errr, getting off topic there...

Closed Tray



vs

Open Tray

Which one is better?

For single units, in terms of accuracy **it does not matter** whether you use open or closed tray techniques. So just use closed tray, it's so easy!

Also for patients with **small openings**, use **closed tray** impression copings all the way!

Which one is better?

For multiple units, I like to use **open tray** because I can splint the impression copings together with light-cured triad, locking them in place.

For **divergent implants**, open tray can be easier to dislodge from the patient's mouth.

Here's a photo courtesy of my homie, Armand Bedrossian. (@dr_bedrossian) See how he splinted the open tray impression copings on the left?

Even though open tray can help with divergent implants, no impression coping will save you from this mess.

For **crazy divergence**, don’t use impression copings. Instead, order NON-ENGAGING titanium temporary cylinders. Life saver right there. This tip alone is worth $2,000. Lucky you... You’ll thank me later ;)

Another pearl that will save you one day…

(This tip is 💰)

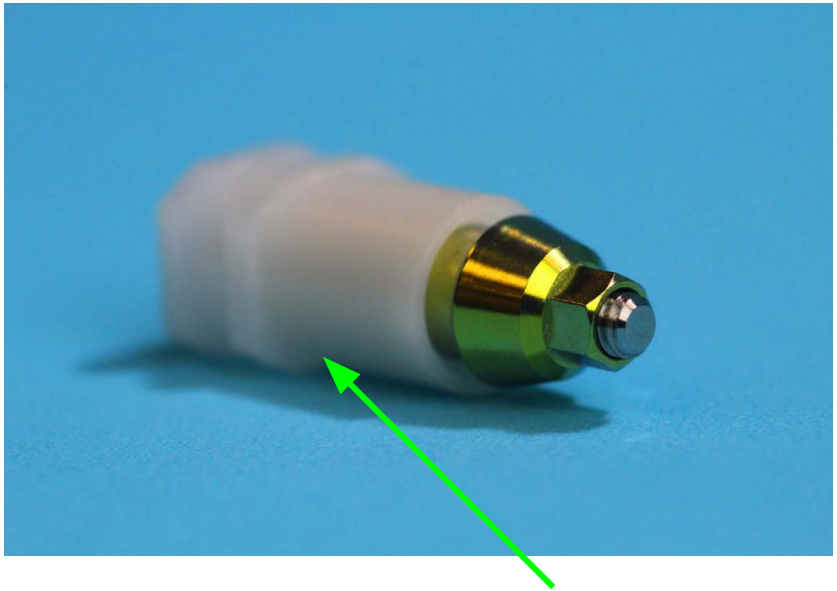
For **patients with small openings** it can be nearly impossible to deliver a screw retained implant crown for a molar.

I've even had patients referred to me just to deliver other people's crowns LOL

If your implant driver and wrench doesn't fit in the mouth, just **use your implant handpiece** with the little **latch attachment insertion** tool.

How to take a Closed Tray Impression

Closed tray impression copings come in 2 basic forms:



With a plastic cap

Without a plastic cap

The plastic caps help you orient the impression copings after the impression has been taken. It allows you to clearly see how the coping is supposed to be oriented.

Without the cap, you just have to give a tiny bit more effort to make sure your orientation is correct. No matter which method you chose, the closed tray impression is pretty damn easy.

Here I'll show you how to use a closed tray impression coping with a cap.

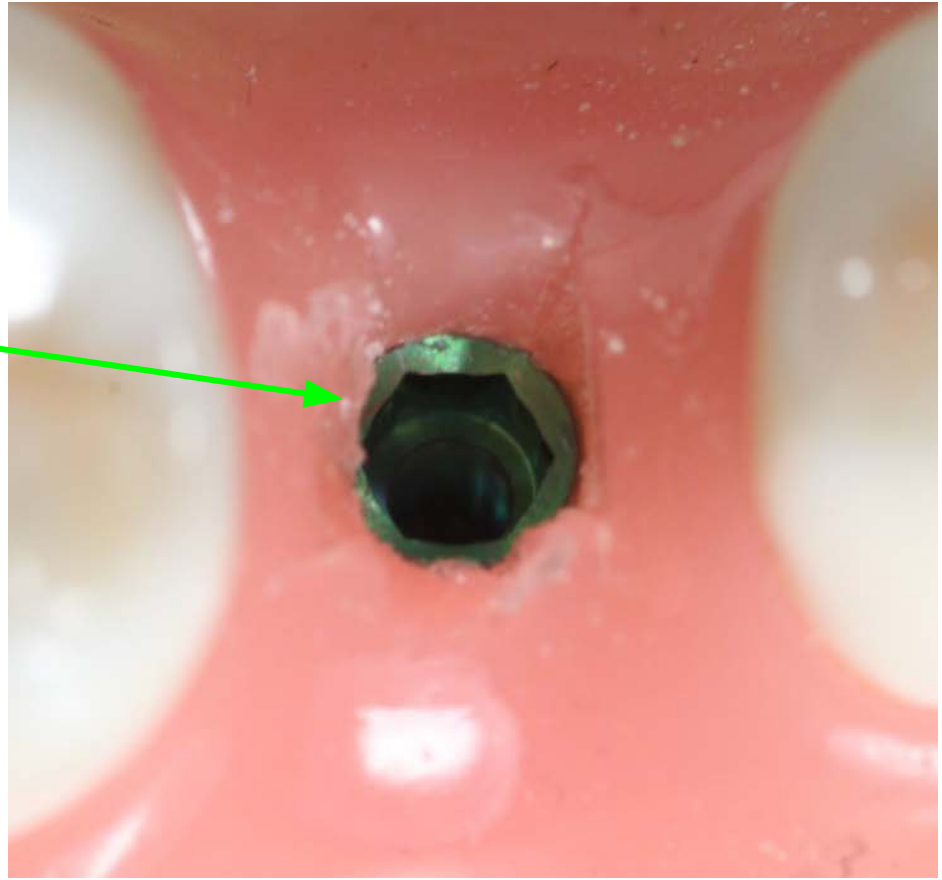
First, do a quick check of the healing abutment. You can do a quick tap with the back of an intraoral mirror. You will quickly learn what a solid implant sounds like. This will be your first indication that things are going well.

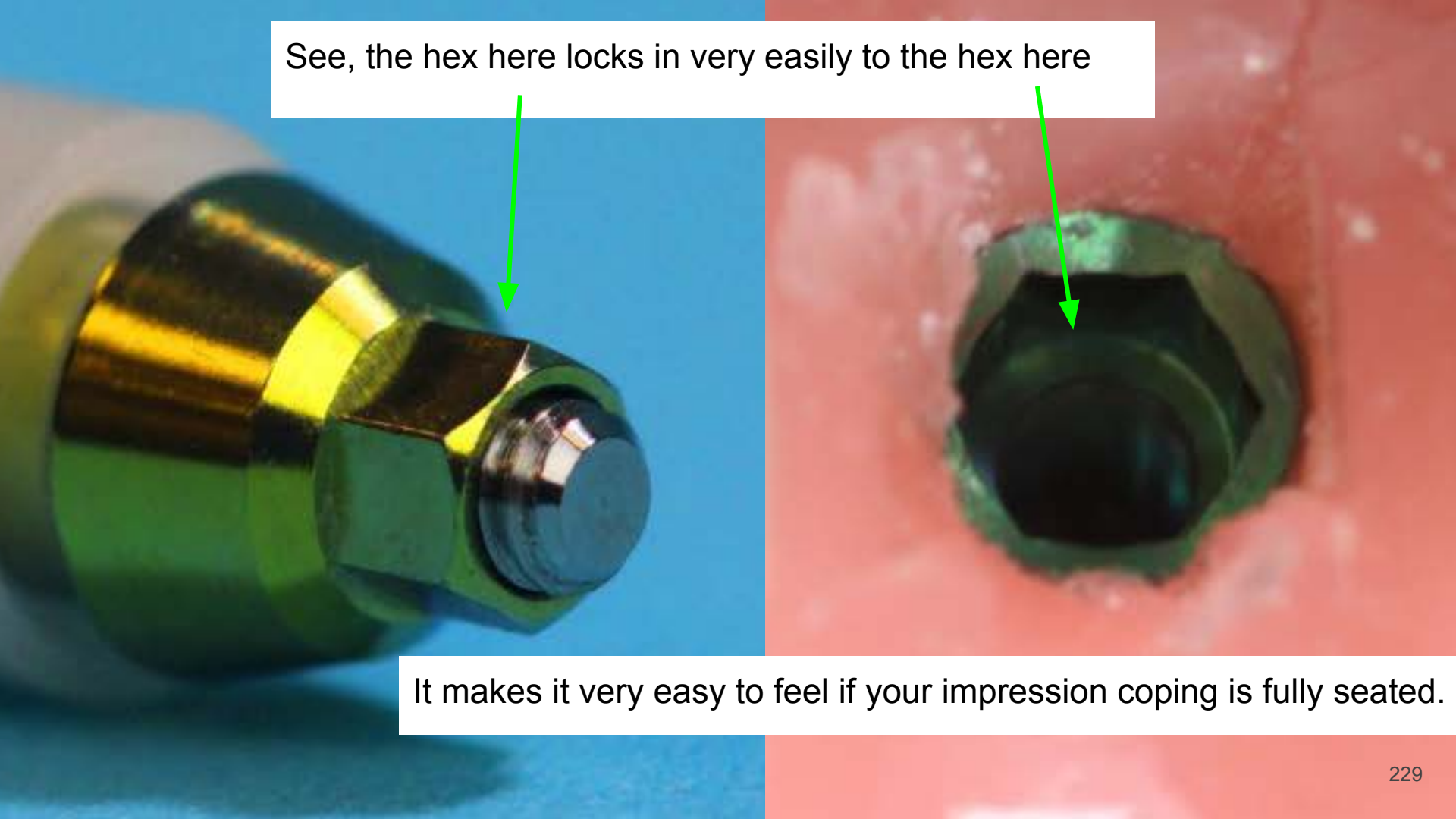
Make sure you have a clear view of the implant platform.

This is an internal hex

(like we talked about earlier, remember?)

An internal hex platform is really nice because it’s so simple to notice if your impression copings and abutments are seated properly.




See, the hex here locks in very easily to the hex here
It makes it very easy to feel if your impression coping is fully seated.

Put a closed tray impression coping on the implant.

Just by rotating the piece with your fingers, you will be able to feel it fall into position within the implant platform.

Then tighten it gently with the hand driver.

If you want, you can verify that it is fully seated with an x-ray. If you are using anything other than an internal hex, then it’s probably a good idea to do so.

Find the right orientation for the plastic snap-on piece. Then snap it in all the way.

See this gap? This white cap is not seated all the way!

Give it a push and make sure it’s seated fully.

Here’s the plastic cap fully seated.

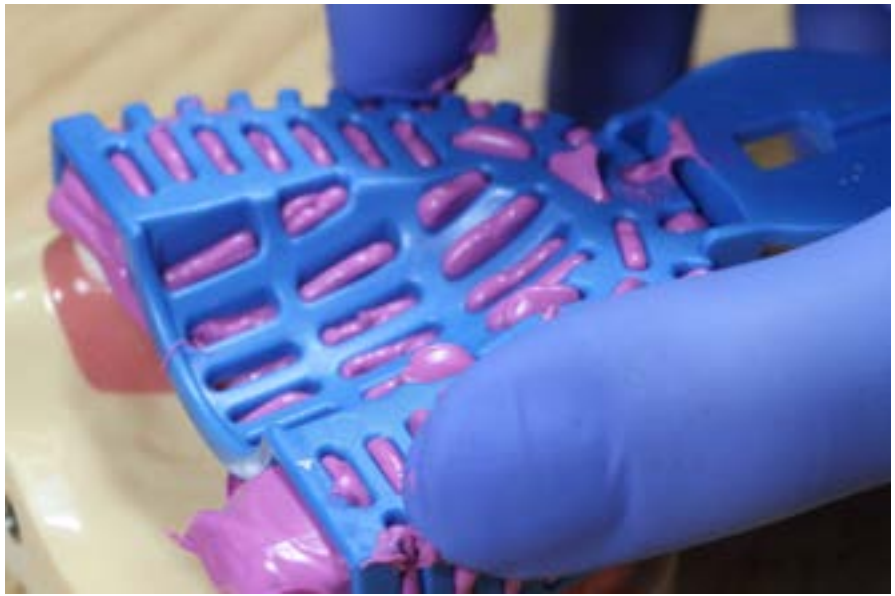
Now it’s...

IMPRESSION TIME!!!!

First, apply light body all around the snap coping. Making sure that you get light body on wrapped all the way around.

