



IMPLA



IMPLA Multi Unit Concept

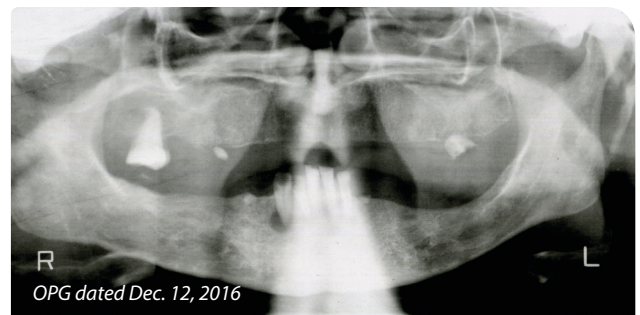
A fixed denture, even without the necessity of augmentation

A case study by Dr. M. Beldoch and Dr. R. Valentin, Cologne/Germany

Clinical case

A 56-year-old female patient presented at our practice in December of 2016 with the desire for a restoration of her prosthetics. The case history was unremarkable and the patient is a non-smoker. The remaining dentition was not worth preserving. Therefore, we suggested a full denture. For the maxilla, we produced a subtotal denture. For the mandible, we decided on an implant-supported solution to ensure a stable fit of the denture despite an advanced stage bone atrophy. In order to avoid complex augmentative procedures, we created a removable denture on a bar construction that is supported by four implants. The distal implants were to be set in an angle to extend the support polygon. The patient was treated between Janu-

ary and December of 2017, using the Multi Unit Concept (Schütz Dental, Rosbach/Germany), as described step-by-step below.



SCHÜTZ DENTAL
Micerium Group

Treatment schedule planning

Considering the reduced bone supply and the deficient bone height especially in the third quadrant, we planned the placement of four interforaminal implants in accordance with the Multi Unit Concept. The distal implants were planned with an angle of 30° (fig. 1: OPG, fig. 2 and fig. 3: Initial situation). The implants are placed interforaminally and the distal implants were inclined by 25°-35°

in distal direction. This procedure provides an extension of the support polygon. The position of the distal implant is mesial and the implant exit point is above or distal to the mental foramen. Consequently, there is normally sufficient bone height even for longer implants with an accordingly higher stability.

First surgery: Extraction and augmentation

We started the treatment end of January 2017. The initial step was to extract the remaining teeth in the mandible as well as the remaining roots in both jaws. Next, we started an extensive augmentation at the place of the bone defect and of the missing bone lamella (area of lo-

wer right cuspid) with autogenous bone and xenogeneic material. The augmentation was covered by an absorbable collagen membrane. (extraction and augmentation, fig. 3-8). 10 days post-surgery, the sutures were removed (fig. 9).

Second surgery: Implantation

After a healing phase of approximately three months (fig. 10), the implants were inserted. First, we made a crestal incision from the area of the lower right cuspid to the area of the lower left 1st bicuspid, with distal relief incisions (fig. 11). The jaw ridge and the mental foramen were layed open. The bone graft was completely ossified (fig. 12 & 13). The implantation site for four implants was prepared in accordance with the drill protocol of the ma-

nufacturer (Schütz Dental, Rosbach/Germany). The distal implants were inclined by approximately 30° and they passed by the mental foramen mesially (fig. 14-16). After the insertion of the implants (fig. 17) and after covering them with healing caps (fig. 18), we closed the wound saliva-proof with a 3-0 silk suture (Schütz Dental, Rosbach/Germany) (fig. 19). The panoramic radiograph shows the situation directly post-implantation (fig. 20).

Re-Opening

8 weeks post-implantation we re-opened the implants (fig. 21 & 22). Next, we produced an individual tray for an impression (fig. 23) and took an impression with help of the Multi Unit impression posts and abutments (Schütz Dental, Rosbach/Germany) (fig. 24). After transferring the situation to the model (fig. 25), an acrylic pattern was

used to create a transfer key (fig. 26-28). It was tried in (fig. 29) and the abutments were fixed (fig. 30 & 31).

Bar Construction

The dental lab (Bisswerk, Aachen/Germany) produced the bar construction and the secondary framework (fig. 32 & 33). This was tried in again in clinical context (fig.

34). The fit of the bar construction was verified with the Sheffield test (fig. 35).

Denture

Next, the dental lab (Bisswerk, Aachen/Germany) created the denture (fig. 36-39). Finally, the position of the implants and of the bar construction was checked radiologically in an OPG (fig. 40). The restoration was finalized

in September of 2017. During a subsequent recall appointment, the denture and the bar construction were checked and cleaned.

