

# Bridging the Gap: Innovative Use of Disposable Syringe and Platelet-rich Fibrin for Treating Planter Fissures

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## Abstract

Deep plantar fissures are a common, painful condition, which are often recalcitrant to multiple modalities. Autologous platelet-rich fibrin is a reservoir of supraphysiological concentration of platelets housing various growth factors shown to accelerate wound healing. This unique form factor affords a novel advantage of its ability to be applied over and within these fissures under occlusion. We report the innovative use of disposable syringes to fashion platelet-rich fibrin casts for management of these deeper fissures.

**Keywords:** Autologous, plantar fissures, platelet-rich fibrin (PRF), wound healing

## INTRODUCTION

Plantar fissures are a common and ubiquitous condition. The pathogenesis of plantar fissure is likened to the formation of vertical cracks in a barrel due to hoop stresses combined with dryness. This in addition to lack of cohesion in the corneocytes in case of keratinization disorders like ichthyosis leads to the formation of large extensive painful fissures refractory to treatment severely impairing the quality of life of the individual. Sivakumar *et al.*<sup>[1]</sup> have graded plantar fissures as Grade 1: superficial painless fissures involving proximal half of foot, Grade 3: painful deep fissures involving whole of foot, and Grade 2 (fissuring condition between Grades 1 and 3). Management options are limited and often unsatisfactory including topical keratolytics and occlusion with micropore tape for Grades 1 and 2.<sup>[2]</sup> However, deeper, painful, and bleeding fissures (Grade 3) tend to be recurrent and recalcitrant to these modalities.

## INNOVATION

We made a novel innovation for treating deep fissures (Grade 3) with platelet-rich fibrin (PRF). This was done by loading a 10-mL syringe with freshly prepared PRF and pushing it with pressure through the nozzle devoid of the needle to fashion slender tubular casts. These tubular casts of PRF hence obtained were used to snugly plug

these deeper fissures under occlusion by securing with multilayered occlusive dressing comprising of a hydrogel (INTRASITE, Smith & Nephew Healthcare Pvt. Ltd.), surgical gauze, and elastic adhesive bandage [Figure 1]. Complete resolution of the fissures was noted with four sessions of instilling PRF in this way [Figure 2]. Platelet-rich plasma (PRP) and more recently PRF are being increasingly used in wound healing and nonhealing ulcers. PRF scores over PRP in this regard for many reasons. There is a sustained release of cytokines from PRF in wound milieu over a week rather than sudden short-lived release in the case of PRP. Second, the integration of fibrin network into the regenerative sites aids in cellular migration of the endothelial cells, which helps in neo-angiogenesis. Third, the presence of leukocytes in the fibrin network helps in evading infections as evidenced by its antimicrobial properties. Fourth, the PRF spun at a lower speed minimizes trauma to individual cells, thereby ensuring more stem cells in the final product. Lastly, the method of preparation is much easier than PRP and does not require the addition of any additional material like anticoagulant making it a true autograft.<sup>[3]</sup> The innovation

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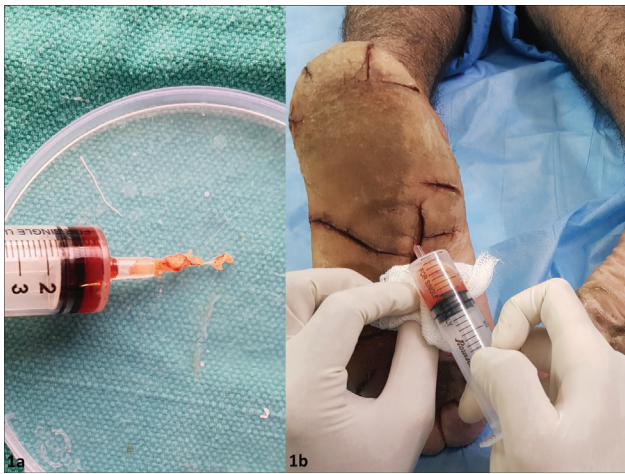
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**Figure 1:** Tubular casts of PRF being pushed out of a 10-mL disposable syringe (A) and applied over deep fissures of the sole (B)

highlights a novel modality in the management of deep and painful planter fissures with a disposable syringe and PRF.

### LIMITATION

The temporary and delicate nature of the dressing renders itself to inconsistencies in results and recurrent sessions require multiple patient visits.

### CONCLUSION

The innovation highlights the use of autologous PRF as a novel, cheap, and effective modality in treating deep planter fissures.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and



**Figure 2:** Deep planter fissures (A) undergoing complete healing with four sessions PRF under occlusion (B)

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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