

# Adipose tissue transplant in recurrent folliculitis decalvans

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## Abstract

Folliculitis decalvans is a rare clinical disorder classified as primary neutrophilic scarring alopecia with a slight preference for the male gender. Here, we report the use of autologous fat transplantation as a source of stem cell therapy for hair re-growth assisted by inflammatory action of the fat itself in a female patient. The patient underwent adipose transplantation in April and September 2017. After treatments, the patient had no new pustules and no longer had pain or burning sensation in the affected area. The hair has re-grown at the periphery area of alopecia appearing stronger and shinier.

## Keywords

adipose tissue transplant, folliculitis decalvans, stem cell, tufted folliculitis

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## Introduction

Folliculitis decalvans (FD), first described by Quinquaud in 1888,<sup>1</sup> is a rare scalp disorder which has been classified as primary neutrophilic scarring alopecia. It mostly occurs in young and middle-aged adults, with a higher prevalence in African-Americans, and a slightly higher incidence rate in the male gender. Clinical features generally consist of follicular pustules and papules with hemorrhagic crusting, resulting from alopecia scarring patches.<sup>2</sup>

FD represents 11% of all primary cicatricial alopecias.<sup>3</sup> Its etiology is not fully understood; however, *Staphylococcus aureus* seems to play an important role in this pathogenesis. The number of reported cases of familial FD also supports the theory of genetic predisposition.<sup>4</sup> Clinically, FD mainly involves the vertex and/or occipital area of the scalp. Initial lesion is an erythematous follicular papule, followed by scarred areas with a loss of follicular ostia and follicular pustules. Patients often complain of itching, pain, and/or burning sensations.

Tufted hair folliculitis is characterized by damage of the follicle infundibular epithelium and the formation of a common infundibulum as well as multiple hairs emerging from one single follicular orifice. It is important to carry out effective treatment to manage the condition and prevent further involvement of healthy hair follicles.

There are varying responses to currently available medications, which mainly consists of systemic antibiotics (e.g. cephalexin, minocycline, tetracycline, clindamycin, rifampicin, ciprofloxacin) and topical and intralesional corticosteroids. More recently, the treatment response to biologic agents (e.g. infliximab and adalimumab),<sup>5</sup> photodynamic therapy (PDT),<sup>6</sup> and neodymium:yttrium–aluminum–garnet (Nd:YAG) laser<sup>7</sup> have been reported.

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Surgery should be carefully considered especially because FD seems to occur after “scalp injury,” scalp, and hair restoration surgery. Given the absence in the literature of a valid therapy to treat this disease, we decided to use autologous fat transplantation as a stem cell resource for hair regrowth assisted by the inflammatory action of the fat itself.

We report a case of recurrent relapsing antibiotic dependent FD treated with adipose tissue transplantation. Furthermore, we discuss an alternative treatment for severe and resistant cases in order to achieve clinical remission or a progressive reduction of recurrences with “traditional therapy-sparing.”

### Material and method

A 41-year-old Caucasian female patient was referred to our clinic with a long history of FD. Her clinical history began about 25 years ago when she referred gradual thinning of her hair on the vertex as well as the presence of papular lesions, hence pustules and widespread erythema. After several years of experiencing these symptoms and discomfort, the patient underwent a biopsy. A diagnosis of FD was made based on the clinical manifestations, isolation from the hair bulbs of the *Staphylococcus aureus* and on the histopathological findings. As the result, a long period of specific antibiotic therapy was administered along with other therapies (isotretinoin, local antiseptic solutions, topical and oral steroids), without any significant clinical improvement.

Her family history was negative for FD as well as for other cutaneous diseases. The patient was healthy, without any other medical illnesses or any signs of immunosuppression.

Clinical symptoms consisted of burning sensation alternating with itching and trichodynia. The clinical picture of the alopecic area was characterized by follicular pustules, crusts, erythema, and tufted folliculitis (Figures 1 and 2).

Before undergoing treatment, the patient had signed an informed consent where the surgical procedure, operative times, and possible complications were explained.

