Utilization of Carbon Dioxide Laser Therapy in the Management of Denture-Induced Hyperplasia and Vestibuloplasty in a Medically Compromised Patient: A Case Report

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Hyperplasia refers to multifactorial tissue growth in the oral cavity over the alveolar ridges or the soft tissues of the vestibular sulcus. Carbon dioxide (CO₂) laser (10,600 nm) therapy is an appropriate option for surgical procedures in soft tissue lesions, as the laser’s photonic energy is predominately absorbed by tissues with high water content. The heat then causes cell rupture due to overheating of the water content. Use of a CO₂ laser at a lower power setting to minimize postoperative complications and improve function in a medically compromised patient is presented in this case history report.

CASE HISTORY

A Caucasian woman in her mid-70s with uncontrolled hypertension, diabetes mellitus, and atrial fibrillation presented with three intraoral lesions (Fig 1) due to ill-fitting maxillary and mandibular complete dentures. Vestibuloplasty of the mandibular labial sulcus was requested to increase depth in order to gain more retention for the new mandibular prosthesis. The patient was taking warfarin, metformin, and hypertensive medications. The first lesion of the mandibular buccal mucosa extended into the region between the mandibular left and right second premolars, where a severe bony resorption was noted. The second lesion was located in the maxillary right region, and the third in the junction between the hard and soft palates, where the post dam of the maxillary complete denture sat.
Laser Surgical Management

Chairside international normalized ratio (INR) was checked. The INR reading was 3.5. Blood sugar level was checked using the Boehringer Mannheim (BM) test. The reading was 10. Blood pressure measurement was 165/92. These measures indicated the possibility of postoperative complications. Power output was then measured using the power meter and read 1.62 W with 50% duty cycle, and the laser parameters were decided (Table 1). Figure 2 shows an excision of the first and third lesions, vestibuloplasty of the lower labial sulcus, and an ablation of the second lesion.

The patient was reviewed 2 weeks after surgery. The three surgical sites healed well, and good depth of the lower labial vestibule was achieved (Fig 3). No postoperative bleeding,
CONCLUSIONS

This case report has demonstrated that utilization of a CO₂ laser at a lower power setting is a useful surgical tool in minimizing postoperative complications and enhancing functional rehabilitation in a medically compromised patient. Further investigations should be performed to observe whether a CO₂ laser can be beneficial for patients who are on anticoagulant medications with persistent INR of > 4 without the need for vitamin K infusion. This would be cost-effective for health organizations and provide patients with safe and promising treatment.

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REFERENCES