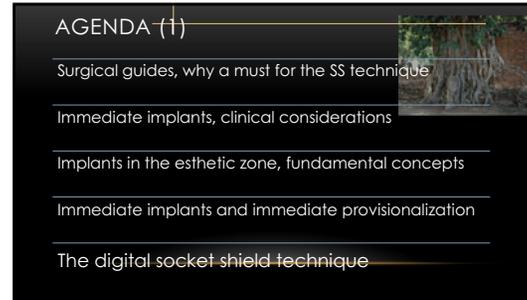
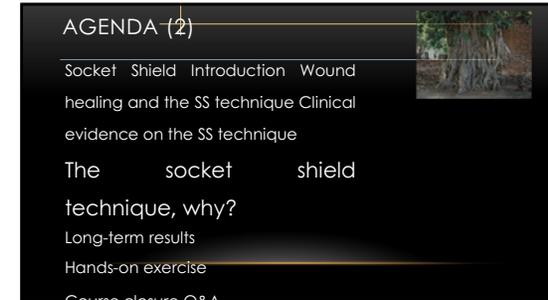




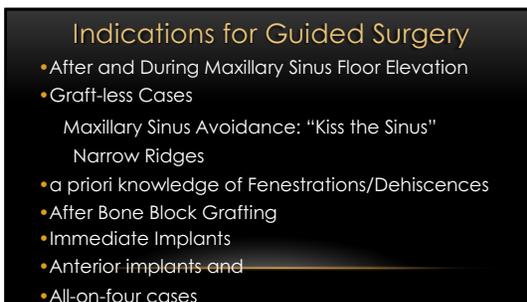
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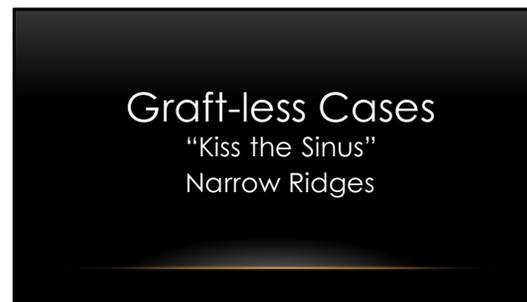
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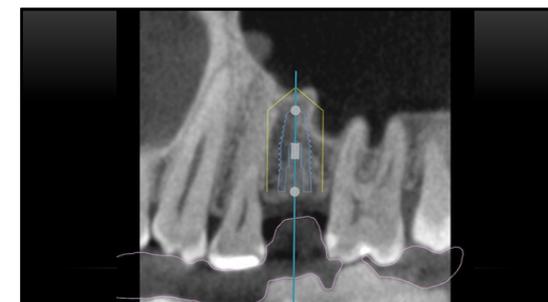
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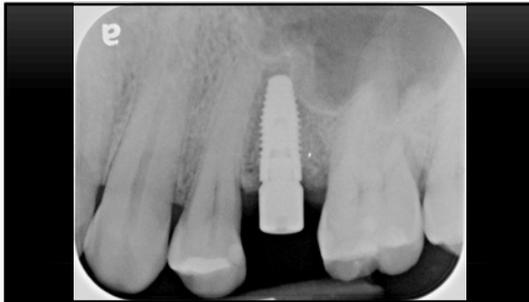
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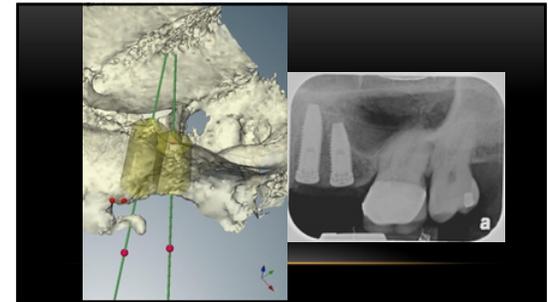
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Tight mesial-distal dimensions

