



Use of Technology for Improved Implant Use in The OMS Practice

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**Image Navigation Surgery For Implant Placement -
A Comparison To Guided Stent Use**

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Synopsis

This session will review the difference between dynamic and static image navigation surgery for dental implant placement.

Learning Objectives

At the conclusion of this presentation, participants should be able to:

Discuss the differences between dynamic and static image navigation surgery and what the literature states regarding their accuracy and clinical outcome;

Identify the treatment sequences required to utilize dynamic guidance, from obtaining the images for digital treatment planning to laboratory fabrication of components used for surgery; and

Describe the indications for using dynamic and static navigation surgery and the challenges to their use.

1. Definitions

- a. Dynamic Guidance - Implant guide systems that allow real time image navigation surgery and alteration of treatment during surgery.
- b. Static Guidance - Implant guide templates/stents that are fabricated prior to surgery.

2. Available Systems

- a. Dynamic Systems
 - i. Image Guided Implantology (IGI)
 - ii. RoboDent
 - iii. MonaDent
 - iv. VoNaviX
- b. Static Systems
 - i. SimPlant
 - ii. Anatomage
 - iii. SICAT
 - iv. EasyGuide
 - v. Nobel Guide

3. Literature

- a. Manual implant placement vs. Image guided implant placement
- b. Accuracy
- c. Clinical Outcomes

4. Financial Considerations

5. Treatment Sequence

6. Challenges

a. Intrinsic Errors

- i. Spatial resolution of CT
- ii. Image data processing
- iii. Planning software
- iv. Static Guide Fabrication
- v. Registration Errors
- vi. Tracking Errors

b. Extrinsic Errors

- i. Impressions
- ii. Stone model fabrication
- iii. CT imaging protocol
- iv. Imaging guide fabrication
- v. Tracker fabrication
- vi. Provisional fabrication
- vii. Seating / movement of static guide
- viii. Seating / movement of patient tracker

c. Limitations of the systems

i. Visualization

1. Seating guide
2. Damage instruments or guide
3. Array interference

ii. Patient Related

1. Maximal mouth opening - Instrument stack limitations
 - a. Maximum Implant length limits
2. Edentulous Patient
3. Tooth Size / Tube Size Limitations

7. Unique Indications

a. Patient related

- i. Minimal mouth opening - Dynamic

b. Procedure related

- i. Remove foreign body - screws etc.
- ii. Sinus elevation
- iii. Remove difficult third molar
- iv. Apicoectomy
- v. Nerve lateralization

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