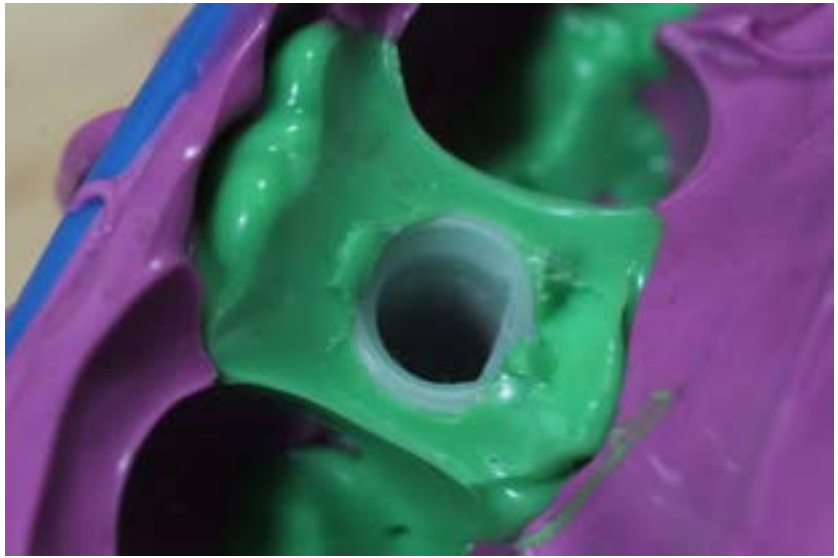
Then load up your tray generously.

Now seat your tray over the entire arch, I like to ensure an assistant is gently pressing down on the impression for the entire setting time.



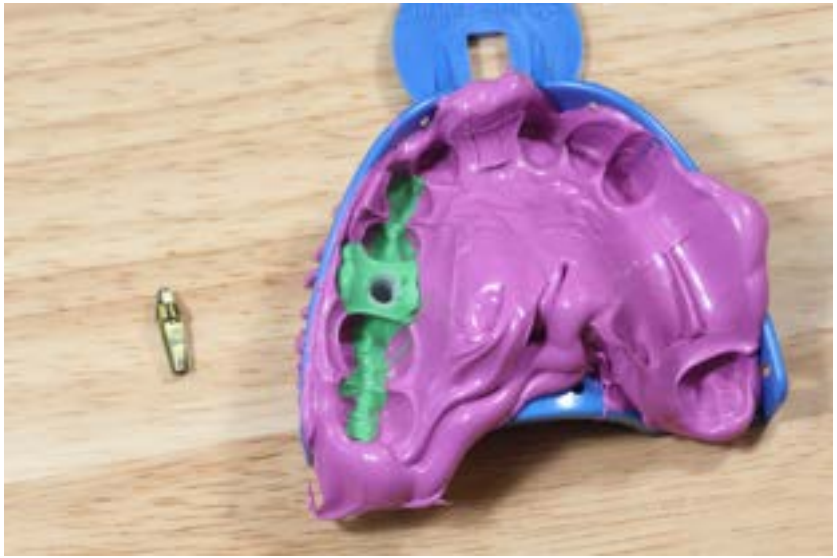
Wait for the full setting time of the material. Then go all around the periphery of the tray and give it little tugs. It may take a little effort to dislodge the impression.

Evaluate your impression site. See how the plastic cap is fully encased in the silicone? That white cap should be perfectly immobile.



I have some imperfections within my impression margin because my plastic model had some rough edges but that doesn't really matter. As far as implant impressions are concerned, the margins are not a huge deal. What matters is that parts are immobile.

Now remove the impression coping from the implant in the patient's mouth.



Package the **impression**, the **impression coping**, and the **opposing arch impression**, and the **bite registration** to send to the lab. Write in your lab slip that you want them to get the **analog**.

Here’s the link for a video version of this walkthrough of how to use a closed tray impression coping:

https://tinyurl.com/y2dclytm

Here's what my lab slips typically look like:

Dear lab guy,

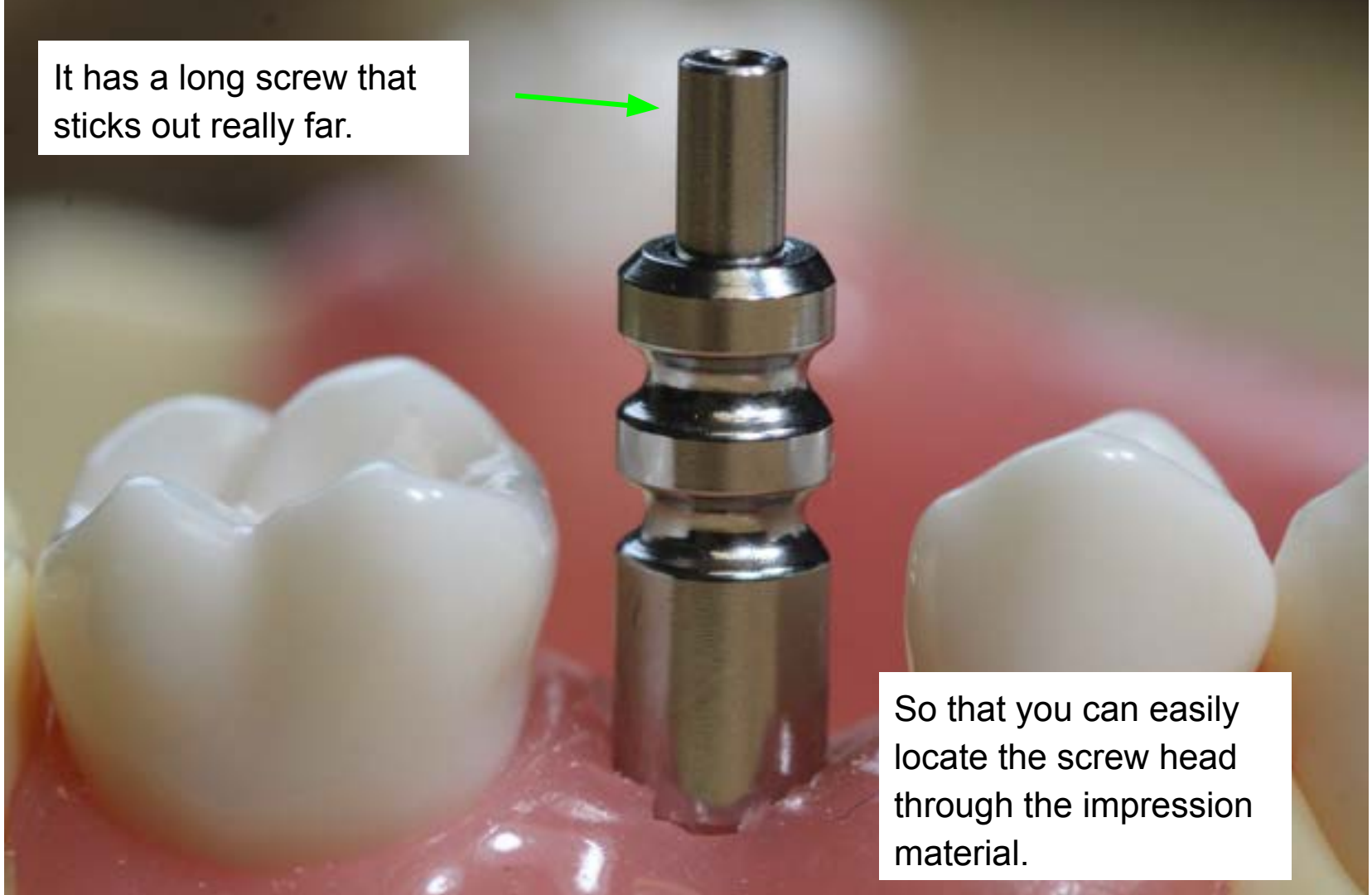
Please make me a screw retained crown with very light occlusion. (I will adjust it and remove occlusion anyway) Shallow cusps please.

I want it in zirconia. Shade A2.

Use this impression coping as the base. (Because I am cheap jk, but seriously...use it.)

Now, let’s look at the other type of impression:

This is what an **open tray** impression coping looks like:

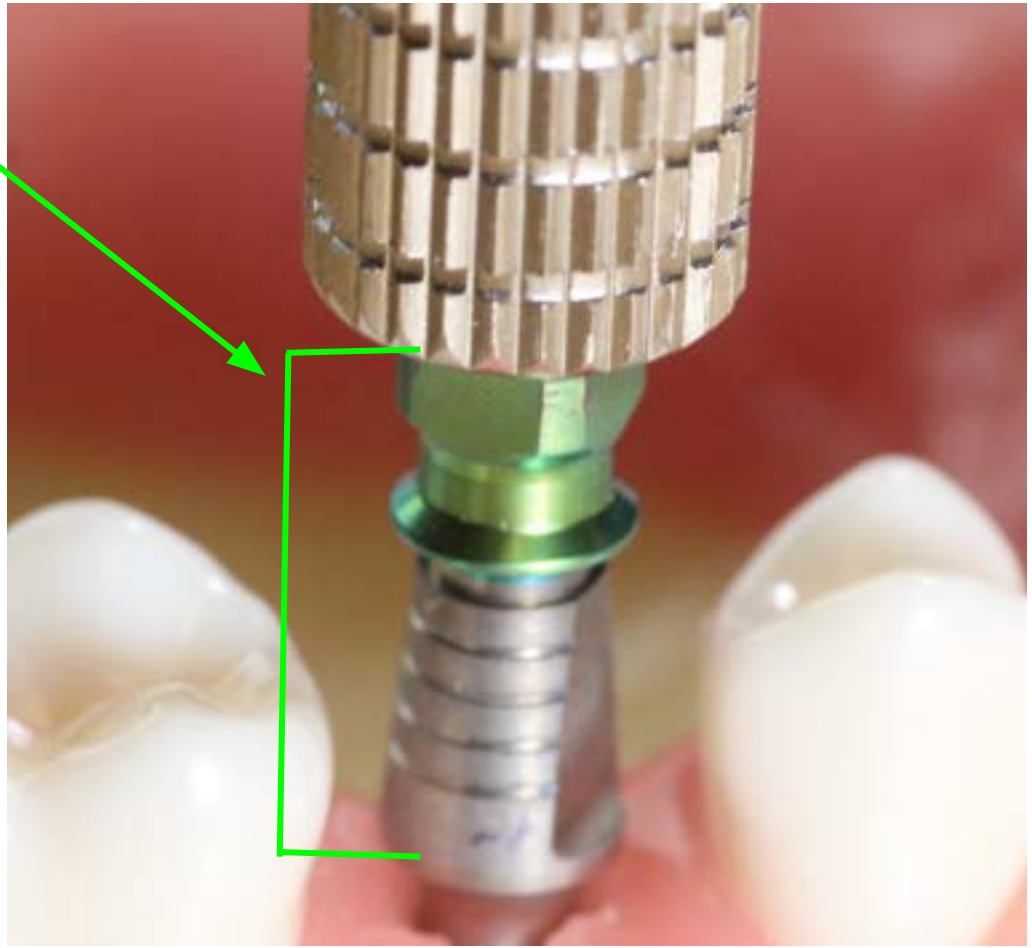

It has a long screw that sticks out really far.
So that you can easily locate the screw head through the impression material.

See this thing right here?

That is called an **implant transfer.** Some implants come with those pieces attached to them already. (The implants are said to be **“mounted”**)

It’s for your convenience so that you can use them to take impressions or serve as stock abutments.

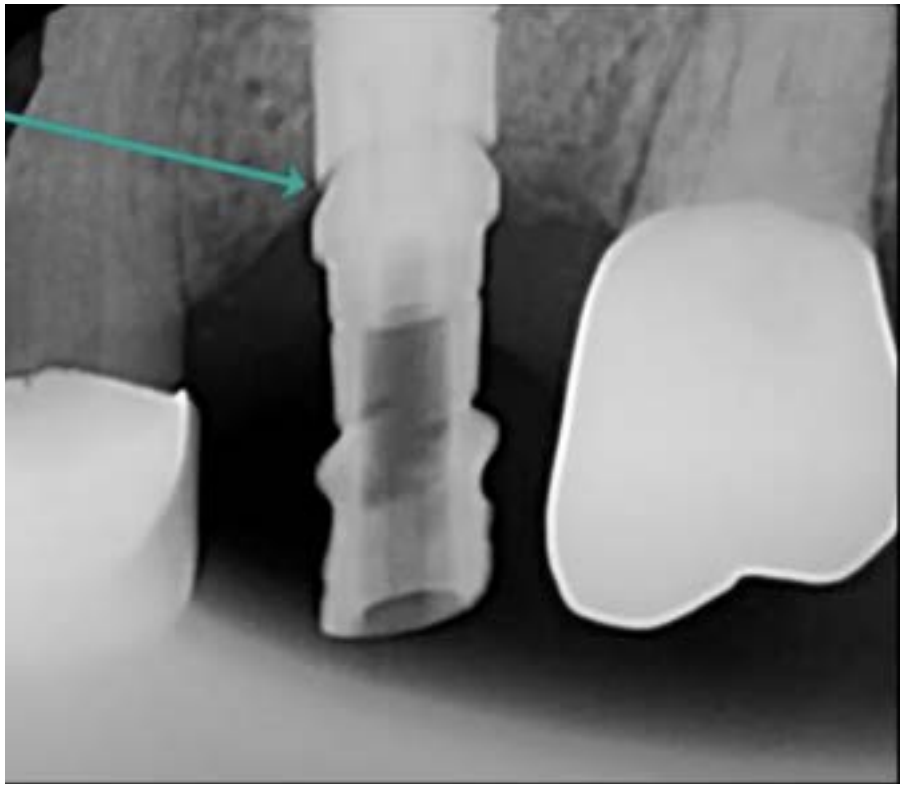
I show you here because you can use them to take open-tray style impressions.