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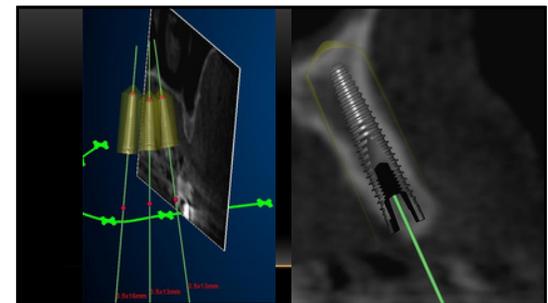
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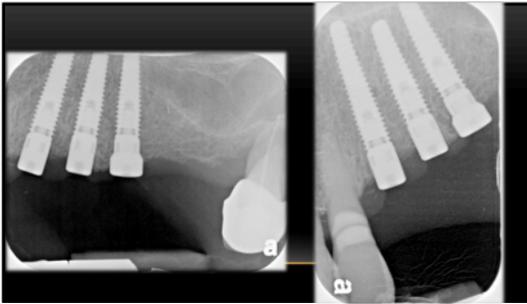
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Narrow Ridges

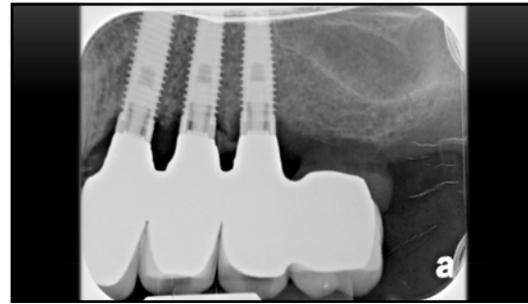
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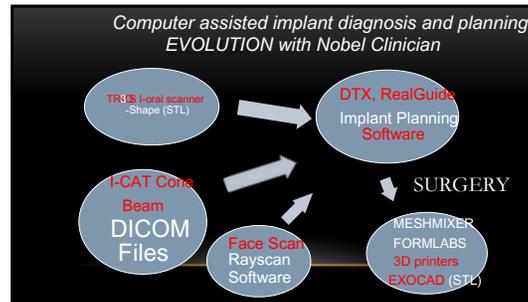


15

Computer assisted implant diagnosis and planning
EVOLUTION with Nobel Clinician, now DTX Studio

- The challenge
- Cone-Beam 3D imaging: I-Cat
- Intraoral scanners: 3-Shape Trios
- 3D printers: Formlabs
- DTX implant software
- Interocclusal Mounting
- SMART Set-up (DESIGNS), Face scans, Guided Surgery
- Conclusions

16



17



18



19



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<p>OUTSOURCE</p> <p>Quality control</p> <p>COST</p>		<p>IN-HOUSE</p> <p>Quality control?</p> <p>TIME</p>
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22



23

3D PRINTING IN DENTISTRY
 ADAWOOD¹ & MARTI¹, SAURET-JACKSON² AND A. DARWOOD³
 BRITISH DENTAL JOURNAL VOLUME 219 NO. 11 DEC. 11 2015

