

Management of Geriatric Patient with Epulis Fissuratum Using Liquid Nitrogen Cryosurgery: A Case Report

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Abstract The aim of this report is to present a case showing the treatment of Epulis fissuratum in relation to an ill fitting denture, in a debilitated geriatric patient with a novel technique using liquid nitrogen cryosurgery. Management of geriatric patients can be quite challenging due to the presence of various diseases. Epulis fissuratum associated with an ill fitting denture greatly hinders mastication and produces discomfort and pain to the patient. The liquid nitrogen cryosurgery can be used effectively in its management, due to its excellent haemorrhage control and postoperative healing. A 71-year-old male reported with Epulis fissuratum in the vestibular sulcus, which was associated with an ill-fitting denture. The patient was a known hypertensive and diabetic, presently on anti-coagulant therapy with previous history of myocardial infarction. Liquid nitrogen cryosurgery was used for the treatment of the lesion. During the procedure, nil haemorrhage was achieved and the postoperative healing was satisfactory. Liquid nitrogen cryosurgery hence can be used effectively in debilitated geriatric patients as it has the boon of achieving excellent haemostasis, good healing with minimal postoperative oedema and pain, maintaining an aseptic environment. This novel technique can be effectively used by dentists in the treatment of Epulis fissuratum besides it can also be used in treatment of other oral soft tissue pathologies achieving a plethora of benefits.

Keywords Liquid nitrogen cryosurgery · Geriatric patient · Haemorrhage control · Soft tissue lesion

Introduction

A poorly fitted prosthesis can give rise to a plethora of problems, notably Epulis fissuratum, residual ridge resorption, ulceration of the soft tissue, etc. Out of which, Epulis fissuratum is considered essentially to be treated due to its masticatory hindrances. It is considered an overgrowth of intraoral tissue resulting from chronic irritation [1]. This mucogingival hyperplasia located over the soft tissues of the vestibular sulcus, may be considered as a reactive condition of the oral mucosa to excessive mechanical pressure on the mucosa. Chronic trauma to the oral mucosa is considered a risk factor for the development of oral carcinoma. Studies have shown that the sharp edges of teeth or the ragged edges of ill fitting dentures have potential to cause oral carcinoma [2]. Hence ill fitting dentures and its sequelae should not be overlooked.

The management of the Epulis fissuratum can be especially challenging in geriatric patients. Geriatric patients often pose with systemic disorders that are tough to deal with. Diabetes is one such condition that needs efficient management. Diabetes is not an absolute contraindication to treatment but most practitioners feel that a patient's glycemic levels must be well controlled before treatment, as the healing can get overtly compromised. Anticoagulant intake is another challenge that pulls the cuffs of the dentist, which he can be readily overcome. The main concern for this is the profuse haemorrhage that might arise during the treatment procedure. Besides these patients also have a predilection for myocardial infarction, stroke, etc. Additionally, at least one chronic disease is found in the

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majority of elderly persons [3]. This mandates the maintenance of a strict protocol during their management.

The advent of various new surgical modalities has made their management much easier. One such novel technique is the cryosurgery. It is used in a number of dermatological and oral procedures because of its obvious advantage of excellent haemorrhage control and postoperative healing.

Case Report

A 71-year-old male (Fig. 1) reported to our dental hospital, Pranu Dental hospitals, Tirupathi with the chief complaint of fibrous growth under and surrounding the borders of an ill fitting mandibular denture which gradually grew in size in the past 6 months (Figs. 2, 3). The denture was delivered to the patient about 2 years back. Patient also complained of pain and discomfort during mastication for the past 1 month. On visual inspection, the denture was ill fitting with a fibrous mass in relation to the mandibular vestibule which was present about 2 cm away from the midline. It extended superiorly up to the crest of the residual ridge and was about 4 cm × 2 cm in size. On palpation, all the inspectory findings were confirmed and the lesion was soft in consistency and smooth in texture. No associated ulcerations were present at the time of examination.

