

“Tent-Pole” for Reconstruction of Large Alveolar Defects: A Case Report

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Severe tridimensional alveolar ridge defects complicate the placement of dental implants, and surgical removal of some oral tumors might not leave adequate bone for dental implant placement. Regenerating an adequate amount of bone vertically and horizontally to achieve a satisfying outcome for well-osseointegrated implants and thus ensure long-term success of implant restoration is challenging. This report describes the clinical feasibility of a simple approach using a screw tent-pole combined with guided bone regeneration to augment complicated tridimensional alveolar ridge defects in a case of extensive bone loss due to maxillary tumor surgery. Titanium screws were arranged in “tented” fashion to provide stable room for bone regeneration. Regenerated bone was achieved and 2 more implants were placed in the regenerated ridge 10 months later, leading to a successful maxillary prosthesis.

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Severe tridimensional alveolar ridge defects complicate the placement of dental implants and even cause some patients to give up implant treatment. Patients seeking dental implant therapy for severe tridimensional alveolar ridge defects from congenital, post-traumatic, or postsurgical causes are frequently seen in clinical practice. Surgical removal of some oral tumors can leave barely enough bone for dental implant placement. Regeneration of an adequate amount of bone vertically and horizontally to achieve a satisfying outcome for well-osseointegrated implants and thus ensure long-term success of implant restoration is challenging.¹

Different techniques to augment bone volume are available, including the ridge splitting technique,² guided bone regeneration (GBR) with resorbable membrane³ and nonresorbable membrane,⁴ titanium mesh⁵ or titanium screw,⁶ distraction

osteogenesis,⁷ onlay block grafts taken from intraoral or extraoral sites,⁸ osteotomies,⁹ sinus augmentation,¹⁰ and combinations of these techniques.

No matter which technique is applied, the critical issue is providing space for newly formed bone.¹¹ This report describes the clinical feasibility of a simple approach using a screw “tent-pole” combined with GBR to augment rather complicated tridimensional alveolar ridge defects in a case of extensive bone loss owing to maxillary tumor surgery. Rather than an autogenous graft, it could simplify the clinical procedure and decrease clinical risk. Titanium screws were arranged in a “tented” fashion to provide stable room for bone regeneration. Regenerated bone was achieved and 2 more implants were placed in the regenerated ridge 10 months later, leading to a successful maxillary prosthesis.

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FIGURE 1. Preoperative panoramic computed tomograms showing severe ridge defects.

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Report of Case

A 19-year-old woman was seeking a dental prosthesis to replace missing teeth in the right maxilla. The patient underwent surgical removal of a maxillary tumor 1 year 6 months previously. On clinical examination, the right upper first bicuspid, second bicuspid, first molar and second molar were missing, and the edentulous ridge in relation to the sites of the right upper second bicuspid, first molar and second molar was concave. The alveolar ridge in this region of the maxillary bone appeared to be completely absent. Computed tomographic (CT) scanning visualized severe bone loss horizontally and vertically (Figs 1-4). A panoramic view indicated that only a very limited amount of bone tissue in a triangular shape remained at the distal site of the right upper canine (Fig 1).

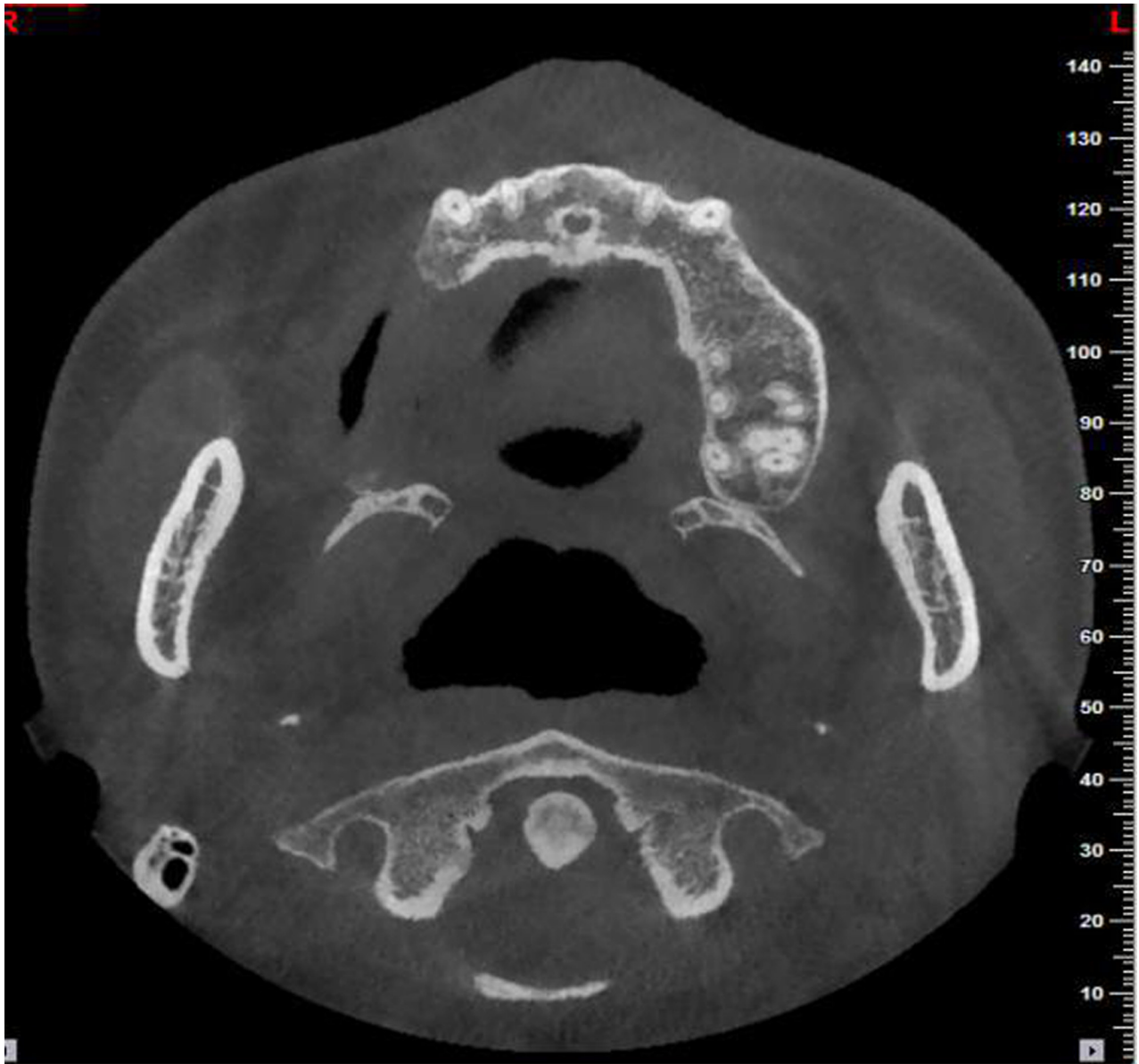


FIGURE 2. Preoperative axial computed tomograms showing severe ridge defects.

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