	<ul style="list-style-type: none"> • "The congruence of scanning, visualization, CAD, milling and 3D printing technologies, along with the professions innate curiosity and creativity makes this an exceptionally exciting time to be in dentistry"
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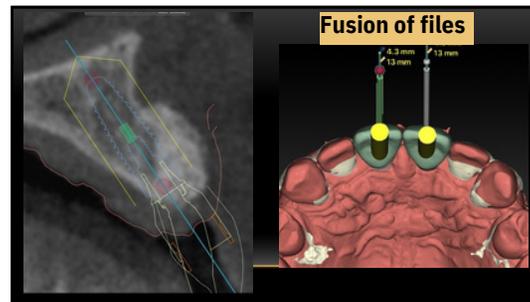
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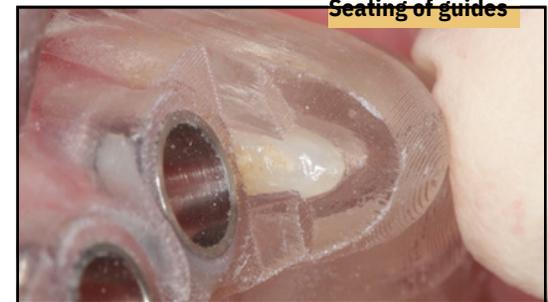
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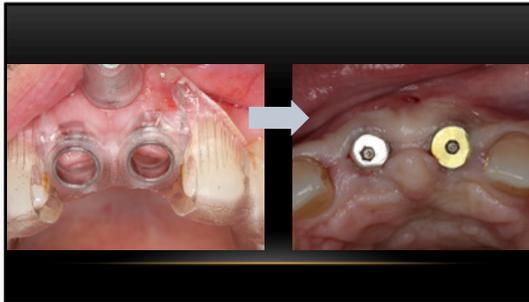
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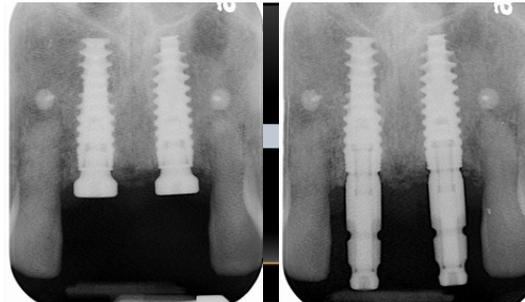
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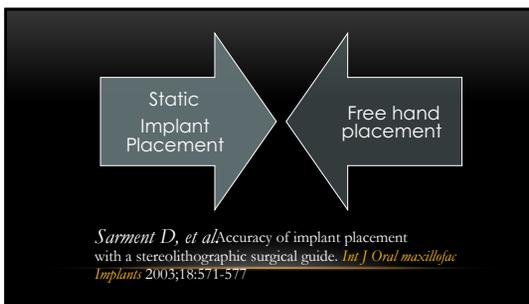
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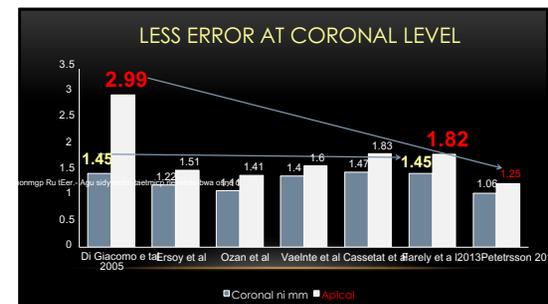


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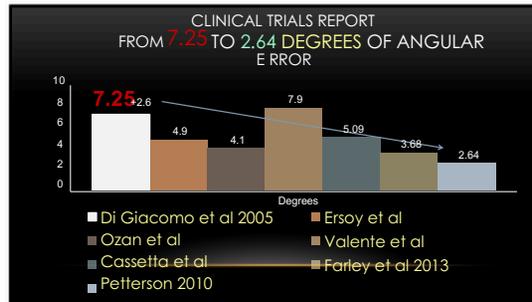
A slide titled "STATIC GUIDANCE ACCURACY" featuring a blue background with a dental implant and a surgical guide. A list of references is provided on the right side of the slide:

1. Sarment DP, Sukovic P, Clithorne N. Accuracy of implants with a stereolithographic surgical guide. *Int J Oral & Max* 2003; 18: 571-577.
2. Di Giacomo GA, Cury PR, de Araujo NS, et al. Clinical accuracy of implant placement using a stereolithographic surgical guide. *J Prosthet Dent* 2005; 113: 100-105.
3. Ersoy AC, Tokuyama T, Ozan O, McGlamery EA. Reliability of implant placement using a stereolithographic surgical guide. *J Oral Maxillofac Surg* 2006; 64: 1339-1342.
4. Ricah ancaiduar cDy, Mora Irheju acrididit icPa, IZ on implant dentistry. *Clin Oral Implants Res* 2009; 20 (Suppl 1): S10-S14.
5. Arslan M, Karabucak Z, Ozdemir T. Accuracy of free hand guide systems for computer-aided implant placement: A stereology-based clinical comparative study. *J Periodontol* 2010; 81: 100-105.
6. Pettersson A, et al. 2010 Accuracy of CAD/CAM-guided implant surgery on human cadavers. Part I. *J Prosthet Dent* 2010; 103: 100-105.
7. Wang et al. Computer technology applications in surgical dentistry: A systematic review. *Int J Oral & Maxillofac Im* 2009; 24 (Suppl): 92-100.

