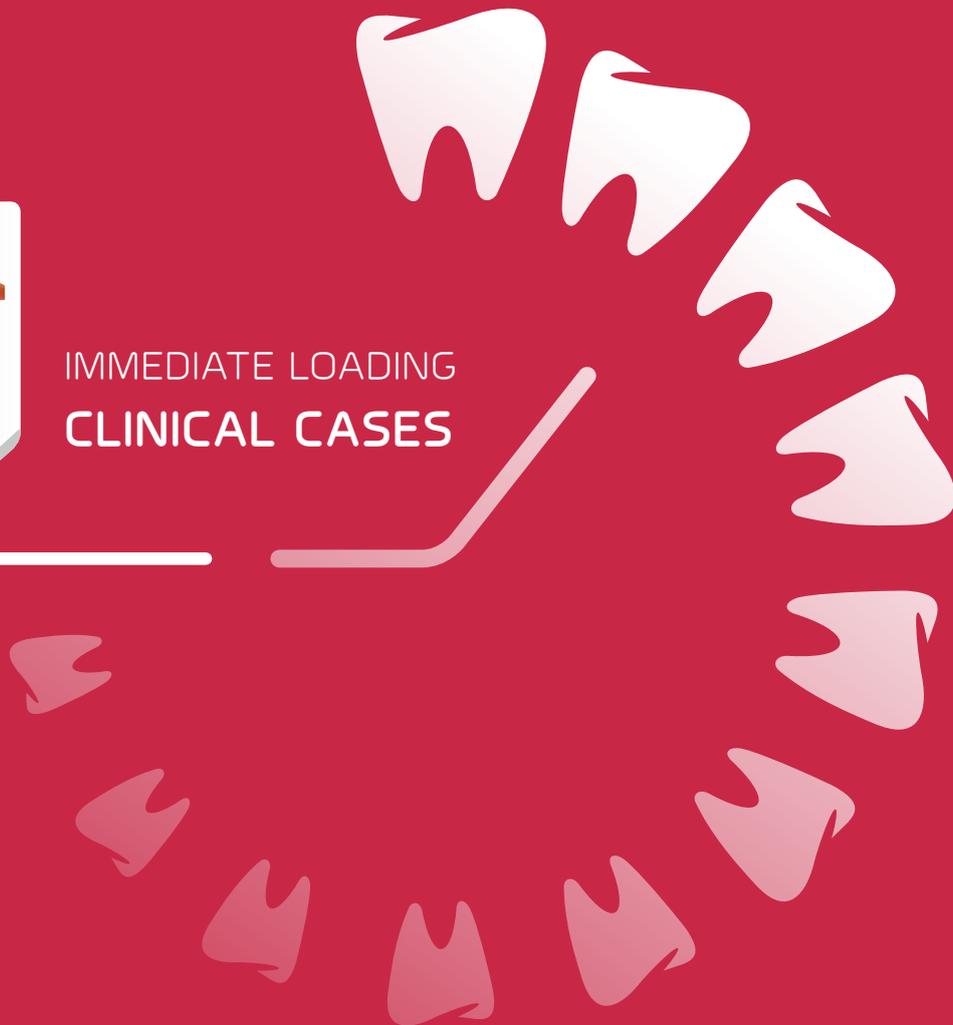


2014
Vol. 02



IMMEDIATE LOADING
CLINICAL CASES



Protocol of an Immediate Loading Procedure in Severe Mandibular Atrophy.

With the courtesy of Dr. Balan Igal D.M.D.

A 79 year old patient – Non-smoker

Anamnesis:

- Controlled Hypertension;
- Hypothyroidism;
- Mastectomy (15 years prior to the date of examination);

Principal Patient's Complaints:

- Impaired aesthetic;
- Difficulty in chewing due to loss of posterior teeth;
- Bad breath odor;
- Teeth mobility;

Intraoral examination:

- Severe bilateral alveolar bone loss – posterior mandible. (Fig.1);
- Reduced posterior occlusal support;
- Chronic generalized severe periodontitis;

Treatment Plan:

- Mandibular clearance (Fig.2);
- Placement of four implants:
 - Two Cortical implants at the extraction sites;
 - Two tilted implants at the posterior area;

Cortical implants are aggressively threaded implants that provide primary stability and bi-cortical anchoring (Fig3). These implants allow immediate loading due to their primary high stability.

Cortical implants are provided with a smooth "Neck" surface (i.e. with no aggressive roughness). The smooth neck surface reduces the adherence of perio-pathogens thus reducing the development of inflammatory process around the neck area (i.e. mucositis and peri-implantitis).

The tilted implants are to be installed as distally as possible in order to shorten any possible extension and its resulting cantilever effect.

