

# Pseudo-dense Hair Transplantation: Strategy of “Less Inside, More Outside” and Central Bulking with Curled Chest Hairs as Treatment for Scalp Scars

Amir Feily, Ahmad Feily, Jacob S. Alexander<sup>1</sup>, Muhammad J. Niaz<sup>2</sup>, Serena Gianfaldoni<sup>3</sup>, Torello Lotti<sup>3</sup>, Marigdalia K. Ramirez-Fort<sup>1,2,4</sup>

Skin and Stem Cell Research Center, Tehran University of Medical Sciences, Tehran, Iran, <sup>1</sup>Department of Physiology/Pathology, San Juan Bautista School of Medicine, Caguas, Puerto Rico, USA, <sup>2</sup>Department of Urology, Weill Cornell Medicine, New York, New York, USA, <sup>3</sup>Department of Dermatology, Guglielmo Marconi University, Rome, Italy, <sup>4</sup>Department of Life Sciences, BioFort Corp., Guaynabo, Puerto Rico, USA

## Abstract

Hair transplantation in areas of scalp scars is a clinical challenge. However, by creating the visual illusion of central bulking with the use of peripherally transplanted curled chest hairs, cicatricial alopecia can perhaps be cosmetically improved. In a case of a 34-year-old affected man, this strategic procedure was implemented with positive results, as the transplantation was successful, the scar was far less noticeable, and the patient was satisfied with the results. The “pseudo-dense hair transplantation” method can be applied to similar patients, noting that a more succinct procedure will need to be elucidated for the varying etiologies of cicatricial alopecia.

**Keywords:** Cicatricial alopecia, hair, pseudo-dense hair transplant

## INTRODUCTION

Scalp scars are characterized by an increase of tissue fibrosis and collagen deposition, and by a decrease in the superficial vascularity. Hair transplantation in areas of such scarring is a clinical challenge, mainly because of the low blood flow, which is not able to provide the necessary oxygen and nutrients to implanted hair follicles.<sup>[1,2]</sup> To date, follicular transplantation into regions of scalp scars is not yet standardized. Herein we present an innovative strategy for the management of a scalp scar arising from a prior failed hair transplantation procedure, which seems to provide excellent results in terms of clinical results (i.e., cosmesis) and patients' satisfaction.

## CASE REPORT

A 34-year-old man, without relevant past or present medical history, underwent a hair transplantation procedure for his androgenetic alopecia [Figure 1A]. Following dense slitting, hairs were inadvertently inserted into the scalp areas that are most vulnerable to cutaneous necrosis (i.e., “danger zone”).<sup>[1]</sup> Transplantation into the scalp danger zone

resulted in necrosis of the scalp vertex and right parietal region. Subsequently, a 2.40cm (in longest diameter) necrotic eschar was formed within 48h [Figure 1B].

Toward healing and preparation for retransplantation, the patient was instructed to apply topical cream with repairing, anti-inflammatory, and protective properties. The cream was composed of thermal spring water, sucralfate, sulfate, and zinc sulfate. The cream was applied twice daily until the scalp eschar was healed by secondary intention with scar formation [Figure 2A and B]. Once the scalp scar was formed, the patient was instructed to allow 1 year for tissue remodeling, before returning to clinic for retransplantation.

To improve scar cosmesis and to avoid necrosis and graft failure, we decided to perform an innovative strategy, namely the “pseudo-dense hair transplantation” technique. The

**Address for correspondence:** Marigdalia K. Ramirez-Fort, MD, BioFort Corp., PO Box 1374, Guaynabo, Puerto Rico 00970, USA.  
E-mail: marigdalia@biofort.io

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**How to cite this article:** Feily A, Feily A, Alexander JS, Niaz MJ, Gianfaldoni S, Lotti T, *et al.* Pseudo-dense hair transplantation: Strategy of “less inside, more outside” and central bulking with curled chest hairs as treatment for scalp scars. *J Cutan Aesthet Surg* 2020;13:226-8.

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10.4103/JCAS.JCAS\_104\_19

strategy includes standard transplantation of “less inside, more outside” hairs, which creates the visual illusion of central bulking with the use of peripherally transplanted curled chest hairs that are oriented to curl toward the scars so as to tent up hairs from outside of the transplantation field.

After having harvested 1000 grafts from the chest [Figure 3A], with a 1-mm punch, we transplanted the curled chest hairs in two different ways. At first, we performed a sparse graft insertion in the central part of scar where the blood flow was poor. Successively, we performed a dense peripheral graft insertion in a special follicular arrangement so that hair curled toward the center of the scar [Figure 3B]. This “pseudo-dense hair transplantation” technique was successful in significantly improving the cosmesis of the scalp scar. After 8 months, the scar was mostly unremarkable and the outcome was subjectively accepted by the patient [Figure 3C].

### DISCUSSION

Follicular transplantation into regions of scalp scars is difficult.<sup>[1,2]</sup> Several reports document the underlying

importance of improved local blood flow via tissue debridement or hyperbaric oxygen therapy, before performing dense hair transplantation.<sup>[3]</sup> In a previous study, we described an “ischemia timeline,” toward aiding clinicians to avoid scalp necrosis. Dense slitting commonly causes cutaneous ischemia (i.e., primary ischemia). After the initial scalp insult, the skin begins to reperfuse until engraftment during the “reperfusion time,” which induces a secondary ischemia. On the basis of this data, we demonstrated by Feily’s method that increasing the reperfusion time results in increased regional blood flow, thereby protecting against scalp necrosis and transplant failure.<sup>[1]</sup>

Unfortunately, the patient presented in this report did not undergo Feily’s method for dense hair transplantation, he developed scalp necrosis and a significant scalp scar. Our report supports the significant importance of optimizing the regional



**Figure 1:** A1: A 34-year-old man, with untreated androgenetic alopecia A2: Two days after undergoing a dense hair transplantation procedure, the patient developed a large eschar on the vertex and right parietal region of the scalp



**Figure 2:** B1: After two weeks of the lesion topical care, the eschar naturally exfoliated, leaving a large wound extending into the dermis. B2) The complete wound healing was achieved after five months of treatment



**Figure 3:** C1: harvesting curled hairs from the chest. C2: The patients scalp four months after pseudo-dense hair transplantation method: few grafts were inserted in the scar region, whereas dense insertion of hairs oriented to curl toward the center of the scar was performed in the periphery. Site of cicatricial alopecia with the dense insertion of hairs oriented to curl toward the center “pseudo-dense hair transplantation” technique (yellow arrow) C3: The patient scalp eight months after the pseudo-dense hair transplantation

vascular supply, to be able to support the density of the hair transplantation desired. Although the ischemia timeline is important to consider before the planning of every follicular transplant procedure, it is particularly crucial to the transplantation planning of scalp scars (i.e., intrinsically poor vascular supply).

The pseudo-dense hair transplantation technique can also be applied to forms of scarring or cicatricial alopecias. An important form of cicatricial alopecia is that seen in the post-radiotherapeutic of patients with scalp, skull, or brain tumors. Unfortunately, hair transplantation in regions of secondary scarring alopecia (e.g., radiotherapy, burns, and surgery),<sup>[1-4]</sup> is similarly difficult to the transplantation of a scalp scar for similar pathophysiological reasons. Therefore, transplantation of regions of cicatricial alopecias also require careful planning, minding of the ischemia timeline, and innovative procedural techniques.

## CONCLUSION

We demonstrate the efficacy of the pseudo-dense hair transplantation technique in significantly improving the cosmesis of a large scalp scar. Further observations are needed to optimize the timing and strategic nuances for the management of different etiologies of secondary cicatricial alopecia.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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