

Alveoloplasty: A Paradigm Shift to a More Efficient Surgical Technique



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Preprosthetic surgery has been an integral part of the oral and maxillofacial surgeon's practice since first described by Obwegeser in the 1970s. Since then, minimal changes or advancements in techniques have been described and are still taught in dental schools. Recent advancements in research now highlight areas of greatest force on alveolar bone during mastication. With this knowledge, surgical planning can improve, helping to avoid buccal bone fractures and other complications that reduce the patient's ability to wear a prosthesis. It has also been demonstrated that longer surgical times increase complication risks, thus the surgeon's goal should be to reduce complications, preserve adequate bone, reshape the alveolar ridge, and minimize surgical time. This technical method introduces a new technique for performing alveoloplasty with extractions, enhancing the surgeon's ability to meet these goals.

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Innovation

This author will present a new surgical technique that enables the surgeon to perform full-mouth extractions with alveoloplasty more efficiently than the previously described techniques¹ by reducing surgical time, minimizing the risk of buccal plate fractures, and decreasing the need for revision alveoloplasty (Fig. 1).

Research has shown that the first 2 to 3 mm of the alveolar bone is the thickest, most cortical portion of the alveolus due to mastication forces placed on this area (Fig. 2).^{2,3} The current standard treatment for full-mouth extractions with alveoloplasty involves extracting all teeth first, then reflecting a full-thickness mucoperiosteal flap to complete the alveoloplasty using rongeurs or rotary instruments and a bone file.^{1,4} This method can make extractions more challenging due to the thicken area of the cervical alveolus that retains the teeth. With standard alveoloplasty, there is a lack of direct visibility and increased risk of buccal plate or tuberosity fractures. These complications can significantly affect the hard tissue base, impacting the patient's ability to wear a prosthesis.

The steps of the new technique are as follows: After achieving profound local anesthesia, a full-thickness mucoperiosteal flap is created using an interdental sulcular incision. The incision is designed to spare as much keratinized tissue, yet remove the diseased tissue associated with the interdental papilla, facilitating faster and less painful healing. The flap is reflected to the mid-vertical plane of the alveolus, exposing the cervical cortical bone that is responsible for the retention of the tooth and any undercuts that will require removal. Using a surgical handpiece with a bone reduction bur of the surgeons' choice, the cervical bone is reduced and flattened to the level of the buccal plate, being careful to only remove the cortical cervical bone and without reducing alveolar height. This technique allows for direct visualization of the alveolar ridge, enabling efficient placement of elevators, increasing the ease of bony expansion, and reducing the risk of buccal plate fractures. Once the teeth are extracted atraumatically, the alveolar bone is evaluated for further adjustments using a bone file, followed by thorough curettage of the sockets to remove any remaining granulation tissue or bone fragments. Because rotary instruments have been used and there is a high potential to

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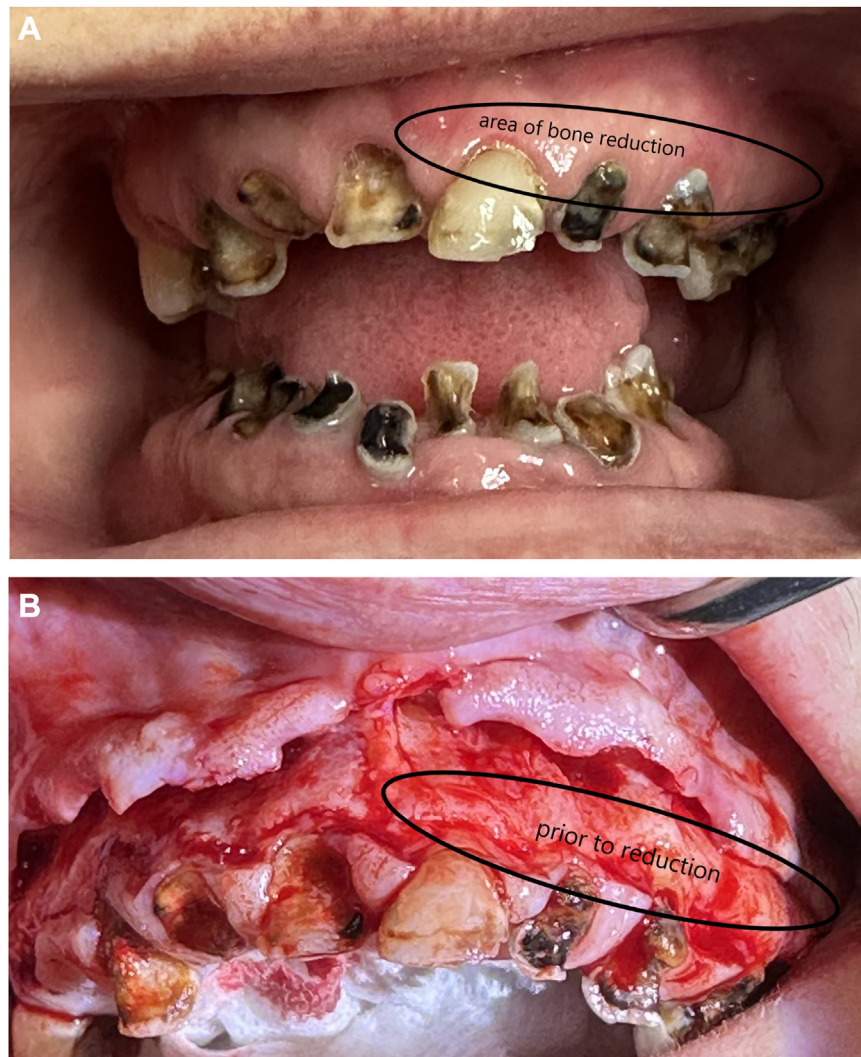