In April 2017, the patient underwent an adipose tissue transplantation. The fat (20 mL) was taken from the median area of the knee and was aspirated through the blunt microcannulas 2 mm in



**Figure 1.** Pre-operative photo: alopecic area with the presence of follicular pustules, crusts, scabs, and erosions around the hair follicles and tufts of hair.



**Figure 2.** Pre-operative dermoscopy: detail of crusts and follicular pustules.

diameter and then was emulsified before infiltrating the alopecic area ( $10 \times 10$  cm) 0.2cc each cm<sup>2</sup>. The treatment was performed in day surgery under sedation.

A bandage was applied to the area treated for only 2 days. The patient was able to wash her hair

after 5 days and returned to work after 1 week. After 5 months, the patient was subjected to another fat transplant without any post-operative complications and with additional benefit to the alopecic area.

## Results

Monthly follow-ups were scheduled. The patient did not have any post-operative complications nor require more drug therapy for the FD. After treatment, the patient did not show new folliculitis and no longer had pain nor burning sensation in the area affected by FD. Hair re-growth could already be seen in the peripheral area affected by the disease (Figures 3 and 4). Before treatment, the patient always wore a hair-band to cover the area affected by alopecia; after treatment the patient no longer wears it as the hair around the affected area has grown stronger and more vital, allowing her to try out different hairstyles.

## Discussion

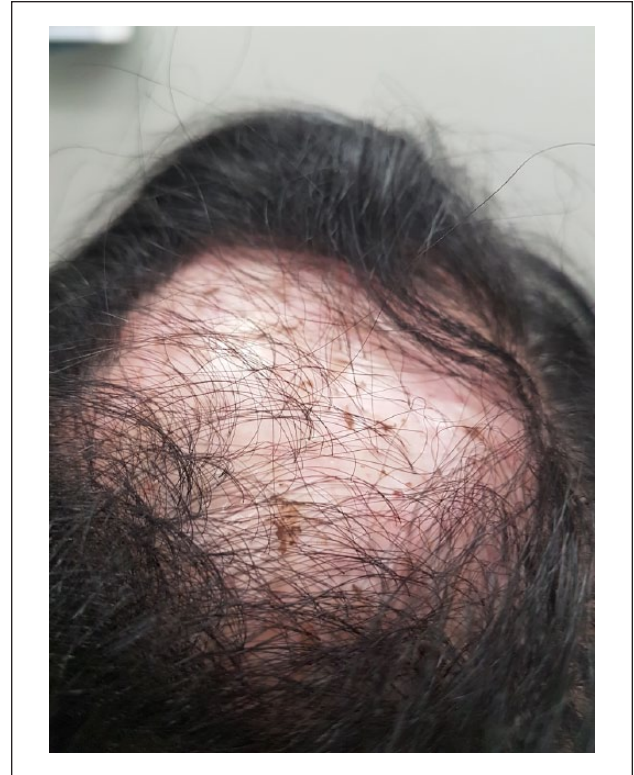
FD is a chronic scarring alopecia often resistant to conventional and combined treatments, and in most cases, patients need to take systemic drugs for prolonged periods. Having said this, it is vital to find therapeutic alternatives to obtain a prolonged disease-free period and avoid progression of disease.

Several recent case reports have indicated treatment success with the use of isotretinoin,<sup>8</sup> biologic drugs (e.g. adalimumab and infliximab),<sup>5</sup> PDT,<sup>6</sup> and Nd:YAG laser<sup>7</sup> in the treatment of recalcitrant FD.

Isotretinoin can be considered a valid alternative to antibiotic therapy, but it can cause various side effects on the skin and mucous membrane and when muscular-skeletal tissues are involved with drug-induced myopathies, they may manifest as muscle weakness, myalgia, and myoglobinuria. Furthermore, isotretinoin is not always accepted by women given its teratogenic effects.

The use of biologic agents is limited due to high costs, potential risks, and side effects involved. PDT has a low toxicity rate and maybe very useful for selected patients, but this therapy can provide some discomfort with transient results.

