

SURGICAL MANAGEMENT OF ORAL PVL WITH BUCCAL PAD FAT AND PRF

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Case Report

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INTRODUCTION

In India high rates of occurrence of oral malignancies and premalignant lesions is attributed to indiscriminate use of tobacco and its derivatives. Gutkha, a form of tobacco laden Areca nut is very commonly consumed and is placed as a quid in buccal vestibule. This results in high prevalence of oral malignancies and premalignant lesions in buccal vestibular regions. PVL (proliferative verrucous leukoplakia) is an aggressive and rare form of oral leukoplakia with high morbidity.^[1]

WHO 2005 described PVL (proliferative verrucous leukoplakia) as a rare but distinctive high risk clinical form of oral precursor lesions. Several studies have examined PVL (proliferative verrucous leukoplakia) characteristics and its propensity to develop into oral carcinoma.^[2]

PVL (proliferative verrucous leukoplakia) is a long term progressive condition which develops as a white plaque of hyperkeratosis that eventually becomes a multifocal disease with confluent, exophytic and proliferative features [3] & behaves in a more aggressive and relentless manner than the more innocuous white oral lesions that it can resemble clinically.^[4]

Recently, Woo et. al have reported a subset of lesions, with the majority clinically presenting as OL, harbouring high-risk HPV (Human Papilloma Virus) subtype and positive for p16.^[5] In addition, clinicopathological spectrums of these lesions are similar to tobacco-induced leukoplakia that occurs more often in adults males on the tongue and floor of the mouth.

According to Barasch et al, when interpreting p16 positivity, the presence of p16 positivity in > 50% of cells with > 25% confluence or > 70% positivity could be considered as the threshold to determine a positive reaction.^[6]

PVL grows slowly and can take upto 7.8 years to become cancerous. The process is irreversible and usually progresses to cancer. According to the study by Bagan, PVL quickly becomes malignant, on average within 4.7 years^[7], whereas Hansen reported an average time to cancer of 6.1 years.^[8] However, Silverman & Grosky reported a longer mean malignant process of 11.6 years.^[9]

Platelets regenerative potential was introduced in the 70s,^[10] when it was observed that they can contain growth factors that are responsible for increase collagen production, cell mitosis, blood vessels growth, recruitment of other cells that migrate to the site of injury, and cell differentiation induction, among others.^[11]

Platelet concentrates are a concentrated suspension of growth factors found in platelets, which act as bioactive surgical additives that are applied locally to induce healing.^[11] PRF (Platelet rich-fibrin) was first used in 2001 by Choukroun et al,^[12] especially in oral and maxillofacial surgery, and is currently considered as a new generation of platelet concentrate. It consists of a matrix of autologous fibrin^[13] and has several advantages over PRP (Platelet rich-plasma), including easier preparation and not requiring chemical manipulation of the blood, which makes it strictly an autologous preparation.^[11]

A normal PRF membrane has rapid degradability (12- weeks), but if fibres are cross-linked, it could provide resistance against enzymatic degradation and could be more stable during the healing time.^[14]

CASE PRESENTATION:

A 35 years old male patient presented with an asymptomatic whitish lesion on right side of

buccal mucosa in buccal relation to 46,47. The lesion has existed for 6 months. (Figure 1)

Figure 1: A 33 year old male with asymptomatic white verrucous plaque on the right buccal mucosa.

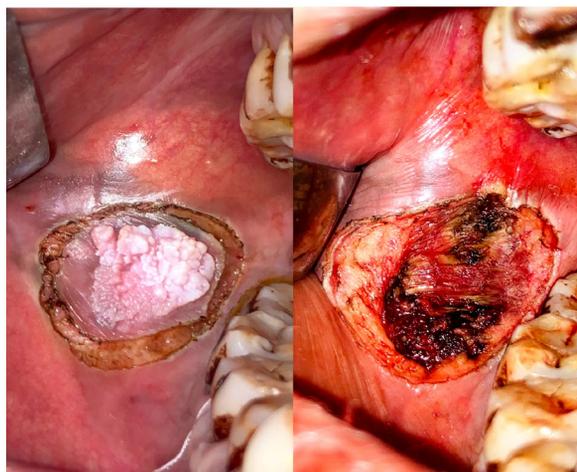


Patient was asymptomatic with no other medical conditions. Patient had a history of Gutkha (tobacco laden areca nut mixture with slaked lime) chewing since last 78-years. Intraoral examination revealed an elevated plaque like whitish lesion of size 2×3 cm square. The lesion had a verrucous/ papillary appearance and was not scrapable.