Discussion

The concept of the distally angulated implants goes back to Kerkmanov, 1990 [Kerkmanov et al., 2000], but was only established at the beginning of the 21st century with the „All-on-4“ concept of Paolo Malo [Malo et al., 2003, 2005, 2006, 2007, Kathami & Smith, 2008]. This treatment facilitates providing a restoration for an edentulous jaw without complex augmentation, even in one of the many cases like this one, where there is limited vertical bone available in the posterior region of the mandible. In this case, the remaining bone height was not sufficient for an insertion of standard length implants in distal position from the mental foramen. Therefore, we decided on an interforaminal implantation. To extend the prosthetic support polygon, the distal implants were inclined by ca. 25-35° in distal direction, in accordance with the above mentioned concept.

The preceding augmentation of the bone defect after extraction in the area of the lower right cuspid was carried out with xenogeneic bone substitute and a collagen membrane in line with the „socket preservation“ [Troiano et al., 2017, Vignoletti et al., 2012]. The augmentation was extended to the other extraction sockets to optimize the situation for the planned implantation. The extraction as well as the bone augmentation and implant surgeries were free of complications and the wound healing was completely uneventful. The prosthetics were manufactured in cooperation with the dental lab Bisswerk

in Aachen/Germany. With the prefabricated parts of the Multi Unit System (Schütz Dental, Rosbach/Germany), an individualization of the abutments could be foregone for an easier and quicker completion. The Multi Unit System was used in combination with cylindrical implants (Schütz Dental, Rosbach/Germany), as these implants offer the greatest primary stability due to their self-tapping thread and the cylindrical external geometry.

As a complete system, the wide selection of abutments as well as auxiliary parts for closed and open impressions offers easy and clear options for quick treatment concepts with angulated implants in the upper and lower jaw. Considering progress and the desire for easy-to-implement and economical solutions, using this system is the logical next step.

Especially for concepts of „everything from one source“, the use of the Schütz Dental Multi Unit System produces excellent results.

