International Poster Journal IPJ of Dentistry and Oral Medicine

Int Poster J Dent Oral Med 2004, Vol 6 No 04, Poster 248

Fabrication of Surgical Template for CT-based Implant Planning

Language: English

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Date/Event/Venue:
April, 5-7th, 2003
International Congress on Reconstructive Preprosthetic Surgery Joint Meeting with California Association of Oral and Maxillofacial Surgeons
Palm Springs/California/USA

Introduction

Prosthetic driven implant placement requires a planning procedure, which considers the available bone and the optimal prosthetic position of the crown. In our days more and more CT-based planning procedures are used, especially for very esthetic demanding cases or if immediate restoration is performed. Different techniques to show the prosthetic situation are published like using BaSO4-doted resin.

Material und Methods

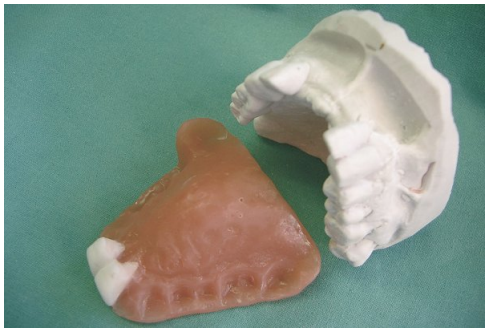
For the CT-based planning we use routinely a wax-up, which is transferred in acrylic resin (80 weight % polymer and 20 weight % BaSO4). If the position of the template during CT-scan cannot be fixed definitely a fixation with a small osseosynthesis screw is performed under local anesthesia. For the reference of the prosthetic axis a gutta-percha point ISO 100 is used, which is placed in the center of the crown. For the optimal vertical position the length of the gutta-percha point is chosen in the same length like the cone of the esthetic abutment (FRIADENT, Mannheim, Germany). Depending to the transfer system for surgery different references are necessary. After the CT-scan the template is modified according the surgical transfer system.

Fabrication of Stent with BaSO4 Crowns

Wax-up for prosthetic planning of crowns

Silicon wall for fabrication of BaSO4-crowns

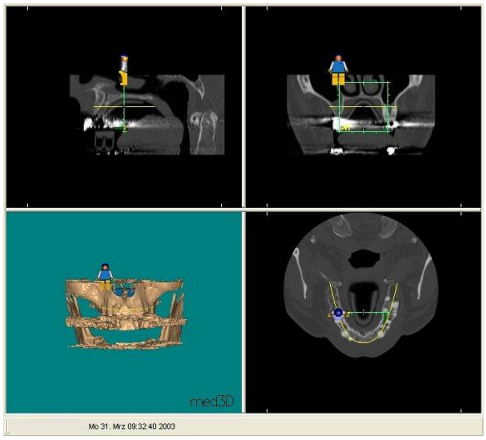
Individual fabricated crowns with BaSO4-doted resin



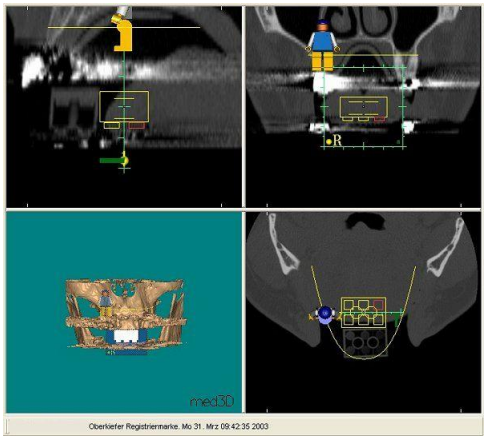
Fixation of BaSO4-crowns in resin plate with stabilization on occlusal surface of dentition

Adaptation of reference marker for ROBODENT and MED3D-planning system, note white spots at tuber area: Security reference points prior sleeve drilling