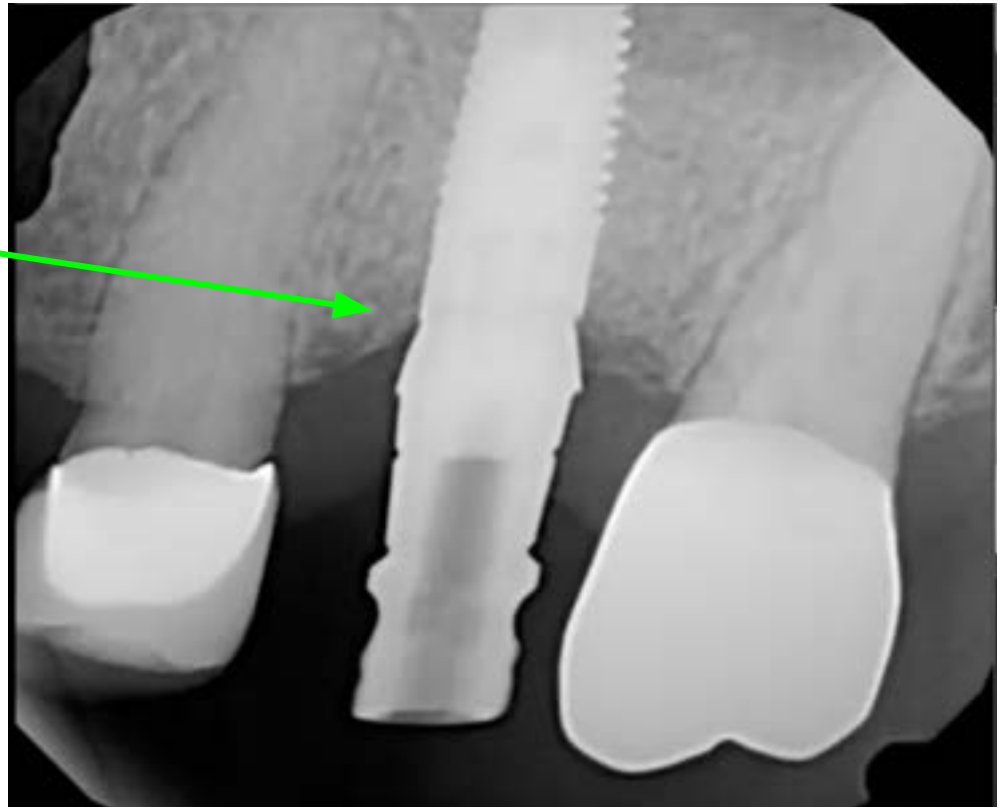
Now, here’s an example of what x rays of a something properly seated versus something not properly seated.

Every system will look a little different, but in general look for gaps or things not joining together straight.

The problem in this picture is that I had tried using a 3.5mm wide platform, when I needed to use a 4.2mm platform.



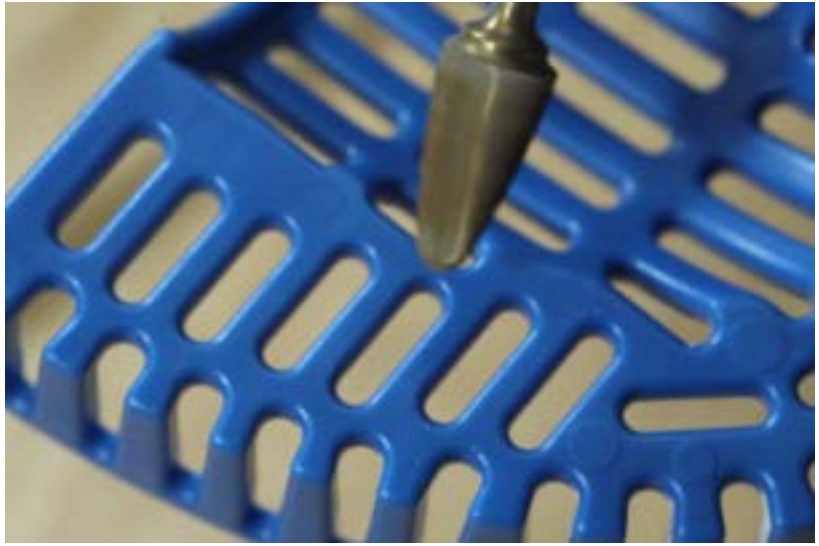
This is the picture with the 4.2 mm platform piece and you can see that the gap has disappeared.



Systems that have only one platform size available, take away this possible error. It is not a perfect solution, but it does simplify your inventory considerably!

Try your tray on and see where the impression tray peeks through.

It's prairie doggin it



For an open-tray impression, you need to make a hole in the impression tray.

This hole will allow you to find the impression coping buried under all the silicone.

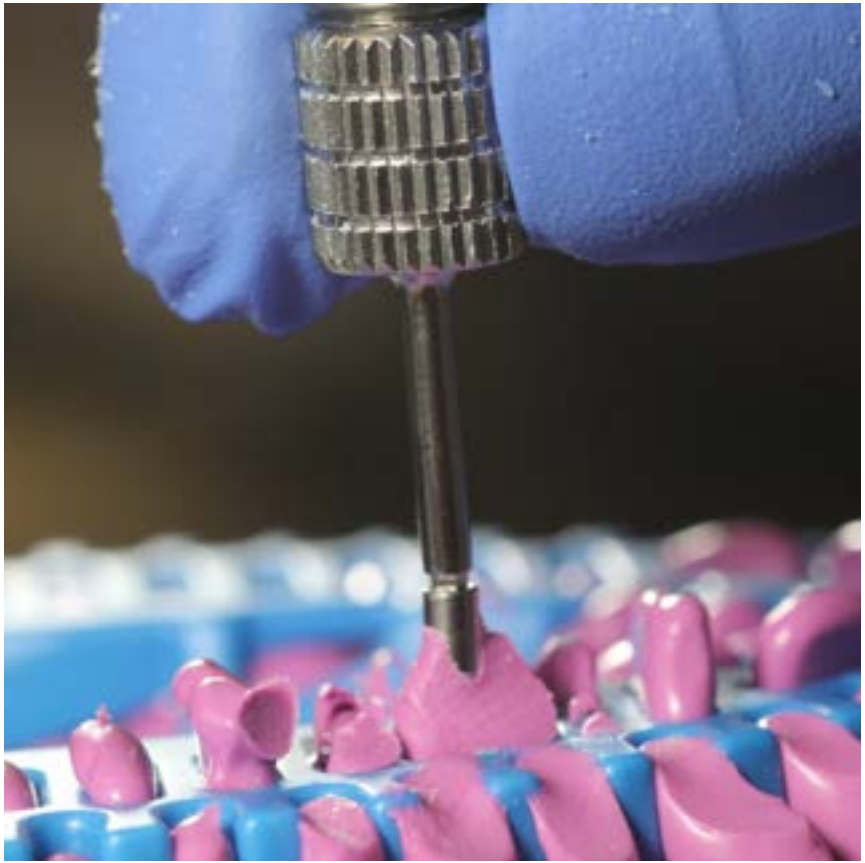
Take a bur and make a hole in the tray. Double check that the impression coping fits through the tray and that it is not binding anywhere on the tray.

Just like in the closed tray steps, you apply light body all around the impression coping.

Make sure you express the light body circumferentially around the coping. Avoid having voids on the lingual!

Then load heavy body in the impression tray and seat it on the arch.


Swipe away the silicone that sits over the screw. Then, wait for the material to fully set up.

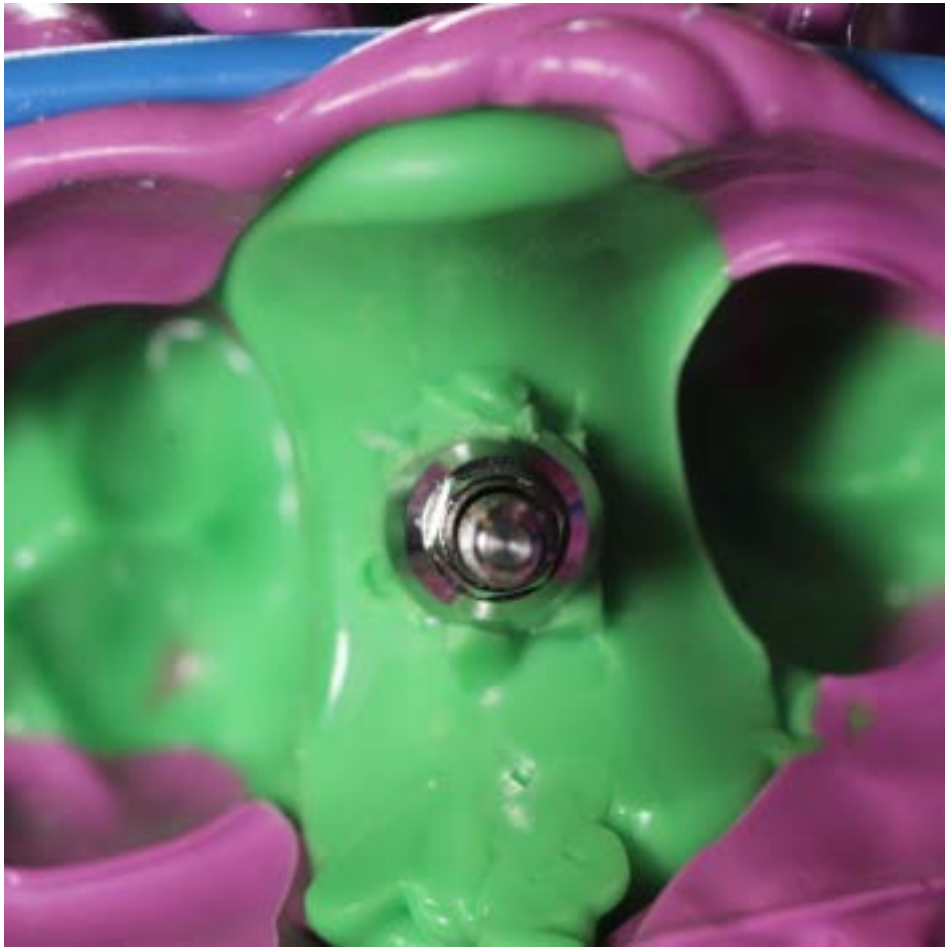


Then, unscrew the screw fully.

Make sure you unscrew it until you hear a clicking noise that indicates that the screw is fully loose.

Bonus points if you remove the screw and set it aside.

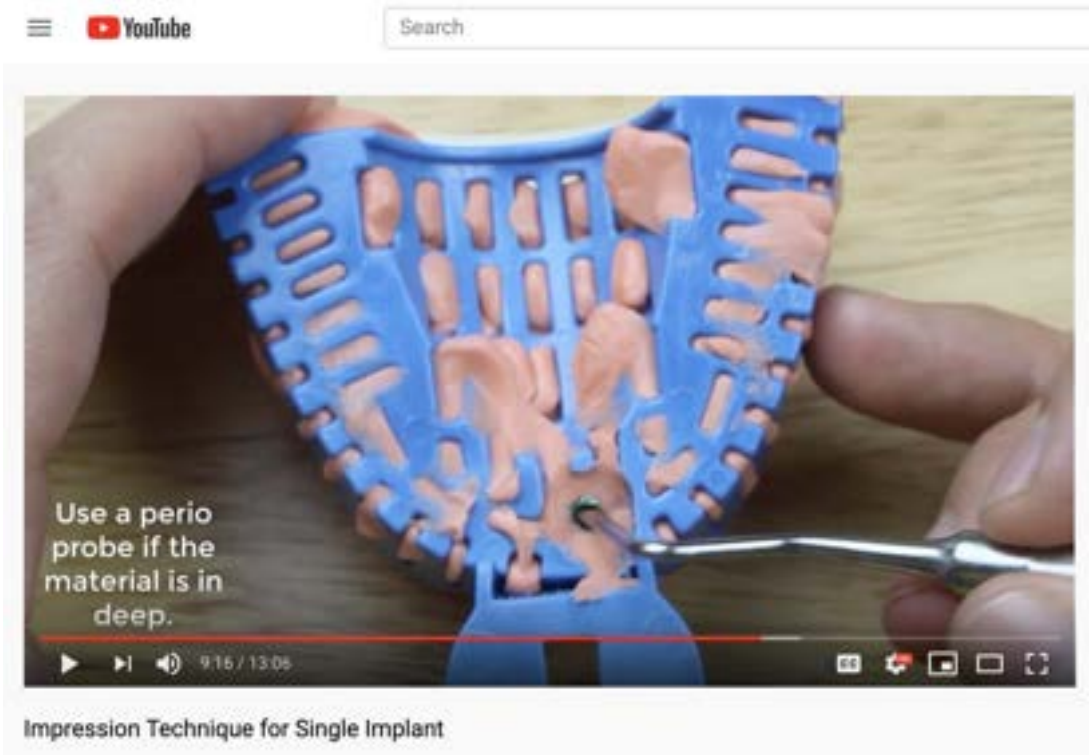
(Pro tip: Don’t let it roll off of your tray and fall on the floor LOL)



Again, the important part is that the coping is fully immobile within the silicone.