The patient presented with an array of medical conditions. He presented with Diabetes, Hypertension, previous history of Myocardial infarction and present Anticoagulant therapy. He was diagnosed with Diabetes 12 years back and was under Metformin for the same. He also gave a



Fig. 1 Extra oral appearance of the patient

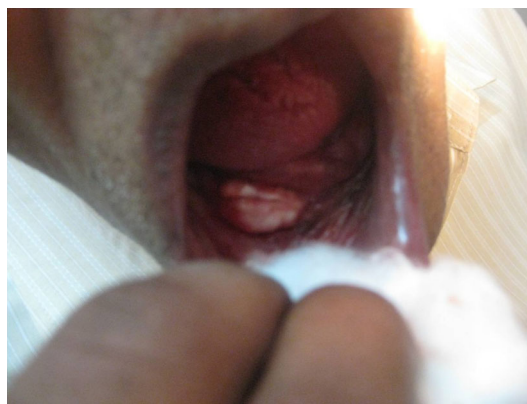


Fig. 2 Intra oral appearance of the lesion



Fig. 3 Appearance of the lesion along the ridge

history of Hypertension present for 8 years and under Losartan for the same. The patient had a myocardial infarction about 5 years back. He underwent angioplasty for the same and was placed under Aspirin from then. According to the American Society of Anaesthesiologists classification [4], he was classified as ASA III that is patient with severe systemic disease that limits activity, due to the presence of more than two systemic diseases.

Hence the patient was referred to cardiologist and haematologist for opinion and consent for the treatment of the Epulis fissuratum. A routine Blood check up was done which revealed the patient's glycemic levels to be 100 mg/dl on fasting and 160 mg/dl post-prandial. His INR level was 2.6. Considering the risk: benefit ratio in discontinuing the Anticoagulant therapy, it was decided not to discontinue it. Treatment of the lesion was planned with Liquid nitrogen gun—MINI CRYOGUN™ model—LNC-196 (Fig. 4). The liquid nitrogen for the gun was procured from Sri Venkateshwara University, Tirupathi (Physics department) which has a liquid nitrogen plant. Opinion and Consent was obtained from the patient's cardiologist. The patient was



Fig. 4 Liquid nitrogen cryogen used

informed in detail about the procedure after which he signed an informed consent form.

Stress reduction protocols such as morning appointment, suitable environment & effective pain control were strictly adhered to. Under 2 % Lignocaine with adrenaline (1:100000) local anaesthesia the lesion was operated. Using the liquid nitrogen cryosurgery gun the lesion was treated by spraying the liquid nitrogen 4–5 times over the lesion at an interval of 2 min between each spray. The spray was held at a distance of 10 mm from the lesion. The temperature of the liquid nitrogen sprayed was around -196°C . The procedure was carried out in 3 sittings at 1 week, 2 week and 3 weeks. It was observed that the cryosurgery technique maintained a clear surgical field with nil haemorrhage accounting to its advantage. Patient was prescribed with Antibiotics—Amoxicillin 500 mg, Metronidazole 400 mg and analgesics—Paracetamol for 3 days after each sitting. The postoperative period was uneventful and healing was satisfactory (Fig. 5).

The patient was recalled at 1 month and 2 months for observation. The healing was observed to be good and there was no recurrence of the lesion. Following the treatment procedure, the ill fitting mandibular denture was relined according to the present residual ridge (Fig. 6). The patient was satisfied with its fit, comfort and phonetics.

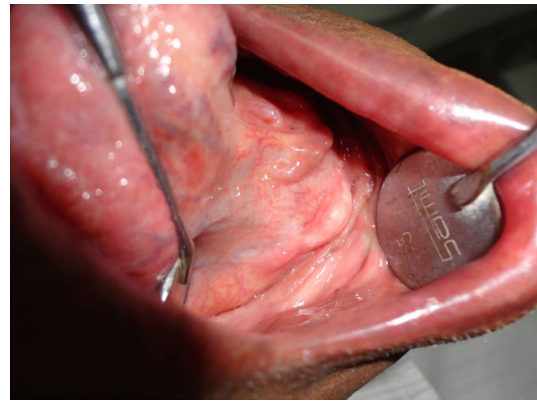


Fig. 5 1 month postoperative



Fig. 6 Relined denture after complete healing of lesion

Discussion

The Management of a debilitated geriatric patient can be an enigma to the Dentist. Epulis fissuratum in this case which greatly hindered the patient's comfort and phonetics was to be treated at the earliest to improve the patient's quality of life. Treatment of Epulis fissuratum can be of two types: conservative and surgical [1]. The conservative approach should be the first option as it is non invasive. However it is quite time consuming. It includes removal of the acrylic flange followed by relining and rebasing after the complete healing of the lesion.