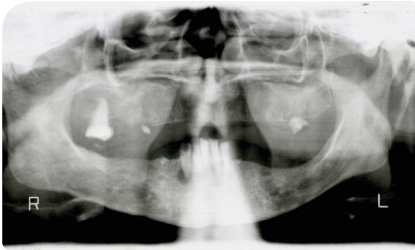


Fig. 1: OPG dated December 12, 2016



Fig. 2: Initial situation



Fig. 3: Initial situation

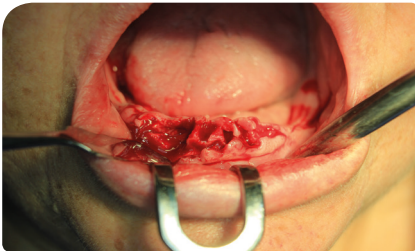


Fig. 4: Extraction and bone augmentation

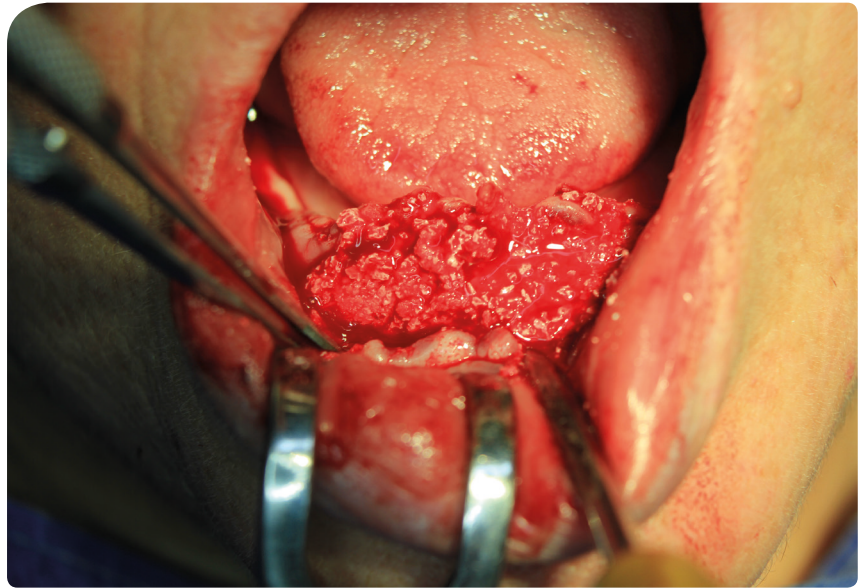


Fig. 6: Extraction and bone augmentation

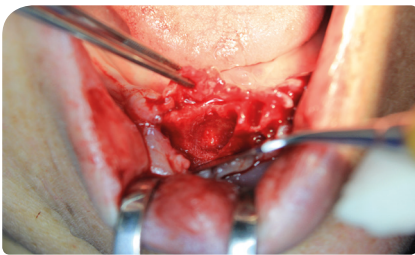


Fig. 5: Extraction and bone augmentation

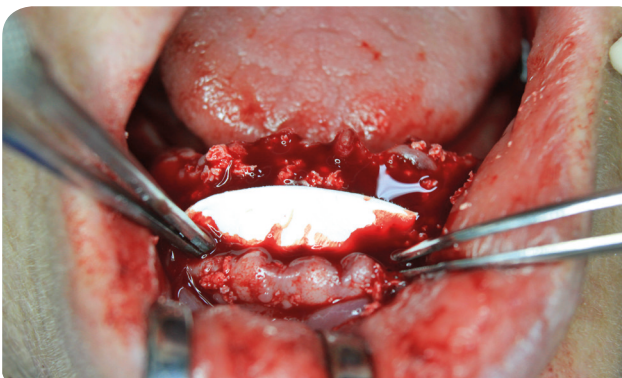


Fig. 7: Extraction and bone augmentation



Fig. 8: Extraction and bone augmentation



Fig. 9: Recall after extraction and bone augmentation



Fig. 10: Situation before implantation (3 months after extraction and bone augmentation)