These implants are also of the smooth neck surface type, for the same reasons as detailed above (Fig4);

- The implants would be immediately loaded and rehabilitated by a screws retained acrylic bridge, reinforced by a 3 mm induction welded titanium (grade 5) bar;
- The bridge to be is a screw retained type restoration, based on angle correcting multi unit abutments;

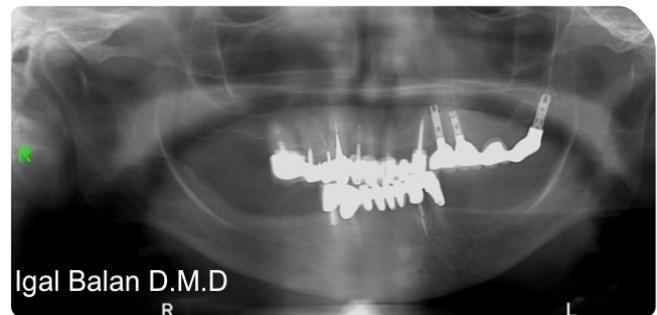


Fig.1 Panoramic X-Ray demonstrating extensive bone loss in the posterior mandible.

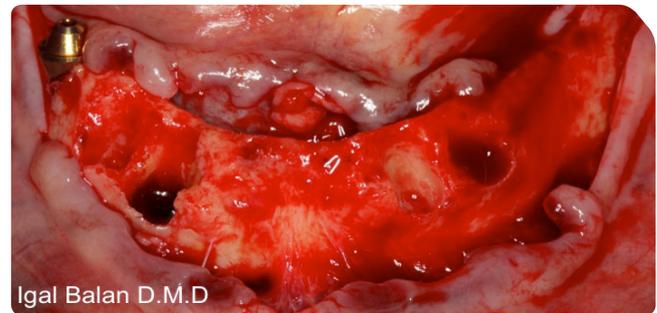


Fig.2 Post extraction site

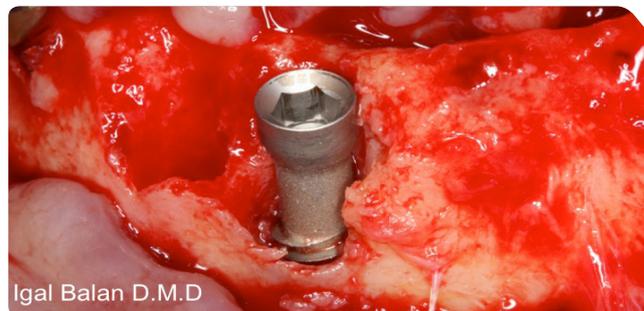


Fig.3 Cortical implant (4X18 mm) with an aggressive thread for a better primary stability and with a smooth neck surface for reduction of bacterial adherence and inflammatory process development.



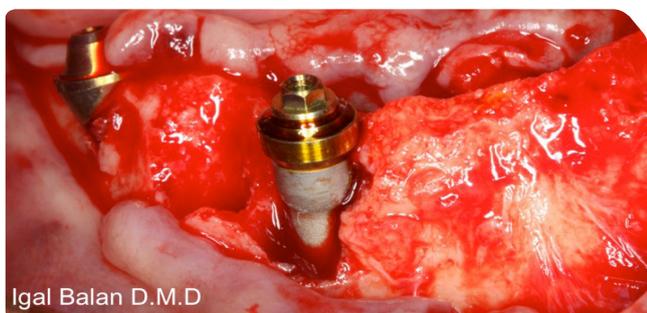
Igal Balan D.M.D

Fig. 4 TUFF Implant (37.5X11.5 mm) with a smooth neck surface for reducing bacteria accumulation and infection.



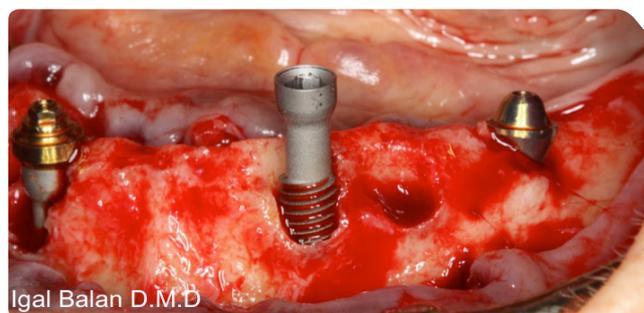
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Fig.5 Cortical implant located in the extraction site of tooth 43. The Coronal area is left exposed due to bone loss.



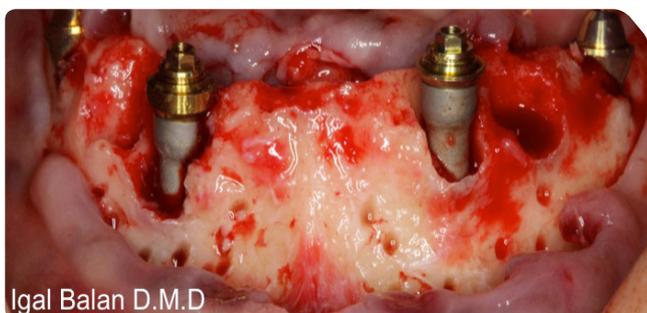
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Fig.6 Straight Multi-Unit abutment mounted on the Cortical implant.



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Fig.7 Cortical implant (4X20 mm) located in the extraction site of tooth 33.