For a step-by-step walkthrough of open tray impressions. Click this picture and watch the youtube video I made for you.

https://www.youtube.com/watch?v=jIroSl9ndmI&t=180s



Okay, let’s pretend you’ve mastered implant impressions and now you want to take it to the next level.

See this beautiful picture of the beautiful work by Dr. Stephanie Zeller?

Stephanie had made a custom healing abutment.

And now this gap represents the ideal emergence profile.

But if it is left like this, the tissue collapses during the impression and you won’t be able to capture those beautiful contours...

Of course Stephanie is a badass so she used flowable composite to quickly capture those contours.

This flowable attaches to the impression coping and serves only to capture the emergence profile.

Then you can proceed with the impression as usual.

👏

Okay, so lets recap:

Implant DONE

Uncovery DONEzo

Impression Nailed it!

Now to deliver this shiznit.

Delivery

Back in the good ‘ol days, dental technicians were a different breed. They were masters of ceramic. Sculptors. Metal workers. Now, they are badasses on the computer, but alas, I feel that ancient craftsmanship is lost to technology.

See, this is how abutments used to be made. They were sculpted by hand with wax.

And then casted in a centrifuge using the lost wax method.

Remember casting a crown in dental school?

Photo credit: https://pocketdentistry.com/the-posterior-maxilla/

Check this out

Actually, my dad said he used to cast his crowns by hand in a sling like in this video. He and my mom did their dental residency in the Amazon Jungle!
I wonder if they did that through MATCH lol

https://youtu.be/iQonDd881ZY?t=20

These days, almost everything is made in CAD (Computer Assisted Design)

And then the dirty work is done by the milling unit.

Of course there is still some post processing.
(refining, staining, and glazing)

But you already knew all of this.

Let’s talk restorative options...

These days, implant restorations are mostly made in one of 3 ways:

OPTION 1

Regular crown
+ tooth colored abutment + tibase

OPTION 2

Regular crown
+ Custom titanium abutment

OPTION 3

Crown with a hole
+ tibase

OPTION 1

Crown

+

Tooth-colored abutment

+

tibase

This is a great option for the most esthetically demanding cases.

The tibase and the abutment are cemented together in the laboratory.

You cement the crown intraorally.

For anterior cases I like to use an emax crown with a porcelain veneer, and a zirconium abutment cemented on a tibase.

OPTION 2

Crown

+

Custom titanium abutment

This works well for pretty much all posterior cases.

The abutment is milled in titanium. It is silver but can be anodized gold to help avoid casting a shadow within the crown.

The crown is cemented onto the abutment intraorally.

OPTION 3

Crown

+

tibase

This is the traditional screw-retained crown.

The laboratory mills the crown and cements it onto the tibase.

All you have to do is seat the thing and torque it down.

This option is awesome because it is simple and retrievable.

However, it is difficult to use this when there are tipped adjacent teeth or pinpoint adjacent contacts.

That covers the most common implant restorations out there...

Now,

onto some BONUS options!

OPTION 4

Crown with a hole

+

custom abutment

Delivered in 2 pieces.

This is often referred to as **“screwmentable”**

This allows you to do all of the try in adjustments very easily, but it also allows the crown to be retrievable by conveniently providing the access hole for the screw channel.

This is excellent for precision adjustments, but it requires you to cement the two pieces chairside while protecting the screw channel. This is harder than it seems.

OPTION 5

Crown with a hole

+

custom abutment

Delivered in 1 piece.

This is exactly the same as option #4 but the lab does the dirty work for you. They cement it and provide you with a single piece to just screw down.

You do lose the flexibility of trying the abutment and crown separately that you had in option #4.

But at least you still are providing more support for the crown by the use of the custom abutment. The increased support makes it less likely for separation from the crown and the abutment.

It is more convenient to deliver than the #4 option, but remember screw-retained crowns are difficult to deliver when there are tipped adjacent teeth or pinpoint adjacent contacts.

Delivering a Screw Retained Crown

Removing healing abutment

Some clinicians tap on the healing abutment with the back of an intraoral mirror. The sound it makes can often help you determine if the implant is stable. It’s a quick and dirty way to assess.

Also, this patient has a huge healing abutment. This makes it convenient to restore but can also squish the papilla.

This is what the mirror handle test sounds like. Check out this video to compare what a problem implant sounds like. Can you tell which one is an issue?

A non integrated implant or a loose abutment on that implant will sound like a dull thud.

https://tinyurl.com/y3anyb3h

Irrigating with Chlorhexidine

Once the healing abutment is removed, I like to irrigate the internal aspect of the implant with chlorhexidine. There is some evidence to show delayed healing of wounds with Chlorhexidine now, so be careful what you use it for.

Apply topical anesthetic

I apply topical anesthetic to the tissue just in case my crown will squish the tissue and cause pain while inserting.

If you had taken some time to mold the tissue prior to restoration, pain should not be much of an issue right now, but let’s just pretend that you did not prep the emergence profile with a custom healing abutment or temporary.

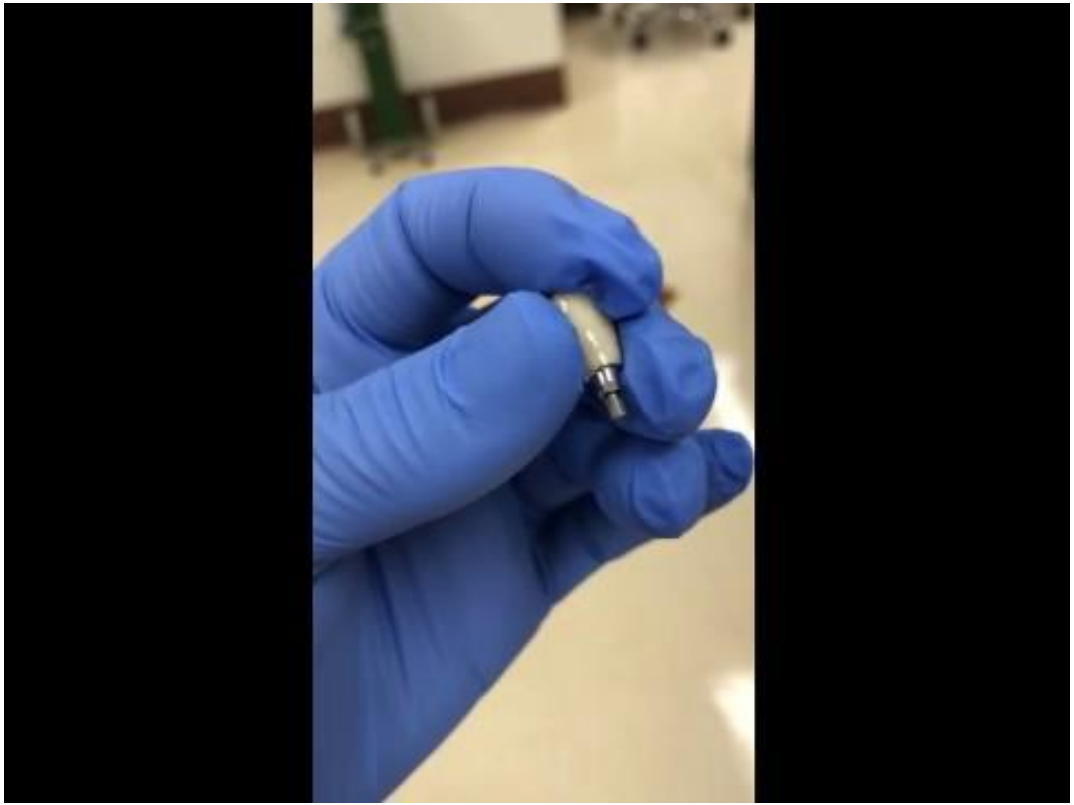
Check Seating

Sometimes screw retained crowns bind on the mesial and distal aspects. At this point, I like to make sure the crown looks properly seated and that it is not binding anywhere.

Check your contacts

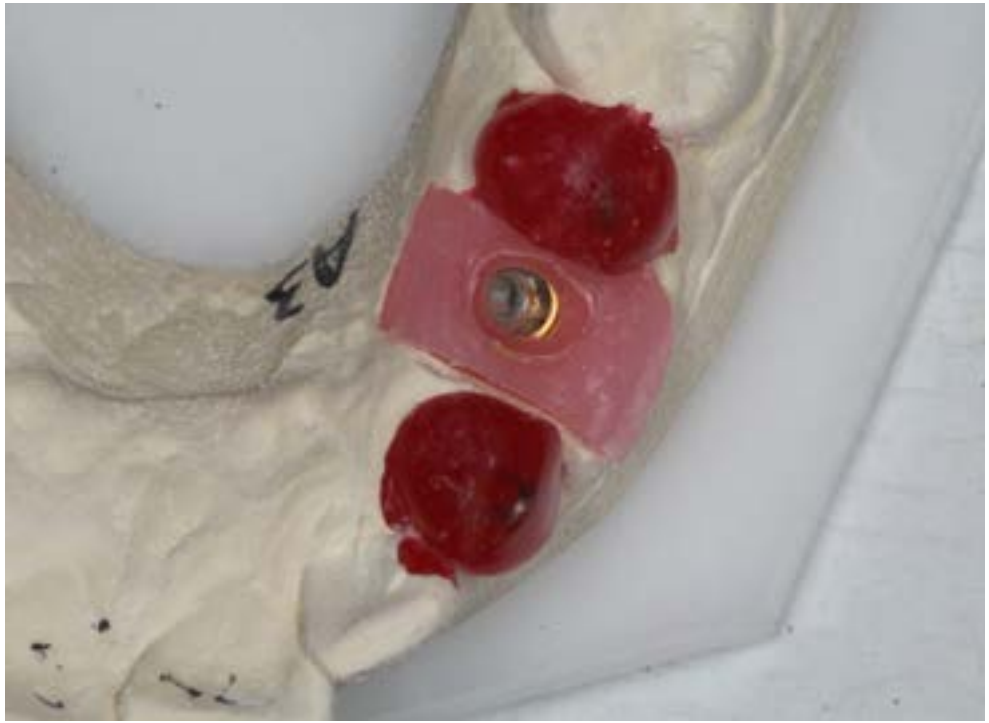
Use floss to check your contacts.If one contact is too tight, it could mean that the abutment is not properly seated. Adjust as needed to get it to seat fully.

This is what the crown looks like before going in. It is a single piece screw retained crown. The laboratory cements the entire crown portion onto a small titanium base to create this prosthesis.



Model

This is what the model looks like. I actually don’t like for the adjacent teeth to be filled with resin, like is shown here. Instead, I like it to be with regular old die stone--or digital! :) but oh well.



After you place the crown, be sure to take an x ray so you can confirm that it is properly seated. Make sure there is no shadow at the junction!

Check occlusion

At this point, get your occlusion so that it is slightly lighter than the occlusion on the adjacent teeth. You will adjust it again after you fully torque it down.

Torque

If its properly seated, proximal contacts are good, and occlusion is good, make sure to polish the areas you adjusted and then you can go ahead and torque it down.

Torque

Torque values vary depending on manufacturer recommendation but are typically 30-35 Ncm.

Retorquing

Literature suggests that you should re-torque the screw after waiting some time. The amount of time is not nailed down exactly.

But 10 minutes is a safe bet. 10 min after the initial torque, go ahead and torque that screw one more time.

Re-check occlusion

Even though you've already adjusted occlusion, check occlusion again once you have torqued the crown. You'll want to relieve it so that the occlusion on the implant is minimal. When the patient bites down lightly into MI there should be no occlusion on the crown.