FIGURE 1. A, Pretreatment photo identifying several areas of bony irregularities requiring alveoplasty. B, Reflection of full thickness mucoperiosteal flap, prior to completing alveoplasty. C, After completion of alveoplasty, before extractions. D, After extraction prior to soft tissue closure. E, Completed case. (**Fig 1 continued on next page.**)

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have bony particulate under the mucoperiosteal flap, copious irrigation is very important. The soft tissue flap is reapproximated and sutured alternating the papillas to gain as much primary closure as possible.

Advantages

This technique offers several advantages, including improved efficiency, reduced risk of buccal plate fractures, and better preservation of alveolar bone. While completing the alveoplasty with the teeth still in place it is easier for the surgeon to visualize how the prosthesis will be fabricated and understand where the alveoplasty is necessary. Decreased amount of bone is removed in the process by focusing only on the cervical cortical ridge that exists to maintain teeth and will create undercuts. Direct visualization allows greater ability to seat elevators and forceps properly

in the furcation of teeth or at the highest point of rotation which will decrease the risk of bone or root fracture. With the cortical cervical bone removed, this allows for greater alveolar expansion and ease of extraction, decreasing surgical time and operator fatigue. The technique will reduce postoperative swelling, decrease infection potential due to shorter operation time, and enhances the fit of immediate dentures.

Significance

By decreasing surgical time by 15 to 30 minutes and preserving more alveolar bone, this technique improves the long-term fit of prostheses and reduces swelling and pain. Immediate dentures become more predictable, and the need for follow-up appointments decreases. The restorative doctor benefits by less follow-up appointments freeing them to increase production, and