35



36



37

Accuracy of a Dynamic Dental Implant Navigation System in a Private Practice

Luigi V. Stortiello, DDS, PhD¹/Bradley S. DeFonso, DDS, MS²
David L. Lipson, DDS, MS³/George S. Sorensen, DDS, MS⁴

231 Implants

Table 1 Case Characteristics

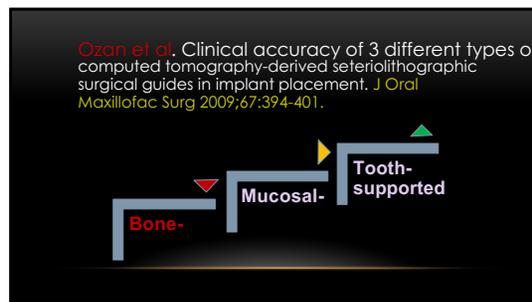
	Male	Female
All patients	95	231
Implant placement	55	146
Face restoration	25	117
Maxilla	41	142
Mandible	14	86
Maxilla & Mandible	20	48
Maxilla & Mandible (2-3-3-3)	15	36
Maxilla & Mandible (1-1-1-1)	5	26
Maxilla & Mandible (1-1-1-1)	5	26
Maxilla & Mandible (1-1-1-1)	5	26
Maxilla & Mandible (1-1-1-1)	5	26

38

Table 2 Key Deviation Statistics of All Implants Inserted (n = 231)

Deviation	Mean	Stati ^c Mean	SD
Entry (2D, mm)	0.71	0.40	
Apex (3D, mm)	1.00	0.74	0.49
Angle (deg)	2.26	0.85	1.62
		2.64	

39



40

CORRECT 3-DIMENSIONAL IMPLANT POSITION IS CRITICAL FOR A FAVORABLE AESTHETIC OUTCOME

41

Predictors of inter-proximal and midfacial recession following single implant treatment in the anterior maxilla: a multivariate analysis

Jan Coyn^{1,2}, Mehron M. Salameh¹ and Inge De Bruijn^{1,3}

¹Department of Periodontology and Oral Implants, University of Ghent, Faculty of Medicine and Health Sciences, Ghent, Ghent, Ghent, Belgium; ²Special Medicine, Free University of Brussels (ULB), Faculty of Medicine and Pharmacy, Brussels, Belgium; ³Department of Periodontology, Middelheim University, Faculty of Odontology, Middelheim, Ghent

Coyn J, Salameh MM, De Bruijn IB. Predictors of inter-proximal and midfacial recession following single implant treatment in the anterior maxilla: a multivariate analysis. *J Clin Periodontol* 2012; 39: 905-908. doi: 10.1111/j.1600-0511.2012.01921.x

Midfacial: implant facial platform **POSIT** (OR 17.2)

42

FREQUENCY DISTRIBUTION (%) OF EXAMINED TEETH ACCORDING TO THICKNESS OF THE FACIAL BONE WALLS

	Missing bone wall	Bone wall thickness <1mm	Bone wall thickness >1mm
Central Incisors	4.6	89.3	6.1
Lateral Incisors	9.5	83.1	7.4
Canine	9.4	82	8.6
First Premolar	21.3	56.3	22.5
Total	10	80.1	9.8

Vedrana B.,Buser D. Thickness of the Anterior Maxillary Facial Bone Wall-A Retrospective Radiographic Study Using Cone Beam Computed Tomography. Int J Periodontics Restorative Dent 2011;31:125-131.

43

WHAT CONSTITUTES A GOOD IMPLANT POSITION, A WELL-PLACED IMPLANT?

44

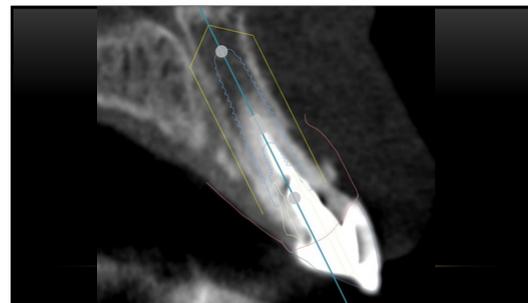
IMPLANT 3-DIMENSIONAL POSITION AND ITS PROSTHETIC EFFECTS

1. Apico-coronal: 2-4 mm apical to the expected gingival margin position
2. Facial-lingual: 2 mm of facial bone is recommended to prevent the loss of facial tissue, and the implant should be positioned slightly palatal to the incisal edge; and
3. Mesio-distal: the implant should be 1-2 mm away from adjacent teeth, and a 3-mm space between implants is recommended.