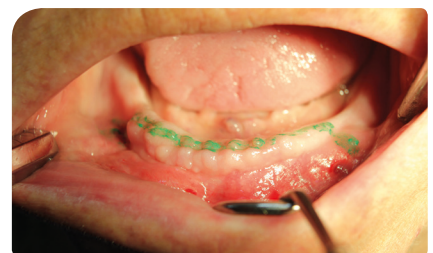


Fig. 11: Incision

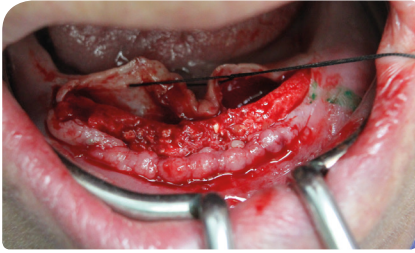


Fig. 12: Laying open the jaw ridge before implantation

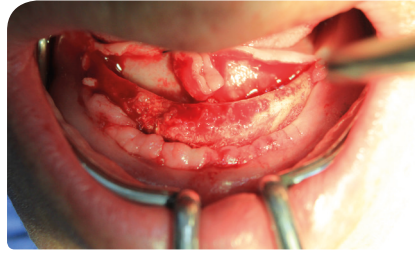


Fig. 13: Laying open the jaw ridge before implantation

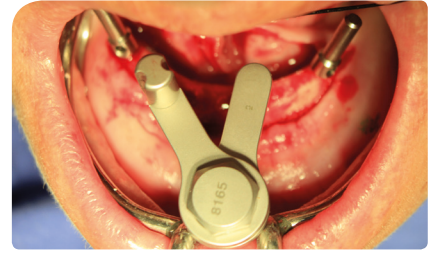


Fig. 14: Implantation

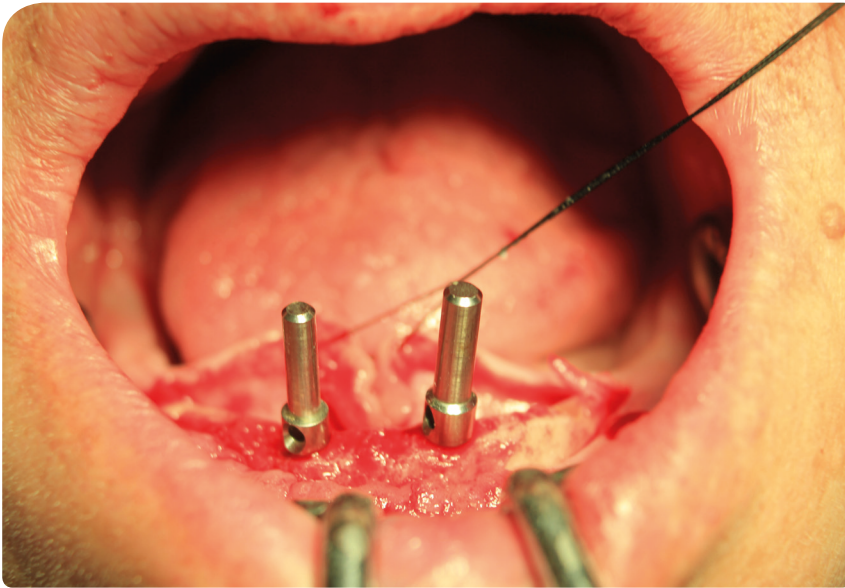


Fig. 15: Implantation

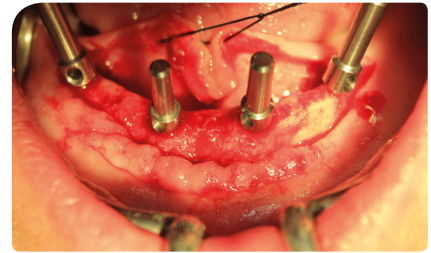


Fig. 16: Implantation

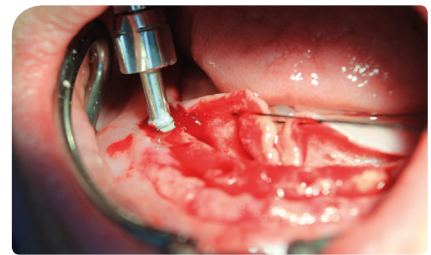


Fig. 17: Implantation

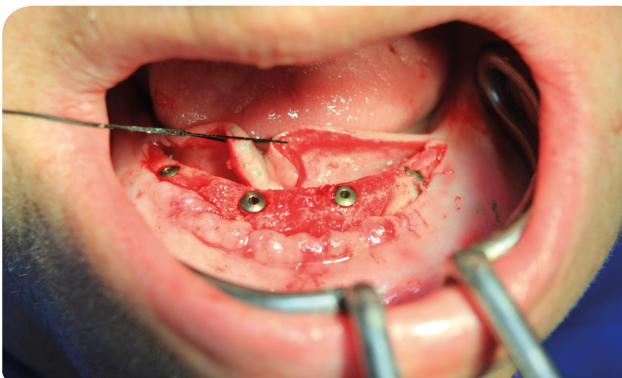


Fig. 18: Implantation

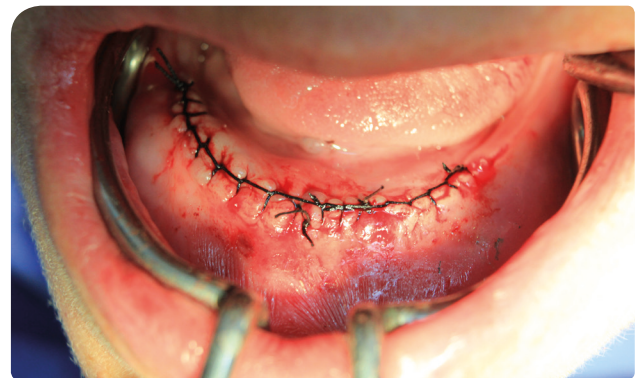


Fig. 19: Implantation

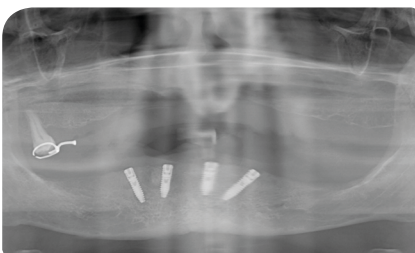


Fig. 20: OPG after implantation, April 24, 2017



Fig. 21: Situation before re-opening (eight weeks post-implantation)



Fig. 22: Situation after re-opening



Fig. 23: Individual tray



Fig. 24: Impression posts for open impression with the Multi Unit System (Schütz Dental)

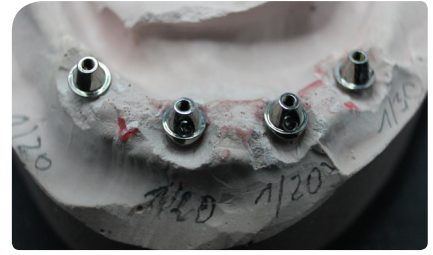


Fig. 25: Abutments of the Multi Unit System (Schütz Dental)



Fig. 26: Blocking of the abutments on the model

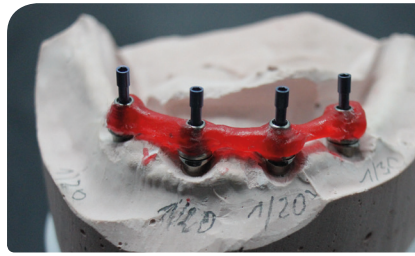


Fig. 27: Blocking of the abutments on the model (e.g. with PaintAcryl carving resin by Schütz Dental)

