



Clinical Application of Custom Alveolar Ridge Splitting Technique in Posterior Single Implant Site



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Placement of implants has become more popular treatment option to restore function and esthetics with high success rates for the edentulous area. For successful implant placement, adequate bone quality and quantity are crucial in achieving primary stability and osseointegration. The bone wall thickness of at least 1mm should be present around the implant to achieve favorable long-term prognosis (1). Especially the buccal bone wall thickness of 1.5mm at implant placement showed significantly less physiologic and pathologic bone loss around the implant overtime (2). However, there are often not enough horizontal ridge due to bone resorption and remodeling after tooth extraction, or due to defective condition of the bone prior to extraction from periodontal disease or periapical pathology (3).

Conventional treatment options for horizontal ridge augmentation includes guided bone regeneration, block grafting, or ridge splitting. Conventional treatments can resolve the problem of atrophic ridge, yet the treatments involve high morbidity, high complication rate, long treatment time, and higher cost. Nowadays, narrow diameter implant (mini-implant) placement has become a treatment option to avoid complication and cost

of ridge augmentation, but narrow diameter implants with diameters of less than 2.5mm exhibited lower survival rates compared to the standard diameter implants (4).

Atrophic posterior mandible is more difficult to apply conventional treatments because the bone is denser and more corticated than the other area of the mouth (5). Posterior mandible has D2/D3 bone density according to Misch bone density classification (6). GBR procedure on defective sites around implants showed less bone fill in the maxilla compared to the mandible (7). Furthermore, the posterior mandible has vital anatomical structures such as inferior alveolar nerve, mental foramen, and anterior loop of the mental nerve which give additional challenge for implant placements in the atrophic posterior mandible.

The Custom Alveolar Ridge Splitting (CARS) technique was previously reported as less invasive treatment option for maxillary anterior. There is no report on the posterior site. The purpose of this case study is to present how the CARS technique can be applied in the atrophic posterior mandible site, and discuss the advantages and limitations once applied in the posterior mandible.

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