

Integrating Fetal Membranes and collagen Layers Seeded with Fibroblasts and Keratinocytes for Diabetic Wound Ulcers

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Abstract : The application of fetal membranes in chronic wounds, particularly diabetic foot ulcers (DFUs), has shown remarkable efficacy in enhancing wound healing, with a notable impact on re-epithelialization. Fetal membranes exhibit potent anti-inflammatory and anti-scarring properties, primarily due to their ability to eliminate allogeneic amniotic cells while retaining a cytokine-rich matrix during preparation. When integrated with collagen, this combination creates a unique microenvironment within the wound, fostering the expansion of epithelial cells, fibroblasts, and keratinocytes *ex vivo*, while preserving their normal phenotype. These cells, in turn, stimulate the release of growth factors and healing signals essential for tissue regeneration. This study aims to assess the efficacy of fetal membranes combined with collagen in the management of DFUs by comparing standard care alone with standard care supplemented with fetal membrane allograft treatment. The study involved two groups of patients: Group A: Patients received the wound dressing with fetal membranes and collagen, followed up for 3 months (15 patients). Group B: Patients were treated with only sterile gauze, with no specialized dressing, and were followed up for 3 months (15 patients). The healing progress in both groups will be evaluated, and the outcomes will provide valuable insights into the potential for further improvements in wound care strategies. Preliminary findings emphasize the significant potential of fetal membranes to enhance healing in chronic diabetic wounds, demonstrating their ability to accelerate tissue regeneration, reduce inflammation, and promote faster, more effective wound closure.

Keywords : biological scaffold, stem cells, skin damage, diabetic foot ulcers

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