

# Management of Verrucous Carcinoma by Laser Ablation: Case Presentation

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## Abstract

**Background:** Verrucous carcinoma or Ackerman's tumor comprise 2% to 5% of oral cancer malignancies. It has a higher prevalence in patients with use of Tobacco and related products. It is also associated with HPV infection. It is more common in middle aged and elderly individuals. verrucous carcinoma is a locally proliferative disease and does not metastasize. It will not invade the underlying bone and muscles and as such it is localized to mucosa. The verrucous carcinoma has the propensity to turn carcinomatous if not treated for a long time. Histopathologically it is characterized by dysplasia without invasion of underlying dermis. Verrucous carcinoma is conventionally treated by a mutilating surgery or radiation. Both these options have side effects which are not acceptable to patients. Laser gives an easier way to handle this condition without any of side effects of above procedures. This was a retrospective analysis of verrucous carcinoma cases where treatment was given in the form of laser ablation of the growth. Laser was used to ablate the visualized tumor and followed up with minor ablative sessions. Sites included were buccal mucosa 50%, RMT area with buccal mucosa 15%, Tongue 25%, 10% had on genitalia. No radiation or any other chemotherapy was administered.

**Results:** Patients were followed up from 1 to 4 years. All patients were alive at the end of 4 years and 2 patients had a malignant transformation due to inadequate follow up. There was no mutilation or any side effects noted of the laser procedure.

**Conclusions:** Though surgery is mainstay of treatment for Verrucous carcinoma. Laser ablation can be offered as an alternative treatment option for patients unwilling for surgery or radiation.

**Keywords:** Verrucous carcinoma • Oral cavity • Laser ablation

## Introduction

Verrucous carcinoma is an uncommon oral malignancy involving buccal mucosa tongue, larynx and genitalia. It is characterized grossly by a cauliflower shaped growth with a wide base. It is whitish in color with a surface resembling broccoli. Histologically, tumor cells proliferated with verrucous or papillary features.

The tumor cells had acidophilic, ample cytoplasm, and nuclear atypia was minimal. Individual keratinization, koilocytosis, basal cell mild atypia, and squamous pearl formation were recognized in all cases. The key feature is absence of invasion of basement membrane. Verrucous carcinoma is 2% to 3% of all oral cancers. It is prevalent in tobacco users, snuff users and HPV infection. All oral cancers have a propensity for field cancerisation and any treatment option in oral cancer should take this feature into account. Treatment options include surgery and radiotherapy. Surgery includes wide excision of the lesion with or without removal of mandible with or

without radiotherapy [1].

## Case Representation

Treatment modalities for verrucous lesions have included surgery, radiation therapy, chemotherapy, cryotherapy, laser therapy, photodynamic therapy, and treatment with recombinant alpha-interferon.

Surgical excision remains the preferred treatment for the primary lesion. Laser ablation is a relatively new procedure. It is being increasingly used in oral malignancies for ablation of cancerous tissue. Laser works by burning the tissue and causing endothelial damage to blood vessels. This happens because of protein denaturation due to heat. The endothelial damage causes thrombosis in small and medium sized blood vessels and consequent retrograde thrombosis increases the effect of the laser. Since Laser does not differentiate between various malignant cells it is extremely

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useful in ablating any kind of malignant cell [2]. This can be done with a high degree of precision. With use of proper skill sets one can ablate the cancerous tissue with minimal damage to normal surrounding tissue. Co2 laser and diode laser is increasingly being used as an alternative approach to treatment of verrucous carcinoma.



**Figure 1.** This figure shows a total resolution of the lesion after 18 months.

Diode laser from Glgaa lasers 980 nm was used in the ablation of the lesions. All patients underwent the procedure under General anaesthesia with endotracheal intubation. Care was taken to avoid any mishaps with laser and the endotracheal anaesthesia. The lesions were identified by their proliferative appearance. The lesions were laserised by directly applying laser on the lesion and intralesionally. The procedure was monitored on a real-time basis under sonography control to gauge the extent of laserisation. Surrounding mucosa to extent of 2 cms was also ablated. There was not any significant intraoperative bleeding in any patient and the laserised necrotic tissue was simply rubbed off after the procedure. The raw area was left alone without any medication. Repeated laser ablation sessions lasting 2 to 5 minutes were done under local anaesthesia every month for any minor recurrences. There was no open surgery in any patient and no chemotherapy or radiation was used. The patients were asked to follow up monthly for 6 months and then every 3 months for a period of 3 years. This patient is a 65 yr old person with history of smoking and history of gutka or chewing tobacco. There was no history of HPV infection [3]. The lesion was present since 5 years gradually increasing in size. On presentation there was a verrucous lesion involving angle of mouth and lower lip.



**Figure 2.** The result after 3 years shows a total resolution of lesion with no mutilation of lip and angle of mouth.

## Discussion

Verrucous carcinoma is an uncommon condition among Oral cancers. It is approximately 2 to 3% of all oral cancers. The diagnosis

depends a lot on the behavior of the tumour. The main diagnostic dilemma is presence of Squamous cell carcinoma in areas of the tumour. Recurrence is a common problem in almost all cases [4]. This was true in the presented cases as well. The recurrence is believed to be due to phenomenon of field cancerisation. This phenomenon presents as dysplastic cells in the the mucosa surrounding the lesion. These later present as new lesions surrounding the repair after resection of the primary lesion. Treatment modalities include Surgery with or without chemo radiation. Surgery in small lesions is the treatment of choice. No neck dissection is necessary in pure verrucous lesions. Unfortunately the surgical excision leads to mutilation of face which is not acceptable to many patients. The quality of life is severely affected which leads to many patients having depression as a side effect. In addition, oral functions like chewing and speech are also affected [5]. Radiotherapy though advocated in many studies has been shown to lead to anaplastic transformation of dysplastic cells in the surrounding epithelium. This phenomenon has been called as field cancerisation. Laser ablation is being increasingly used in management of soft tissue tumours. It is coming into focus for oral cancers. The advantages of Laser is short operating time, bloodless surgery. The disadvantages include margin clearance not available on histopathology. Laser ablation of verrucous lesions has been used for primary and recurrent lesions.

## Conclusion

Verrucous carcinoma is low grade well differentiated form of Squamous cell carcinoma. Surgery is not always necessary for management of this condition. Laser ablation is a viable alternative to surgery and radiotherapy. Repeated sessions of laser are mandatory requirement for a full recovery from this condition.

## Conflict of Interest

Not applicable. Written informed consent was obtained from the patient for the publication of this case report and any accompanying images. The authors declare that they have no competing interests.

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