BLACK DIAMOND

IMPLANT DRILLING PROTOCOL

1	DISCOVERY SEQUENCE
2	DRIVE SEQUENCE
3	STABILITY SEQUENCE

DISCOVERY SEQUENCE

PURPOSE

How to discover which bone density (D1 or D2/D3 or D4) from the start and use same drilling protocol to begin every osteotomy.

CONSIDERATIONS

What is depth? Depth is implant size +3mm; If we are placing a 10mm implant then we want to drill to 13mm (as long as vital anatomy allows). *When placing Neodent implants.

Biological drilling" 50 Ncm @ 50 RPM will help in adequate under preparation of osteotomy while minimizing damage to surrounding bone and will allow you to "feel" the density of host bone

Step	Bur	Depth	Speed
1	1.5mm Lance (Blue Sky Bio) 	3 MM	1200-2000 RPM + Irrigation
2	**XRAY FOR ANGULATION AND PROXIMITY TO VITAL ANATOMY** VERIFY YOUR OSTEOTOMY IS CENTERED BEFORE GOING DOWN THE BONE		
3	2mm Initial Drill Lance 	6 MM	1200-2000 RPM + Irrigation
4	**XRAY FOR ANGULATION AND PROXIMITY TO VITAL ANATOMY**		
5	2mm Lance 	6-8mm	1200-2000 RPM + Irrigation
6	ROCK 2MM DRILL SIDE TO SIDE WHILE PUSHING APICALLY IF PUSHES TO DEPTH THEN = D4 BONE = STOP DRILLING. IF NO PUSH THEN DRILL TO DEPTH 50 RPM / 50 NCM | **CHECK BUR FLUTES**		
7	**3.5 MM FOR 3MM BREAKTHROUGH CREST** MAKE SURE YOUR OSTEOTOMY IS CENTERED BEFORE YOU BRING THE BUR APICALLY		

DETERMINE BONE DENSITY

THREE REDUNDANCIES TO VERIFY

CT REVIEW

Dark/Radiolucent	D4
Light/Opaque	D1

FLUTE CHECK

White	D1
Red with Flecks of Bone	D2/D3
Blood without Bone	D4

2.0 LANCE PUSH TEST

Encounters Resistence	D1-D3
Soft Bone	D4

***When drilling at 50 RPM / 50 NCM; you can literally see what type of bone is on the drill**

DRIVE SEQUENCE

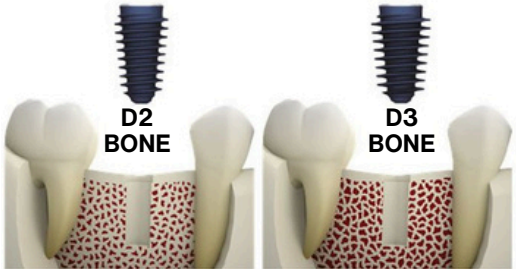
PURPOSE

In order to finish your osteotomy you will need to focus on the feel of the bone and check the bur flutes to decide what density (D1 or D2/D3 or D4) before you can drive your implant

CONSIDERATIONS

Once Bone Density is Determined Check Bone. *Based off Sample Implant of 4.3 x 10 [Starting Point 3.5 MM Lance - 3 MM

	BUR	DEPTH
1	3.5 MM	6-8 MM
	1200 - 2000 RPM	
	Check Bone on Bur to Triple Check Density	
2	3.5 MM	Final Depth
3	Optional 3.75 MM	Final Depth
4	4 MM	Final Depth
	Check Bone on Bur to Triple Check Density	
5	4.3 MM	Final Depth
	*If Anatomy Allows 3 MM Below Crest	
6	Place Implant	1 - 2 MM Subcrestal
	30 RPM @ 30 NCM	



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3	Optional 3.75 MM	Final Depth
4	4 MM	Final Depth
5	Place Implant	1 - 2 MM Subcrestal
	30 RPM @ 30 NCM	

1	3.5 - 6 MM 1200 - 2000 RPM
2	Place Implant 1 MM Subcrestal
3	Check Torque (Use Torque Wrench)

IF TORQUE IS

>35 NCM = STOP

<35 NCM = Increase Implant Size and Replace
Consider Using a Drive Implant

STABILITY SEQUENCE

PURPOSE

- Based on implant torque (ncm) and how far supracrestal the implant is, will guide your next steps to ensure stability.
- Where does your implant stop when placing it at 30 RPM @ 30 Ncm?
- Verify the drill is going to depth; it's important to drill to depth with D1 bone so the implant does not bottom out and spin hence losing torque.
- Ideal torque is 45Ncm; to bring implant in sometimes you need to bring the implant down carefully by 2 turns out and 3 turns to avoid over torquing.
- When at desired depth - we advise taking 1 - 2 turns out then bringing it to exactly 45Ncm with torque wrench.
- CSI best practice is a minimum of 35Ncm; at 35Ncm you can change the cover screw or healing abutment without risking the implant unscrewing.
- 25Ncm is acceptable and will integrate but you can not touch it during the healing phase.

CONSIDERATIONS

While placing the implant with the implant motor (30rpm @ 35Ncm), the implant can stop above the crest, at the crest, or below the crest. How far above or below the bone the implant stops will dictate what your next steps are.

>4 MM Above Bone (Supracrestal)
1. Remove Implant
2. Increase 1 Bur Size or a Bur that's Equal to Implant Size
3. Verify bur is at depth (implant +3mm)
4. Replace Implant

1 - 2 MM (Supracrestal)
1. Good Job, Well Placed Implant!
2. Torque to 2 MM Subcrestal

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Implant Stopped at the Bone <35 NCM
1. Slowly Torque to 1 - 2 MM Subcrestal
Check Implant Stability Using Torque Wrench
Torque Level If 35 NCM Accept 35 and Move On **OR** Upsize Implant for Increased Stability and Torque to 45 NCM