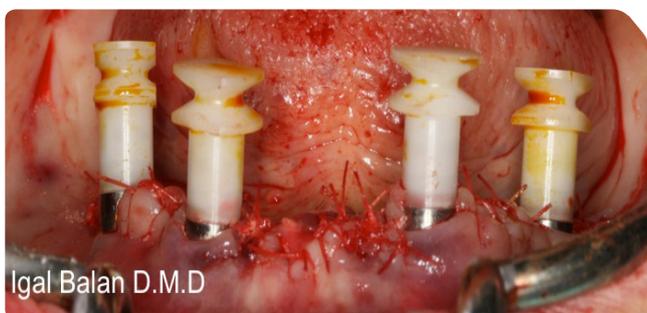
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Fig.8 Four implants with Multi-Units showing the Decortication of the bone prior to bone grafting.



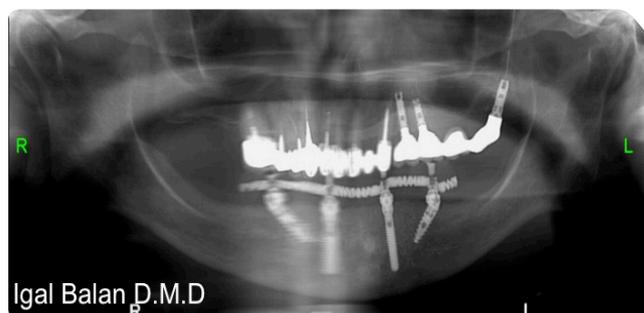
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Fig.9 Bone augmentation using HA & Calcium sulfate bone graft.



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Fig.10 Snap-on Transfer for an easy impression taking using closed tray technique.



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Fig.11 Post op. panoramic X-ray, taken at the day of the operation.

Immediate loading protocol of a cortical implant placed in a post extraction socket with an extensive bone loss.

With the courtesy of Dr. Balan Igal D.M.D.

Primary stability (mechanical stability) of the dental implants is a key factor with high correlation to implant survival rate. Micro movements that exceed 200µm may result in implant failure. Insertion and loading of an implant placed in a fresh socket requires adequate primary stability. Due to its aggressive threaded design, the Cortical implant enables bi-cortical anchorage thus increasing the primary stability which is required for immediate loading.

The following case presents an implant placement in a post extraction site after enucleation of a specimen which was later diagnosed as a radicular cyst. The chronic inflammatory process caused severe bone loss.

61 years old female patient – nonsmoker.
Declares to be of good health.

Chief complains:

- Unstable denture in the lower jaw;
- Impaired aesthetic;
- Teeth mobility;
- Bad breath odor;

Clinical examination:

- Lower jaw: Moderate alveolar bone loss and root remnants;
- Upper jaw: Chronic generalized severe periodontitis, severe bilateral alveolar bone loss of posterior maxilla and secondary caries. Additionally, extensive periapical lesions were detected (fig 1);

Treatment plan:

- Extraction of roots remnants;
- Cyst enucleation in the location of teeth 13 and 14 (the cyst was histologically diagnosed as “Radicular Cyst”). The cyst caused an extensive bone resorption with a wide destruction of the buccal plate (fig 2 and 3). It was decided to place a Cortical implant at the location of the enucleated cyst (fig 4 and 5);
- The implant is to be placed at a 30° angle, parallel to the mesial wall of the maxillary sinus. The angulation will be later corrected by a 30° Multi-Unit abutment (fig 6);
- The implants would be immediately loaded and rehabilitated by a screws retained acrylic bridge, reinforced by a 3 mm induction welded titanium (grade 5) bar;



Fig 1: The panoramic X-ray illustrates chronic generalized severe periodontitis and severe bilateral alveolar bone loss.

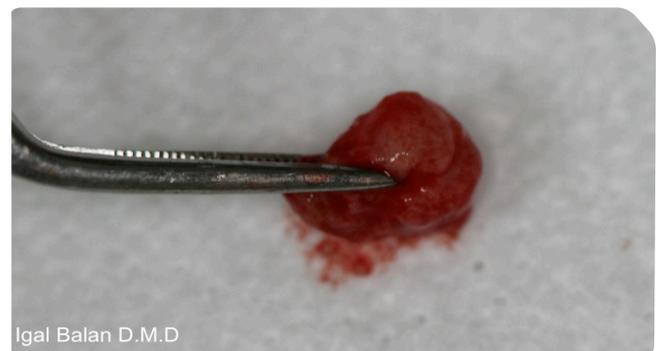


Fig 2: Radicular Cyst that was enucleated from the location of the teeth 13, 14.

