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Case Report

Platelet rich fibrin: A new covering material for oral mucosal defects

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ABSTRACT

In the current oral and maxillofacial surgery practice, the use of PRF membrane is limited to bony lesions and gingival defects. We have used it for reconstruction of benign hyperkeratotic lesion of oral mucosa in a healthy adult male and have found good healing clinically. It is suggested that the use of PRF membrane could be tried for various other superficial oral mucosal lesions.

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1. Case report

In the year 2001, French Oral and Maxillofacial Surgeon Joseph Choukroun (et al) developed a second-generation platelet concentrate in Paris, and named it Platelet Rich Fibrin (PRF). It had certain clear advantages over PRP and fibrin glue like cost effectiveness, no risk of viral contamination, no requirement of bovine thrombin hence less complicated fabrication etc.¹ For these reasons PRF has gained popularity in various dermatological and surgical procedures over the years. Technically, PRF is defined as an immune and platelet concentrate containing all constituents of a blood sample that are favorable to healing and immunity.² The PRF clot could easily be compressed into PRF membranes that was widely used as a healing coverage agent over wounds.

In Oral and Maxillofacial surgery, till now PRF clots and membranes have been used intra-orally only in hard tissue

defects³ and gingival recessions⁴ to enhance the rate of healing. We used PRF membrane to cover an excisional wound of oral mucosa, and evaluated healing clinically.

A 65-year-old smoker presented with a white lesion in the lower anterior vestibule and attached gingiva. It was 4.8 × 1.7 cm in maximum dimensions, non-tender, curd like and could not be scrapped off (Fig. 1). It was diagnosed as a hyperkeratotic lesion without epithelial dysplasia on incisional biopsy. The lesion was excised under local anesthesia (2% lignocaine with 1:80,000 Adr.) Excision was confined to the margins of the lesion, and up to mucosal and sub-mucosal depths only considering the benign pathology. We called this partial thickness excision (not including muscular layer). Surgical site was covered with pressure dressing for 15 min to achieve hemostasis. 40 ml of blood was drawn from patient's right median cubital vein, distributed to 4 glass tubes of 10 ml each and immediately centrifuged at 3000 RPM for 12 min. The technique was similar to the one described by Choukroun to

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Fig. 1 – Hyperkeratotic lesion in lower labial vestibule.

make PRF gel.⁵ 4 clots of PRF were obtained after separating them from the clot containing RBCs. They were pressed between two flat surfaces (glass slabs covered with sterile wet gauze) to produce PRF membranes (Fig. 2). These membranes were used to cover the excisional wound and sutured with the mucosal margins using resorbable sutures (Fig. 3). While performing the procedure, it was found that PRF membrane had acceptable elasticity and it could be stretched to some extent (1.52 mm) to cover the wound edges well. However, it is a fragile covering and needs careful manipulation to prevent tearing. After reconstruction of the lesion with PRF membrane, paraffin gauze was used to cover the defect and pressure dressing was applied over it. Patient was asked to keep the dressing in situ for 24 h and was prescribed broad-spectrum antibiotic and analgesic for 3 days. On the next day, dressing was removed and it was found that the PRF membrane was taken up well by the site. Patient was kept on liquid diet for 7 days and asked to maintain strict oral hygiene. On the 7th day, sutures were removed and wound healing was assessed. The graft site was healing well with mild erythema and pain at the points of suture removal. No slough or other signs of necrosis were seen. Surgical site was re-evaluated 15, 30 and 60 days later and it was found that the wound healing was clinically complete with mild fibrosis (Fig. 4). Even after 1 year of follow-up now, patient is asymptomatic with no signs of recurrence of the lesion. Patient is advised for review every 6 months hence.

Fig. 2 – PRF membranes made from patient's blood.

Fig. 3 – PRF membranes grafted over wound and sutured.

Fig. 4 – 60 days post-operative healing after PRF membrane grafting.

Fig. 5 – Hyperkeratotic lesion.

Fig. 6 – Excision and Collagen membrane grafting.

2. Discussion

A debate can be raised over leaving small excisional wounds open to heal secondarily or cover them with other coverage agents like collagen membrane. However, it is commonly observed that achieving hemostasis is very difficult without a coverage agent, especially after the patient is sent home and spits or coughs accidentally. Closing the wound primarily would obviously need more undermining or would close the wound under tension with more fibrosis and reduced mouth opening if operating in areas like posterior buccal mucosa. The lesions that we have operated on are of various sizes (26 cm diameter) and it is observed that achieving absolute hemostasis intraoperatively itself is time taking and tricky.

The primary purpose of a coverage agent is to protect the wound and provide an environment conducive to healing, which the PRF membrane did excellently, with additional advantage of achieving hemostasis. Also, in some of our cases, we compared PRF membrane with the commercially available collagen membrane for coverage in similar lesions and found PRF membrane to be better owing to better workability and easier manipulation, better tear strength, better clinical healing (Figs. 5–7), better epithelialization of wound on post-operative histo-pathological examination. Moreover, having an autogenous source, PRF is cost effective and carries no risk of allergic reactions. The centrifuge machine and other materials for its fabrication are easily available in most Oral and Maxillofacial settings, hence requiring no extra preparation. The only

Fig. 7 – 60 days post-operative healing.

shortcoming that we see is that PRF membrane lacks bulk hence cannot be used for reconstruction of deeper wounds.

But, overall it is a simple and safe procedure and can be tried in future for reconstruction of various other superficial soft tissue lesions of oral mucosa.

Conflicts of interest

All authors have none to declare.

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