

INTRODUCTION

Scars can result in significant changes in appearance that cause negative impact on the image as well as the self-confidence. scars serve as constant reminders of trauma, reinforcing feelings of devaluation, leading to functional impairments that may necessitate career changes and result in financial strain, and emotionally individuals with visible scars often experience a shift in their psychological state, making them more susceptible to depression and anxiety.

Nanofat reduces inflammation, stimulates angiogenesis, and modifies the behavior of surrounding cells. Nanofat injections increase collagen organization, decrease fibrosis markers and improve expression of antifibrotic factors. Nanofat stem cells (NCS) exhibit immunomodulatory effects, suppressing lymphocyte proliferation and inhibiting the activities of proinflammatory cells contributing to dermal fibrosis improvement. The potential benefits of nanofat include its capability of remodeling the ECM in the dermal layer, promoting dermal fibroblasts and epidermal keratinocytes to proliferate and migrate, and promote the secretion of ECM proteins. So Nanofat showed significant increases in collagen deposition, epidermal thickness, and other positive changes, supporting the effectiveness of micro-fat injection in scar characteristics such as vascularity, thickness, pliability, relief, surface area, stiffness, and irregularity.

Nanofat has been documented in the literature as a valuable method to inducematuration &improvement of scars owing to the small size of particle and high stem cell content. Barr and Barrera (2011) suggested that fat grafting before hair follicle placement enhances graft survival and promotes optimal growth in previously compromised tissue.

Akdag, Evin et al. (2018) further demonstrated the benefits of combining FUE hair transplant I conjunction with autologous fat graft to camouflage cleft lip scars. Their study reported a higher graft survival rate and greater patient satisfaction, highlighting the potential of fat grafting in improving hair transplant outcomes in scarred tissue.

As recommended by Kutlubay et al. (2013), hair restoration should only be performed when the condition is stationary to ensure adequate blood supply for graft survival.

Pathomvanich and Imagawa (2010) also suggested a minimum waiting duration of 4-6 months so as to allow scar maturation.

AIM OF THE WORK

The aim of this study was to assess the efficacy of FU extraction versus FUE with Nanofat in treatment of patients of scars in hairy areas.

PATIENTS AND METHODS

Patients: The current study included 40 patients with scars in hairy areas. Patients assigned into two groups in sample randomization:

Group (A): includes 20 patients in whom only FUE was performed.

Group (B): includes 20 patients in whom Nanofat was performed followed by (FUE) three months later. - Patients recruited from plastic surgery outpatient clinic of the Alexandria main university hospital. -Approval of the medical ethics committee of Alexandria faculty of medicine obtained. An informed written consent for treatment, study participation, and photographs taken from every participant included in the study.

Inclusion criteria:

1.Patients with visible mature atrophic scar in hairy areas.

2.Adequate donor area.

Exclusion criteria:

-Age <18 or >50 years.

-Recent scar <6 months.

-Inadequate donor area.

-Active infection of the donor area.

-Non-compliant patients.

-Bleeding tendency.

-Hypertrophic scars and keloids.

Methods: It is a prospective randomized cohort study.

All studied group subjected to:

1.Full history taking included personal data, present history of the onset, course and duration of the condition, past history of previous treatment, and medical history related to the condition.

2.**Examination:** a. General examination. b. Local examination for:

i.Recipient area: to assess its surface area and exclude presence of signs of active infection, scaling of scar tissue according to Vancouver scar scale and estimation of number of follicular units required to cover treated alopecic scar.

ii.Donor area: estimating its adequacy, density of hair of the area.

iii.Taking digital photographs of donor and recipient areas.

RESULTS

Table 1: Comparison between the two studied groups according to Percentage of hair growth

	Group A (n = 20)		Group B (n = 20)		Test of Sig.	p
	No.	%	No.	%		
% of hair growth after 1 year						
Poor (<25)	1	5.0	0	0.0	$\chi^2=9.243^*$	MCPC=0.019*
Fair (25 –50)	6	30.0	1	5.0		
Good (50 –75)	8	40.0	5	25.0		
Excellent (>75)	5	25.0	14	70.0		
Min. – Max.	23.70 – 84.03		46.68 – 88.88		t=3.519*	0.001*
Mean ±SD.	60.83 ±17.94		77.80 ±11.97			
Median (IQR)	63.98(45.18 – 75.13)		80.06(74.16 – 87.47)			



A



B

Figure:

Group B

A preoperative

B 1 year post fue and nanofat injection in beard

CONCLUSION

Follicular Unit Extraction (FUE) hair transplantation is a useful method for addressing scarring alopecia. However, the viability of grafts can be hindered by poorly vascularized and fibrotic scar tissue. Nanofat grafting has been shown to enhance the mechanical and vascular properties of scar tissue.