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## GTR, GBR and their coexistence

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Implant placement in the maxillary and mandibular molar region is often difficult when teeth are removed due to severe periodontal disease. In addition to the lack of available pristine bone, anatomical structures such as maxillary sinus and mandibular nerve (esp. inferior alveolar nerve) make treatment planning difficult. Although sinus lift surgery can obtain new bone in the maxilla, a long prosthesis is formed when the position of the implant fixture platform is too apically positioned due to vertical bone loss. This is not only aesthetically disadvantageous, but it is also common to develop a deep periodontal pockets which inevitably lead to peri-implantitis. In the mandible, when the alveolar bone is severely resorbed and only the basal bone remains, it experiences the same difficulty such as the maxilla.

In order to overcome this, a vertical augmentation procedure is performed to move the platform more coronally. This situation is similar to one-walled periodontal defect, therefore, results are unpredictable and procedures are technique sensitive. Moreover, the level of vestibular depth can be moved coronally to make primary closure of the grafted site, and subsequent soft tissue management procedures are required thereafter.

Based on these, we designed a novel K-incision and applied it to implant placement of the severely absorbed upper and lower molar region. In addition to the omission of the additional soft tissue surgery described above, the most important advantage of this procedure is that it can obtain guided tissue regeneration from adjacent tooth. Within the limit of study, our data show that guided bone regeneration (GBR) and guided tissue regeneration (GTR) can coexist. To clarify the safety and efficacy of this technique, multi-center randomized clinical trial study is needed.