Plug the Access

Plug the access hole with a barrier so that the screw head does not get damaged if you ever have to re-access the hole. I like to use teflon tape. I used a cotton pellet in this picture.

Leave room for composite

Make sure to push the plugging material down far enough so that you have enough room for composite to bind and not fall out. I like to leave 3mm of room at least.

Place composite

Place composite into access hole and make sure it does not interfere with occlusion.

Check occlusion again

Even though you did your best, the composite is still probably interfering with the occlusion. You also want to check excursive movements--like when the patient grinds to the right and left. Remove those and relieve any added contacts from the composite.

Done!

Polish the composite surface and...your done!

Delivering a Cement Retained Crown

Put the abutment onto the implant. You have to gently feel it and make sure it engages into the implant before you go and tighten it down.

This is a learned feel. It is super important that you make sure it fully seats.

After its in position, go ahead and take an x ray to verify that the connection is flush.

Place the crown onto the abutment. See if the incisal edges match up to where you wanted them. Does it seem to be seating properly just at-a-glance?

If so, you're likely on the right track.

Go ahead and check the crown fit as if it was a natural tooth. Here you see me checking contacts.

You didn’t forget the steps to seating a crown did you?

Let’s refresh anyway:

- Check the contacts!
- Assess marginal fit. In my opinion, if it’s seated at the margin, it’s fitting properly, right?
- Check occlusion! For single implant crowns, surrounded by adjacent natural and healthy teeth, let’s leave the implant just slightly out of occlusion.

The nice thing about implants is that the margins should be perfect because the crowns are milled precisely to fit the abutment and you can check this out of the mouth.

Anyway, you do want to make sure that your crown seats fully. So if the contacts are good, take a look at the margin.

It’s easiest to assess at the lingual side. You can use a perio probe to feel the margin there because the tissue is a little more rigid and the margin can be a little more superficial on the lingual.

Now that you've:

- verified radiographically that the abutment is seated fully
- You've tried on the crown and it seems to line up well at the incisal edges and has a reasonable occlusion (you didn't do your final occlusion check or any adjustments to occlusion at this point.)

It's time to torque the abutment.

I like to place the little driver bit onto the screwhead by itself first.

This just seems to be easier than trying to engage it while it's attached to that whole big torque wrench contraption.

After I engage the screwhead with my fingers, I attach the wrench onto the the little driver bit.

Most implant systems have you torque the abutment screw down to about 30 Ncm.

Then I’ll go ahead and place the crown on the abutment and check the occlusion with articulating paper.

If there are healthy adjacent teeth and the occlusion is stable, I want to leave this implant crown slightly out of occlusion.

So at this point, I’m going to adjust this to eliminate the marks.

The “centric occlusion” marks are the ones that the patient makes when you tell the patient to “tap tap tap”

Let’s relieve these.

The “eccentric marks” are the blue marks you get when you have your patient grind side to side. You want to completely eliminate these contacts so that there is no chance they are putting these eccentric forces on the implant.

Place some teflon (if you don’t have teflon, use cotton pellets) inside the access hole so that you don’t get any cement inside accidentally.

I push it in a little so that I am 100% sure that it is not messing with my occlusion.

To help you NOT overfill your crown with cement, you can use this little trick.

Fill your crown with light body PVS and let it overflow.

Then I mix the cement or just use the little extrusion tip.
I like to use Fuji Cem. I like that it's radiopaque!

I fill the crown with cement and then I plug the little PVS thing we made into it and it extrudes the cement. Don’t push TOO hard or else you might remove almost all of the cement.

But for implant crowns, a little goes a long way!

Then I seat the crown and hold it as it sets. I then check all the margins with an implant curette.

There are a variety of implant curettes. The plastic ones use to be recommended but I really don't feel they work well.

I used a titanium curette here and it works well at the margin but it can scratch up the crown. Notice at the cervical aspect that I accidentally scratched the crown here.

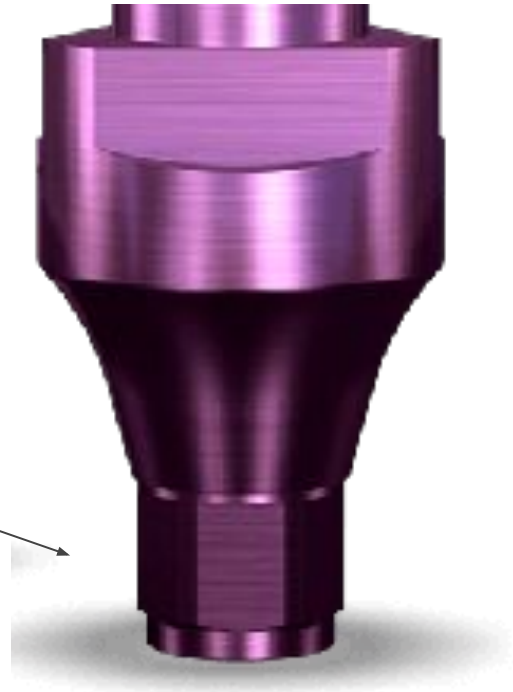
Lastly, recheck your occlusion! Doing most of your adjustment beforehand is best because then you can polish it outside of the mouth too. But in this case, I saw that the occlusion was close and I just decided to do the adjustment in the mouth after I cemented it. It's a faster way to do it, but less ideal. I used a zirconium polishing bur after this to get it smooth.

There are a ton of different types of adjustment burs out there. This is the one that I used. Use whatever you use for your natural-tooth crowns.

In 2017, I took the CDT (Certified Dental Technician Exam) and failed it.

Aside from one of my denture teeth getting sucked into the vacuum (nooooooooooo), the main reason I failed is this.

I used an **engaging abutment**. Engaging means that it has this little part right here:



That little area “engages” with the implant so that the part does not spin around. However, with bridges (and full arch) the engaging component becomes a nuisance for seating the prosthesis. So you have to use **non-engaging** components here.

A competent lab technician takes care of that for you, so you don’t need to worry. But it’s good for you to understand what the term means...

Complications

Patient:

Me:

Let’s talk about complications, shall we?

First, let's talk about that thing...

That thing that people are so scared of...

that now we're not even supposed to call it by its name...

NOOOOOOOO

Professor:

We DON’T speak its name.

Me:

Mufasa Mufasa Mufasa!

In a big picture view, we can divide biological complications into 3 categories:

1 FAILS TO INTEGRATE

The implant is loose at the follow up visit. It never achieved osseointegration.

2 TISSUE LOOKIN SHADY

Tissue inflammation, bleeding on probing but no bone loss. Left untreated, this will become a problem.

3 BONE LOSS OVER TIME

The implant integrates just fine. It looks great at first and you restore it. But then it has progressive bone loss.

Let’s get this one out of the way first because the simplest.

1 FAILS TO INTEGRATE

The implant is loose at the follow up visit. It never achieved osseointegration.

2 TISSUE LOOKIN SHADY

Tissue inflammation, bleeding on probing but no bone loss. Left untreated, this will become a problem.

3 BONE LOSS OVER TIME

The implant integrates just fine. It looks great at first and you restore it. But then it has progressive bone loss.

In this scenario, you'll usually notice it at the follow up appointment when you're seeing if the implant is ready to restore. I call this the **restorative readiness** appointment.

You'll know it didn't integrate if you feel it is mobile, or if the implant hurts the patient when you turn an abutment on it.

You can also hear that a failed implant sounds different than a non-failed implant with a percussion test. You can also test with ISQ (implant stability quotient)

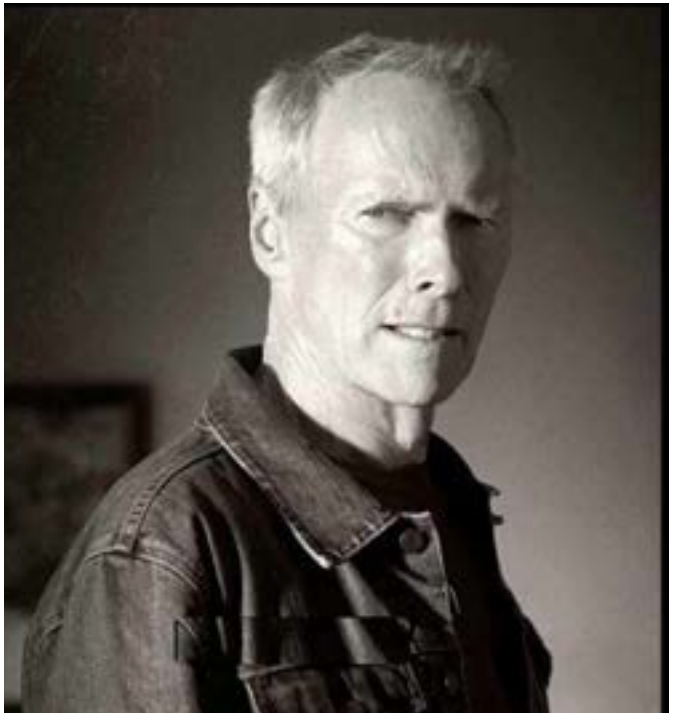
❶ FAILS TO INTEGRATE

In this situation, it's usually pretty straightforward to remove the implant.

You can put an impression coping on it and then grab the impression coping with the hemostat to **pull it out.**

If the site looks super clean, you can choose to graft it. However, it is generally a safer bet to remove the implant, debride the site and revisit and rebuild after healing.

Now, how do you tell your patient so he doesn't reach behind the chair and **choke you with the high vac suction tip**?



You know he wants to...

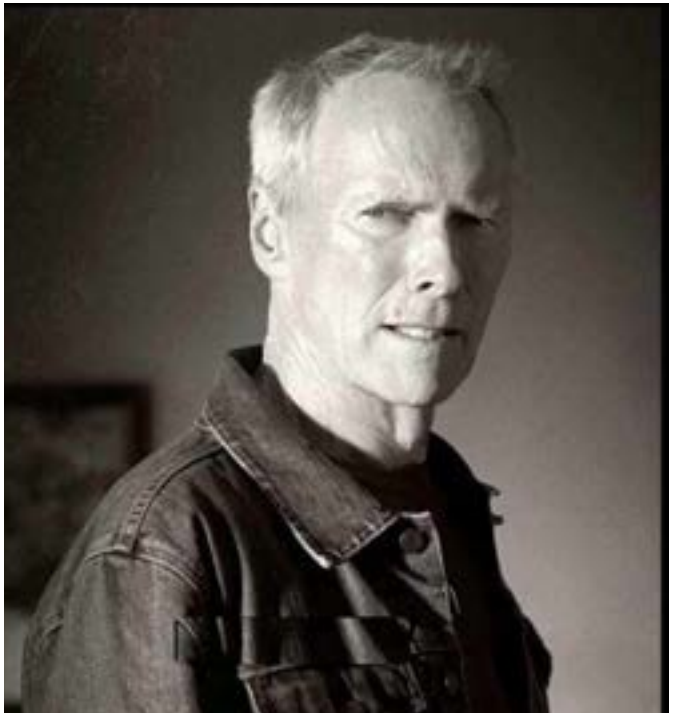
Step one:

Don’t look disheartened.

Don’t look like this is the first time it’s happened.
Don’t look scared, sad, or uncertain.

They can smell the fear.

...But don’t look totally unsympathetic either. Look like you are taking the matter seriously and that you are focused on it and resolving it for them. You are their doctor after all!



Step two: Sample Script

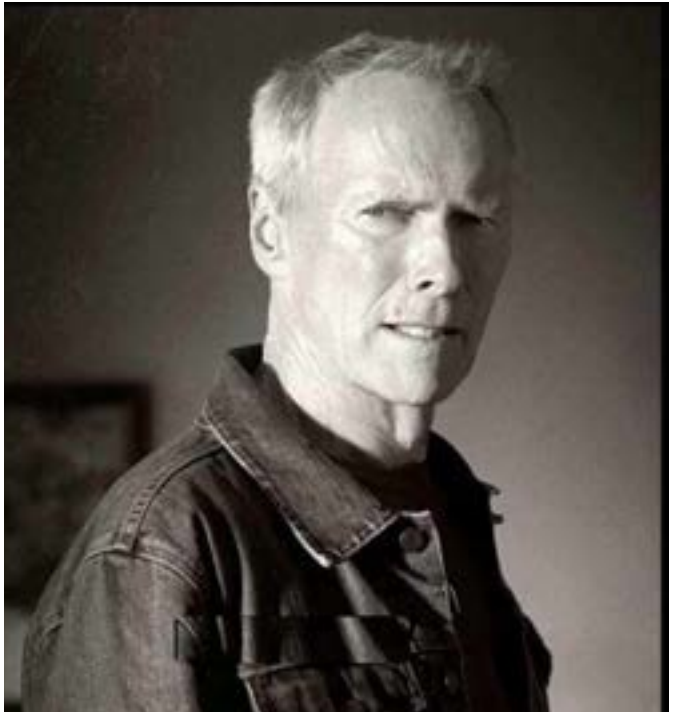
“Remember I said that sometimes the bone doesn’t heal properly around the implant?