45

Apico-coronal

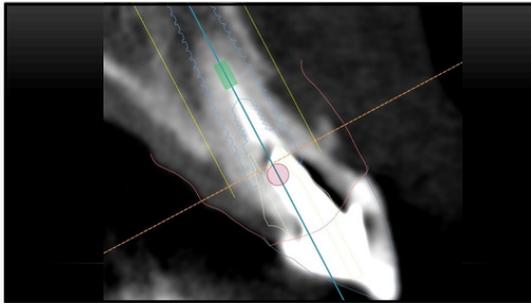
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Facial-lingual

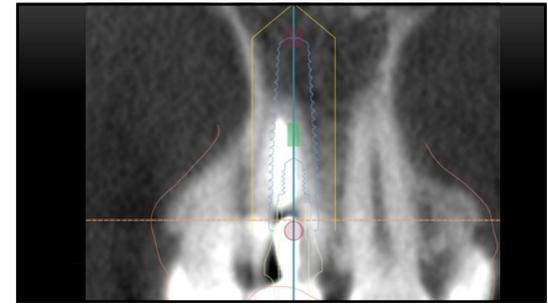
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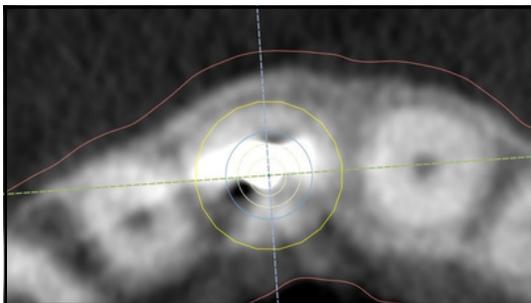
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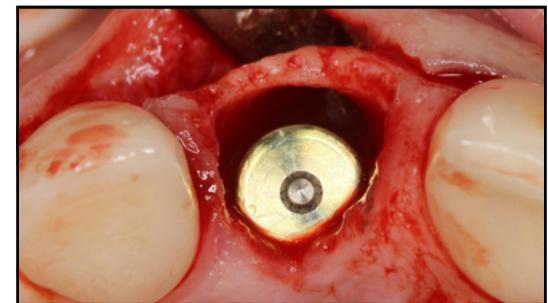
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CHU SJ, SALAMA MA, SALAMA H, ET AL. **THE DUAL-ZONE THERAPEUTIC CONCEPT** OF MANAGING IMMEDIATE IMPLANT PLACEMENT AND PROVISIONAL RESTORATION IN ANTERIOR EXTRACTION SOCKETS. COMPEND CONTIN EDUC DENT. 2012;33(7):524-534.

Effect of grafting 0.59 mm or 54% less horizontal buccal bone resorption

CT grafting 0.41 mm less apical migration and 0.66 mm thicker mid-facial mucosa

56

ADVANTAGES OF NEW TECHNOLOGIES AND THE SS TECHNIQUE

1. Powerful implant planning software
2. Accuracy of in-house printed surgical guides
3. Precise immediate implant planning and placement

Effective and better treatment for our patients

57

1 Printed guides are accurate enough and should be used for every S-S case and all anterior implants

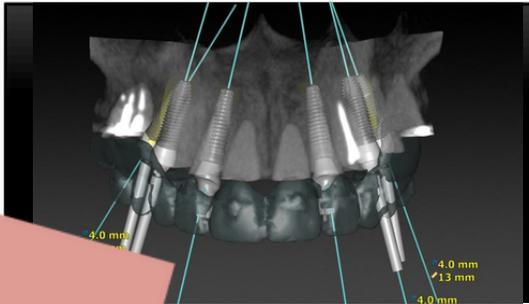
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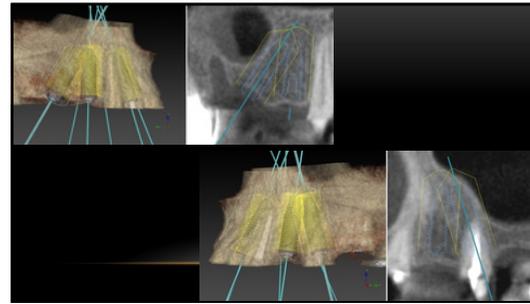
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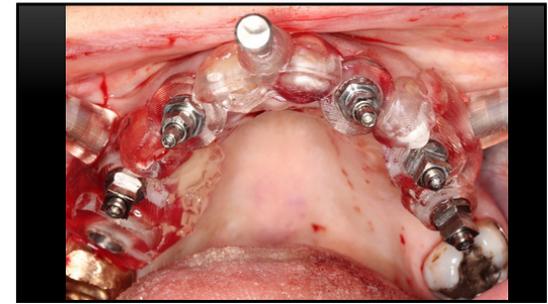
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67

