

The pace of wound healing

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The pace of wound healing is a seminal issue in hair transplantation. The body will not grow new hair until the wounds in the skin are completely healed. Poor healing can affect the blood supply to the follicle and can, anecdotally at least, often result in a frizzy appearance to the transplanted hair. This is not an outcome that our patients expect when undergoing a transplant.

To optimise the chance of uniformity of growth and to encourage a robust follicle, wound healing should be upper-most in the minds of the transplant team. Before the 20th century, wounds were traditionally treated by cleansing them and leaving them dry, allowing the wound to “breathe.” Ointment or oil was used to help prevent infection. Throughout the first part of the 20th century, a dry wound was the standard of care.¹

It was not until 1958 that Odland first reported that an unbroken blister healed faster than one that was opened.² In 1962, Winter found that induced wounds in pigs occluded with a polyethylene film more than doubled wound epithelialization compared to no occlusion.³ A year later, Hinman and Maibach established that occlusion (as opposed to air exposure) speeded healing in experimental human skin wounds.⁴

Those early hallmark studies demonstrated that covering the wound allowed a beneficial “moist wound healing” environment. Today, it is widely recognized that moisture is key to wound healing.⁵⁻⁷ Air exposure desiccates a wound, increasing surface necrosis depth by 0.2-0.3mm every 2 to 3 hours.⁸ Eschar formation impedes epithelial cell migration because cells must migrate from the wound edge and travel under the eschar base. Moisture increases re-epithelialization rates by 30 to 50%.⁹ Epithelialization of moist wounds begins 3 days earlier than in wounds that are allowed to dry, and moist wounds heal 2 to 6 times faster.¹⁰

Why do moist wounds heal faster than dry wounds? The precise mechanisms are not fully understood. In 1962, Winter proposed that moisture prevented a crust from developing, which would impose a barrier to epithelialization.¹¹

Winter’s research is based on the case of occlusive dressings, but, in hair restoration surgery, we are unable to use occlusive dressings on the recipient or donor areas—although we can adhere to his basic principle that moist wounds heal 2 to 6 times faster than dry wounds by spraying with water the recipient area throughout the surgery. This water will run down onto the

donor area keeping it moist. We can then educate the patients and encourage them to spray both the donor and recipient areas regularly until the wounds are healed.

References

1. Kannon, G.A., and A.B. Garrett. Moist wound healing with occlusive dressings. A clinical review. *Dermatol Surg.* 1995; 21:583-590.
2. Odland, G. The fine structure of the interrelationship of cells in the human dermis. *J Biophys Biochem Cytol.* 1958; 4:529-535.
3. Winter, G.D. Formation of a scab and the re-epithelialization of superficial wounds in the skin of the young domestic pig. *Nature* 1962;193:293-294.
4. Hinman, C.D., and H. Maibach. Effect of air exposure and occlusion on experimental human skin wounds. *Nature* 1963; 200:377-378.
5. Colwell, J.C., M.D. Foreman, and J.P. Trotte. A comparison of the efficacy and cost-effectiveness of two methods of managing pressure ulcers. *Decubitus* 1993; 6:28-36.
6. Motta, G.J. Dressed for success: how moisture-retentive dressings promote healing. *Nursing* 1993; 23:26-33.
7. Hunt, T.K., Mueller, R.V., and W.H. Goodson III. Wound healing. In: L.W. Way, editor. *Current Surgical Diagnosis and Treatment.* Norwalk: Lange; 1994. pp 89-90.
8. Wheeland, R.G. Wound healing and the newer surgical dressings. In: Moschella SL, Hurley HJ, editors. *Dermatology.* Philadelphia: WB Saunders, 1992; pp 2305-2311.
9. Bolton, L.L., C.L. Johnson, and L.V. Rijswijk. Occlusive dressings: therapeutic agents and effects on drug delivery. *Clin Dermatol.* 1992; 9:573-583.
10. Eaglstein WH. Experiences with biosynthetic dressings. *J Am Acad Dermatol* 195;12:434-440.
11. Winter, G.D. Formation of a scab and the re-epithelialization of superficial wounds in the skin of the young domestic pig. *Nature* 1962; 193:293-294. ♦