Well, that’s what happened here. It doesn’t happen often, but it DOES happen.

<u>But don’t worry. I’ll make sure you’re taken care of.</u>

What we have to do is remove the implant. And let this site heal up.

Once that area is all settled down, we’ll go back to trying to get a tooth on there. I know, you really don’t like your temporary. If you want, I can have a new temporary made for you.”



Step 3:

Decide what YOU (the doctor) want to do financially for the patient.

It is a good policy to stand behind your implants financially.

If you get a failed implant, I would recommend that you:

1. Pay for a simple bone grafting if it is necessary (not necessarily the full price of advanced bone grafting unless they only need the advanced bone grafting because of bone loss that you may have caused.
2. Allow a full refund to the patient for the implant surgery

But don’t focus the conversation around this yet. Your patient has not lost trust in you yet. They just want you to help them.

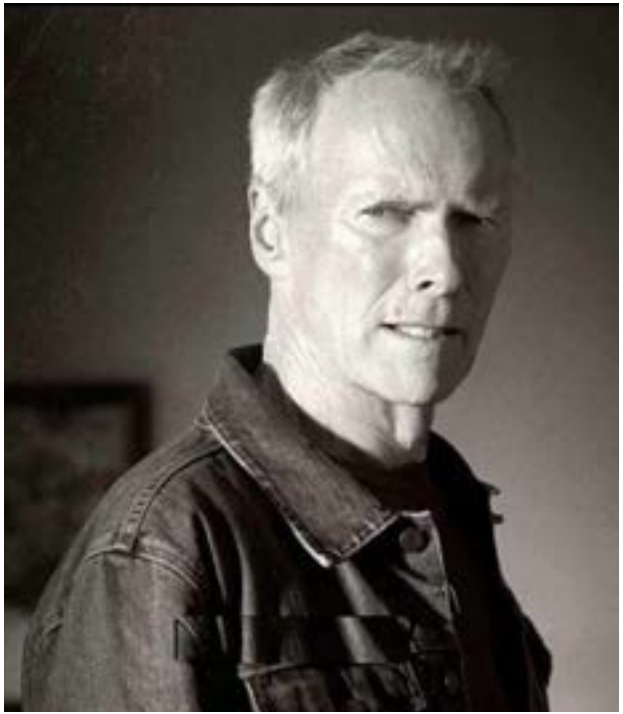
Step four:

“Now, once the site is healed up, I will evaluate it and see if it is ready to receive another implant. **I want to give this the best chance of succeeding.**

If I can do it for you, I will. If I see that it requires some more extensive bone grafting or gum grafting, I’ll have you seen by a periodontist or oral surgeon. Because big gum and bone stuff, that’s in their wheelhouse. They would be better at it than me.

If it turns out that we can’t do an implant for some reason, I’ll credit or refund you what you paid us for the implant. Don’t worry, I will make sure you’re taken care of.

And if we need to work with these other specialists (oral surgeon and periodontist) I’ll make sure they know about your particular situation. We’ll make sure that we do right by you. Does that sound good?”



Step five:

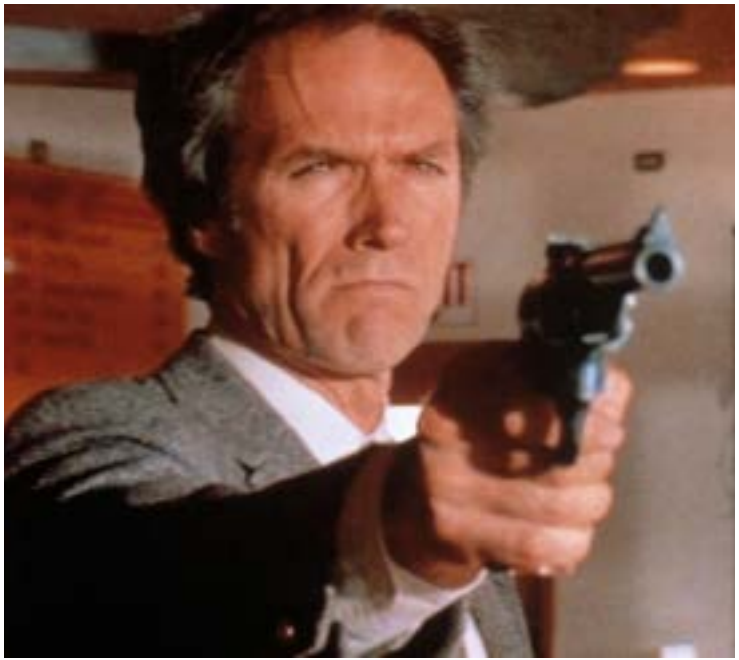
If it looks like it will be a big repair job, reach out to your local oral surgeon or periodontist right away. Share your concerns about the case and ask them for advice.

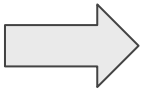
If it is decided that they need some advanced procedures from the oral surgeon or periodontist, ask for an approximate cost. They might say something like, “don’t worry I’ll take care of it.” If that’s the case, treat them nice! You’ve got a specialist on your side!

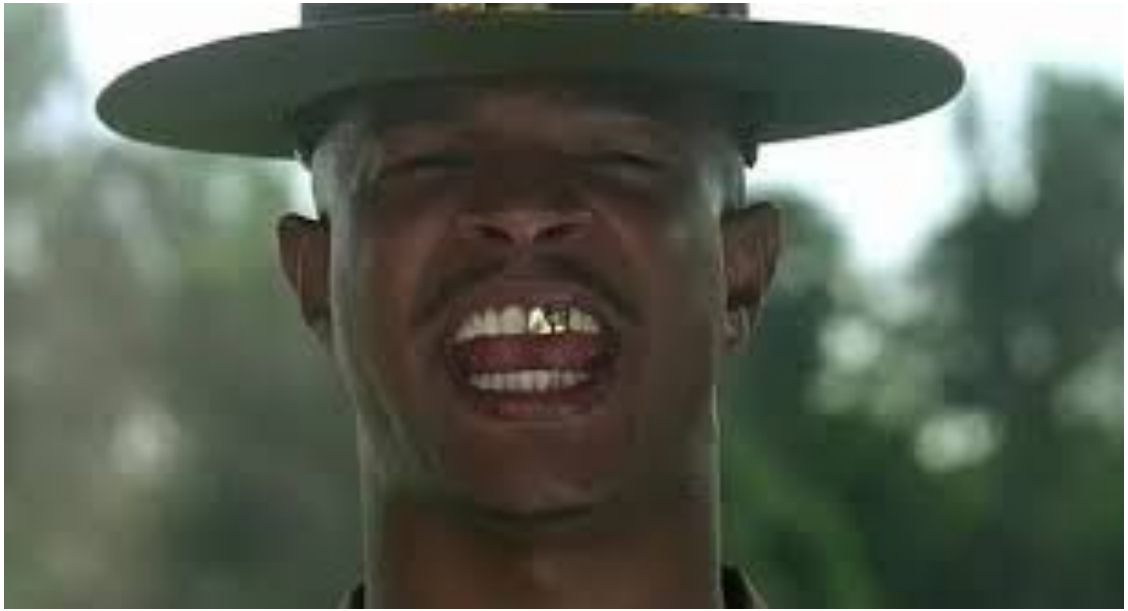
If they give you a price, tell them that you would like to pay for a portion of it for the patient because you want to help make it right for them.

You guys will come up with a plan that makes EVERYONE look good.

Play your cards right and you'll move from this to this.







Now we get to the HARD stuff...

Now let's deal with this one

We're going to call this one **peri-implant mucositis**

Bleeding on probing

We're going to call this one **peri-implantitis**

Bone loss

The inflammation is most likely being caused by **bacteria** or **cement.**

The mission is to make that site **<u>squeaky clean.</u>**

One well-known protocol proposed by Dr. Niklaus P. Lang is called Cumulative Interceptive Supportive Therapy...

Gosh that's sounds so wordy..maybe if we change the font....

CUMULATIVE INTERCEPTIVE SUPPORTIVE THERAPY

Now *THAT'S* what I'm talkin bout.
Now it's legit. I got your back Dr. Lang.

The protocol basically makes these recommendations:

IF:

- **Pockets 3 or less**
- **Plaque + (BOP+)**
- **No bone loss**

THEN USE:

Mechanical Debridement, polishing and scaling

IF:

- **Pockets 4-5**
- **BOP+**
- **No bone loss**

THEN USE:

Mechanical Debridement, polishing and scaling

\+ Chlorhexidine rinse for 1 month

You can use chlorhexidine gel instead of the rinse...

IF:

- **Pockets 5+**
- **BOP+**
- **Bone loss less than or equal to 2mm**

THEN USE:

Mechanical Debridement, polishing and scaling

\+ Chlorhexidine rinse for 1 month

***Local AB seems to work better!** Repeated minocyline application can sustain pocket reduction and keep the pathogen levels down for up to 12 months! (Renvert et al, 2006/2008)

\+ Systemic or local antibiotic therapy*

But what if there is **MORE than 2mm** of bone loss?

Let’s move on to the
last category...

For this part, I need to summon some help.

So, I'm going to share some of the suggestions from this paper

Journal of the International Academy of Periodontology 2014 16/1:9-18

Biological Implant Complicatio and Their Management

Yung-Ting Hsu, Suzanne A. Mason and Hom-Lay Wan

Department of Periodontics and Oral Medicine, Schoo University of Michigan, Ann Arbor, MI, USA.

Abstract

Background: Background: With the increasing popularity of dental implants the presence of implant complications is rising, and the question of how to best manage these complications still lingers in most clinicians' minds. This paper aims to provide clinicians with an overview of the most commonly encountered biologic implant complications as well as to provide guidelines as to how to treat them.

Methods: Available English literature was reviewed, including peer-reviewed journal publications and online resources. Several treatment modalities have been proposed to manage these complications, including non-surgical mechanical debridement, antiseptics, local and/or systemic antibiotics, lasers, resection with or without implantoplasty and regenerative approaches.

Results: In this guideline, it is suggested that the treatment modalities should be chosen based on the severity of peri-implant diseases, amount of bone loss and the morphology of peri-implant bony defects. For peri-implant mucositis or peri-implant defects with less than 2 mm destruction, non-surgical treatments are recommended. For peri-implant defects with more than 2 mm destruction, surgical treatments (e.g., resection with or without implantoplasty, guided bone regeneration) are suggested that include removal of the implant if the bone loss is beyond repair.

Conclusion: The prevention of biological implant complications relies on careful planning, a thorough examination to assess etiological factors and a regular maintenance recall schedule. With early diagnosis, biological implant complications should be managed based on the severity of peri-implant disease, the amount of bone loss and the morphology of the peri-implant bony defects.

Why?

Because when it comes to implant literature, Dr. Hom-Lay Wang is a baller shot caller.

https://tinyurl.com/yycd63ej

Ok, first does the implant have more than 50% bone loss?

If so, removing it could be a reasonable course of action.

Ninja Sidenote:

Before you remove (aka “explant”) the implant, consider the implications for your patient. Do they have the motivation to undergo the necessary bone reconstruction and future implant surgery to make your future implant successful?

The “cure” should NOT be worse than the disease so to speak. If the patient is not emotionally, mentally, ready to go through the reconstruction, it may be better to leave the implant and try to save it.

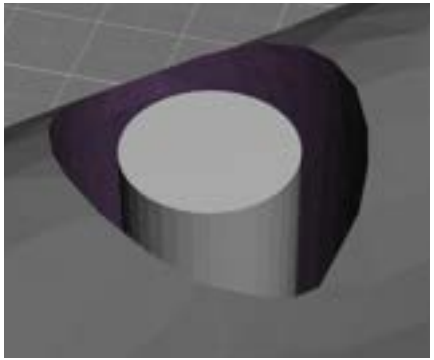
If the implant has <u>less than 50%</u> bone loss...

But more than 2 mm bone loss...

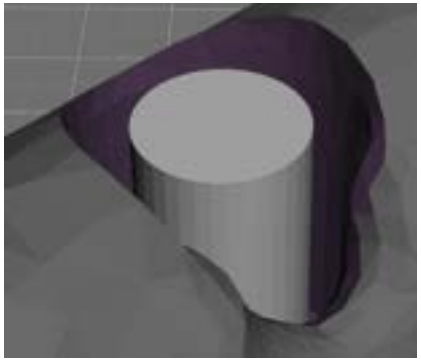
It’s time to get bloody up in this muda

Let’s identify what we’re working with...