A UNIQUE CASE?

1. Avoided diagnostic/cognitive bias
2. DTX studio implant software
3. Guided surgery
4. Tilted implants
5. Retained teeth/soft tissues
6. Cad-cam screw-retained restorations

68

AGENDA (+)

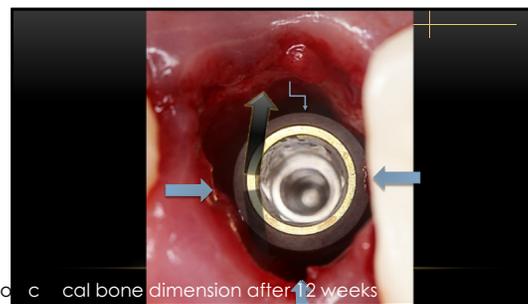
- Surgical guides, why a must for the SS technique 
- Immediate implants, clinical considerations
- Implants in the esthetic zone, fundamental concepts
- Immediate implants and immediate provisionalization
- The digital socket shield technique

69

IMMEDIATE IMPLANTS

Resorption of the alveolar bone dimension after 12 weeks

70



71

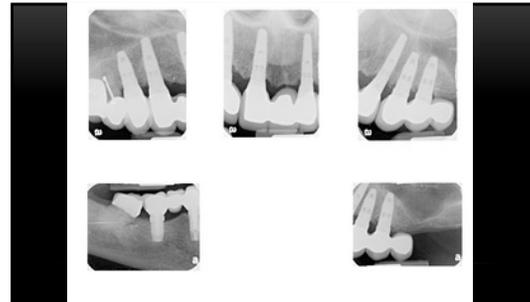
Immediate Implants Indications

- **Implant stability**
- Ideal, 4 mm of apical bone for stability
- Mesial-distal bone walls for stability
- Uncompromised osseous anatomy
- Dental infection that can be eliminated at the time of placement

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73



74

"GUIDED SX" ADVANTAGES

- 3-D diagnostic capabilities
- Able to relate surgical guide to existing socket anatomy
- Implants in BE position within the socket
- Increase surgical and prosthetic precision
- Time of surgery reduced
- Decrease morbidity

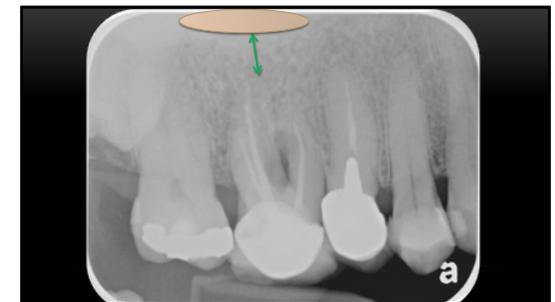
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Controlling implant position!!!

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Atraumatic tooth extraction simultaneously with implant placement

