UNIDENTAL THE ANTERIOR MAXILLARY IMPLANT

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Abstract: *Single implant plateau connection must be provided with antirotational design. With greater is hexagonal internal or external space dimention with the more resistant the distribution of forces when mounting of the blunt. The risk of screw loosening or loss is lower. Modern conexions have conical outlet and internal antirorational system with bigger sides.*

Cuvinte cheie: *implant unidentar, restaurări implanto-protetice*

Rezumat: *Platoul şi conexiunea implantului unic trebuie să fie prevăzut cu un design antirotaţional. Cu cât este mai mare dimensiunea spaţiului hexagonal intern sau extern cu atât este mai rezistentă la repartiţia forţelor în momentul montării bontului. Riscul slăbirii sau pierderii şurubului este mai mic. Conexiunile moderne au priză conică şi sistem antirotaţional intern cu laturile cât mai mari.*

Implant positioning in relation to the ridge

Implant position is made in relation with the bone, not with the free edge of the teeth neighbors gums.

Some authors consider that the implant must be lowered to 4 mm below the free gingival margin adjacent teeth to develop a profile according to the crown with a flat shape, to maintain health and to support the adjacent tissues adjacent natural teeth. In the same time resorption is prevented by lowering the hard and soft tissues of the zone of single implant site *(Fig. 1)*.

In conception of the authors such placement provides emerging profile of the crown about 4-5 mm on the vestibular wall which approaches width of a natural tooth. Will disappear as "black spots", wide spaces between implant crown and adjacent teeth, this technique provides successful aesthetic restorations. Periimplantar bag depth of 4 mm provides sufficient scaling porcelain necessary to achieve contour and color of a natural-looking crowns. However, several questions arise regarding health ditch around the implant.

After the first year of prosthetic loading is a significant loss of periimplantar bone rated between 0.8 and 1 mm, especially when the insertion was immediately postextractional.

Sometimes this general resorption adds a bone loss of at least 0.5 mm below the connection blunt / implant that can extend beyond edge of crest, depending on the degree of adaptation of implant design on bone quality and density.

The existence of a ditch in the vestibular of 4-5 mm, or more, creates difficulties in using cleaning and maintenance tools and plaque flora and have many opportunities to develop and produce inflammatory phenomena. In situations where periimplantary bag has 4 mm vestibular in interproximal areas of implant crown, interdental papilla corresponding areas are exposed to probing areas deeper than 4-5 mm to higher risk of bacterial retention. A thick and compact cortical withstand high occlusal stress. When the implant is lowered under cortical index bone, trabecular bone weaker which surrounds implant package has a lower ability to sustain occlusal loads. Another negative effect is biomechanically elongation crown and decreasing root resistance. Term will occur periimplantar resorption and decreased bone, periimplantar groove deepening and deficiencies in daily care. Finally clinical crown lengthening occurs which decreases in width at the package because as the crown narrows approaching the implant body diameter (3.75 to 4.2 mm).

Figure no. 1. Periimplantary papilla appearance after the first year after insertion after an improper positioning of the implant in relation to the alveolar bone. (M. Engelman)

Aesthetic consequences are disastrous, occurs papilla retraction with black triangular spaces instead of buds and space food outlet.

Depth of the periimplantary gingival space must be maintained long-term from 3 up to 4 mm depth which may make cleaning and maintenance of superstructures on implants.

In a trench more than 4 mm anaerobic bacteria that produce periimplantitis have chances to develop. Lean the connective tissue surrounding the implant has only fibers arranged parallel to implant. Therefore, the mechanism of attachment is less adherent when compared with the tooth, where fibers are arranged perpendicularly forming a circle ligament around him. In peridentar sounding gum bag, dental probe stops in epitelio-conjunctiva junction circular is almost at the bone. Dental probe from the periimplantary bag penetrates almost all soft tissue depth and the doctor can not effectively assess the actual depth of the groove junction epitelio-attachment attachment.

