



Alveolar Ridge Splitting - Split Crest Technique

Vladimir Biocanin*

Professor, Department of Oral Surgery and Implantology, Dental Anesthesiology, Faculty of Dentistry, Pancevo, Serbia

*Corresponding Author: Vladimir Biocanin, Professor, Department of Oral Surgery and Implantology, Dental Anesthesiology, Faculty of Dentistry, Pancevo, Serbia.

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The need for dental implants for the rehabilitation of edentulous patients is constantly growing. Many patients with long-standing edentulism and unstable dentures have sharp and narrow alveolar ridges. In those situations, placement of dental implants is impossible without large bone augmentations with surgical trauma and risks of complications. One of the surgical procedures which overcome drawbacks of bone augmentation in such cases is the split crest technique (SCT) (alveolar ridge split technique) [1].

Split crest technique is recommended in situations with narrow alveolar ridges with sufficient height. SCT is the surgical technique based on viscoelastic properties of jaw bone. Namely, surgical procedure is based on the mid-crestal osteotomy, with buccal and lingual cortical plate movement opposite to each other (expansion), creation of the space between them where implants are inserted, and remaining space filled with bone substitute, or plasma rich in growth factors, or even empty. The most of the studies showed no differences regarding bone healing when the gaps between the split bone were filled with bone substitute or not [1,2].

There are different surgical kits and techniques for SCT [3]. One of the best solutions is expansion technique without vertical osteotomy, where splitting is done gradually, with special set of expanders. This fact was confirmed in my surgery department in many patients, where the buccal bone remained intact after bone expansion. In my opinion, mid-crestal osteotomy without vertical relaxing osteotomy in combination with expansion drills, allows SCT to be safe and efficacious method. One of the main drawbacks of expansion technique of alveolar ridge split presents use of the saw for mid-crestal osteotomy. Moreover, using of the saw may be dangerous in the limited area, especially in the posterior region of the jaws. In my view, it is better to use piezo instead of the saw for mid-crestal osteotomy. In addition, osteotomy with ultrasonic devices seems to be valuable in the early stages of bone healing. Likewise, ultrasonic osteotomy minimizes the risk of alveolar bone fracture during expansion. The average horizontal bone gain with SCT was 3.61-3.69 mm, regardless the surgical instruments used (conventional or ultrasound). On the other hand, the average vertical bone loss was 1.44mm with SCT with immediately inserted implants.

Success rate of inserted dental implants with this technique was in range of 91.7-100% [4]. Very high implant stability quotients (ISQ) of the inserted dental implants immediately after SCT allows immediate implant loading. Some authors showed better success rate with SCT in maxilla than in the mandible [5]. It is advisable to insert dental implants immediately after SCT (one-stage surgery). Moreover, immediate implant insertion requires lower sum of the bone substitute, prevents collapse of the expanded bone and shortened the period of healing.

Having in mind advantages and drawbacks of SCT, SCT seems to be safe and effective technique for implant placement in narrow alveolar ridges.

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