

THE CONSERVATION OF THE ALVEOLAR RIDGE POSTEXTRACTIONAL IN THE PERSPECTIVE OF THE PROTEZATION ON IMPLANTS

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Abstract: The remodelling of the postextractional nondirected physiology of the soft and hard tissues is done through deforming functional and aesthetical resorptions, which lead to great difficulties in the conventional prosthetic restorations or in the ones based on implants. 6 months after the undirected extraction, the alveolar bone reduces its dimensions with 40%, which represents a value varying from 8 to 10 mm, and with 50-60% of the width. Deffects and massive resorptions appear in the case of: patients with advanced periodontal disease; patients with atrophical periodontal tissue, thin buccal and/or alveolar cortical bone; periapical suppurations.

Cuvinte cheie: conservarea osoasă; creste alveolare postextractionale, protezare pe implanturi

Rezumat: Remodelarea fiziologiei postextractionale nedirijate a țesuturilor moi și dure se face prin resorbții anatomice funcționale și estetice deformante, care duc la dificultăți mari în restaurările protetice convenționale sau pe implanturi. La 6 luni de la extracția nedirijată osul alveolar se reduce cu 40% înălțime, ceea ce reprezintă o valoare ce variază între 8 - 10 mm și cu 50-60% din lățime. Defecte și resorbții masive apar la: pacienți cu boală parodontală avansată; pacienți cu parodonțiu atrofie, corticale orale și vestibulare subțiri; ca urmare a supurațiilor periapicale.

SCIENTIFIC ARTICLE OF THEORETICAL PREDOMINANCE

The GBR – guided bone regeneration of the postextractional alveolar crest

A normal postextractional socket is made of:

- The cortical bone with the 4 walls (V-O and M-D);
- Periodontal remaining ligaments fixed to the socket walls;
- Gum epithelium which surrounds the socket.

The stages of the nonguided healing :

1. The instant filling with blood of the socket which leads to the stable clot in a few hours;
2. In the first week, the clot is organised through fibrinous tissue due to the proliferation of the fibroblasts and of the neoformation vessels;
3. 3 weeks after the extraction there is a well organised fibrous clot (calus);
4. 6 months after the extraction there is a bone structure of neoformation;
5. The gum epithelium at the borders of the socket migrated towards the center of the socket invading the newly formed clot from inside up to its complete covering (2 weeks).

The guided bone regeneration changes the healing pattern and prevents the resorbtion of the crest by :

1. Blocking the epithelial invasion of the postextractional clot. The protection of the postextractional clot speeds up the bone regeneration through:
 - The selective access in the socket of the osteoformative cells;
 - The access in the alveol of the biological growing factors.
2. Endoalveolar bone graft adition which serves as a matrix for the neoformation of the alveolar crest.

The membranes play the following part:

- Barries against the epithelial invasion;

- Selective barrier of nutritive supply;
- Bone remodeling pattern;
- protection of the newly formed blood clot from the oral environment;
- Ensure a high volume of the space of the alveolar crest.(3)

The nonresorbable membranes

The standard membrane PTFEe – politetrafluoretilen has as disadvantages :

- Dehiscences with the microbial uncovering of the bone grafts;
- Reintervention after 2-3 months for their removal.

Bioresorbable membranes:

- sintetical (polimers)
 - natural (colagen, calcium sulfate)
- 6-8 weeks represents the complete silent period for a postextractional remodeled crest with membranes and bone grafts .

The bone augmentation materials serve as :

- filling and maintainance of the alveolar space protected by a membrane;
- osteoconductor through the creation of a matrix which sustains the bone neoformation;
- growing factors released from the material stimulate the bone neoformation;
- osteogenetic factor when out of autogenous small particles mixed with adition materials, the living cells from the bone matrix are activated.

