

Clinical Insights for Hair Restoration: A Case Study on UC-MSCs derived Secretome Therapy in Alopecia



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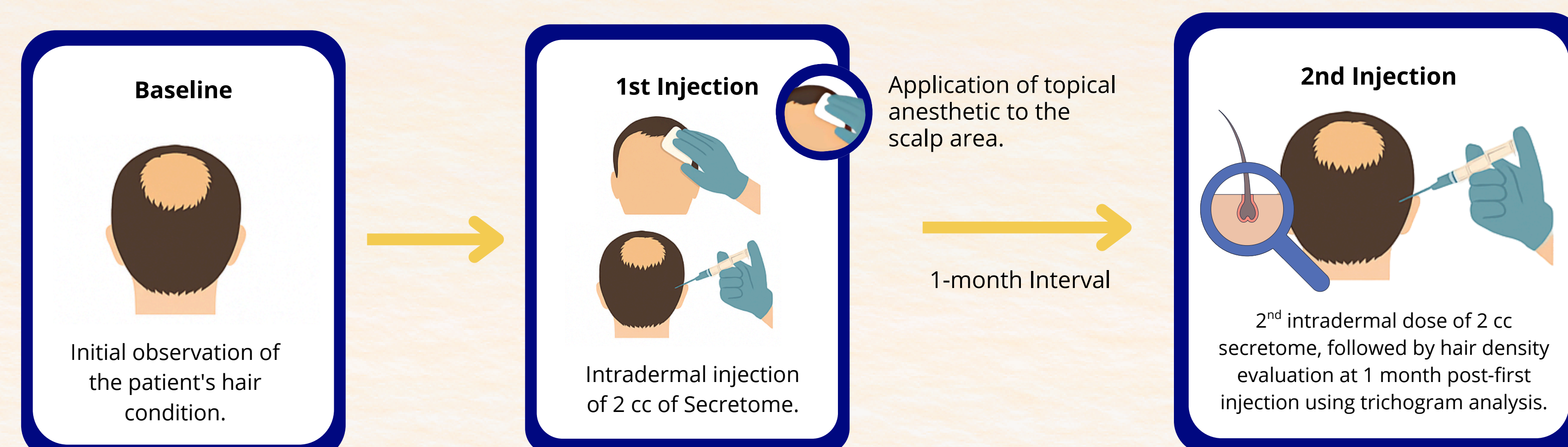
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Methods

Background

Alopecia is a common condition that causes progressive hair loss, affecting both men and women, typically resulting in thinning of the hair on the crown and frontal scalp. It is primarily driven by genetic and hormonal factors, with dihydrotestosterone (DHT) playing a key role in its pathogenesis. Available treatments, including medications, laser therapy, phototherapy, and alternative therapies, often provide limited or unsatisfactory results. In recent years, regenerative medicine has emerged as a promising approach for treating various conditions, including alopecia. The therapeutic potential of stem cells is derived from their capacity to release bioactive molecules, which are referred to as the Secretome. These molecules have paracrine and trophic effects that facilitate tissue repair and regeneration.

A 38-year-old male patient presented to the clinic with complaints of progressive hair thinning and loss, predominantly localized to the frontal hairline and vertex (crown) area of the scalp. Clinical evaluation, including scalp examination and patient history, led to a diagnosis of androgenetic alopecia (AGA), classified as Norwood-Hamilton type III, indicating moderate recession of the frontal hairline along with early vertex thinning. As part of the therapeutic intervention, the patient received two sessions of intradermal injections of a secretome derived from umbilical cord mesenchymal stem cells (UC-MSCs), with each session spaced one month apart. The UC-MSC-derived secretome used in this treatment was manufactured under stringent conditions in a Good Manufacturing Practice (GMP)-certified facility operated by ProSTEM. To ensure product consistency and safety, each batch underwent comprehensive quality control testing and was supplied with a Certificate of Analysis (CoA), confirming compliance with predefined quality specifications for clinical use.



Results & Discussion

Follow-up trichogram analysis revealed a significant improvement in scalp hair parameters following treatment. Hair density increased from 50 hairs/cm² at baseline to 75 hairs/cm² after the second session, indicating a marked enhancement in follicular activity. In addition, there was a noticeable reduction in the proportion of miniaturized hair follicles, suggesting reversal of follicular degeneration commonly observed in androgenetic alopecia. Clinically, the patient exhibited the growth of thicker, more pigmented, and structurally robust hair shafts, accompanied by a stabilization of ongoing hair loss.

These therapeutic effects are attributed to the bioactive components within the UC-MSC-derived secretome, which is rich in essential growth factors such as vascular endothelial growth factor (VEGF), insulin-like growth factor 1 (IGF-1), fibroblast growth factor (FGF), and hepatocyte growth factor (HGF). Collectively, these factors play a critical role in promoting angiogenesis, extending the duration of the anagen (growth) phase of the hair cycle, and stimulating regeneration of the hair follicle niche. The synergistic action of these signaling molecules creates a regenerative microenvironment that supports follicular repair, rejuvenation, and enhanced hair regrowth. Importantly, no adverse events or complications were observed throughout the treatment period, highlighting the safety and tolerability of UC-MSC-derived secretome therapy in this clinical context.

Conclusion

The positive response in hair restoration observed in this patient suggests that UC-MSCs derived Secretome may be a promising treatment for Alopecia. However, further research with a larger patient population is required to validate its efficacy and establish optimal treatment protocols.



Fig. 1. Visual improvement in hair density from baseline (left) to 1 month post UC-MSCs derived Secretome treatment (right).