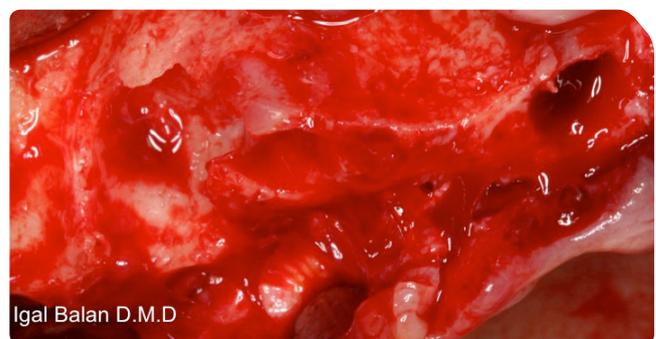
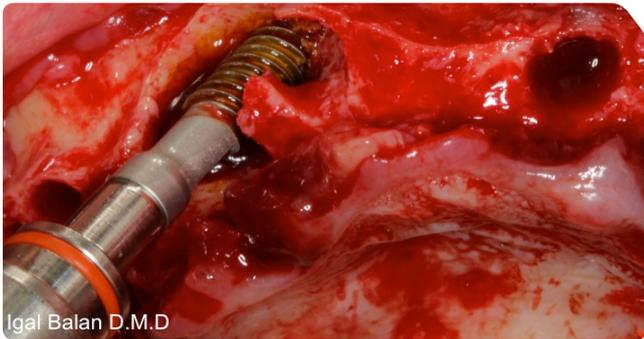
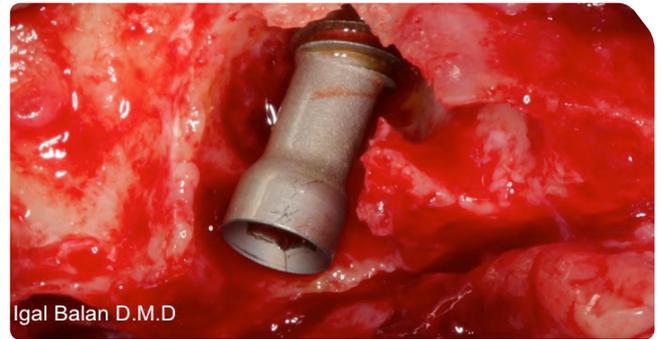


Fig 3: Enucleation site



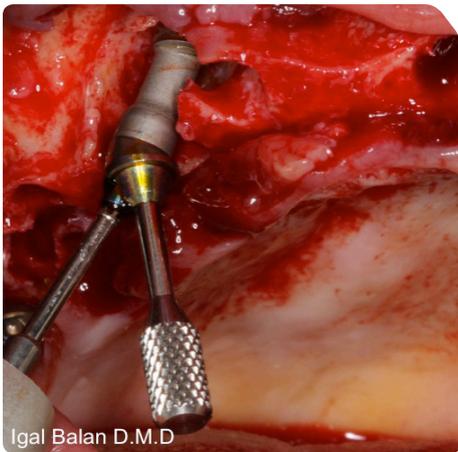
Igal Balan D.M.D

Fig 4: A Cortical implant (4x16) placed at the location of the major bone loss.



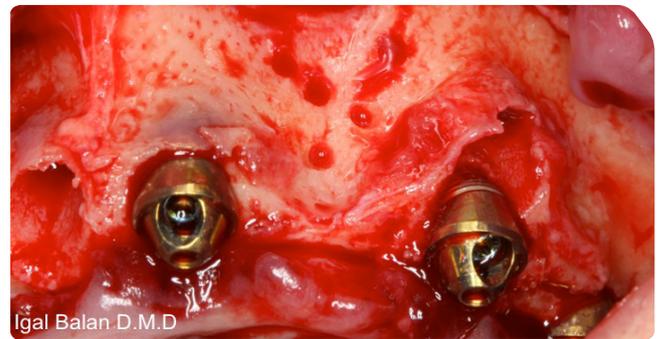
Igal Balan D.M.D

Fig 5: Despite the extensive bone loss, the recommended initial stability (over 45Ncm) for immediate loading was obtained.



Igal Balan D.M.D

Fig 6: A Multi-Unit abutment is mounted on the implant in order to compensate for the angulation.



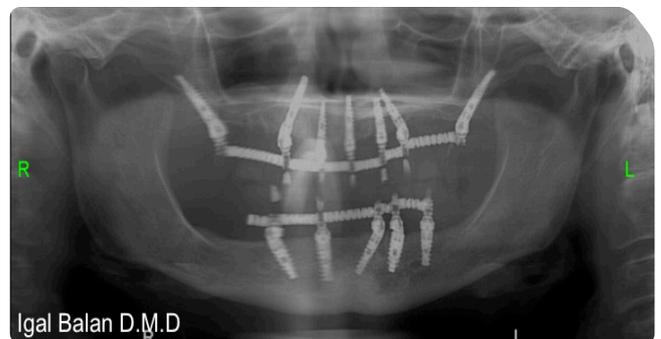
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Fig 7: Decortication of the bone prior to bone grafting.



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Fig 8: Bone augmentation using HA & Calcium sulfate bone graft.



Igal Balan D.M.D

Fig 9: Post op. panoramic X-ray, taken at the day of the operation.

Extramaxillary Technique - Zygomatic implant in Severe Maxillary Resorption: Full Mouth Rehabilitation.