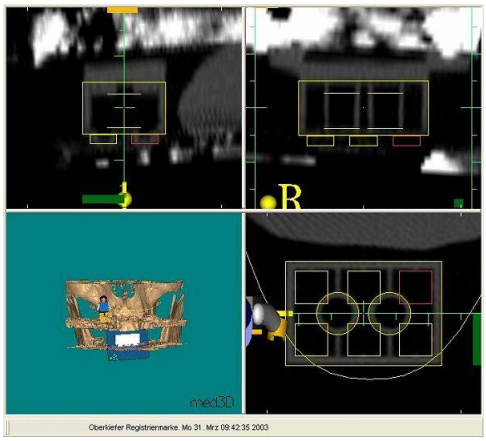
Determination of Implant Position by MED3D-Software



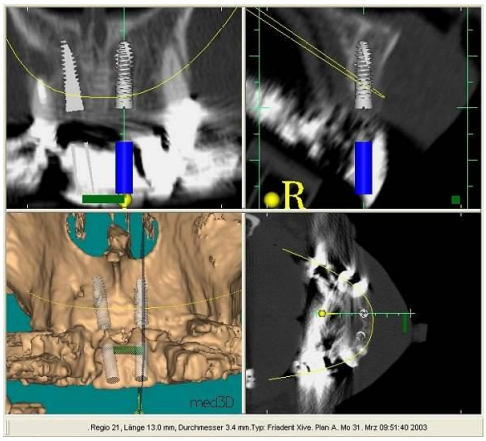
MED3D-planning screen with regenerated 3D-modell and panoramic line



Calibration of CT-scan with reference marker in CT-scan and master by program

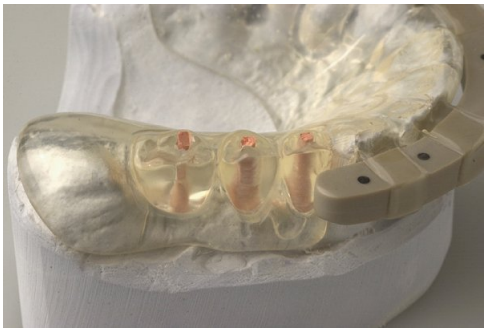


Calibrated CT-scan with congruence of reference of stent and program



Final position of XiVE®-implants for central incisors in 3D-model with placement of sleeves

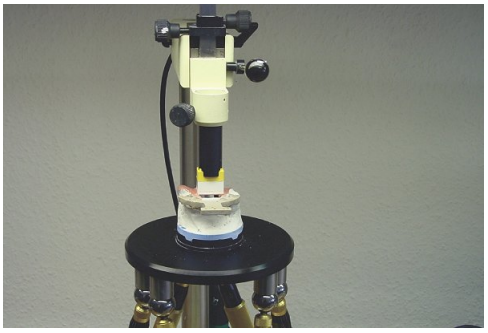
Fabrication of Stent with Guttapercha Point



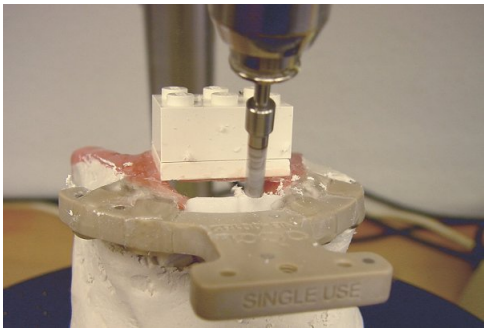
Transparent occlusal borne stent with central holes in axis of abutments filled with Guttapercha points

Fixation of reference and navigation signal holder on stent with a distance for a non disturbed preparation of the preceptor side