MANAGEMENT:

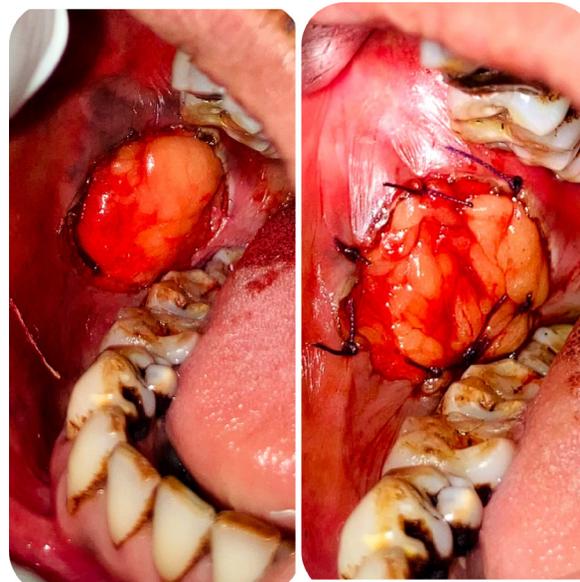
After informing the patient regarding the findings it was decided to excise the lesion with adequate margin. The patient was taken for surgery with due aseptic precaution under local anaesthesia. Lignocaine 2% with 1:80,000 adrenaline was locally infiltrated around the lesion during the surgical procedure. The lesion was excised with safe margin of 0.5 cm (Figure 2) with electro cautery and haemostasis achieved by bipolar cauterization. Buccal pad of fat was harvested from the same surgical site by blunt dissection through the underlying buccinator muscle.

Figure 2: Surgical excision done with electro cautery with safe margin



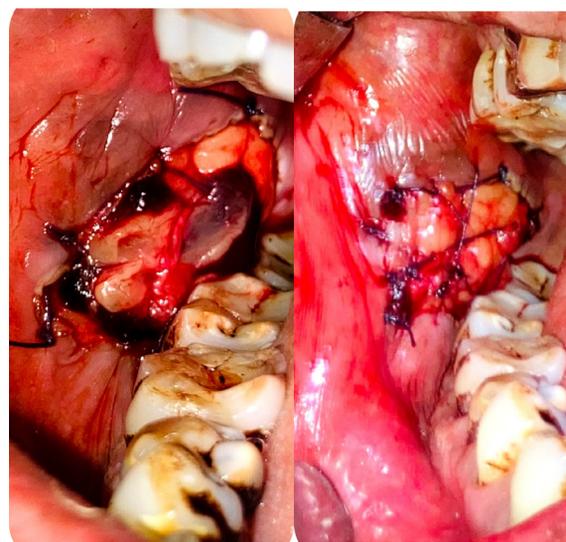
Adequate amount of buccal pad of fat was harvested to cover the entire defect without tension on the pedicle. 40- polyglactin 910 suture was used for suturing buccal pad of fat to the margins of defect (Figure 3).

Figure 3: Reconstruction of the defect with buccal pad fat harvesting from the same site



The reconstructed site was then covered with PRF membrane which was prepared from 50ml of blood extracted from the patient, Meticulous suturing of buccal pad fat and over line PRF was done (Figure 4).

Figure 4: Meticulous suturing of buccal pad fat with over line PRF was done



Quilting of the PRF membrane to the underline buccal pad fat was done to prevent displacement of the membrane during masticatory functions.

Patient was followed up for next 6 months with uneventful healing. (Figure 5)

Figure 5: Follow up 2 months & 6 months



Figure 6: Biopsy specimen



Figure 7: Hyperkeratinisation with proliferation of epithelium (10x)

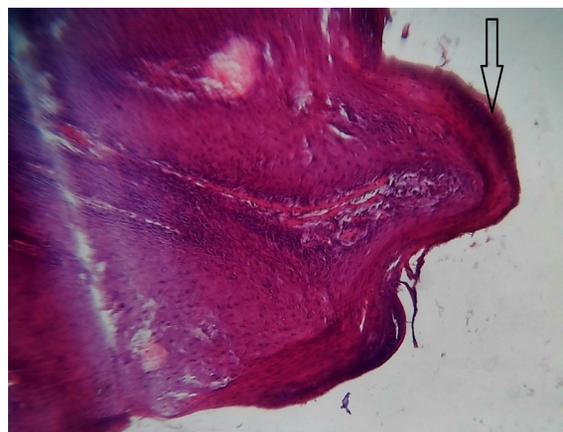
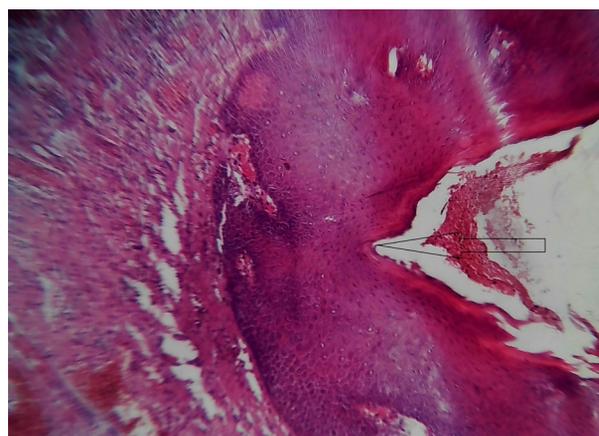


Figure 8: Invaginations of parakeratin plug (10x)



PROTOCOL FOR PRF PREPARATION:

The protocol tries to accumulate platelets and the released cytokines in a fibrin clot.