With the courtesy of Dr. Balan Igal D.M.D

Patient: 56 years old female.
Smoker: 10 packs years.
Declares to be in good health.

Chief complains:

- Impaired aesthetic (shy smile);
- Teeth mobility;
- Bad breath odor;
- Spontaneous bleeding;

Clinical examination:

- Upper jaw:
 - Chronic generalized severe periodontitis;
 - Teeth mobility;
 - Extensive loss of supporting bone;
 - Panoramic X-ray demonstrating Sinus pneumatization;
 - Grade III furcation defect in tooth 16;
- Lower jaw:
 - Chronic generalized severe periodontitis;
 - Teeth 44-45 show extensive crown destruction and deep caries;
 - Periapical lesion in tooth 43;
 - Implants – Perimplantitis with threads exposure (fig 1);

Surgical procedure:

Lower jaw: Teeth extraction, installation of parallel (axial) implants.

Upper jaw: Extractions, installation of axial implants at the anterior zone and tilted implants at the posterior zone to avoid sinus elevation.



Fig 1: The panoramic X-ray illustrates chronic generalized severe periodontitis, sinus pneumatization, caries and perimplantitis.



Fig 2: A tunnel preparation drill for the Zygomatic implant.

It was decided to install a Zygomatic implant at the right side because of the pneumatization of the sinus and inability to place a TPP (Tubero-Pterygo-Platine) implant.

The Zygomatic implant placement is a highly predictable procedure with a high success rate in restoration of atrophic jaws, without the need for complex bone augmentation procedures. The implant was placed following the extramaxillary protocol; this is a modification of the traditional Branemark technique.

In the Extramaxillary technique a bypass of the maxillary sinus is being made in a manner that prevents damage to the Schneiderian membrane.

The Zygomatic implant is anchored in the zygomatic bone and not in the alveolar bone; the resulting torque is very high. The prosthetic platform is being shifted buccally to a more appropriate position of the restoration.

Having an unthreaded body ending with an aggressive thread at the apical part of the implant the Zygomatic implant is highly suitable for the Extramaxillary approach. This design facilitates the fixation of the implant in the zygomatic bone.

A special drill design allows the clinician to create a clean tunnel preparation with minimal risk of membrane damage (Fig 2 and 3).

Following the osteotomy, a sinus lift procedure is done as well to prevent any damage to membrane integrity during implant placement.

A 45° angle Multi-Unit abutment will provide the angle correction needed.

Rehabilitation follows immediate loading protocol by a screw retained acrylic bridge, reinforced by a 3 mm induction welded titanium (grade 5) bar.

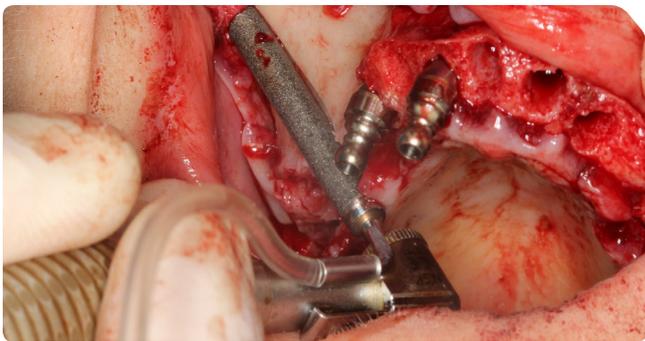


Fig 3: Osteotomy preparation.

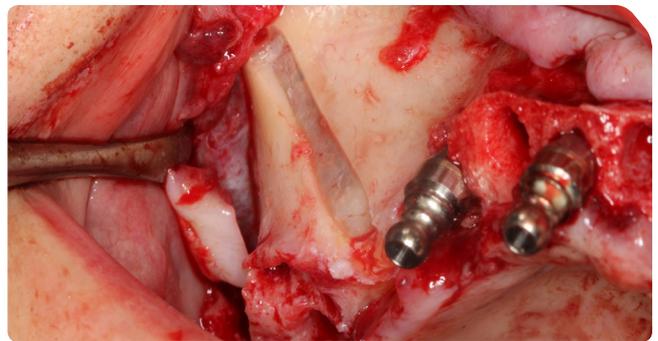


Fig 4: Tunnel preparation.

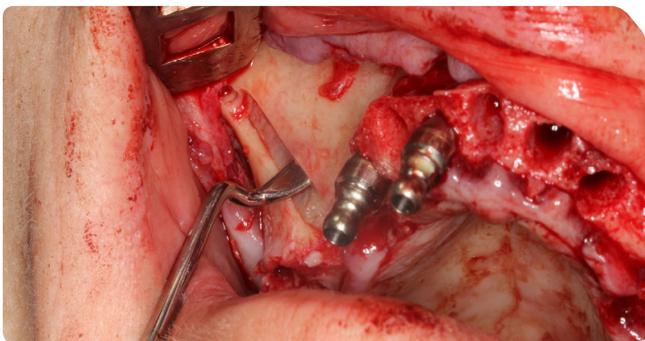


Fig 5: Intact Schneiderian membrane after osteotomy preparation.



