Modern implants from a different angle

By Safa Tahmasebi BDS, MS (USA) Prosthodontist; Costa Nicolopoulos BDS, FFD (SA) Oral & Maxillofacial Surgeon

Background

With the success of dental implants, the profession of dentistry has moved into applying innovative ideas that have decreased treatment time and amplified the quality of patient's lives. While integrating into modern dentistry, implant treatment has shifted direction from being surgically driven to prosthetically driven. Amongst other developments in improving all aspect of implant dentistry, angled implants were first introduced in the early 1990's and since then there has been ample research to confirm their efficacy and safety.

Implants were originally tilted in a bodily fashion to bypass certain anatomical structures. However, tilted implants were later found to have mean difference between tilted and upright implants was found in the severity of edentulous maxillae as opposed to bone grafting and conventional prosthodontics to restore the posterior maxilla. In a ten-year study patients with tilted implants preferred a more favorable aesthetic appearance as opposed to the traditional restoration using the use of angled abutments, which are the inevitable use of custom made abutments to correct the severe distal inclination of the implants. The use of angled abutments facilitates the avoidance of anatomical limitations, shortening of cantilevers, and enables the use of screw retained restoration without the need of angled abutments. The use of angulated abutments is hence not necessary since Co-Axis Implants correct the angulation within the body of the implant.

Deciding on the Angle

This tapered body implant is available in 12°, 24° and 36° degree built-in angle , ranging in 4, 5, 6 mm diameter and 8.5mm to 19mm in length. It is currently available in the external hex, Tri-nex and internal octagon connections. In extreme cases for even higher angle correction, the Co-Axis implant can be combined with a 17° or even the 50° angled abutment. With various angulations available one can make a decision of the angle needed by the use of angled direction indicators that may be used to orientate and assess the 3-D position of the desired access hole within the surgical guide.(figure 6). The angled direction indicator is inserted into the osteotomy and the prosthetic axis is checked regarding the access hole position for screw retention as well as for parallelism with other implant fixtures. When the orientation is con-
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Dr. Safa Tahmasebi Completed his Bachelors degree in Biology and a minor in Biochemistry at Saint John’s University Queens New York in 2004 with a full scholarship based on academic performance. In 2005 he joined State University of New York at Buffalo School of Dental Medicine where he attained his Doctor of Dental Surgery and qualified as a Dentist in 2008. He joined the Albert Einstein Medical hospital of Montefiore in Bronx New York where he completed one-year hospital dentistry fellowship. In 2015 he completed three and half year full time training in prosthodontics and surgical training with a masters degree in prosthodontics at the West Virginia University School of dentistry. During this time He was an adjunct clinical instructor to the undergraduate programs at the WVU University. In 2015 he joined the SameDay Dental implants Bränemark Osseointegration Center (BOC) Dubai as a full time prosthodontist specializing in full mouth rehabilitation, immediate loading and Smile reconstruction.

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Figure 6. 12° direction indicator within a surgical guide

Figure 7. Direction indicators left to right (0°, 12°, 24° and 36°)

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Dr. Costas DDS qualified as a dentist in 1984 receiving his dental degree cum laude from the University of Witwatersrand, Johannesburg, South Africa. He graduated top of this class with rank order No.1 and received numerous awards including the Gold Medal of the Dental Association of South Africa for the most outstanding graduate. In 1989 he completed his 4 year full time postgraduate Maxillo-facial & Oral Surgery training at University of Witwatersrand, South Africa and was awarded FFD (SA) MFD. Since 1990 he is in full time specialist Maxillo-facial & Oral Surgery private practice concentrating on immediate loading rehabilitation of the maxilla: a systematic review. J Dent Res. 2012 Sep; 91(9):821-7


Figure 8. The use of 12°, 24° and 36° implants in a fixed maxillary immediate loading rehabilitation

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Figure 8. The use of 12°, 24° and 36° implants in a fixed maxillary immediate loading rehabilitation

References

Conclusion
Today more clinicians are advocating the use of angled implants. This leads to less grafting procedures that not only minimizes the patient’s morbidity associated with grafting procedures. Co-Axis implants also allow early or immediate loading protocols that would otherwise not be possible with conventional procedures. Therefore, the use of native bone, the avoidance of expensive angled abutments, decreased patient morbidity, reduced cost, benefits of immediate loading, likelihood of bone retained restorations, and elimination of long cantilevers are all advantages of using Co-Axis implants.

