



Bilateral Vestibuloplasty Utilizing Palatal Soft Tissue Grafts in an HIV-Positive Patient

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ABSTRACT The dental treatment of HIV-positive individuals has undergone a change from the management of HIV-associated oral lesions to routine comprehensive dental care. To the authors' knowledge, this is the first report in which palatal soft tissue grafts were used for vestibuloplasty in an HIV-positive patient with a shallow mandibular vestibule. No adverse sequelae were seen during follow-up.

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ACKNOWLEDGMENT

The authors wish to thank Dr. Gina Biersack, Cascade, Mich., for her invaluable assistance in the management of this case.

Since the beginning of the AIDS epidemic, oral manifestations have been observed as an underlying component of this immunocompromising disease.¹⁻³ In fact, oral lesions were frequently used as defining criteria for AIDS diagnosis and disease progression.⁴⁻⁶ The use of combined antiretroviral drug regimens, known as highly active antiretroviral therapy, HAART, has substantially increased the life expectancy and the quality of life of HIV-positive individuals and altered the prevalence and severity of many HIV-associated oral lesions.⁷⁻¹⁰

Although the effects of HAART therapy on oral lesions are varied, the management of oral health in HIV-positive individuals has moved from primarily the management and treatment of HIV-associated oral lesions to providing overall comprehensive dental care as seen in the general population.¹¹⁻²²

A variety of HAART-related systemic and local factors such as xerostomia, salivary gland disease, hyperlipidemia, increased risk for cardiovascular disease, diabetes, and osteonecrosis have the potential to increase the risk of tooth loss due to increases in caries and periodontal disease.^{11,23-32}

The dramatic increases in the life expectancy of HIV-positive individuals, combined with the potential for increased tooth loss have led to an increased need for tooth replacement. Routine dental care is the primary intraoral need faced by the HIV-infected individual today.

Choromanska and Waszkiel determined that as the duration of a patient's HIV infection increased, the percentage of patient's with prosthetic dentures in both dental arches also increased.¹⁶ Prior to the fabrication of a dental prosthesis many patients need preprosthetic surgical procedures including vestibulo-



FIGURE 1. Preoperative image of the area with minimal vestibular depth.



FIGURE 2. A 17 mm x 8 mm x 1.5 mm graft harvested from the maxillary right molar and premolar region.



FIGURE 3. Even thickness of the graft was ensured by trimming any fat or tissue tags from the connective tissue portion of the graft.

loplasty. The goal of these procedures is to increase the vestibular depth. This increased depth aids in denture retention by limiting traction produced by muscular and fibrous attachments.

A variety of surgical techniques have been used for vestibuloplasty including submucosal vestibuloplasty, secondary epithelization vestibuloplasty, Edlan-Mejchar vestibuloplasty, and soft tissue grafting vestibuloplasty.³³⁻³⁵ Various types of grafts like split-thickness skin grafts, buccal mucosal grafts and palatal grafts can be used for these procedures.^{33,34} Over the past 20 years, palatal soft tissue grafts have been routinely used for vestibular extension procedures.³⁴

This graft material is utilized frequently because it is highly keratinized and well-suited for supporting dentures.³⁴ Recently, reports have also been published using an acellular dermal matrix and a tissue-engineered dermal replacement for vestibuloplasty procedures.^{36,37} To the authors' knowledge, this is the first report of the treatment of an HIV-positive patient with a shallow mandibular vestibule in which palatal soft tissue grafts were used for vestibuloplasty.

Case Report

A 51-year-old white male was referred for vestibuloplasty in the mandibular anterior region to facilitate denture retention. Medical history revealed he was HIV-positive. He was diagnosed in 1994 and since then has been under the regular care of a physician. His laboratory analysis prior to surgery revealed a CD4+ T-lymphocyte count of 385 cells/mm³, viral load

of 3,500 copies/ml, platelet count 150,000 platelets/ml, absolute neutrophils of 3.3 x 10³/μL, and a total white cell count of 5.9 x 10³/μL. His hemoglobin was 15.6 g/dL and the hematocrit was 47.5 percent.

The patient's medications included tipranavir, emtricitabine and tenofovir disoproxil fumarate, ritonavir, temazepam, fluoxetine hydrochloride, and oxycodone and acetaminophen prn pain. The patient also reported a 35-pack a year smoking habit.

The intraoral clinical exam revealed inadequate vestibular depth in the mandibular anterior region (**FIGURE 1**). The patient was completely edentulous and was wearing a maxillary complete denture. The treatment plan was to use palatal soft tissue grafts to increase the vestibular depth. The patient was educated about the surgical procedure, the postoperative healing process, and postoperative care. Bilateral palatal soft tissue grafts were harvested from the maxillary right and left premolar, and the canine region.

Surgical Procedure

After obtaining profound anesthesia in the mandibular right quadrant (2 percent lidocaine HCl with 1:100,000 epinephrine, Benco Dental Supply Co., Wilkes-Barre, Penn.), a scalpel blade (15 C) was used to make a partial thickness incision corresponding to the mucogingival junction. The incision was started in the first premolar region and continued anteriorly to the midline. A periosteal fenestration was performed at the most apical aspect of the recipient site. A rectangular soft tissue graft

measuring 17 mm x 8 mm x 1.5 mm was harvested from the maxillary right molar and premolar region (**FIGURE 2**).