Fig 6: length measurement of the osteotomy – 45mm



Fig 7: Zygomatic implant (4.2x45)



Fig 8: The Zygomatic implant is mostly unthreaded to reduce periopathogens accumulation and development of perimplantitis; Aggressive fixation threads to the Zygomatic bone exist only at the apical part

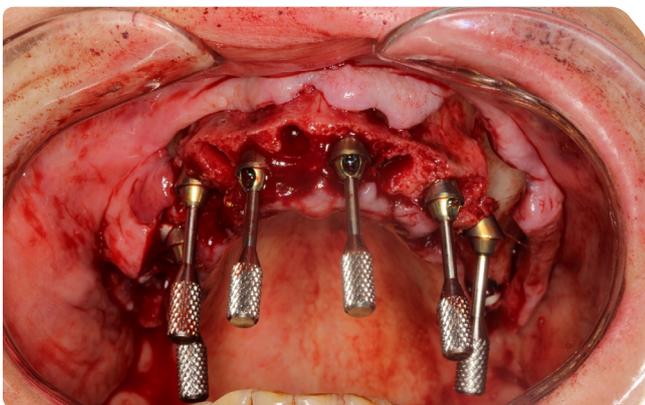


Fig 9: The mounted Multi-Unit Abutments demonstrate the parallelism level that was achieved after angle correction.

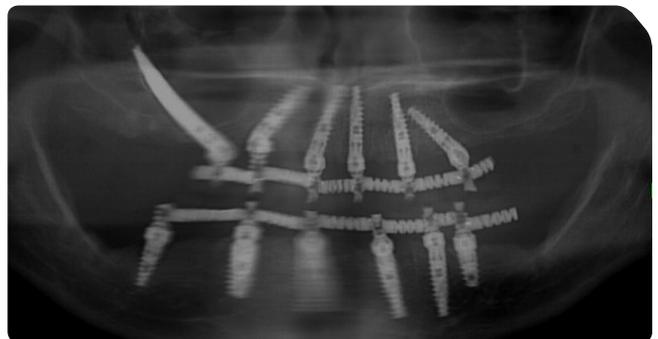


Fig 10: Post op. panoramic X-ray, taken at the day of the operation

Dental Implantation Treatment plan - Planning ahead.

With the courtesy of Dr. Balan Igal D.M.D.

Dental Implantation has been in use for about 50 years. During this period of time, many technological and biological developments that contributed significantly to the high success rate of implantations, have taken place.

Measureable quantitative and qualitative criteria for determining the success rate of dental implants have been set by various researchers such as Alberktson and others.

The use of dental implants as part of routine dental care is growing. However, with the number of implants installed, we observe a marked increase in failure rates as well as in the incidence of pathological processes such as mucositis and periimplantitis.

Long-term follow-ups and vast accumulated knowledge reveal a less optimistic picture of dental implantation, and the illusion that dental implants can serve as long term substitutes for natural teeth is beginning to dissipate.

Nowadays we see more and more implants losing their bony support, and aside of functional failures there is also deterioration in the uncompromised aesthetic aspect.

Therefore, more and more often clinicians are faced with the need for an upfront treatment planning of complicated cases which involve the removal of previously installed failed implants.

Having to deal with failures raises questions about the key rules in planning of implantation procedures, for example: As it is well known, 16 mm or even 13 mm Long implants, show stability even after losing half of their support. However, once their support has been compromised, a non-reversible damage is being caused which makes their replacement, in case of failure, much more difficult. Based on this premise, the question that comes forth is whether to choose long implants or short implants to start with.

When we offer a treatment plan to a patient who had previously installed implants that failed, we should take into consideration the etiological factors that led to this failure. It is also important to understand that the use of implants is not a lifetime solution, and therefore the planning has to take into consideration future needs of the patient.

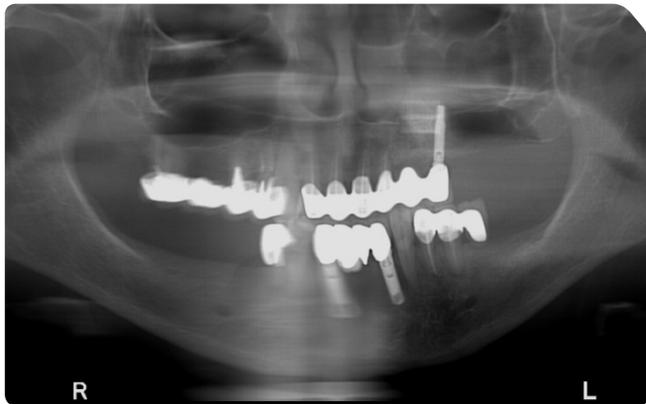
The following case presents a 64 years old female patient.

