Unique Surgical and Prosthodontic Experiences Using a Novel Single-Drill Implant System

Paul Sim, DDS, Avinash S. Bidra, BDS, MS, FACP

University of Connecticut School of Dental Medicine, Post-Graduate Prosthodontics, Farmington, CT

INTRODUCTION

- Advancements in dental implant systems have streamlined both surgical and prosthodontic procedures, offering more efficient treatment protocols.
- This case series explores the successful utilization of a novel single-drill implant system across various clinical scenarios.

OVERVIEW OF THE SINGLE-DRILL IMPLANT SYSTEM

Step 1: *OsseoDirector (<2000 rpm)*

Step 2: *OsseoShaper (50 rpm)*

Step 3: *Implant placement (<70 Ncm)*

- Conventional drilling protocols involve a series of high-speed drills with increasing diameters to gradually widen the osteotomy.
- The novel drilling protocol (Nobel Biocare N1 System) uses a single high-speed pilot drill (“OsseoDirector”) followed by a low-speed bone-shaping instrument (“OsseoShaper”) designed to minimize cell death and optimize bone formation.[1]
- After shaping, a tri-oval implant is placed to full depth, designed to minimize cortical stress while maintaining high-strain areas for mechanical stability.[2]

CASE SERIES

CASE #1: *Pilot-guided flapless implant placement*

1. Initial presentation | *2. Soft tissue punch* | *3. Pilot-guided OsseoDirector* | *4. OsseoShaper* | *5. Implant placement (insertion torque of 40 Ncm)* | *6. Screw access* | *7. Soft-tissue contouring*

Pre-op radiograph

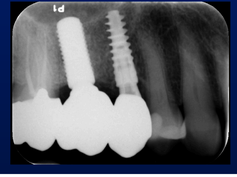
Post-op radiograph

CASE #2: *Immediate implant placement*

1. Initial presentation | *2. Atraumatic extraction and N1 preparation* | *3. Implant placement (insertion torque of 32 Ncm)* | *4. Custom healing abutment* | *5. Soft-tissue healing* | *6. Screw access* | *7. Final prosthesis*

Pre-op radiograph

Post-op radiograph

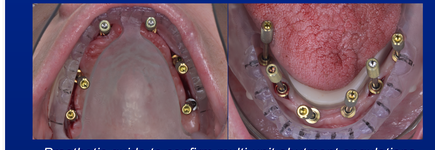


CASE #3:

Maxillary and mandibular complete-arch fixed implant-supported prostheses

Pre-op

Post-op



Prosthetic guide to confirm multi-unit abutment angulations

Delayed loading protocol due to low insertion torque values:

- *Maxilla: insertion torque of 9-15 Ncm*
- *Mandible: insertion torque of 11-40 Ncm*

BENEFITS

- Reduced surgical time
- Improved efficiency
- Increased patient comfort

LIMITATIONS

- Limited ability to correct initial osteotomy angulation
- Difficulty achieving primary stability in Type III/IV bone

REFERENCES

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