Case report - Dr. med. dent. Steffen Ulbrich, St. Gallen, Switzerland

Biodenta® Tissue level Implants placement to establish the lost vertical dimension

INTRODUCTION

A 49 year old patient had previously lost several important functional teeth. This had resulted in a non-balanced occlusion, consequently the upper anterior porcelain-fused-to-metal bridge had broken.

Both problems were solved by replacing the missing roots with dental implants and fabrication of a new upper anterior porcelain bridge.

CASE REPORT

The missing teeth in the maxilla (25 and 26) and the mandible (35, 36, 45 and 46) were replaced with Biodenta® implants.

As the implants were to be placed in the non-aesthetic zone, Tissue Level Implants were selected. To ensure optimal healing a one-stage surgical approach was selected.

The panoramic radiograph showed adequate bone volume in the mandible. However due to atrophy in the maxilla bone regeneration would be required here.

Fig. 1:
Pre-planning OPG.

Fig. 2:
Defects in the existing restorations.

Fig. 3:
Planned implant placements within the maxilla and mandible.

Fig. 4: Surgical Stent for the maxilla

Fig. 5: Surgical Stent for the mandible

Surgical Stents for the maxilla and mandible were manufactured in a dental laboratory, using prefabricated teeth in a set-up that was then converted into an acrylic guide. (Fig. 4 and Fig. 5)

Fig. 6 and 7:
The Surgical Stents supplied by the dental laboratory.

Measurements on the OPG indicated a bone height of 4-5mm at the #26 site. In this situation an internal sinus lift using Osteotomes (Summer's Technique) was performed (Fig. 9). A thorough radiographic analysis is essential in order to determine if a bone graft procedure is required. If the residual vertical bone height is less than 3mm a lateral sinus lift procedure is indicated.

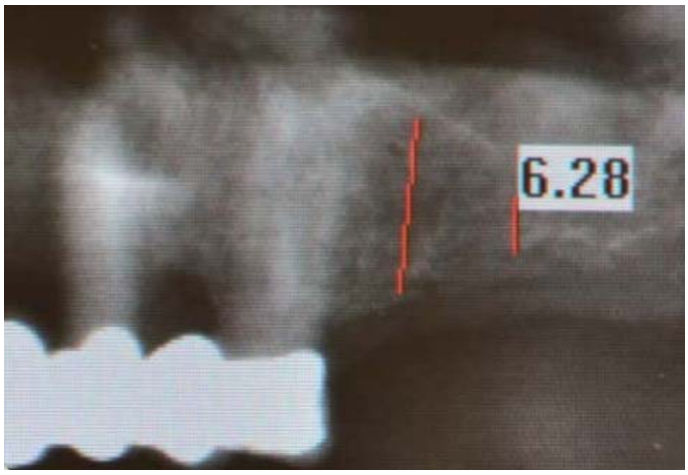

Fig. 9: Measurement of the vertical bone height

On completion of the Osteotomy, Biodenta® implants were placed in the prepared bone sites. The insertion handle enables a safe and predictable insertion of the implant (Fig.10).

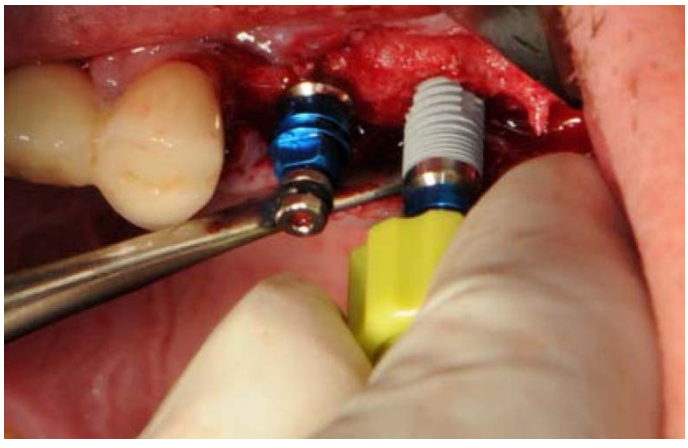

Fig. 10: Insertion of the implants

The Healing Caps were inserted (Fig.11) and the wound closed using 4/0 silk sutures (Fig.12).

Fig.8:
Internal Sinus Lift Procedure using Osteotomes.

Fig.11:
2 mm healing caps in place

Fig.12:
Sutures in situ

Six Biodenta® implants were placed in total. In the mandible, 4.1mm diameter / 10mm length implants were placed in the #34, #44 and #45 sites. In the #35 site a 4.1mm diameter / 12mm length implant was placed. In the maxilla, a 4.1mm diameter / 10mm length implant was placed in the #25 site and a 4.8mm diameter / 10mm length implant was placed in the #26 site.

For this case, in order to achieve a predictable aesthetic result a one-stage surgical approach was performed. The surgery was completed with the placement of 2mm healing caps, in order to give support to the peri-implant tissues and papillae (Fig.13 and 14).

After a healing period of six months the prosthetic phase commenced. The impression caps/guide pins were inserted and an impression taken using an open-tray technique with Impregum® (Fig.15).

The final abutments were designed utilizing CAD/CAM software. They were milled from zircon oxide by a CAM machine. After sintering the frameworks, porcelain was applied using ceramics2in1

The individual customised abutments (Fig.17) were inserted using a positioning splint with a maximum torque of 35Ncm. The final crowns were cemented (Fig.18). The lateral view (Fig.19) demonstrates the harmonious integration of the new restorations within the existing dentition.

Fig.13:
Maxilla after a 6 month healing period

Fig.14:
Mandible after a 6 month healing period

Fig.15:
Impression caps and guide pins in situ in the maxilla

Fig.16:
Frameworks and finished lab-work after porcelain application

Fig. 17: Individual customised abutments

Fig. 18: Cemented crown and bridgework in the maxilla (Occlusal View)

Fig. 19: Cementation of the crowns in the maxilla (Buccal View).

Fig. 20: The completed rehabilitation of the dentition

A balanced occlusion was established (Fig.20) with all the crown and bridgework demonstrating an excellent occlusal fit (Fig.21).

Re-establishing the balance within the occlusion, the upper anterior bridge was cemented using a composite cement.

The final result was very satisfying – it is undetectable in comparison with the original bridgework (Fig. 22, 23 and 24).

Fig. 25: Correction of the anterior reconstruction

Fig. 22: Lateral view of the reconstruction

Fig. 23: Lateral view of the reconstruction

Fig. 24: Anterior view

Dr. med. dent. Steffen Ulbrich

CLINICIAN

Dr. med. Dent. Steffen Ulbrich is a member of the ITI group and the AACD.

Dr Ulbrich is a Consultant within Prof. Sailer's Clinic in Zurich.