Case Report

Efficacy of diode lasers in oral verrucous hyperplasia: A case series

ABSTRACT

Oral verrucous hyperplasia (OVH) is a potentially malignant lesion that may transform into an oral cancer. Cases without local metastases can be conservatively managed with local excision, laser therapy, photodynamic therapy, chemotherapy, etc. The aim of this article is to present a case series showing treatment outcomes of OVH excised with laser. A total of 5 cases of OVH diagnosed histologically were included. All the 5 cases were excised using a diode laser and the specimen was sent for histopathological examination. Histopathological examination of excisional biopsy specimen with adjacent normal epithelium result has shown to be verrucous hyperplasia excluding the chance of verrucous carcinoma in any of the case. All the 5 cases were followed up for 18 months. All the 5 patients have shown excellent healing and epithelialization by 1 month and have shown full range of healing by the end of 3rd month. There were no complications reported over a follow up period of 18 months. Verrucous hyperplasia is a challenging pathological state for success after excision. A high degree of chance for recurrence and scarring of the tissue compromises treatment outcomes. In our experience use of diode laser for excision has shown satisfactory healing with minimal scarring and there were no cases of recurrence after 18 months follow up.

Keywords: Diode lasers, laser excision, metastases, verrucous carcinoma, verrucous hyperplasia

INTRODUCTION

Oral verrucous hyperplasia (OVH) is a potentially malignant lesion that may transform into either an oral verrucous carcinoma (OVC) or an oral squamous cell carcinoma.[1] It was first described by Ackerman in 1948.[2] In 1980, Shear and Pindborg[3] differentiated verrucous hyperplasia from verrucous carcinoma. They separated these entities based on the lack of invasive growth in the verrucous hyperplasia that is entirely superficial to adjacent normal epithelium.[3] Within the orofacial region, verrucous hyperplasia is encountered in oral mucosa and also sinonasal and laryngeal mucosa.[4]

The diagnosis and management of verrucous hyperplasia are a surgical challenge because of the lack of clear distinguishing features between verrucous hyperplasia and verrucous carcinoma. Management generally includes surgical excision with or without chemo and radiotherapy, laser excision, cryotherapy, and a more recent topical photodynamic therapy.

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CASE REPORT

We have performed laser excision of 5 cases of OVH (3 males and 2 females) with a mean age of 45 years. Four cases involved buccal mucosa, and one case involved gingiva along with alveolar mucosa. All the cases were histologically diagnosed to be OVH by incisional biopsy and were treated using laser excision under local anesthesia.

A diode laser (810 nm) was used at 2.5 W to cut the mucosa with a 2–3 mm clinically safe margin around the lesion. The use of laser reduced the volume of local anesthetic solution required for regional anesthesia and provided a relatively bloodless field of operation. The excised specimen was submitted for histopathological evaluation, which confirmed the diagnosis of OVH.

CASE 1

A 60-year-old male reported with a complaint of irregular growth on the right side of the teeth bearing area for 12 months. On examination, there was grayish white to pink growth seen on the right alveolar ridge which measure 2 cm in diameter at premolar and molar region [Figure 1]. There was no regional lymphadenopathy. There was a history of tobacco chewing and smoking for 35 years. A working diagnosis of OVH was made, and an excisional biopsy was planned. Laser excision using diode laser at 810 nm was performed under local anesthesia [Figure 2]. One week postoperatively, there was granulation with redness, and by the end of 1-month healing was uneventful with minimal scarring [Figure 3]. No recurrence was noted at 18 months follow-up.

Figure 1: Preoperative case 1

Figure 2: Intra operative case 1

Figure 3: Post operative case 1

CASE 2

A 42-year-old male reported with a complaint of irregular growth on the left side of the cheek associated with episodes of burning sensation for 3 months. On examination, there was white-to-pink nodular growth on the left buccal mucosa [Figure 4]. There were no regional lymph nodes palpable. An incisional biopsy was performed and was confirmed as OVH. Based on an incisional biopsy report, a treatment plan of excisional biopsy with diode laser under local anesthesia was planned. Diode laser was used for the excision of the lesion [Figure 5]. Postoperatively, the patient showed excellent healing with no scarring at 1-month follow-up [Figure 6], and there was no recurrence noted at 18 months follow-up.