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Sinus lift with simultaneous implant placement

Piezosurgery offers the patient a gentle treatment with less complications and time saving benefits.

By Dr. Peter Hentschel

Oral rehabilitation has been paid notice for a long time to regain masticatory function and for aesthetic reasons. Implant placement in the maxilla is often limited due to missing height of the alveolar process, this can be solved by external Sinus Graft (Boyne 1980). The alveolar crest can be built up to 8-15 mm by Sinus Elevation. The success rate is between 85% to 95% after 15 years. The function of the sinus is not touched by the reduced volume. The success rate is between 85% to 96% after 15 years (Peleg et al. 2000).

At external elevation and sinus augmentation a second surgical procedure can be avoided by simultaneous implantation in case of 5 mm bone height. During the elevation of Schneiderian Membrane with sandwich technique autologous bone and bone substitute materials are used (Kamikawa et al. 2005). To resist the respiratory pressure non-resorbable bone substitute material (e.g. CompactBone B, bovine Bone) or the cranial bone lid are placed next to sinus membrane.

The during the procedure gained autologous bone can be placed alone or in combination with a bone graft material (e.g. Compact Bone S, biphasic Calcium Phosphate) around the placed implant. Sinus Elevation with simultaneous implant placement is indicated with up to 97.0% survival rate in after years (Peleg et al. 2000).

Guided Bone Regeneration (GBR) as state of the art method for bone grafting usage in most cases biocompatible membranes. Resorbable membranes offer several advantages beside the easy handling, as no need for a second surgical procedure for removal or minimization of complications, e.g. soft-tissue dehiscences.

Single tooth rehabilitation with implant is the appropriate method instead of conventional use of bridge. In the reported case the situation is aggravated by the lowered sinus and lateral limitation by intact adjacent teeth. For lateral one-stage sinus lift we are using the special designed Sinus-Lift implant for increased primary stability (SL Implant; Dentegris, Germany). The improved stability is based on micro threads with increased contact in neck area. The autologous bone is gained during surgical procedure within piezo assisted window preparation and drilling process (Fig. 1).

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To ensure the barrier and to stabilize the particulated bone-grafting material a pericardium membrane with a resorption time of 16-24 weeks is used (Bone Protect Membrane; Dentegris, Germany). The pericardium membrane offers very good handling properties in combination with a prolonged barrier function.

Case Study

The patient (30 y.f.) was showing an alveo loco lost tooth in 15 (Fig. 2). Patients request was aesthetic and masticatory rehabilitation which was suggested by one-stage sinus lift.

Based on diagnostic planning piezosurgical window preparation in 15 (Fig. 5) was performed after local anesthesia and periostal flap. By choosing a round-oval lid design sharp edges can be avoided which reduces the risk of perforation.

After release of the sinus membrane (Fig. 4) the implant tunnel was prepared (Fig. 5) and the Implant (SL Implant; Dentegris, Germany) placed (Fig. 6). Simultaneusly the surrounded space was covered with a rehydrated Collagen Membrane (Bone Protect Membrane; Dentegris, Germany) as protections of the Schneiderian membrane (Fig. 7). Autologous bone was mixed with Compact Bone B and placed in the sinus for stabilization (Fig. 8).

After control of primary stability particulate materials was filled laterally and covered with pericard membrane according to GBR standards (Fig.9). The flap was readapted and closed, control by X-ray shows axial positioning and augmentation of sinus maxillars (Fig. 10).

Reentry after five months was accompanied by full ceramic crown and results in aesthetic and harmonic rehabilitation (Fig. 11).

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