Numerous studies on the effect of accumulation of

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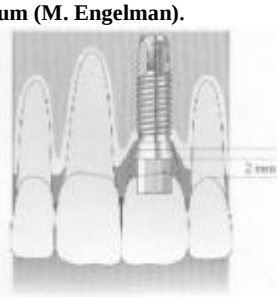
plaque around the tooth and implant showed that the apical extension of bacterial infiltration was more pronounced around the implant. Explanation is given by the availability of titanium to receive plaque proteins and weak defense of connective soft tissue around the implant. At unidentar implant anaerobic bacteria that grow in areas close to the implant may affect the adjacent natural teeth.

Figure no. 2. Implant platform off the external cortex of the bone when the the ideal place of catalytic unidentar is placed from 1-2 mm apical from conjunctival insertion zone adjacent teeth gum (M. Engelman).



It was demonstrated that long-term reduction of gingival may relate with periimplantary groove depth which will produce a long-term poor aesthetics. *(Fig. 2).*But not all trenches around teeth more than 4 mm with anaerobic bacteria will lead to loss of cortical bone. Immune system and strict hygiene prevents pathological bone resorption and tooth stability.

However success in implantology and periodontology not depends entirely on the patient's immune system or the nature of its bacterial flora. Therefore, few things are needed:

- groove depth monitoring;
- reinforcing oral hygiene;
- periodic inspection of the restoration;
- periimplantar radiology of bone;
- application of periodontal procedures to limit the groove depth.

Only implant survival is not the only criterion in contemporary dental practice. Crown appearance, color and shade crown pottery and especially the presence of cervical region ideal spaces, a normal gingival contour and gingival papilla design are equally important aesthetic criteria. Health of the soft tissues around the implant within the professional responsibility of the physician and patient obligation after awareness and instruction.

After the above mentioned we recommend that the implant is not placed under the bone index. Modern implants have cervical zone evazive and often wound and drains and less depper recommended for compact bone and harder as cortical. That is why the implant platform will stop at the external cortex of the bone when the ideal unidental catalytic is placed from 1 to 2 mm apical to the gingival conjunctival insertion zone adjacent teeth. This ensures at least 3 mm of soft tissue emergence vestibular implant crown.*(Fig. 3, fig. 4, fig. 5, fig. 6, fig.7, fig. 8, fig. 9).*

Figure no. 3. Measuring length edentulous space

Figura nr. 4. Flap removal

Figures no. 5 and 6. Ridg splitting on piezosurgery and classical method

Figure no. 7. Drilling of alveolar bone

Figure no. 8. Mechanical insertion of implant

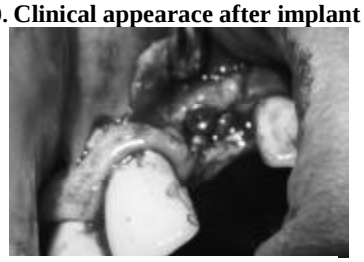
This is an ideal and desirable situation. In most cases requires the application of augmentation material that is put on the vestibular and distal implant to increase soft tissue contour frome the vestibular zone. Additive periimplantar graft has some advantages:

- attached vestibular lining thickness increases;
- facilitate surgical shaping of the interdental papilla;
- improves facial contour ridge and vestibular slope;
- prevents observation of color transparency implant titanium gray body with vestibular mucosa.

At bone augmentation techniques are added fixed soft tissue grafting surgical techniques. A connective tissue graft can be used to achieve an additional thickness of the vestibular soft tissue and papilla. A bone augmented and structured well which is added conjunctival graft provides stability and desired height of the interdental papilla. After unique implant insertion radiological control is recommended with an examination of the

implant to recomply position and relationship with adjacent teeth.

Figure no. 9. Clinical appearace after implant insertion



Provisional prosthesis made above, is recontoured to prevent the contact with soft tissue which covers the implant. Acrylic provisional prosthesis is worn to suturing removal (10-14 days) is then replaced with a bridge from a resin adhesive. Recommend to wait two weeks to fix because the acid content deck adhesive gel may migrate in gingival wound and healing is compromised. In addition, the wires are easily removed when the deck is still positioned adhesive. Unidental acrylic prosthesis is stored for reuse when adhesive bridge will fracture during uncementation.

