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Efficacy of Cold Atmospheric Argon Plasma in Wound Healing Resulting from Spinal Surgery in a Patient with Diabetes: A Case Report

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ABSTRACT

Introduction: Wounds can be classified as acute and chronic. Acute wounds include abrasions, blisters, burns, or post-surgical cuts. Acute wounds heal quickly with timely treatment. However, some wounds can become chronic due to delayed healing, local ischemia, or wound infections, especially complicated infections. In recent years, plasma therapy for wound healing has attracted much attention, leading to increased interest in medical devices that utilizes cold plasma at atmospheric pressure. Cold atmospheric plasma operates at temperatures similar to the human body, below 40°C, and is effective in promoting wound healing by producing several active substances, such as electrons, ions, neutral ions, ultraviolet rays, heat, electric fields, and reactive oxygen and nitrogen species.

Materials and Methods: In this study, a single atmospheric pressure cold plasma jet was used. The study sample was a 59-year-old woman who had type 2 diabetes for 20 years. Her wound was caused by spinal surgery. The wound was treated with plasma irradiation in five stages, with each session lasting two minutes.

Results and Discussion: The wound area improved by 95% after four sessions of plasma irradiation.

Conclusion: The use of cold atmospheric argon plasma is effective in reducing wound surface area and improving healing.

Keywords: Cold atmospheric plasma, Diabetes, Medical plasma, Wounds

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