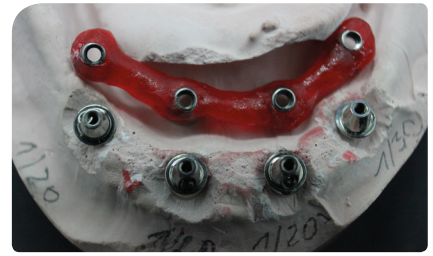


Fig. 28 a: Blocking of the abutments on the model



Fig. 28 b: Blocking of the abutments on the model



Fig. 29: Intraoral fitting



Fig. 30: Multi Unit abutments (Schütz Dental) inside the mouth



Fig. 31: Multi Unit abutments (Schütz Dental) inside the mouth



Fig. 32 a: Bar construction and secondary framework on the model



Fig. 32 b: Bar construction and secondary framework on the model



Fig. 32 c: Bar construction and secondary framework on the model



Fig. 33: Secondary framework on the model



Fig. 34: Fitting of the bar construction



Fig. 35 a: Sheffield test



Fig. 35 b: Sheffield test



Fig. 35 c: Sheffield test



Fig. 35 d: Sheffield test



Fig. 36: Finished denture



Fig. 37: Finished denture



Fig. 38 a: Finished bar construction



Fig. 38 b: Finished bar construction



Fig. 39: Finished denture

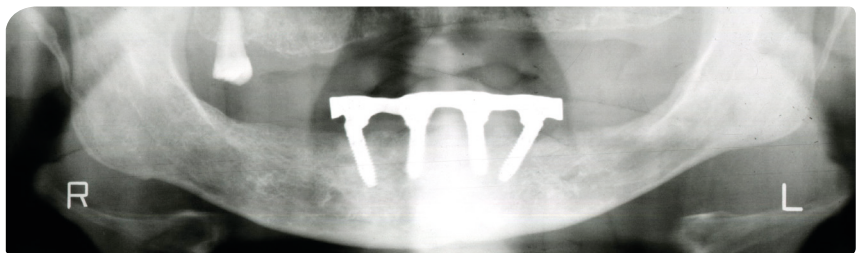


Fig. 40: OPG after the insertion of the bar construction

Literature

1. Maló P, Rangert B, de Araújo Nobre M. „All-on-Four“ immediate-function concept with Brånemark System implants for completely edentulous mandibles: A retrospective clinical study. Clin Implant Dent Relat Res 2003; 5 (Suppl 1): 2-9.
2. Maló P, Rangert B, de Araújo Nobre M. All-on-4 immediate-function concept with Brånemark System implants for completely edentulous maxillae: A 1-year retrospective clinical study. Clin Implant Dent Relat Res 2005; 7 (Suppl 1): S88-94.
3. Maló P, de Araújo Nobre M, Petersson U, Wigren S. A pilot study of complete edentulous rehabilitation with immediate function using a new implant design: Case series. Clin Implant Dent Relat Res 2006; 8:223-232
4. Maló P, de Araújo Nobre M, Lopes A. The use of computer-guided flapless implant surgery and 4 implants placed in immediate function to support a fixed denture: Preliminary results after a mean follow-up period of 13 months. J Prosthodont 2007; 97(suppl):S26-S34.
5. Krekmanov L, Kahn M, Rangert B, Lindström H. Tilting of posterior mandibular and maxillary implants of improved prosthesis support. Int J Oral Maxillofac Implants 2000; 15: 405-414
6. Troiano G, Zhurakivska K, Lo Muzio L, Laino L, Cicciù M, Lo Russo L. Combination of Bone Graft and Resorbable Membrane for Alveolar Ridge Preservation: a Systematic Review, Metaanalysis and Trial Sequential Analysis. J Periodontol. 2017 Sep 12:1-17. doi: 10.1902/jop.2017.170241.
7. Vignoletti F, Matesanz P, Rodrigo D, Figuero E, Martin C, Sanz M. Surgical protocols for ridge preservation after tooth extraction. A systematic review. Clin Oral Implants Res. 2012 Feb;23 Suppl 5:22-38. doi: 10.1111/j.1600-0501.2011.02331.x.
8. Khatami AH, Smith CR. „All-on-Four“ immediate function concept and clinical report of treatment of an edentulous mandible with a fixed complete denture and milled titanium framework. J Prosthodontics 2008;17(1):47-51

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