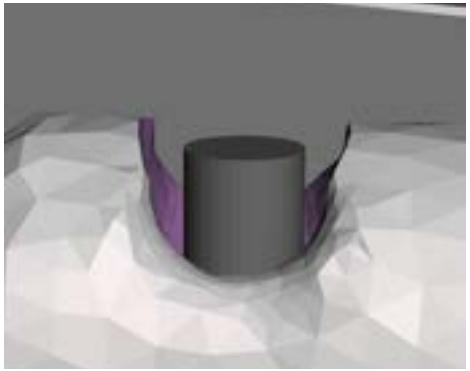
Does the implant have any walls around it?



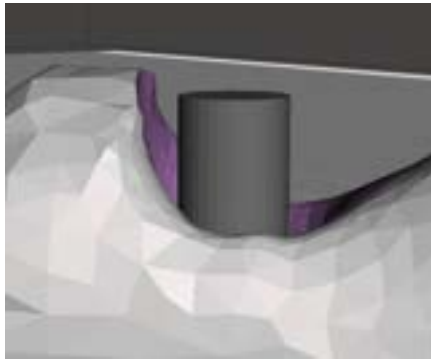
4 walls



3 walls

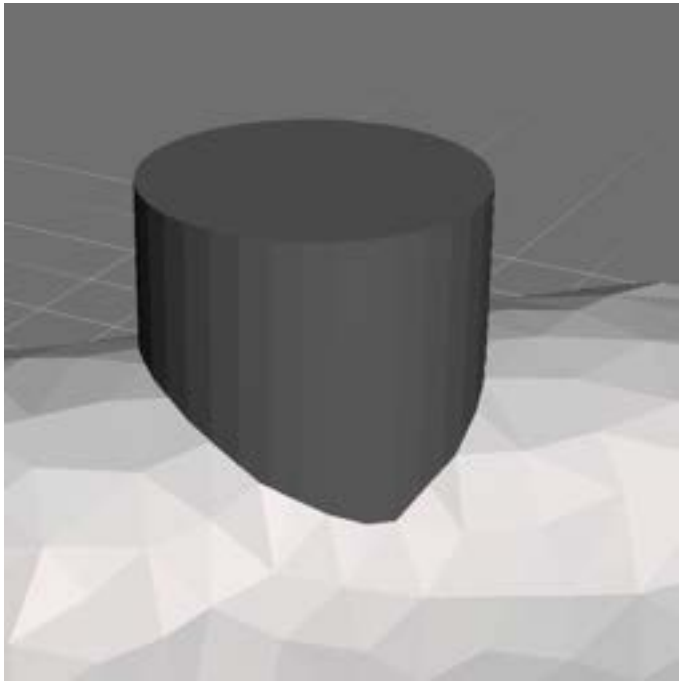


2 walls

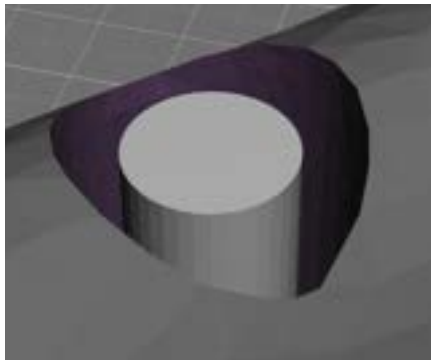


1 wall

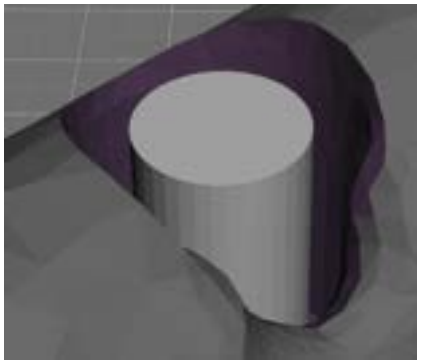
Or maybe it has NO WALLS and has just horizontal bone loss like this one:



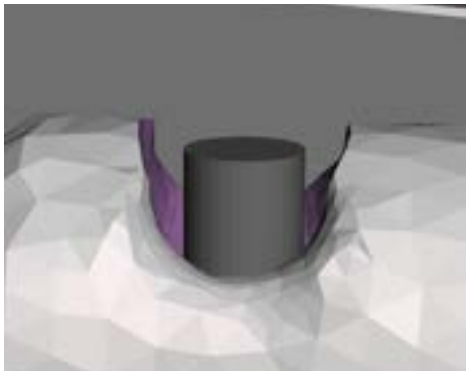
If it has 2 or more walls, let's **try to rebuild** with guided bone regeneration.



4 walls



3 walls



2 walls

So, should I just like start grafting the crap out of this defect?!

Patience,
my young padawan.

Remove bacterial film, you must.

Gram Negative Anaerobic Bacteria lead to peri-implantitis.

And peri-implantitis leads to the dark side.

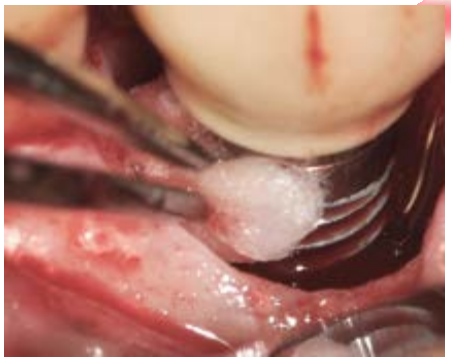
Let’s get the tissue looking healthy,
before we consider grafting options.

Local antibiotic treatment with **surface detoxification** should help you improve the health of the tissue.

There are several methods of surface detox:

Mechanical

Surface Scrub



Laser

For some good lit on this, check out this article by my boy Fernando Suarez:

https://tinyurl.com/yya5bzbc

Mechanical

Mechanical debridement alone is not very effective for **peri-implantitis.**

BUT with **peri-implant mucositis**, mechanical debridement is effective!

It helps with:

Pocket Depth Reduction
Clinical Attachment Loss Gain
Plaque Reduction
Control of Inflammation

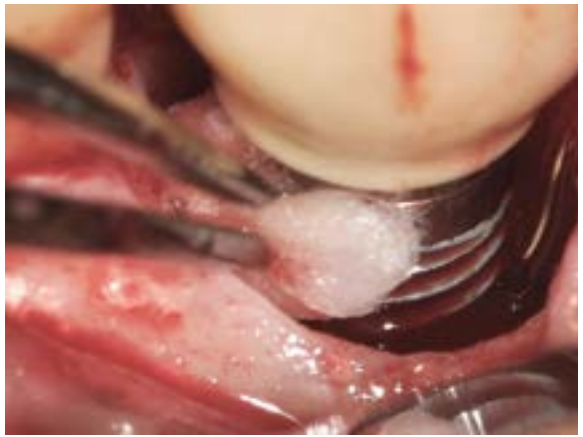
Some interesting tools I have come across are the “ibrush” and the “R brush”.

The ibrush helps remove the granulation tissue at an implant site. The R brush is helpful for cleaning the implant surface.

https://www.neobiotech.nl/a-51430069/peri-implant-solutions/i-brush/

Surface Scrub

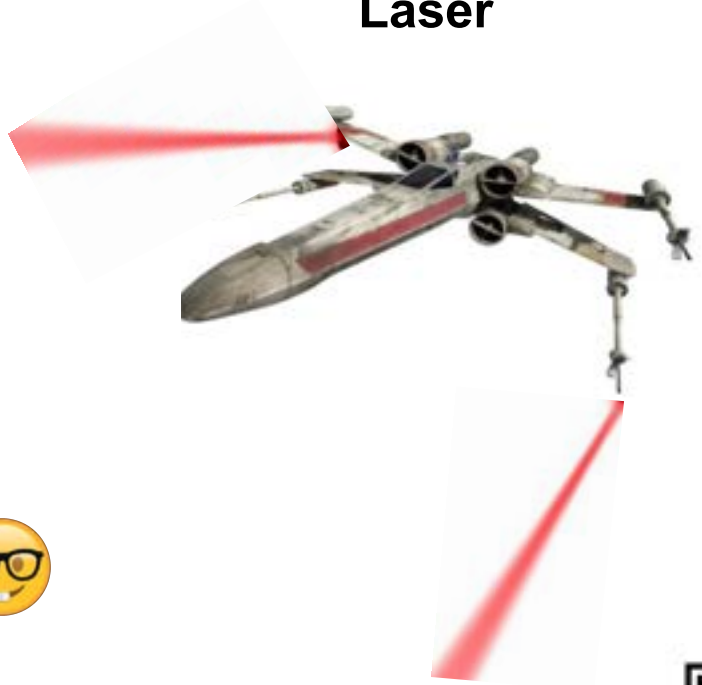
There are so many agents that can be used to scrub down an implant:



- **Saline**
- **Citric Acid**
- **Chlorhexidine**
- **Hydrogen Peroxide**

Saline is not very effective for detox. The rest of them seem to work to varying degrees. However, it is not clear what is the “best” agent for surface detoxification.

Laser



Can help with clinical attachment loss.
Can help gain some back!

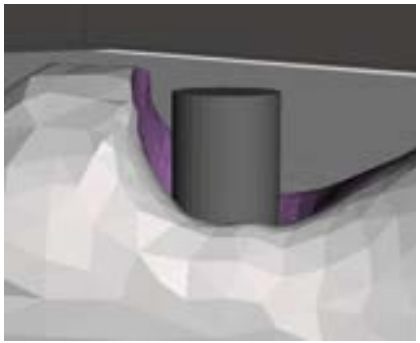
But the results seem a little short lived.
(less than 6 months)

Effects may not be much different from using mechanical plus chlorhexidine irrigation.
(Schwarz et al 2005/2006)

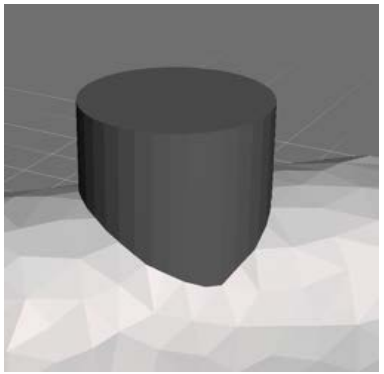
Here's another big overview of surface treatments worth looking at:

https://tinyurl.com/y4knq3f9

But if it has a defect with only one wall, or it has horizontal bone loss...



1 wall



Horizontal bone loss

Let’s try something else...

Implantoplasty

What the hell is even that?

It’s where you polish off the threads from the implant. You make that implant super smooth so that it is much easier to keep it clean.

Picture from the article by Dr. Fernando Suarez. →

https://tinyurl.com/yya5bzbc

Here’s a picture from a different article:

It seems crazy, but it works! Polishing the implant surfaces can help reduce the inflammation and stabilize the bone level.

https://tinyurl.com/yydlhxe2

Question: What if my screw strips?

“What if yo momma strips?

Answer (to Dwight's question):

I like to use a screw removal kit. It's saved my ass a couple of times.

To be honest though, although I bought this entire kit, **<u>you really only need 2 out of the 33 pieces</u>** that come with this kit in order to retrieve a screw.

I'll show you which ones:

A screw removal pilot drill

Step 1: Use this bur at 1,000 RPM in reverse.

Pump it up and down and make sure to use irrigation!

A screw removal tap

Step 2: Run this tap in reverse at 50 RPM.

Press down and wait for the threads to engage. It will slowly back out the screw!

If you want to see me use the drills, here's the link. But really there's not much to it!

https://www.youtube.com/watch?v=IDh-a2Wr9fI&t=7s

Implant Ninja's Essential Carry

You don't need to buy that big kit like I did. Honestly, I've only touched these 2 pieces out of that whole kit LOL

The problem is that I could not find these 2 drills for sale alone! So, I said screw it, let's do it!

And we made it available on the Implant Club website.

Here is a link to buy these 2 bits:

https://theimplantclub.com/the-oh-sh-t-pack/

That's right, its called the Oh Sh*t pack

So you have a kit.
...must be nice.

No sweat, Barak. I'll show you what to do if you don't have a fancy kit like me.

What to do if your screw is stripped and you don't have a screw removal kit:

Try other implant drivers. Other drivers (yes from other systems!) might engage and save you for the day!

Try adding a thin sliver of teflon tape to the end of the driver, it may help it engage the screw head.

Insert a piezo and draw a small circle in a counterclockwise fashion on the screw head. The vibration and spinning might get it out!

Get fat round bur on your slow speed. Place it into the screw head and then hit the rheostat. This may spin the screw out.

Put an explorer in there and rotate it counterclockwise. This might do the trick at this point!

Use a ¼ round bur on a high speed and carve slots into the screw head. Then use a flat driver to get it out. Or try your other drivers again. Try the fat round bur on slow speed in reverse again.

Finally, if all else fails...

If you are NOT salvaging the abutment. AND you NEED to get that damn screw out….

You can make a bigger access into the abutment. Make the screw access channel bigger so you can see in there!

If it can wait, re-appoint the patient and go buy yourself a screw retrieval kit.