Figure 4: Pre operative case 2

Figure 5: Intra operative case 2

Figure 6: Postoperative case 2

RESULTS

All five patients have shown excellent healing and epithelialization by 1 month and have shown the full range of healing by the end of the 3rd month. There were no complications and recurrences reported over a follow-up period of 18 months.

DISCUSSION

OVH is a whitish or pink elevated oral mucosal plaque or mass with either verrucous or papillary surface. The common age of presentation is fourth–sixth decades of life. In the present case series the mean age of presentation was 45 years. Cases with a presentation at an earlier age have also been reported in the literature, which can be attributed to the early acquisition of tobacco chewing habits, frequency, and nature of habits.[4] Males predominated females (1.5:1), which is contradictory to other studies, and this can be attributed to the early acquisition of habits in Indian males than that of females.[4]

The common site of involvement is buccal mucosa, gingiva, and alveolar mucosa. These are followed, in order, by the tongue, floor of the mouth, lip, and palate.[5] Wang *et al*. in a study of sixty patients of OVH concluded that the lesions occur more commonly on the buccal mucosa and are highly associated with the areca quid chewing and cigarette smoking habits.[1] This is inconsistent with our case series with 4 out of the 5 cases showed lesions involving the buccal mucosa. The case series has also shown that there is a high degree of association with areca quid chewing and cigarette smoking. In this study, all the five patients had the habit of tobacco chewing, alcohol consumption, and two of them had the habit of smoking, which could be pointed out as predisposing factors for OVH.

Verrucous lesions of the oral cavity show a varied histological pattern. The proposed histopathologic criteria for the diagnosis of OVH are as follows: (a) Long and narrow heavily keratinized verrucous processes (sharp variety) or broad and flat verrucous processes that are less keratinized (blunt variety); (b) the absence of invasion of the hyperplastic epithelium into the lamina propria as compared with the adjacent normal mucosal epithelium; and (c) the presence of cytologic/architectural features of dysplasia.[3]

In the literature, there are many reports considering verrucous hyperplasia as a potentially malignant disorder.[1,6,7] However, this is not under acceptance by the WHO.[8-10] Verrucous hyperplasia is a forerunner of verrucous carcinoma, and the transition between these two conditions is quite consistent. Poswillo has reported that verrucous hyperplasia once diagnosed should be treated such as verrucous carcinoma because of the significant overlap between their clinicopathological features.[11] Treatment modalities would include total surgical excision, with or without chemotherapy and radiotherapy. Keeping in view of the preoperative histologic diagnosis and the prognostic constraints, a more conservative approach of cryotherapy, laser excision, and topical photodynamic therapy may also be chosen in cases of verrucous hyperplasia.

In this case series we have used a diode laser (810 nm) at 2.5 W for local excision of the lesion. The use of laser for excision reduces the volume of local anesthetic solution required in attaining regional anesthesia and offers a relatively bloodless field, thereby emphasizing its benefits over conventional surgical excision.[12]

Surgery of the premalignant and potentially malignant lesions is mostly performed conventionally, but using laser has been proven very effective in recent times. The use of a laser allows precise excision, together with some of the underlying connective tissue. The heat generated reaches the deeper lying cells and consequently, renders very

low recurrence rates. As an alternative to the scalpel, the CO_2 laser has been used for more than 25 years. Jangam *et al*. reported the use of CO2 lasers for excision of OVC involving retromolar area showing satisfactory healing with no complications.[13] In recent studies, very low recurrence rates were observed with the Nd: YAG and diode lasers, probably due to their deep penetration of the light through the tissue.[14-18] Soft-tissue diode lasers have shown a precise incision margin as compared to CO_2 lasers[19] and coagulation properties similar to Nd. YAG lasers.[20] The present case series highlights the outcome of using a diode laser in excision of verrucous hyperplasia. The case series has shown excellent results with a full range of normal epithelialization and functional recovery of the involved tissue with minimal scar tissue formation.

To monitor the progression of the disease to see whether OVH lesions would transform into oral cancer, periodical follow-up assessments every 3 months were arranged for all the patients. All the patients were followed up for 18 months, and no cases of recurrence have been noted.

A more conservative treatment approach may reduce morbidity in patients with good prognostic constraints. Laser excision is one such modality with good treatment outcomes with minimal scar formation.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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