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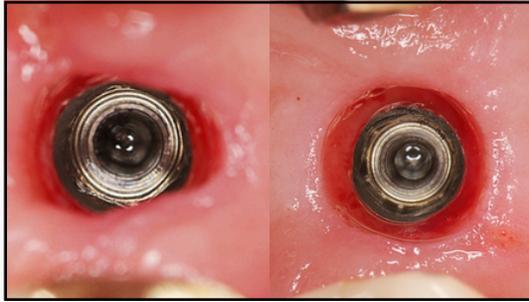
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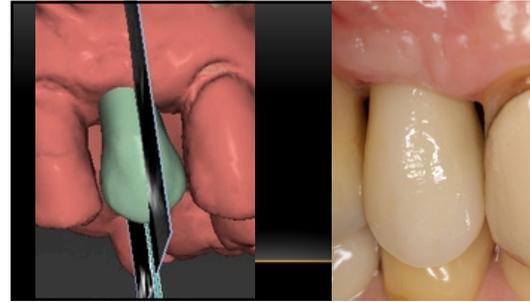
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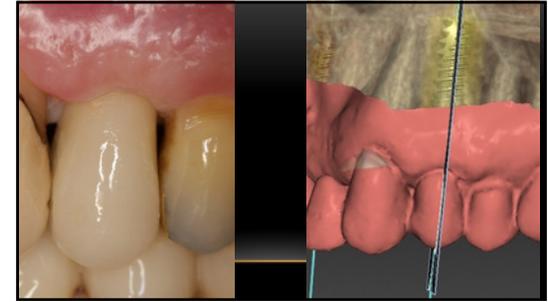
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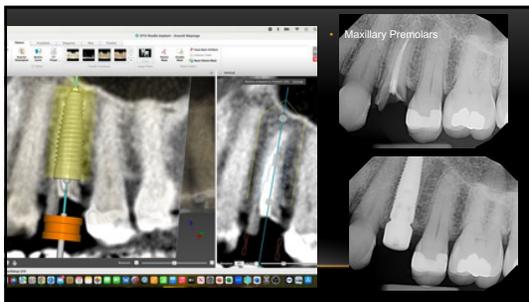
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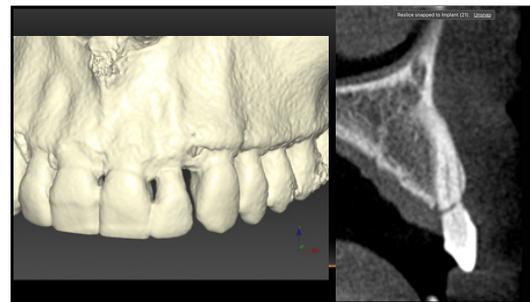
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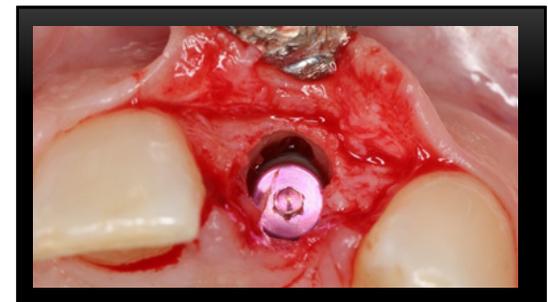
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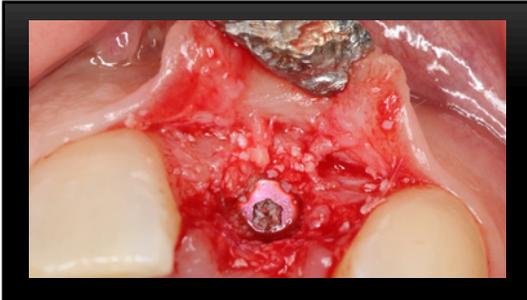
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Clinical Guidelines & Considerations

- 1) Infection might affect immediate implants
- 2) Primary stability beyond the extraction socket
- 3) Large buccal osseous defects involving the crest
- 4) Socket configuration demands surgical skill
- 5) Occlusion not allowing provisionalization

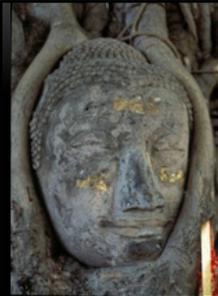
De Rouck, et al. Single-Tooth Replacement in the Anterior Maxilla by Means of Immediate Implantation and Provisionalization: A review. Int J Oral Maxillofac Implants 2008;23:897-904.

93

Lee, C.-T.; Chiu, T.-S.; Chuang, S.-K.; Tarnow, D.; Stoupe, J.
Alterations of the bone dimension following immediate implant placement into extraction socket: Systematic review and meta-analysis.
J. Clin. Periodontol. 2014, 41, 914-926.

Gingival recession expected after immediate implants = **0.5-1.0 mm**

94



"As we go forward, I hope we're going to continue to use technology to make really big differences in how people live and work."

Sergey Brin
Google search engine developer

95