The dental extraction with limited bone sacrifice:

- the choice of the favouravle moment for the extraction of the unreplaceable teeth when the bone loss is minimal (e.g. periodontal diseased teeth, teeth with massive coronary destructions, old remaining rootths, extended apical processes);

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CLINICAL ASPECTS

- the anesthetics;
- the incision;
 - circular incision, around the tooth, within the sulcus;
 - two vertical incisions, oral and vestibular, separated towards the apex with the conservation of the papillae;
- the decolation of the high vestibular trapezoid flap, up to the apex, beyond the fixed mucosa- mobile mucosa limit ;
- the palatal flap is uncovered moderately with the protection of the anatomical elements (arteries, glands);
- the complete muco-periosteal flap ;
- the luxation of the tooth without the trauma of the bone;
- the drill section where there are ankylosis and curved roots;
- the curettage of the soft tissue with the complete exposure of the alveolar bone – the granulation tissue postpones the moment of augmentation;
- the perforation of the medullary for the triggering of the bleeding and for intraalveolar blood supply;
- the bone augmentation:
- the powder is mingled with autogenous blood or with physiological serum;
- the mixture is introduced into the socket without pressure since the endoalveolar compaction leads to 2 negative phenomena :
- it prevents the blood supply beneath the material i;
- it stops the revascularization of the artificial bone.(4)

The placement of the membrane implies :

- the cutting of the membrane by the shape of the wound i;
- the membrane had to be 3 mm wider than the vestibular-oral limits of the wound;
- the membrane is smeared with blood.

The suture of the flap

- the detensioning and the coronal elongation of the flap through auxiliary horizontal periosteal incisions;
- the first suture in mattress reversed “U” which ensures a firm contact between the bleeding surfaces;
- the rest of the sutures in separate points;
- the exterior protection of the wound with a sterile dressing under moderate pressure for the primary adaptation of the flap on the bone graft.

The postoperative medication implies the administration of: antibiotics (augmentin 1 g/ 12 h for 7 days), antalgics (coxtral, arcoxia), antiinflammatories (flamexin, ibuprofen), antiseptical mouthrinse (Corsodyl), ice bags for 6-8 hours, daily check up, at 7 days, then 14.(7)

Observations:

- the acute infections, the pyogenic suppurations delay the moment of the augmentation with 6-8 weeks from the first surgical intervention and the reduction of the central infection i;
- the uncovering of the nonresorbable membrane after 2 weeks must not alarm the clinician. check up and a steady hygiene is needed;
- the dehiscences with the perforation and the loss of the augmentation material represents the most serious complication;
- the infected membranes are removed before the infection spreads to the bone.

CONCLUSION

The guided bone regeneration prevents the chaotic and mutilant atrophy of the crests allowing their classical restoration through a bridge or skeletal prosthesis or through an implant overstructure.

BIBLIOGRAPHY

1. bohoney09.wikispaces.com/file/view/Periodontitis.jpg/92324994/Periodontitis.jpg&imgrefurl=http://bohoney09.wikispaces.com/Group%2B7&usq=__stw3eSP1nKHolM42NZS9S12VLbc=&h=462&w=697&sz=55&hl=ro&start=10&um=1&itbs=1&tbnid=G6r12YQTc8sIqM:&tbnh=92&tbnw=139&prev=/images%3Fq%3DPeriodontitis%2Blocal%2Bcause%26um%3D1%26hl%3Dro%26client%3Dopera%26rls%3Dro%26tbs%3Disch:1
2. http://images.google.ro/imgres?imgurl=http://www.smilecary.com/files/periodontitisComp.jpg&imgrefurl=http://www.smilecary.com/patient-education/gum-disease-prevention.php&usq=__hxTx6EqmyeT8LLh2prNSgmRLjU=&h=328&w=470&sz=33&hl=ro&start=3&um=1&itbs=1&tbnid=Osf7fMOacghxKM:&tbnh=90&tbnw=129&prev=/images%3Fq%3DPeriodontitis%2Blocal%2Bcauses%26um%3D1%26hl%3Dro%26client%3Dopera%26rls%3Dro%26tbs%3Disch:1
3. http://en.wikipedia.org/wiki/Chronic_periodontitis
4. <http://en.wikipedia.org/wiki/Periodontitis>
5. Nicolae V.: “Elemente de implantologie orală”, Ed. Universitatii “Lucian Blaga” Sibiu 2005
6. Nicolae V.: “Forme clinice si variante terapeutice implanto-protetice ale edentatiei termino-terminale mandibulare” Ed. Universitatii “Lucian Blaga” Sibiu 2006
7. Nicolae V.: “Abordari chirurgicale in implantologia orală”, Ed. Universitatii “Lucian Blaga” Sibiu, 2009.