PRF protocol requires only centrifuged blood without any addition of anticoagulant and bovine thrombin. Then, a blood sample is taken without anticoagulant in 10 ml tubes in a glass or glass-coated plastic tube then immediately centrifuged at 3000 rpm for 10 min. The resultant product consists of the following three layers:

- Top-most layer consisting of a cellular plasma
- PRF clot in the middle
- Red corpuscle base at the bottom

After this, it is necessary to put PRF clot in a sterile cup for approximately 10 min to allow the release of the proper serum contained within.

HISTOLOGICAL FINDINGS:

H & E stained section shows hyperkeratotic proliferation of stratified squamous epithelium with mild dysplastic features like increased mitotic figures, nuclear hyperchromatism, loss of stratification and cellular and nuclear pleomorphism are seen. The underlying stroma is fibrocellular. At places chronic inflammatory cells are appreciated. Over all features suggestive of Proliferative Verrucous leukoplakia with mild dysplasia.

Figure 9: Bulbous rete ridges - elephant foot like appearance (10x)

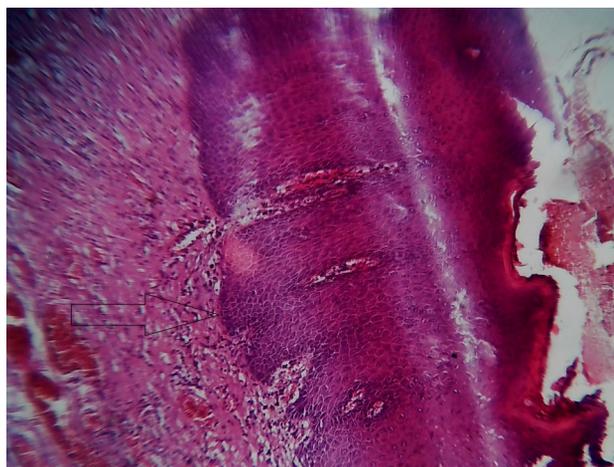
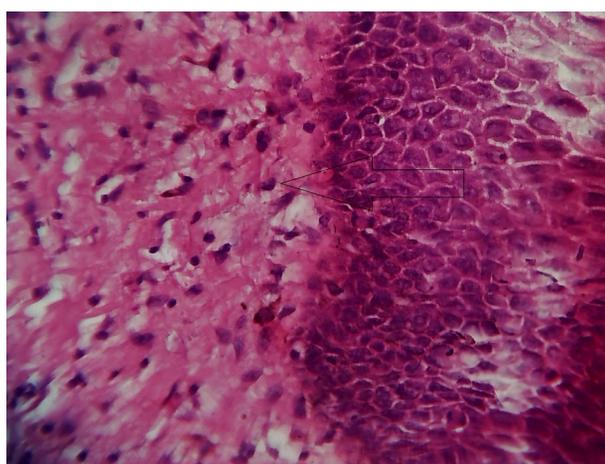


Figure 10: Dysplasia- increase mitotic figures above the basal layer resembles as mild dysplasia (40x)



DISCUSSION

When considering the management of PVL is commonly treated with conventional surgery with electro cauterly, laser ablation, and cryosurgery. [15] Except in conventional surgery where resection of the lesion is targeted, in other methods, the tissue destruction is obtained via intracellular & extracellular freezing, denaturing lipid protein complexes and cell dehydration. There are several advantages of using co2 lasers for oral lesions, particularly less intraoperative bleeding, minimal damage to adjacent tissue, delayed acute inflammatory reaction and reduced myofibroblast activity, leading to reduced wound contraction and scarring. [15]

PVL is a progressive disease which may not be respond to traditional treatments and has shown to have a high recurrence rate despite the early interventions that has carried out in the management.

Non-reconstructed lesion they heal by secondary intention which scar formation leading to decrease mouth opening. The reconstruction options to treat a buccal mucosa defect of this size are flaps like Nasolabial, Submental or Radial forearm free flaps. The other options include placing a skin graft, buccal pad of fat or collagen membrane. However buccal pad of fat is an on-site available graft with no donor site scar formation. Hence we decided to repair the defect with the help of buccal pad of fat covering it with PRF to considering the regenerative properties of PRF.

Advantages of PRF in soft tissue healing:

- It has a natural fibrin framework with growth factors within that may keep their activity for a relatively longer period and stimulates tissue regeneration effectively.
- Used as a membrane, it avoids a donor site surgical procedure and results in a reduction in patient discomfort during the early wound healing period.

CONCLUSION

PVL has a high recurrence rate and should be excised adequately and reconstructed to reduce postoperative functional deformities.

The reconstruction of the defect should be evaluated depending upon the defect sizes and donor site morbidities. PRF as a regenerative graft should be explored as a viable option for reconstruction of mucosal defects.

CONFLICTS OF INTEREST

There are no conflicts of interest.

CONSENT:

Written informed consent was obtained from the patient for the publications of this case report and any accompanying images. A copy of his written consent is available for review by the Editor-in-chief of this journal.

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