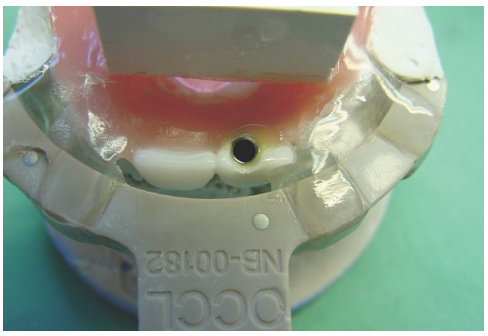
Transfer of CT-Data to Implant Stent by MED3D-System



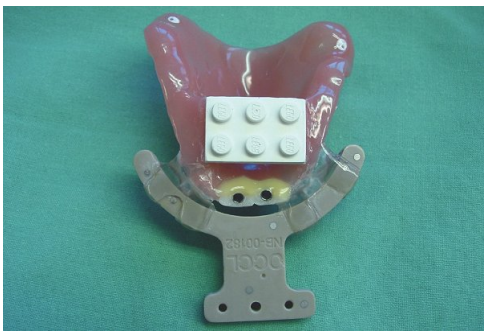
Placement of template in MED3D-hexapot to perform the transfer of the CT-generated planning data in definite start position



After transfer of registration performing the holes for the drill guide

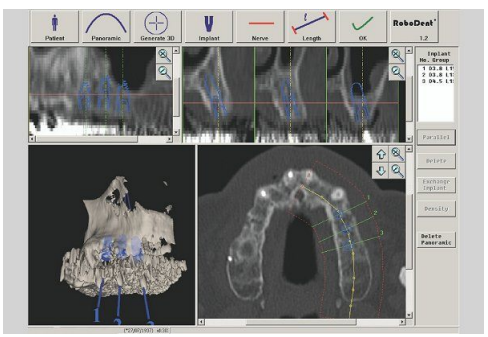


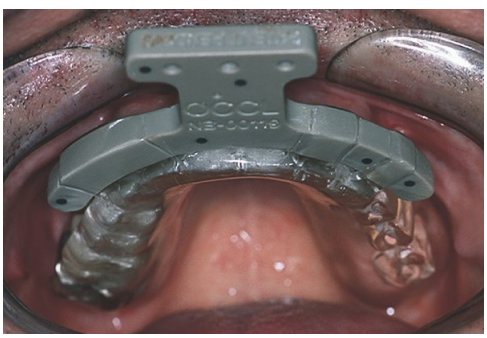
Situation after fixation of drill guide with light curing resin



Final drill guide for the use with MED3D

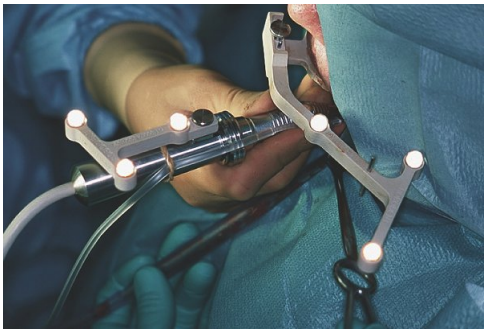
Navigation with Robodent



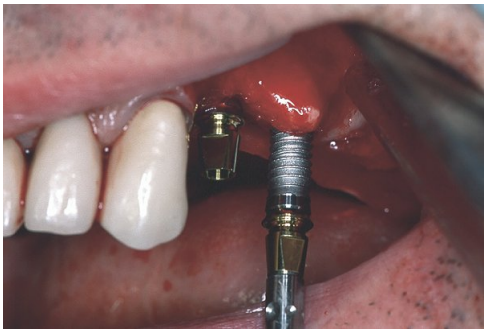


Determination of implant position for the placement of 3 XiVE® Implants in the upper maxilla

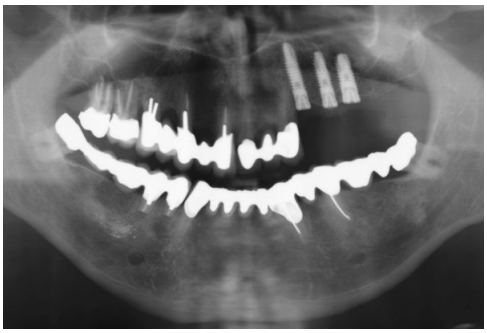
Check of stent for stability prior to removal of acryl with guttapercha pin