Considering the lack of efficacy of previous treatments carried out, we decided to use adipose tissue transplant as an alternative to conventional



**Figure 3.** Post-operative photo: absence of crusts or pustules around the hair follicles, with stronger looking hair.



**Figure 4.** Post-operative dermoscopy: detail of absence of pustules and crusts and we can also note the increase in hair density.

therapy in order to try and recover the anti-inflammatory and regenerative capacity of the fat tissue.<sup>9-12</sup> In the literature, various authors have already used the fat grafting in the treatment of hair loss to facilitate and accelerate hair re-growth,<sup>10,11</sup> but there is no data in the literature regarding the use of this treatment as a curative therapy in FD.



The adipose tissue transplant is easy to carry out and appears to have no side effects. The treatment is carried out under sedation in day surgery and can be repeated if required.

One single case is not enough to prove that this treatment can be considered an appropriate therapy for FD, it requires a longer follow-up, but can be considered a valid additional therapy, especially in cases where patients do not respond to conventional therapies.

After undergoing treatment, the patient did not have to continue the use of antibiotic therapy, as there were signs of hair re-growth at the periphery area of alopecia, where the hair appeared stronger and shinier. As a result, the patient no longer has trichodynia and has no signs of disease activity. Consequently, this case can be considered a valid result as there are promising prerequisites to continue to move in this direction with further treatments needed on increasing and follow-up.

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### References

1. Quinquaud E (1888) Folliculite epilante et destructive des regions values. *Bulletins et mémoires de la Société médicale des hôpitaux de Paris* 5: 395–398.
2. Vañó-Galván S, Molina-Ruiz AM, Fernández-Crehuet P, et al. (2015) Folliculitis decalvans: A multicentre review of 82 patients. *Journal of the European Academy of Dermatology and Venereology* 29: 1750–1757.
3. Powell JJ, Dawber RP and Gatter K (1999) Folliculitis decalvans including tufted folliculitis: Clinical, histological and therapeutic findings. *The British Journal of Dermatology* 140: 328–333.
4. Douwes KE, Landthaler M and Szeimies RM (2000) Simultaneous occurrence of folliculitis decalvans capillitii in identical twins. *The British Journal of Dermatology* 143: 195–197.
5. Mihaljević N and Von den Driesch P (2012) Successful use of infliximab in a patient with recalcitrant folliculitis decalvans. *Journal Der Deutschen Dermatologischen Gesellschaft* 10(8): 589–590.
6. Miguel-Gomez L, Vano-Galvan S, Perez-Garcia B, et al. (2015) Treatment of folliculitis decalvans with photodynamic therapy: Results in 10 patients. *Journal of the American Academy of Dermatology* 72(6): 1085–1087.
7. Meesters AA, Van der Veen JP and Walkerstorfer A (2014). Long-term remission of folliculitis decalvans after treatment with the long-pulsed Nd:YAG laser. *J Dermatol Treat* 25(2): 167–168.
8. Tietze JK, Heppt MV, von Preußen A, et al. (2015) Oral isotretinoin as the most effective treatment in folliculitis decalvans: A retrospective comparison of different treatment regimens in 28 patients. *Journal of the European Academy of Dermatology and Venereology* 29(9): 1816–1821.
9. Folgiero V, Migliano E, Tedesco M, et al. (2010) Purification and characterization of adipose-derived stem cells from patients with lipoaspirate transplant. *Cell Transplantation* 19(10): 1225–1235.
10. Perez-Meza D, Ziering C, Sforza M, et al. (2017) Hair follicle growth by stromal vascular fraction-enhanced adipose transplantation in baldness. *Stem Cells and Cloning* 10: 1–10.
11. Shin H, Ryu HH, Kwon O, et al. (2015) Clinical use of conditioned media of adipose tissue-derived stem cells in female pattern hair loss: A retrospective case series study. *International Journal of Dermatology* 54(6): 730–735.
12. Bellei B, Migliano E, Tedesco M, et al. (2017) Maximizing non-enzymatic methods for harvesting adipose-derived stem from lipoaspirate: Technical considerations and clinical implications for regenerative surgery. *Scientific Reports* 7: 10015.