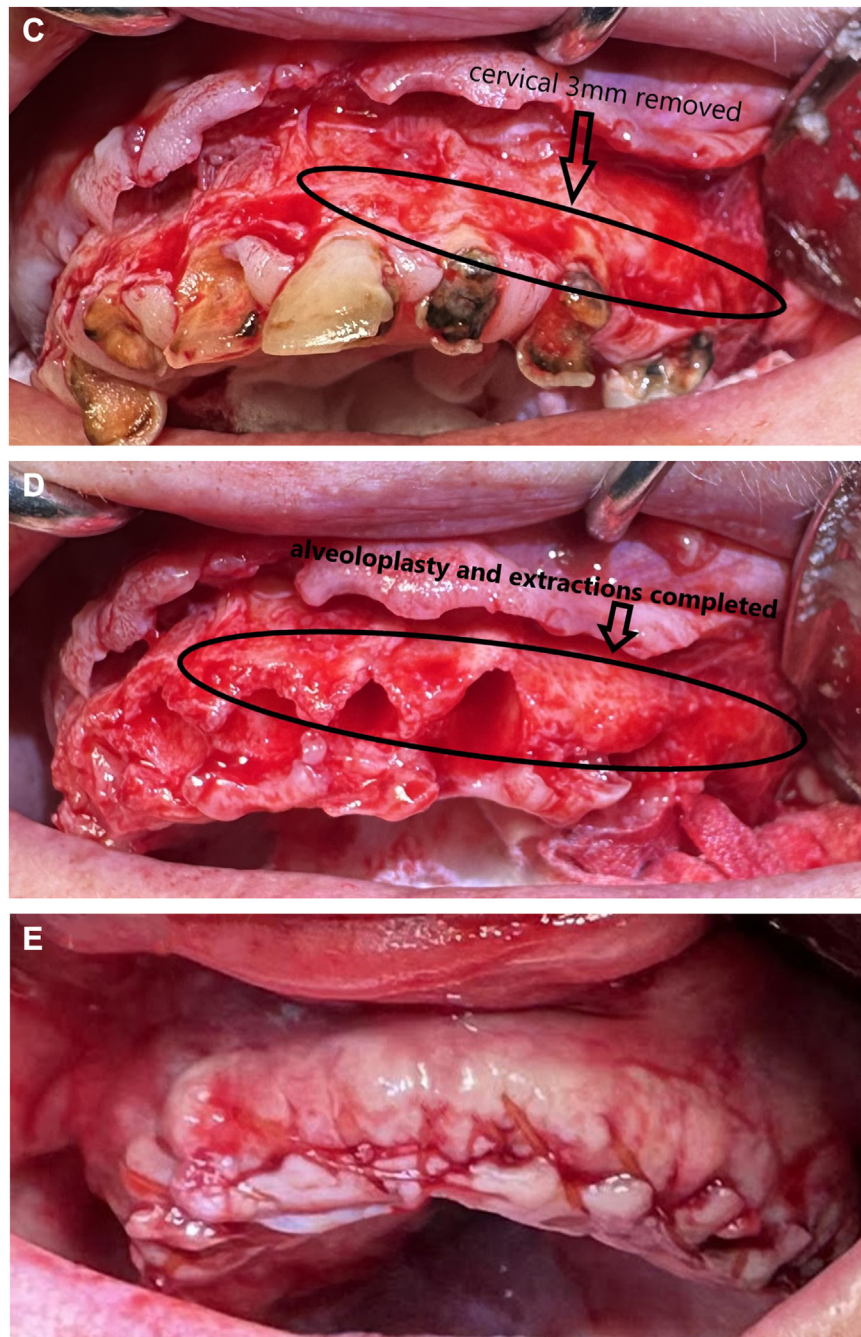


FIGURE 1 (cont'd).

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the patient benefits from less pain, better-fitting dentures, greater potential for only needing a reline instead of a full remake which will save them money, and overall less surgery and less potential complications.⁵

Evidence

This author has used this alveoplasty technique for over 10 years with minimal complications and minimal

need for secondary alveoplasty. After switching from the old paradigm to this new technique, patients have reported less pain, swelling, and reduced use of opioid pain medications. Restorative dentists have reported fewer ill-fitting immediate dentures, greater satisfaction, and improved outcomes with final prostheses. The restoring doctors have been able to begin final prosthesis fabrication earlier and with a more consistent result.

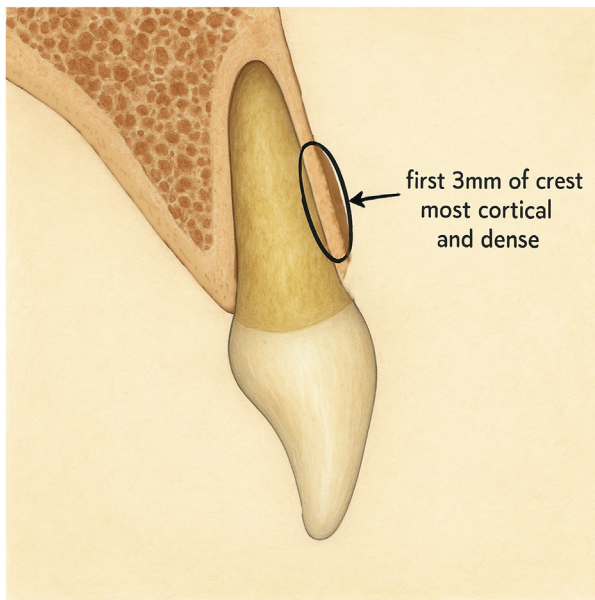


FIGURE 2. Diagram of alveolar bone.

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Challenges

The greatest challenge of this technique is education. Although this technique has demonstrated significant benefits for the surgeon and patient, it is contrary to what has been taught to almost every practitioner. The standard alveoloplasty technique has been taught since the early 1960s and is published in every textbook that has been used in the past or currently used today to teach dental students. With the old techniques still being used in dental schools, it will be difficult to change to the new technique.^{4,6}

The technique is simple but there is a slight learning curve to perfect it, which will potentially discourage surgeons to adopt this method. In my career, I have encountered many other surgeons when challenged with new improved techniques or methods. The standard response has been “this is how I have always done it, and I’m not going to change” which could be the greatest challenge to overcome.

Time

Alveoloplasty is a common procedure that is completed regularly in surgical practices. With continuing education courses, publication of this technique, and revisions in textbooks that are written, it could be widely accepted and become a standard of care within 5 to 10 years.

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