Unidental implant discovery

The second surgical meeting begins with clinical and radiological examination. On a retroalveolar radiography is examined carefully interface crest bone / implant to ensure the absence of bone loss before blunt indeed be added to the implant body.

If you suspect a bone loss biger than 2 mm periimplantary tissue must be examined directly. Horizontal defect correction cervical includes local autogenous graft and covered with barrier membrane and reconstruction by suturing the soft tissue.

If the fault is down less than 2 mm autogenous bone implant can be added and discovery of the implant continues because the registry integration is between the side walls of bone and implant.

Shaping soft tissue design

Exposure of the implant platform should be made having regard to the final architecture of soft tissue.

Some architectural criteria are valid and enforceable in different stages of treatment:

- periimplantar groove depth;
- interdental papilla;
- appropriate height and facial contours;
- attached gingiva;
- soft tissue thickness;
- gingival margin location

Soft tissue shaping is done in three stages

1. Phase I operation - addition of granular autogenous graft alloplastic (xenogeneic)
2. Stage II surgery - free of connective tissue grafts; plastic gum
3. Step Prosthetics
   - application stump healing and contour
   - outline provisional with temporary work
   - anatomical blunt
   - final restoration with ceramic-metal restoration or ceramic on zirconium dioxide structures.

Plasty gum shortens the gum tissue on the ridge to produce cervical ridge contour of the crown, the interdental papilla and vestibular contour.

After discovering the implant with the scalpel is created a palatal flap and inserted a healing profile of 2 mm thick. If there is bone defect can add granular xenogeneic or alloplastic graft around the lid and flap is sutured over the healing cap. After three weeks is discovered the implant by gingivoplasty shaping, with the scalpel, the contour of the interdental papilla. An interdental papilla can be created in an edentulous region near two adjacent teeth by a protocol. Carved excess tissue papilla initially creates a desired contour of soft tissue. However there is a disadvantage in addition to interdental papillae placement near the unidental implant.

Epitelio-conjunctiva interproximal insertion of a natural tooth extends to the incised edge followed by interproximal alveolar bone placing it above the vestibular and palate walls. At a polling peridental ditch is equal everywhere, even if the bone has a different shape: higher interproximal and lower oral and vestibular sides. Interproximal bone around the implant is not subjected to such a shape. As a result interdental papillae which occur natural and are raised to fill the interproximal areas between adjacent teeth corresponds to deeper at sounding than other areas of the implant crown.

Interproximal region can be treated as an interproximal area of a three-unit bridges. Interdental papillae rarely develops near a bridge, instead interproximal contact is extended towards the gum and neck region of the deck is slightly overcontoured by etching model. By assimilation is done at unidental when the contact areas of one tooth crown is extended in particular proximally to the gums and cervical region of the crown is slightly overcontoured in width, similar to a bridge. This concept makes small compromises in the aesthetic zone interproximal papilla not near as high as between teeth implant crown like natural teeth and crown width of the package is 0.5 mm larger. We obtain a lower groove depth around the implant and so much improved daily hygiene. This protocol is applicable also in superior frontal areas but the position of the upper lip during the smile does not show gums spaces around the teeth. Once soft tissues are recontour with a bistoury apply a healing blunt. Its size and shape mimics the final crown contour neck and extends over and around the gums to 1-2 mm.

Acrylic provisional prosthesis is modified to accommodate cape healing and still carry 4 to 6 weeks longer to mature and full of gum epithelization. Are patients who require temporary prosthesis to wear a prosthesis without mobilization. In this case will turn out a provisional fixed prosthesis which is carried by a protocol:

- fitting provisional abutment (abutment pickup) by raising moderate (10 NCM);
- prepare blunt with turbine mills;
- blunt is imprinted and a crown is manufactured in the laboratory or is made a immediate crown by the doctor;
- crown remains is cemented provisionally without occlusal contact.