Surgical situation with implant placement in maxilla with Robodent-Navigation-System



Placement of XiVE® Implants in non-augmented bone in close direction to anatomic structures



Radiograph after placement of 3 XiVE® Implants with minal sinus elevation for the posterior implant

Conclusions

Implant planning based on the ideal position of the prosthetic cone of the abutment allows determining the ideal position of the implant under prosthetic considerations.

This poster was submitted by Dr. Jörg Neugebauer.

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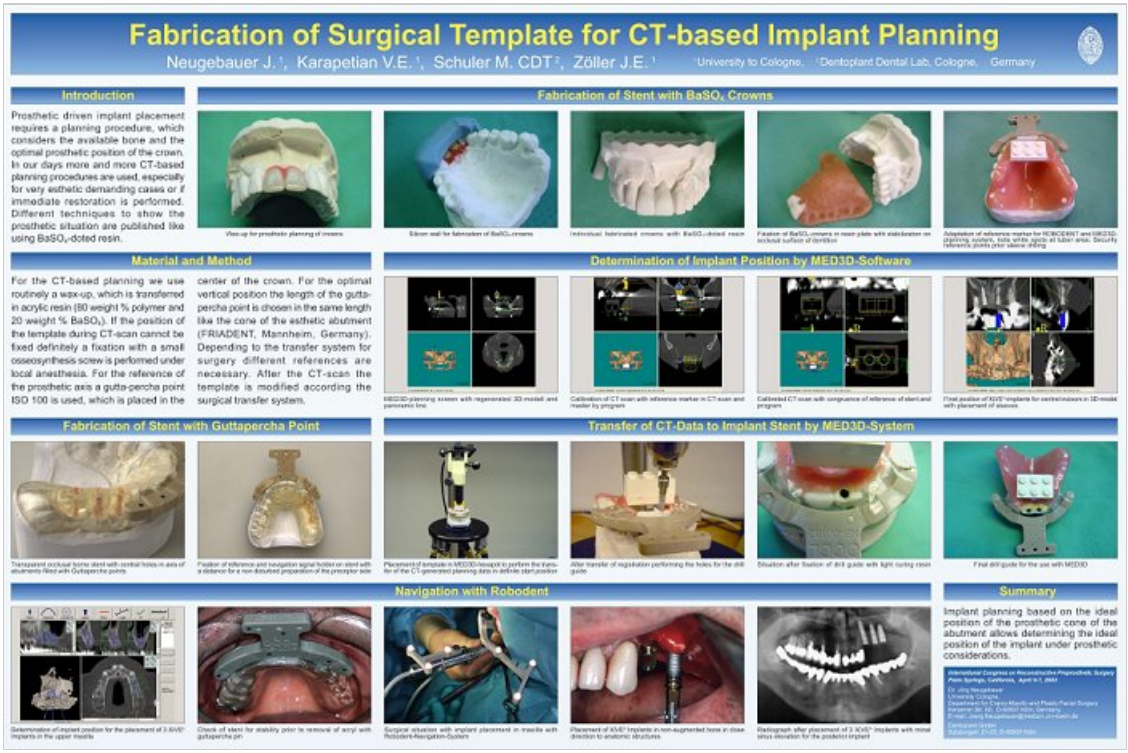

Fabrication of Surgical Template for CT-based Implant Planning

Neugebauer J.[1], Karapetian V.E.[1], Schuler M. CDT[2], Zöller J.E.[1]
[1]University to Cologne, [2]Dentoplant Dental Lab, Cologne, Germany

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Fabrication of Stent with Guttapercha Point

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Navigation with Robodent

Summary

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