The clinical examination showed:

- Chronic generalized severe periodontitis;
- Peri-Implantitis and Mucositis around implant's in the lower jaw;
- Calculus and plaque accumulation;
- Implant's threads exposure;
- Bleeding on probing;
- Periodontal pockets and mobility;
- Secondary caries in some of the restorations;
- Periapical lesions around teeth 34-35;

Treatment plan:

- Clearance - Extractions of all teeth and implants (mandible and maxilla);
- Installation of 7 implants in maxilla, out of which:
 - 2 Tubero Pterygoid Palatine implants (TPP);
 - 1 Zygoma implant by extra maxillary approach;
 - 2 tilted implants (the right one being parallel to the sinus mesial wall);
 - 2 parallel implants at the anterior region;
- Lower jaw- 5 implants, out of which 4 in the intramental region. 4 of which are Cortical type implants;

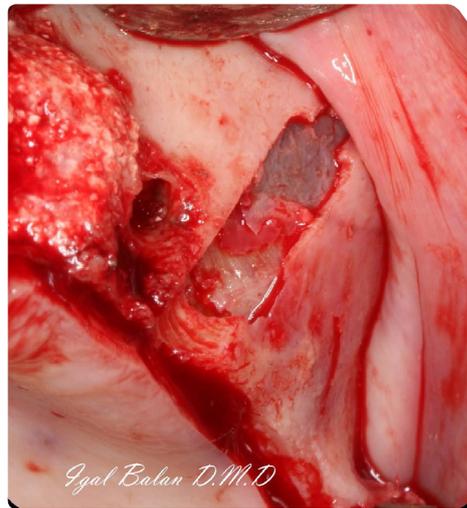


Panoramic X-Ray demonstrating an Extensive Periodontal disease, Secondary Caries, Peri-Implantitis and Periapical Lesions.

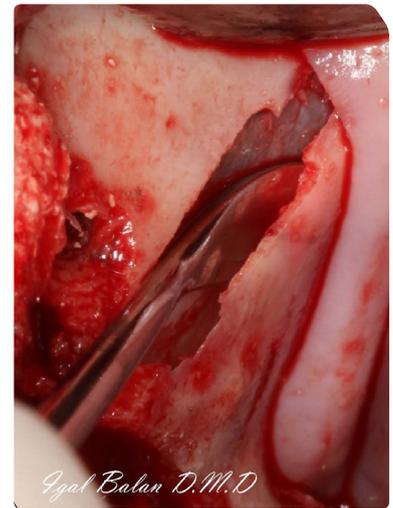
Upper jaw:



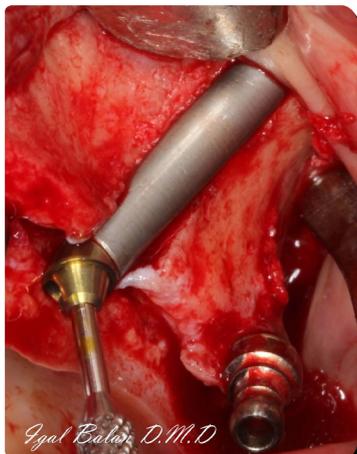
Coarse diamond grit coated Primary bur, used for the preparation of a groove for the Zygomatic implant. Following burs are coated with a finer grit.



The Sinus membrane can be seen intact after the groove preparation.



Sinus Membrane Lateralization to minimize any eventual damage while drilling deeper to the Zygomatic bone.



Zygomatic implant with a 45° Multi Unit abutment correcting the angulation.



Reinforced provisional bridge, fabricated on the day of the operation.



In Extra-Maxillary technique the screws are inserted buccally unlike the screw insertion in the Branemark conventional technique.

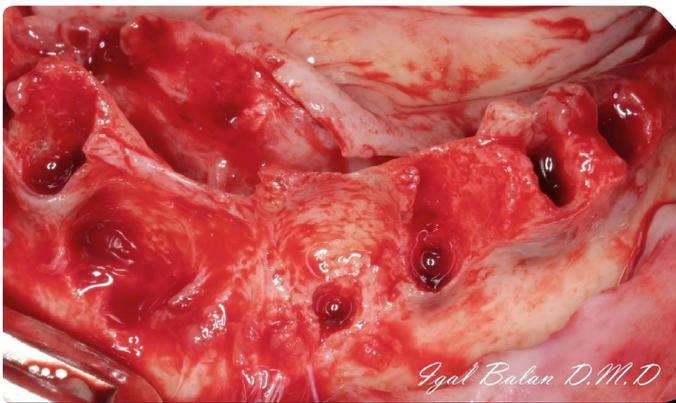
Lower jaw:



Clinical image of the lower jaw prior to the extraction. Calculus and Plaque accumulation, Implant Threads exposure, Peri-Implantitis and Mucositis are observed.



