

Diode Laser for Treatment of Leukoplakia: A Noble Approach with Two Case Reports

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ABSTRACT

Background: Tobacco use has lead to the increased prevalence of premalignant lesions. Leukoplakia is one of the predominant premalignant lesions in the oral cavity. Despite accessibility of oral cavity to direct examination, the malignancies are often still not detected until a late stage, as a result the survival rate of oral cancer has remained essentially unchanged over the past 3 decades. Various treatment modalities for treating leukoplakia are medical, surgical (electrocautry, scalpel), Cryotherapy, laser. This article describes two case reports diagnosed as leukoplakia and treated with diode laser to evaluate the outcome. It was found that there is no recurrence of lesion 6 months post operatively.

Keywords: Precancerous lesion, leukoplakia, malignant transformation, diode laser, toluidine blue, recurrence.

INTRODUCTION

Leukoplakia is defined as a white patch or plaque which cannot otherwise be characterized clinically or pathologically as any other disease (WHO 1978)¹. Leukoplakia is an intraepithelial lesion showing epithelial hyperplasia, with or without hyperkeratosis and minimal inflammation and with or without varying degrees of dysplasia². Its prevalence in general population ranges from 1% to 5%³. Leukoplakia usually affects persons older than 40yrs of age⁴, with slight male predilection⁵. Approximately 70% of oral leukoplakias are found on the lip vermillion, buccal mucosa, gingiva⁴. The reported recurrence rate for oral leukoplakia range from 7.7% to 38.1%⁶ and the malignant transformation rate may vary from 0.13% to 17.5%⁷. Oral leukoplakia is caused by a variety of local and systemic factors which include tobacco, alcohol, candidiasis, chronic irritation, deficiency of vit A, B₁₂, folic acid, syphilis, sideropenic anemia,

xerostomia, viral herpes simplex⁸. Lasers can be used to remove soft tissues superficially by evaporation with minimal thermal damage to adjacent tissues resulting in minimal tendency to scar and little post-operative pain and edema².

CASE REPORT

Case 1:

A 27yr old man reported with a greyish white patch on the right buccal mucosa. He gave history of chewing 7 to 8 sachets of gutkha a day since 8 yrs and consumes alcohol occasionally. The right buccal mucosa demonstrates a rough, greyish white patch measuring 2×1cm. The lesion was rough, non-scrappable and non-tender on palpation. (Fig: 1)

Fig 1: Leukoplakia on the right buccal mucosa. (case 1)

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Case 2:

A 24yr old man reported with a greyish white patch on the left buccal mucosa. He gave a history of smoking 4 to 5 cigarettes a day since 3yrs, chews 8 to 10 sachets of gutkha a day since 5yrs and consume alcohol occasionally. The left buccal mucosa demonstrated a greyish white patch measuring 3×2cm. The lesion was rough, non-scrapable and non-tender on palpation. (Fig: 2)

Fig 2: Leukoplakia on the left buccal mucosa.(case 2)



Toludine blue dye application was done for identification and to outline the margins of the leukoplakia prior to laser application.(Fig: 3) Diode laser (ezlase) with a frequency of 940nm was used at 3watt in a non-contact and continuous mode (Fig: 4) for the removal of leukoplakia patch(Fig: 5). Topical application of anaesthetic gel was sufficient for the entire procedure. Post operatively patient was advised to maintain proper oral hygiene and was asked to take analgesics only if required. No antibiotics were prescribed. Post-operative healing

was satisfactory and patient showed no recurrence 6 months post-operatively.(Fig: 6)

Fig 3: Leukoplakia after toludine blue staining.



Fig 4: Diode laser system used (ezlase)



Fig 5: Immediate Post laser application.



Fig 6: 6 months post operative treatment photograph.



DISCUSSION

Leukoplakia is a potentially malignant lesion of the oral cavity. Oral leukoplakia on the floor of mouth, ventrolateral surface of tongue and soft palate have a high risk of malignant transformation. The lesions resistant to treatments and those persisting for long duration may have worse prognosis than recent ones⁹. Non homogenous leukoplakia exhibits higher recurrence rates and increased malignant transformation. As most of the leukoplakias are asymptomatic but can undergo malignant transformation the primary objective of the treatment must be to eliminate the lesion and prevent such malignant transformation. The primary management for leukoplakia starts with the elimination of etiologic factor followed by vitamin therapy¹⁰. If the lesion does not subside with basic line of treatment it must be excised by scalpel, cryosurgery, electro cautery, lasers¹¹. Excision by scalpel, cryosurgery, electro cautery cause scarring and contraction which can mask early signs of recurrence². Diode is a solid active medium laser, manufactured from semiconductor crystals using some combination of aluminium or indium, gallium and arsenic. All of the diode wavelengths are highly absorbed by pigmented tissues and are deeply penetrating. The diode is an excellent soft tissue surgical laser and is indicated for cutting, coagulating and to vaporize gingiva and mucosa. The chief advantage of the diode laser is its small size. There are evidences that diode lasers reduce the need for local anaesthetic during surgical procedure¹². This finding was confirmed in our case as the entire procedure was carried out only on topical anaesthetic gel. The thermal necrosis zones of less than 1mm can be achieved which provides adequate surgical precision and haemostasis¹². This modality is very suitable for the treatment of intra epithelial lesions like leukoplakia. The advantages

of laser treatment are minimal adjacent tissue damage, rapid tissue ablation or incision, sterilizing action, preservation of histologic margins, minimal post-operative pain and oedema. As seen in our case minimal analgesics were needed and there was no need for antibiotics as the infection rate is very low as laser seals the lymphatic channels. Recurrence was not noticed at 6 months post operatively which was in acceptance with the reduced recurrence rate after laser treatment given in literature¹¹. The disadvantages are lack of tactile sensation to the surgeon and high cost of the treatment¹¹.

CONCLUSION

In the era where the patient has got a chance to opt for the treatment modality using the criteria such as pain, and length of the procedure diode lasers are emerging as an important tool especially for intra epithelial pathologies like leukoplakia.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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