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Efficacy of PRF as a Palatal Bandage on Pain Scores and Wound Healing in a Patient with Palatal Chemical Burn: A Case Report

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Abstract: ***PRF is a second generation platelet concentrate obtained from autologous blood with simplified processing without the need for biochemical clot handling, so it is used as a periodontal dressing for palatal wound in this case report. Aim: The aim of this case report was to evaluate the advantage of PRF palatal bandage as a periodontal dressing on pain scores at the palatal burn site. Materials and method: A Patient with history of traumatic extraction of 18 and carbolic acid burn in the same palatal region reported to the Out Patient Department of Periodontology. Oral examination revealed palatal mucosal erosion involving 14, 15, 16, 17, tooth region. A CBCT was done. The region was anaesthetised and a PRF dressing was placed and stabilised with 5.0 suture covering the wound area. Prophylactic antibiotics were given and patient was recalled after every 7 day for 1 month. Result: PRF palatal bandage showed post-operative significant lower pain score on consecutive visits. Conclusion: PRF helped in accelerating the healing by properties like enhanced growth factors, angiogenesis, and wound protection from external wound.***

Keywords: PRF, Chemical burn, Pain, Palatal bandage

1. Introduction

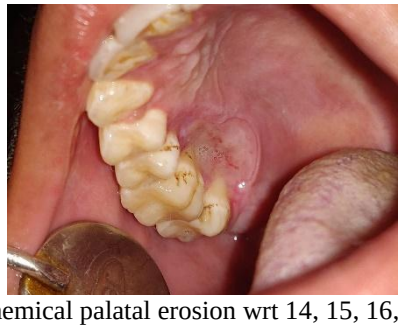
Platelet Rich Fibrin are second generation platelet concentrates that was developed by Choukroun *et al*., in 2001.[1]Palatal mucosa usually heals by secondary intention and requires a longer healing duration with more patient discomfort and pain. Therefore, a variety of periodontal dressings have been used to assist the healing of the mucosal tissue loss in the palatal region.[2] Conventional periodontal dressings provides a mechanical and protective barrier to the wound by covering it from the external environment and preventing cross contamination. They don't have any healing properties. They neither have anti-microbial property nor does they accelerate healing. In cases of palatal mucosalerosion, the healing is usually delayed and hence the entire duration is seen to be discomfortable and torture for the patient. Carbolic acid is a flammable, highly corrosive chemical which is well absorbed by all routes exposure including inhalation, cutaneous, or oral. Phenols denature and precipitate cellular proteins and results in tissue injury.[3] Hence its use in the oral cavity can cause serious damage to the oral mucosa and its underlying bone.

Platelet Rich Fibrin has been shown to accelerate wound healing by effective neovascularisation and promoting fast cicatricial tissue remodelling and can be used to shield open wounds. Hence PRF has been effectively used as a palatal dressing/bandage to cover and safeguard the raw wound of the palatal side. The fibrin and platelet concentrate effectively releasing growth factors over a period of 7-10 days, accelerating wound healing, reduces post-operative pain and hence has been effectively used for topical and cutaneous application.

2. Case Report

A 16 year old female patient with complains of pain in upper right back tooth region since 1 month visited the outpatient department of department of Periodontology, Shree BankeyBihari Dental College & Research Centre, Ghaziabad, Uttar Pradesh. Patient also complained of pain radiating in the lateral side of tongue since 1 month. Patient had no medical history. Past dental history of patient revealed that patient had undergone extraction in relation to 18. Extraction was traumatic in nature. Patient was prescribed carbolic acid rinse post extraction and she had rinsed it for 3-4 days. Post rinse patient had started experiencing burning sensation and pain in her maxillary right posterior palatal region. Upon clinical examination presence of an oval shaped erosive region surrounding the palatal aspect of 14, 15, 16, 17 tooth region. The region was painful on touch. Loss of papilla on right lateral surface of tongue was also noticed. A CBCT investigation was done for that region and upon report of CBCT, chances of osteomyelitis was ruled out. The region was cleaned using a moist cotton gauge, and then PRF membrane was made from patients autologous blood following Choukroun *et al* procedure. The membrane was then stabilised on the wound region using 5-0 non resorbable silk sutures. An additional covering of a Coe-pack was placed on the region. Patient was kept on antibiotic, analgesic and vitamin-B supplementation for 7 days. Sutures were removed and region was inspected. Patient's pain scale was measured using Visual Analogue Scale. Patient was kept on regular follow up for a month post placement of PRF dressing.

3. Clinical Images

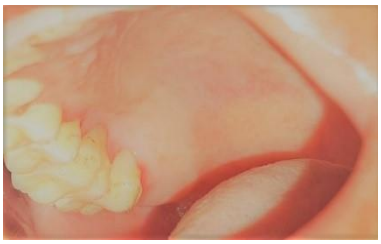


Chemical palatal erosion wrt 14, 15, 16, 17


PRF membrane stabilised using 5.0 suture


Coe pack placed


Post operative after 1 week


Post operative after 1 month

4. Result

PRF palatal bandage showed post-operative significant lower pain score on consecutive visits. Also a clinical sign of inflammation was reduced after 1 month post-operative.

5. Discussion

Among the different types of platelet concentrates, PRF was first described by Choukroun et al. They obtained the PRF by gentle centrifugation of peripheral blood and characterized it as being platelet-rich and fibrin-dense. The main objective of this case report was to assess the efficacy of PRF as a palatal bandage on soft tissue healing and also on pain score and discomfort of patient.[4]

PRF is believed to contain platelets in a concentration seven times that of blood and release high quantities of proinflammatory cytokines IL-1β, IL-6, and TNF-α, as well as a main coagulation matricellular glycoprotein called thrombospondin-1 (TSP-1) during the first 7 days of wound healing.[5]

The above clinical images shows that post application of PRF bandage color match, contour, and texture of the palate improved over a month follow up, as well as less pain and discomfort was elucidated. PRF not only gives mechanical protection but also releases an arsenal of potent growth factors such as transforming growth factor beta-1 (TGFB-1), platelet derived factor AB (PDGF-AB), fibroblast-derived growth factors, and vascular endothelial growth factor (VEGF), all of which can promote angiogenesis as well as healing and remodeling processes.[6]

Yen et al. found that administration of a platelet concentrate could accelerate the soft tissue healing and regeneration of palatal tissue thickness after a 6-week interval, as observed at both clinical and histological levels.[7]

Study conducted by **Anilkumar et al** concluded that success of PRF preparation depends on the speed of blood collection and its immediate centrifugation before initiating the clotting cascade. Therefore, quick handling is characterized as a key factor for achieving a clinically usable PRF clot.[8]

The case report evaluated the clinical effect of PRF as palatal bandage removal on the healing of the donor area, as well as investigated the pain scores and patient discomfort after PRF application. The success of PRF technique significantly depends on its handling that is related to the blood collection and its centrifugation. Moreover, the final amount of available sample is low as it is autologous blood and there is a need to use glass-coated tube for achieving clot polymerization.

6. Conclusion

PRF helped in accelerating the healing by properties like enhanced growth factors, angiogenesis, and wound protection from external wound.

7. Conflict of interest

There was no conflict of interest

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