The connective tissue surface of the graft was inspected and any uneven portions were trimmed using a new 15 C blade (**FIGURE 3**). The graft was transferred to the recipient site and secured using 5-0 Polyglactin 910 (Vicryl sutures, Ethicon, Inc., Somerville, N.J.) and 4-0 chromic gut sutures (4-0 Chromic Gut sutures, Ethicon, Inc.).

First the graft was stabilized using interrupted sutures (**FIGURE 4**), then periosteal strapping sutures were placed to ensure close proximity of the graft to the recipient bed (**FIGURE 5**). A similar procedure was then completed on the mandibular left arch using a 15 mm x 8 mm x 1.5 mm graft. Both grafts were sutured together at the midline using interrupted sutures (**FIGURE 6**) and firm digital pressure was placed on both the donor and recipient sites for four to five minutes until hemostasis was obtained.

The patient was advised to take four 200 mg ibuprofen prn pain and use a 0.12 percent chlorhexidine gluconate rinse twice daily for two weeks. He was instructed to avoid any movement of the lower lip and to avoid any muscular traction to the surgical site. The donor site was protected by the maxillary complete denture. He was also instructed to refrain from smoking. The patient was seen for a follow-up appointment at two weeks and all remaining sutures were removed. The patient was seen for another appointment at four weeks. Lower denture fabrication was started six weeks after the surgery.



FIGURE 4. The graft was stabilized by suturing the coronal portion of the graft to the coronal aspect of the recipient site using interrupted sutures.



FIGURE 5. Periosteal strapping sutures using 4-0 chromic gut were placed to ensure close proximity of the graft to the recipient bed.



FIGURE 6. Suturing of both grafts including the use of periosteal strapping sutures. The two grafts were also sutured together at the midline.



FIGURE 7. Healing at two weeks postoperative.



FIGURE 8. Postoperative healing at eight months. Note the minimal shrinkage of the soft tissue grafts as well as the deepened vestibule.

Clinical Observations

The patient reported he had refrained from smoking for three days following the surgery, and had smoked about half a pack for the next 10 days. However, in spite of this, healing at both the donor and recipient sites was uneventful. The patient reported moderate discomfort for the first three days, which gradually reduced over the next week. At two weeks, the appearance of the recipient site was consistent with normal healing. The grafts looked vascularized with good perfusion and the borders of the graft appeared slightly erythematous (**FIGURE 7**).

At four weeks, the borders of the graft were less erythematous. At the eight-month follow-up visit, there was a substantial increase in the depth of the vestibule and a marked increase in the amount of keratinized gingiva (**FIGURE 8**). There appeared to be minimal graft shrinkage.

Discussion

To the authors' knowledge, only one other publication has reported on soft tissue grafting in an HIV-positive patient.³⁸ In that report, a connective tissue graft was performed on tooth No.

25 in a 26-year-old male patient who was diagnosed with moderate hemophilia A, HIV, and chronic hepatitis C. The recipient site healed uneventfully and root coverage of 85 percent was obtained. However, postoperative complications included sloughing and spontaneous bleeding at the donor site, which resulted in the need for additional Factor VIII concentrate.

Studies comparing the healing response after soft tissue grafting procedures in HIV and non-HIV positive patients are not available. However, various published reports have discussed implant placement in HIV-positive patients with good success.^{15,17-19,21,22} In a large prospective study performed by Stevenson et al., edentulous subjects each had two dental implants placed in the anterior mandible to support an overdenture.^{15,29} Twenty of these subjects were HIV-positive (test group) and nine were HIV-negative (control group). Five HIV-positive subjects dropped out of the study due to medical reasons. Each implant was evaluated six months after loading to assess the outcome of treatment. The results showed that regardless of the subject's HIV status, all implants had successfully integrated after six months.

Additionally, none of the implants placed showed signs of mobility, pain, bleeding, significant bone loss or infection. It is worth noting that some subjects in the test group also had additional risk factors including cigarette smoking and diabetes. This study illustrates that dental implants have a predictable outcome for HIV-positive individuals and suggests that HIV-positive patients are at no higher risk for developing postoperative complications following invasive surgical procedures.

A report by Campo et al. assessed postprocedural complications in 101 patients who were HIV-positive.¹⁴ The procedures used in this study were classified as being invasive or not invasive. Overall, the complication rate in the HIV-positive patients was found to be 2.2 percent. A large study conducted by Powell et al. investigated 1,053 surgical procedures performed in 395 patients.³⁹ A wide variety of surgical procedures were performed by practitioners of varying skill levels on patients characterized as American Society of Anesthesiologists physical status classification I or II.⁴⁰ Overall, the infection rate was 2.09 percent, which is similar to other studies reporting on postoperative infection.⁴¹⁻⁴³

A common misconception exists that due to the disturbances in an HIV-positive patient's immune function, these individuals may have poor wound healing and frequent infection following invasive surgical procedures. This has led some clinicians to avoid performing surgical procedures on HIV-positive patients altogether. Regardless of this belief, HIV

status alone is not an indication for the routine use of antibiotic prophylaxis. The authors' patient's CBC with differential values did not predispose him to an increased risk of bacterial infection. The lack of postoperative complications in this patient are consistent with the findings of others with regard to not using antibiotics during invasive oral procedures.^{44,45}

Conclusions

Based on the results of this case report, vestibuloplasty using palatal soft tissue grafts was demonstrated to be a successful surgical procedure in an HIV-positive patient despite his lack of compliance with postoperative instructions regarding smoking. The surgery increased the retention and stability of his mandibular denture greatly improving his overall quality of life. ■■■■

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