The surgical approach includes using any of the following: the conventional scalpel, electro cauterisation, soft tissue lasers and liquid nitrogen cryosurgery. The surgical scalpel has been used time immemorial for this soft tissue lesion. Electro cauterisation was also used to remove

Epulis fissuratum with advantages of haemorrhage control and postoperative healing. But with the advent of lasers, the former has taken a back seat. Some of the lasers used in dentistry for this purpose is CO₂ laser, Er:YAG laser, Nd:YAG laser, diode laser, argon laser and KTP laser [5]. Many studies have shown that the carbon dioxide lasers have more promising results than the scalpel [6, 7]. Better healing was observed with carbon dioxide laser than with the surgical scalpel between postoperative days 7 and 14. The advantages of carbon dioxide laser noted were its tissue protective technique, asepticity, minimal postoperative pain and oedema, rapid wound healing, insignificant scarring, less than 6 % of recurrence rate, repeatability of the treatment, and minimal functional impairment in the oral cavity [8–12]. This allows the maintenance of an adequate sulcus depth important for achieving a correct peripheral seal for dental prosthesis retention and stability, preventing further recurrences [13, 14].

Recently, the liquid nitrogen cryosurgery has also been studied for its utility in this regard. A recent study has shown that the liquid nitrogen cryosurgery has results equal to that of the carbon dioxide laser in terms of haemorrhage control and postoperative healing [7, 15]. The liquid nitrogen cryosurgery has been used successfully in a number of oral surgical and dermatological procedures. It is widely used in removing epidermal warts, molluscum contagiosum, hemangiomas, treating chromomycosis [16–18] and also in excision of skin malignancies [19]. In oral surgical procedures it has been implemented in the management of aggressive primary jaw lesions [20, 21] and minor soft tissue surgeries [22, 23]. It has the boon of achieving excellent haemostasis, without direct contact with tissue while maintaining an aseptic environment. It also provides good healing with minimal postoperative oedema and pain.

The mechanism behind it is that as the cryosurgery is applied ice crystals are formed intracellularly and progressive necrosis ensues. It is advocated that repeat freezes, as used in our case report, results in rather large intracellular ice crystals and it is this increase in size which is more lethal to the cells [24]. Another advantage is that cryosurgery is a painless procedure because of the immediate blockage of the nerve transmission in that area. Low temperatures have been shown to be capable of blocking neural transmission. It achieves haemostasis by means of necrosing the capillary ends by which it ligates the same. Studies have showed the increased presence of platelets in vessels treated with cryosurgery [24], denoting its role in haemorrhage control. Another valid advantage of cryosurgery is its low cost when comparing it with its counterpart techniques. Hence all these properties of cryosurgery make it a best suited technique in treating geriatric patients.

Clinical Significance

The advantages of cryosurgery over the conventional method makes it an important asset in the armamentarium of oral surgeon and has additional advantages of controlling pain and perhaps dealing with lesions in sites that would be difficult to treat by other means. Hence it can be used in the treatment of Epulis fissuratum, besides it can also be used in treatment of other oral soft tissue pathologies achieving a plethora of benefits.

Conclusion

Dentists are treating increased number of elderly patients who have one or more significant comorbidities, which may complicate treatment planning and reduce ability to carry out post treatment monitoring. The potential benefit of the treatment and overall prognosis are also important factors that we need to assess and reconcile in shaping treatment strategies. Hence it mandates the modification of treatment plan to suit the geriatric population and to decrease the likelihood of adverse events from dental innervations. The cryosurgery is one such excellent technique which translates benevolence to the geriatric patient.

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