INTRODUCTION

The success of implant-supported dental prosthesis is well documented by prospective long-term studies, demonstrating their reliability and versatility in solving esthetic and functional issues. However, collapse of the alveolar ridge after tooth extraction is a common occurrence, limiting the bone available for implant placement. Horizontal and vertical bone resorption is more extensive in the first year after tooth loss, with ridge volume reaching 60% reduction after 2 years. Moreover, bone resorption can be exacerbated when the tooth is associated with inflammation or trauma or the patient has submitted to multiple extractions. Thus, additional procedures may be needed to recover tissue loss and achieve satisfactory esthetic results.

Despite surgical procedures such as alveolar ridge augmentation before or during implant insertion, preoperative orthodontics (forced extrusion) is recommended to augment preexisting bone defects. An early approach is recommended to minimize bone resorption and avoid the morbidity and complications of these procedures. However, even minimal bone resorption can lead to deficiencies in soft-tissue contour, which can be managed by soft-tissue augmentation during or after implant insertion.

Several tissue augmentation techniques are proposed to enhance esthetics in mild or moderate horizontal defects; however, the choice of therapy depends on the dimensions and position of the defect. These techniques include the subgingival connective tissue graft, the roll technique or a connective tissue pedicle graft, the full-thickness gingival onlay graft, and combination onlay-interpositional grafts.

Other clinicians have either adapted or modified these techniques to accomplish localized ridge augmentation around dental implants during the first or second stage of surgery using a modified roll technique, a rolled split palatal flap, or a beveled palatal approach. A modification of the original pouch roll technique can be used during the second surgery stage to augment marginal gingival thickness on the buccal side and provide esthetics to single or multiple dental implant rehabilitations. It is easy to perform, but it lacks long-term evidence of soft-tissue stability. Therefore, this article presents a pouch roll technique to provide buccal soft-tissue augmentation of small defects during placement of a nonsubmerged implant or during the second stage of a submerged implant, with 5-year follow-up.

TECHNIQUE DESCRIPTION

After administration of local anesthesia with 2% lidocaine plus epiinephrine 1:100,000, an intrasulcular buccal incision was made, which continued interproximally along the teeth to the palate, followed by a horizontal incision (Figures 1 and 2). Then a semilunar or circular incision was carried out, maintaining a buccal pedicle to preserve the delicate 1 to 2 mm of gingival sulcus adjacent to the teeth, which will become the interproximal papillae (Figure 3). Afterward, the minipedicel flap was deepithelialized using a 15C scalpel blade held firmly with atraumatic soft-tissue pliers. A full-thickness flap was elevated, creating a pouch the length of the minipedicel flap. It made the division of retail in the direction to proximal apical in the receptor, resulting in a pocket. After obtaining this pocket or framework, the portion wheel is circular or semilunar into the same tissue volume by increasing the buccal region (Figure 4). This provided a dual-purpose soft-tissue stratum on the buccal surface of the implant while preserving the integrity of the papilla during installation of the nonsubmerged implant. The tissue around the abutment or provisional prosthesis healed with an emergent profile suitable for holding the soft tissue in
position. It is helpful to use a horizontal mattress suture to ensure intimate tissue contact of the folded “trapdoor.” The palatal incision was closed with 2 single interrupted sutures (Figures 5 and 6).

For postsurgical pain control, 600 mg ibuprofen every 4 to 6 hours was prescribed, and 500 mg amoxicillin was prescribed 3 times daily for 7 days to prevent infection. The patient was instructed to avoid brushing and trauma to the surgical site and to rinse every 8 hours with 0.2% chlorhexidine gluconate (Figures 7 and 8).

**FIGURES 1–3.**  
**Figure 1.** Preoperative occlusal view 6 months after stage 1 implant surgery.  
**Figure 2.** Intrasulcular buccal incision accomplished and palatal horizontal incision.  
**Figure 3.** Buccal minipedicle flap.

**DISCUSSION**

Implant therapy in the anterior maxilla is a challenge for clinicians because they are often confronted with tissue deficiencies caused by various conditions and high esthetic demands by patients. Thus, achieving and maintaining an adequate marginal gingival contour and sufficient width of keratinized tissue around the implant-supported prosthesis are important for the maintenance of peri-implant health and optimal esthetics. This study demonstrated soft-tissue...
stability at the 5-year follow-up of a pouch roll technique to restore the marginal gingival contour.

Previous clinical studies have shown that the facial wall of extraction sockets in the anterior maxilla is often thin—mainly comprised of bundle bone—and is resorbed quickly (within 4 to 8 weeks), leading to a reduction in bone height of approximately 2 to 3 mm on the facial aspect regardless of whether an implant is placed in the socket.\(^6\)\(^7\) Therefore, for optimal esthetic outcome, soft-tissue augmentation should be considered in implant-supported rehabilitation.

The original pouch roll technique was first described by Abrams in 1980\(^{18}\) in reconstructing the gingival margin contour around the residual edentulous ridge for a fixed prosthesis. Later, Scharf and Tarnow\(^ {19}\) and Hürzeler\(^ {20}\) suggested the use of this technique to reconstruct the gingival margin contour of a mild or moderate buccal deficiency during the second stage of implant surgery.

However, it is recommended that this technique be performed concomitant to implant surgery, which provides the second-stage surgery an additional opportunity for peri-
implant tissue management. Advantages of the modified pouch roll technique are preservation of the integrity of the papilla, increased soft-tissue thickness, improvement in esthetics by eliminating the buccal soft-tissue concavity, and obtaining healing by primary intention. In cases of minimal bone volume, narrow implants and the modified pouch roll technique can be used as an alternative to bone grafts to minimize postoperative morbidity and risks of infection and to reduce cost and treatment time. However, restoration of more than 2 to 3 mm of soft tissue requires bone-grafting procedures.

Accordingly, our case report has demonstrated that this procedure is considered more reproducible, more predictable, and less invasive for small defects.

**REFERENCES**

2. Francetti L, Azzola F, Corbella S, Taschieri S, Del Fabbro M. Evaluation of clinical outcomes and bone loss around titanium implants with