If it cannot wait, you may consider cutting the damn abutment off. This is absolutely the last resort though!

What if I got a spinner?

This goes back to our previous discussion about insertion torque. Spinners do integrate!

However, they DO need to have some primary stability. If you DON’T have primary stability, use the following chart to troubleshoot it:

Is there vertical or lateral instability?

(With light pressure, does it move sideways or is it depressable?)

NO

Put a cover screw instead of a healing abutment.

Leave it alone

YES

1. **Remove & Place longer implant**

If you don't have a longer implant...

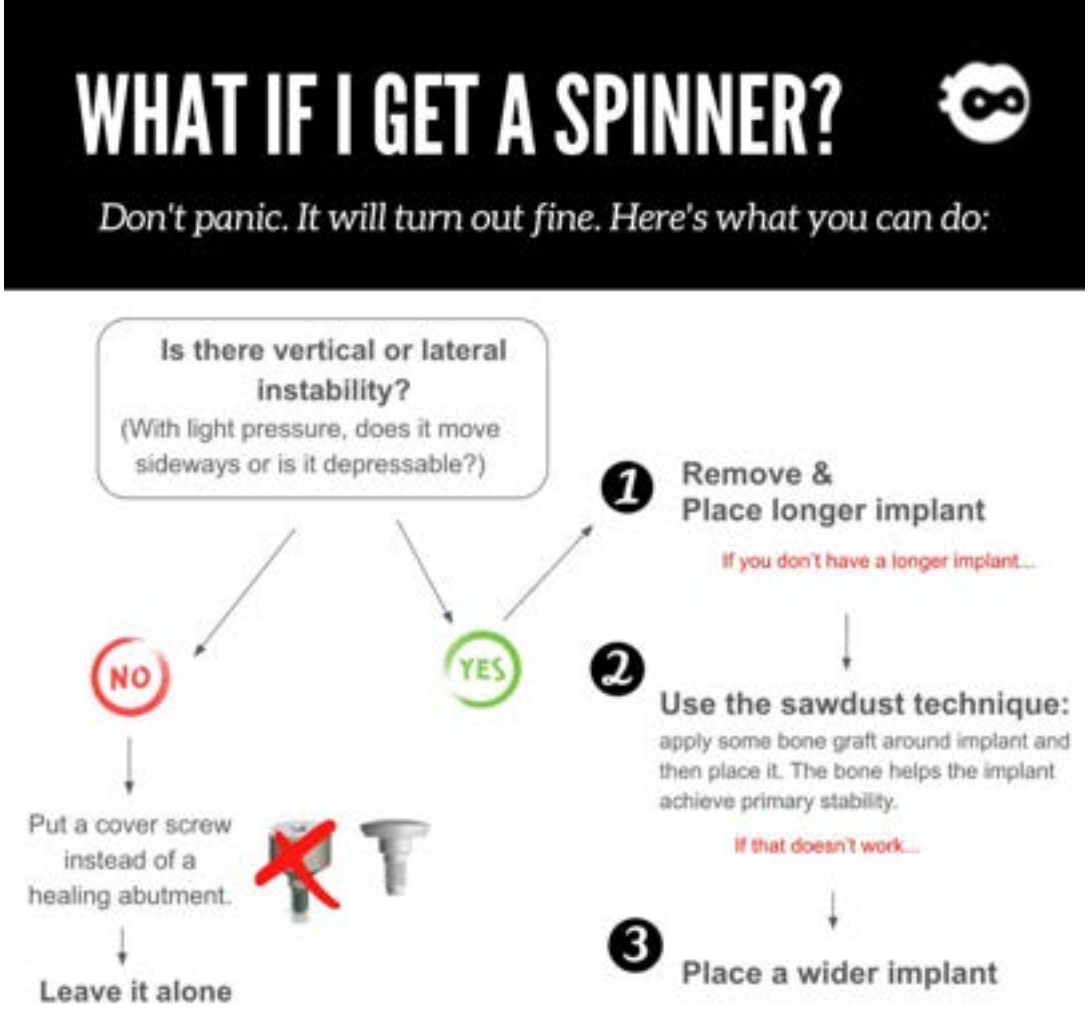
2. **Use the sawdust technique:**

apply some bone graft around implant and then place it. The bone helps the implant achieve primary stability.

If that doesn't work...

3. **Place a wider implant**

I cleaned it up a bit into a picture you can keep for later:



What if the implant is spinning and it did not yet go to full depth?

1. Take the implant out and place it on a sterilized surface. (In your surgical kit)
2. Get a drill that is one size narrower than the one you used last.
3. Use it to drill to the full length of the implant + 1.5mm.
4. Reinert the implant.

What if the implant is spinning BUT it doesn't come out of the bone when I am reversing it?

1. Put your implant mount or impression coping on the implant.

2. Grab a straight hemostat.

3. Use the hemostat to grab the transfer or impression coping and twist counterclockwise while applying a force that pulls the implant out. Give this several turns and the implant will come out.

Oh Snap, the ridge was not wide enough!

What to do here depends on:

1) How deficient are you? Is there a small on the facial aspect with some visibility to your implant? Or is the implant sticking out on the facial side?

And

2) How proficient are you with veneer grafting or GBR?

Oh Snap, the ridge was not wide enough!

Note, this is NOT an excuse to skip the basic treatment planning guidelines. I do NOT advise treatment planning cases like this or taking on cases with deficient bone. It's much easier to deal with a wide ridge. But, if you're already in middle of the surgery...

1) If it is not TOO deficient, and you already finished the prep, place your implant. Place a cover screw, then do veneer grafting or GBR.
2) If you did not finish prepping your site, consider ridge split.
3) If the implant is sticking out of the bone on the buccal, I would remove it and do GBR. Live to fight another day.

What if the crown gets stuck?

Sometimes implant crowns can get stuck. So even if you loosen up the screw it might not come out.

1. Loosen the screw
2. Check the contacts (make sure they're not too tight)
3. Get hemostats and wiggle the crap out of it
4. Use an abutment removal tool. This tool is inserted after the prosthetic screw is taken out. As you turn this tool, it will push the abutment out as.

What if the implant transfer gets stuck on the implant?

Get the wrench, it can be a surgical wrench or a restorative torque wrench...

And put it upside down on the implant transfer. Then give it a counterclockwise turn just like 1mm or less.

This extremely slight movement, will most often loosen up the implant transfer and it will come out right away.

What if the driver gets stuck on the implant?

If your implant has a deep morse taper inside, the parts tend to get stuck on them.

This is especially true if you’re placing your implants and you get above 45Ncm insertion torque. The insertion tool might get stuck.

If that happens, give the insertion tool a slight counterclockwise turn and then grab it with a straight hemostat and wiggle the crap out of it.

What if the healing abutment falls out during the healing phase?

No biggie. If it's within a week of placing the implant, and it just fell out, you can bring them in land sterilize the healing abutment and put it back on. Or just get a new one and put it on.

If the gums have already grown over it, just leave it alone.

If it is more than a week since placement, just leave it be. Wait for the osseointegration period to finish and uncover the implant.

What if the patient's opening is too small?

1. If your implant has a transfer on it, remove the transfer.
2. You can place the implant insertion tool directly into the implant and use this to place it with the wrench.
3. For VERY small openings, attach the implant mount to your handpiece and use this to place the implant.

This is the transfer

This is an implant insertion tool for the wrench

This is an implant insertion tool for the handpiece.

What if I drop my implant?

1. Don’t sweat it. Don’t worry.

2. Just open a new implant.

3. After the appointment, call your implant company and have them send you a replacement. (Unfortunately most implant companies make you jump through hoops. I have about 10 implants in my desk that I never got replaced just because I did not want to jump through hoops…)

What if the implant gets lost in the sinus?

1. Don’t sweat it. Don’t worry. It happens.
2. Take a pano.
3. Call up your local oral surgeon’s office. Let them know that you were placing an implant and it slipped into the sinus.
4. Send your patient to their office to get it removed. They’ll likely open a little window into the sinus and pluck it out.
5. Take diligent notes. If it helps you feel better, call your malpractice insurance. They will help you out!
6. Don’t let it happen again.

What if the implant fails to integrate (comes out)?

Nobody has 100% success rates. Nobody. Implants will fail to integrate sometimes. That's okay.

First and foremost, sympathize with the patient.

"Mrs. Smith, Implants have a very high success rate, but sometimes this does happen. Now, I know it was not a very comfortable process for you, but I want to make sure we get you taken care of the best way possible. I still want you to have the best outcome."

What if the implant fails to integrate (comes out)? (cont.)

1. Remove the mobile implant with hemostats, irrigate and debride the site.
2. Review medical history. Make sure there was nothing that would impair wound healing.
3. After soft tissue healing, open a flap, graft the site. Then leave the site alone for 3 months.
4. Go back and place an implant into the edentulous space.

Other Important Shiznit

Absolute Contraindications

IV Bisphosphonates

Oral Bisphosphonates sometimes pose little risk, but IV is no joke. This is a deal breaker for me.

Absolute Contraindications

Radiation Therapy

Above **65Gy** there is a significant risk for ORN. Trust me you don't want ORN.

But even at 55Gy I still refer out to an oral surgeon, I like to keep it predictable for myself. At 55 Gy, the implant is mostly held in mechanically NOT by osseointegration.

Absolute Contraindications

Any Uncontrolled Medical Condition

I know this is vague, but I ask patients if they've had any hospital visits in the last 2 years.

Any condition must be diagnosed and monitored/treated by the appropriate physician.

Bottom line: **If patients are not on top of their healthcare, I can't help them.**

Here's a list of RED FLAG MEDS I have laminated and use to screen my patients.

- Bisphosphonates
  - FOSAMAX (Alen**dronate**)
  - Zolendronic acid (Reclast or Zometa)
  - Didronel
  - Boniva
  - Aclasta
  - Atelvia
  - Actonel
  - Aredia
  - Binosto
  - Skelid
- Antiresorptive agents:
  - Denosumab
  - Xgeva
  - Prolia
- Antiangiogenic agent used in cancer chemotherapy
  - Sunitinib (Sutent)
  - Bevacizumab (Avastin)
- Corticosteroid
  - Long-term Prednisone with fosamax

Here’s a list of some of the frequently prescribed meds...

What?

Amoxicillin

- 500 mg tabs
- Disp: 18 tabs
- 2 g 1 hour prior to surgery
- 1 g 6 hours initial dose
- 1 tab tid for 3 days

Why?

Standard prophylaxis prior to placing an implant and for a few days after.

What?

Clindamycin

- 300 mg tabs
- Disp: 12 tabs
- Take 2 tabs 1 hour prior to procedure
- Take 1 tab 6 hours after
- Take 1 tab tid for 3 days

Why?

Used for prophylaxis only if patient is allergic to amoxicillin.

Also used if signs of infection after implant placement.

What?

Tylenol #3 (acetaminophen with codeine)

- Disp: 12 tabs
- Sig: Take 1 tab qh6 prn pain

Why?

Help with pain control!

What?

Valium 5 mg

- Disp: 1
- Sig: Take 1 tab 1 hour prior to procedure
- * No driving within 8 hours of taking Valium* Patient should have a driver!

Why?

Reduce Anxiety about appointment

That’s it! That’s the basics!

See, wasn’t that a piece of cake, like I promised?

Hey!

Thanks for taking the time to look this over, my friend.

I hope this book can somehow help you gain a better understanding, if somewhat ridiculously, and help you along your implant journey.

The warmest regards from my family to yours :)

Cheers!

Ivan from Implant Ninja

PS: keep on keepin on

If you found this useful
(although a bit unconventional),

I invite you to take one of our online implant courses.

I guarantee you they are hands-down the most bad-ass online courses you will experience.

Yes, our courses eat other courses for breakfast.

If you're looking for a place to begin placing, or to start full arch. Then look no further.

You can snag a spot in one of our courses at www.implantninja.com

Feel free to give me a shout at implantninja@gmail.com

Or shoot me a text at 209-242-2977

Also, I'd like to share a little secret with you.

After being frustrated in my search for an implant company that I felt had my back and helped simplify my clinical life,

I decided screw it, we're gonna do it ourselves.

So me and the Implant Ninja team built an implant company focused on helping the customer win the day, rather than trying to hard-sell them.

Here's what we came up with. I'd love to hear what you think:

https://theimplantclub.com/

Implant Badassery Awaits.

Ivan Chicchon, aka Implant Ninja, is a Prosthodontist by day and a dental implant nerd/entrepreneur by night.

WE HOPE YOU ENJOY THE LITTLE BOOK OF IMPLANT WISDOM!

LEAVE US A REVIEW.
WE'LL SEND YOU SOMETHING SPECIAL.

★★★★★

3 EASY STEPS

1. VISIT THIS LINK
2. CLICK REVIEW
3. ADD YOUR REVIEW