Revolutionising paediatric burn scar management: Unleashing the potential of stromal vascular fraction

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Figure 1: Ten days after a scald burn to the chest.

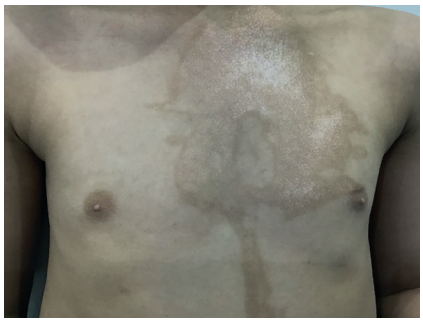

Figure 2: One month after the primary SVF injection.

Figure 3: One year after the conclusion of the SVF sessions.

Burn injuries often result in challenging scars that impact the aesthetic appearance and also pose functional and psychological concerns for the affected individuals. Traditional approaches to treating burn scars have primarily relied on skin grafts, requiring donor sites and often resulting in additional complications. In recent years, the field of regenerative medicine has introduced innovative strategies for addressing such scars.

One promising avenue involves the use of stromal vascular fraction (SVF) derived from adipose tissue. Adipose tissue, once primarily regarded as a storage depot, has evolved into a valuable source of regenerative cells, particularly mesenchymal / adipose stem cells (MSCs/ ADSCs). Stromal vascular fraction, a heterogeneous mixture of cells obtained through the mini-lipoaspiration of fat tissue, encompasses a spectrum of regenerative components, including fibroblasts, pericytes, endothelial / progenitor cells, and more [1]. This dynamic cellular reservoir, combined with its ease of isolation in outpatient settings, positions SVF as a promising therapeutic tool for scar management [2].

In this case report, we present a detailed exploration of the application of SVF for the treatment of a burn scar. The implications for scar improvement are assessed, and by shedding light on the practical application of SVF in burn scar treatment and minimal scar formation, this case report aims to contribute valuable insights into the evolving landscape of regenerative medicine and scar management.

Case report

A nine-year-old Arab female patient presented 10 days after a scald burn to the chest. Upon examination, the patient presented with large erythematous areas over the medial area of the chest with left para-mammary involvement and linear extension over the upper abdomen, approximately 9% of the total body surface area. The fresh scars displayed irregular borders, high vascularity, and a soft, pliable texture without contracture or deformities (Figure 1).

By strategically integrating SVF therapy with standard treatment we aimed to prevent permanent burn scars and enhance cosmetic outcomes. The patient underwent three spaced SVF injections over three months, targeting the affected area. Upper legs and abdomen near the umbilicus were chosen for donor site. Thirty millilitres of lipoaspirate had been centrifuged into two Arthrex ACP® double syringes (Arthrex Inc., Naples, FL, USA), yielding 1ml SVF. One millilitre SVF was injected into scars intradermally using a 27G needle.

Discussion

This regimen optimised SVF's regenerative effects, ensuring progressive scar improvement. Figures 2 (one month after the primary SVF injection) and 3 (one year after the conclusion of the SVF sessions) demonstrate a remarkable transformation, with minimal scar permanence. Irregular borders and high vascularity observed in Figure 1 diminish, revealing a softer texture and reduced scar prominence. Figure 3 displays the burn scar's impressive healing progression, with minimal hyper- and hypopigmentation as the scar fully resolves.

Conclusion

Stromal vascular fraction therapy strategically complements standard treatment, minimising permanent burn scars and enhancing cosmetic outcomes. The minimal pigmentation irregularities underscore the regenerative potential of SVF in promoting a more uniform and aesthetically pleasing scar texture and appearance as part of the healing process. This comparative analysis underscores the effectiveness of SVF therapy in promoting a favourable cosmetic outcome, validating its potential as an innovative approach in the management of burn scars.

References

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