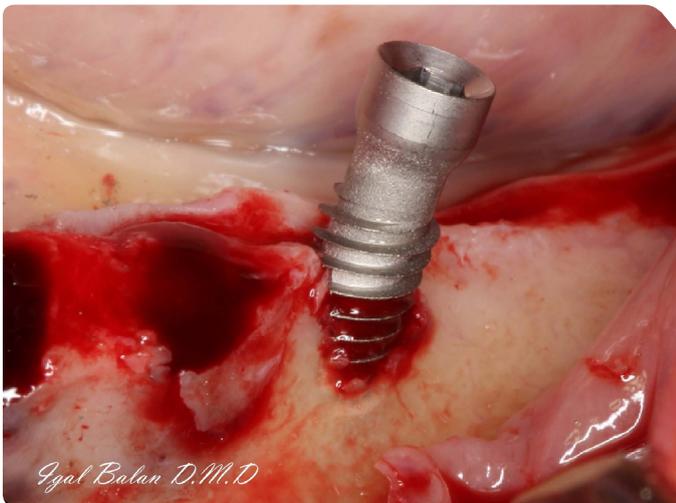
Old Implants post extraction.



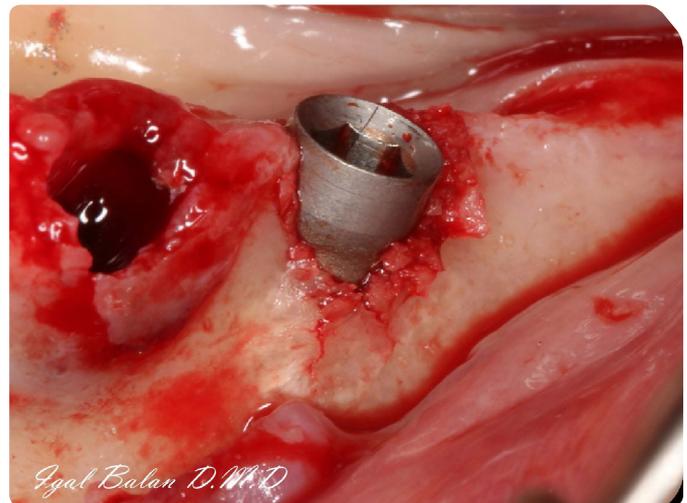
Lower jaw after the extractions. Extensive bony defects at the extraction sites are observed.



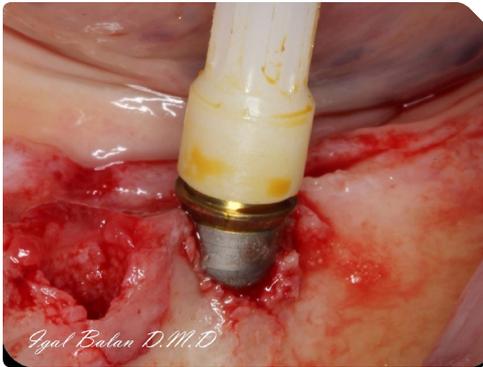
A Cortical implant with aggressive threads, designed to provide excellent primary stability.



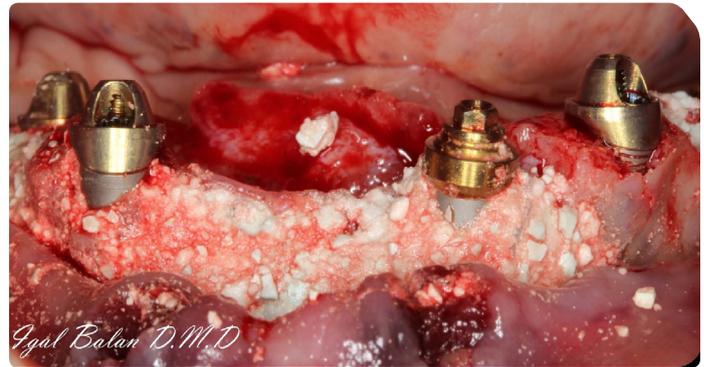
Cortical implant inserted at the extraction site.



The neck of the implant remains exposed. The smooth neck minimizes the adherence of periopathogens.



A Multi-Unit abutment is mounted on the implant.



Bone augmentation using HA & Calcium sulfate bone graft



Snap-On Transfer bases are mounted on the Multi-Unit.



Suturing around the transfer bases



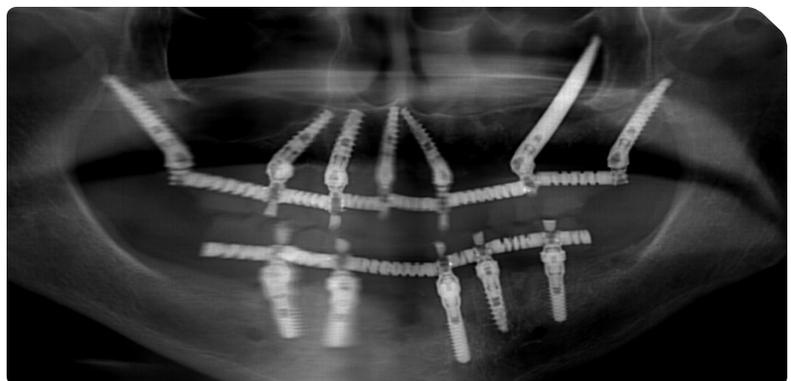
The female components of the transfers are being mounted on the male components.



Reinforced provisional lower acrylic bridge.



Occlusal view of the lower acrylic bridge.



Panoramic X-Ray (with the provisional bridge) at the end of the operation.

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