Profile and edges provisional crown are modeled and completed by direct intraoral observation. If using composite resin material may be added intraoral to create desired vestibular profile, similar to the desired final restoration.

Before cementation crown stump pressure is put on gradually extending soft tissue. Gum tissue is allowed four weeks to heal in that position.

Unidental prosthetic implant abutment

Required unidental implant blunt should be equipped with an ideal antirotational system and discussions about conexions are still ongoing. For unidental implant prosthetic abutment with internal hexagon and taper connection and angulation of 5-10° is most used. These require at least two pieces:blunt with hexagonal design and screw of the blunt that connects blunt with the implant body. Abutments may be titanium gold or zirconium, but screws will always be from titanium. There are abutments of two body parts that come

directly from the implant, anatomical abutments and bio-aesthetic, gold abutments.

For each category are provided different angulation, heights and different thicknesses. For special circumstances exist abutments manufactured in laboratory. Calcined implant abutments are mounted in analog implant after imprinting prosthetics field and transfering in the laboratory. Here is poured gold, steel or titanium a blunt with desired design and after specific situation. Unidental abutments still have several characteristics:

- requires minimal preparation if the implant is not in the ideal position;
- abutment in implant placement to be done without interference from hard or soft tissue;
- use it to build abutments thicker crown abutments with cervical wider;
- profile crown: bigger abutments are used to induce a gingival outline that can be the first requirement for achieving aesthetics;
- straight and angulated unidental abutments are prepared only for aggregation by cementing

Disposing cause problems with removal screw crown. If you want to be reused is recommend creating an access hole from the oral until you identify the screw and remove the crown. Disposing causes the screw would be:

- mismatch components;
- insufficient raising;
- excessive raising;
- excessive occlusal loading;
- inadequate screw design

To ensure that the abutment is fully seated on the implant body (maximum tolerance of 60 microns) and fully charged piece socket and is locked antirotational recommend radiologic examination.

CONCLUSION

A crown not aggregated by screwing is not closing the interface and the edge blunt-crown. In this space the bacteria will colonize and in occlusion these gaps may act as a endotoxin pump even encouraging their proliferation in the periimplantar ditch, totally undesirable situation.

A crown cemented closes gaps between crown and stump. There is still a free space at the platform interface and the implant abutment. At the horizontal platforms space allows bacteria to grow within the implant body to escape from this level. This connection is placed in the bone or under the bone and can cause trouble. Conical connections reduce this risk.

BIBLIOGRAPHY

1. Engelke W.G.H., Diederichs C.G., Jacobs H.G., Deckwer I., Alveolar Reconstruction with Engelke W., Sofortimplantation und Sofortbelastung, Implantologie Journal, 7/2002, pag. 42-50.
2. Engelman M.J.: Clinical Decision Making and Treatment Planning in Osseointegration. Quintessence Books, 1996.
3. Floyd P., Palmer R., Barrett V., Treatment Planning for Implant Restorations, British Dental Journal, vol. 187, nr. 6, September 1999, pag. 297-300.
4. Frangiskos F.D., Papadopoulos G.A., Comparative Study of Stresses around Brånemark Fixture and IMC – Implants Connected with Natural Teeth by Fixed Prosthetic Restoration, Dental Implantology, nr.3, September 1998, pag. 208-213.
5. Lindh T., Dahlgren S., Gunnarsson K., et al., Tooth-Implant Supported fixed Prostheses A Retrospective Multicenter Study, International Journal of Prosthodontic, vol. 14, 2001, pag. 321-328.
6. Nicolae V., Elemente de implantologie orală, Editura Universităţii Lucian Blaga, Sibiu, 2005.
7. Nicolae V.: Tratamentul implanto-protetic al edentaţiilor parţiale mandibulare. Editura Universităţii "Lucian Blaga" Sibiu 2007.