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.
- 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 (Fig.3). 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 peri-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 (Fig.4).

- 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.

Intraoral X-Ray indicating extensive bone loss in the posterior mandible.

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

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

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 complaints:
- 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.

With the courtesy of Dr. Balan Igal D.M.D.
Patient: A 56 years old female.
A 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.

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 extrammary technique; this is a modification of the traditional Branemark technique.
In the Extrammary 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 at 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 Extrammary 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 correct the angle of the screw entrance.

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