Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Comparison of the effectiveness of adipose-derived stem cell condition medium (ADSC_CM) combined with microneedling or fractional carbon dioxide laser on acne scar healing

Protocol summary

Study aim

Evaluation the effect of conditioned medium of adipose derived stem cells on healing of scar after fractional Carbon Dioxide(CO2) laser resurfacing or micro needeling

Design

The aim of this study was to evaluate the efficacy and side effects of using CO2 laser with conditioned medium in comparison with microneedling with conditioned medium in 30 patients with acne scars who were enrolled in block randomized method. In each session immediately after laser treatment, one side of the patient's face (intervention group) conditioned media of adipose derived stem cells, and the other side of the face (control group) physiological serum is applied topically on the laser site for one hour. This procedure is repeated 4 times with 4 week intervals.

Settings and conduct

This design is done at the skin and stem cell research center of Tehran university of medical sciences and without the patient's knowledge, after the CO2 laser or microneedling, one side of the face of conditioned media of ADSC and other side for blinding is used of the physiology serum in the scars.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Age between 20-60; Developing middle to severe atrophic scars in face region. Exclusion criteria: Pregnancy and breastfeeding; Active infection in face; Using any local drugs on face except sun protection creams in last month

Intervention groups

Intervention group 1: The whole face is treated with CO2 laser. Immediately, on one side of the face, the conditioned media of adipose derived stem cells, and on the other side of the face, physiological serum is applied topically to the scar site. Intervention group 2: The whole face is treated with microneedling. Then, similar to the first intervention group, conditioned medium and physiological serum are used on both sides of the face.

Main outcome variables

scar's surface; side effects; patient's satisfaction

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20080901001159N33**
Registration date: **2021-06-01, 1400/03/11**
Registration timing: **prospective**

Last update: **2021-06-01, 1400/03/11**
Update count: **0**

Registration date

2021-06-01, 1400/03/11

Registrant information

Name

Mohamad Ali Nilforoushzadeh

Name of organization / entity

Skin and Stem Cell Research Center, Tehran University of Medical sciences

Country

Iran (Islamic Republic of)

Phone

+98 21 2220 5158

Email address

sdlrc@mui.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-06-22, 1400/04/01

Expected recruitment end date

2021-08-23, 1400/06/01

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title
Comparison of the effectiveness of adipose-derived stem cell condition medium (ADSC_CM) combined with microneedling or fractional carbon dioxide laser on acne scar healing

Public title
Evaluation the effect of conditioned media of adipose drived stem cells on acne scar

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Age between 20-60 Having middle to severe atrophic scar in face region

Exclusion criteria:
Pregnancy and breastfeeding History of cancer Pregnancy, breastfeeding Patients with active acne Vascular / muscle collagenous disorders of immunodeficiency or use of immunosuppressive drugs People with herpes disease are active People with Mental Disorders Active infection in the face

Age
From **20 years** old to **60 years** old

Gender
Both

Phase
1

Groups that have been masked

- Participant

Sample size
Target sample size: **30**
More than 1 sample in each individual
Number of samples in each individual: **2**
A half face will be considered as the control group and one half as an intervention group

Randomization (investigator's opinion)
Randomized

Randomization description
In this method, block randomization is used. Each patient was considered as a block and left and right sides of their face were randomly assigned to two groups using cards with study groups written on them.

Blinding (investigator's opinion)
Single blinded

Blinding description
In each group, both sides of the face will be treated with CO2 laser or microneedling at the patient's scar area, immediately on one side of the face, the conditioned media of adipose derived stem cells and the other side of the face saline solution is used topically on the scar.

Placebo
Used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics Committee of Tehran University of Medical Sciences

Street address
Tehran University of Medical Sciences, Keshavarz blvd

City
Tehran

Province
Tehran

Postal code
1417653761

Approval date
2021-02-14, 1399/11/26

Ethics committee reference number
IR.TUMS.MEDICINE.REC.1399.1131

Health conditions studied

1

Description of health condition studied
atrophic scar

ICD-10 code
L90.5

ICD-10 code description
Scar conditions and fibrosis of skin

Primary outcomes

1

Description
Scar size

Timepoint
before and 3month after the intervention

Method of measurement
visioface

2

Description
side effects

Timepoint
One week after session

Method of measurement
Questionnaire and visit

3

Description
Patient Satisfaction
Timepoint
Three and six months after the last treatment session
Method of measurement
Questionnaire

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: One side of the face after being anesthetized, is first treated with Fractional Laser Co2, and then adipose conditioned media of adipose derived stem cells is applied topically to the scars for one hour.This procedure is repeated 4 times with intervals of 4 weeks.
Category
Treatment - Other

2

Description
Intervention group: One side of the face after being anesthetized, is first treated with microneedling, and then adipose conditioned media of adipose derived stem cells is applied topically to the scars for one hour.This procedure is repeated 4 times with intervals of 4 weeks.
Category
Treatment - Other

3

Description
Control group: (Other side of face) After sufficient anesthesia, first treatment with Fractional Laser Co2, and then physiological serum is applied topically to the site of the scars for one hour. This procedure is repeated 4 times with intervals of 4 weeks.:
Category
Treatment - Other

4

Description
Control group: (Other side of face) After sufficient anesthesia, first treatment with microneedling, and then physiological serum is applied topically to the site of the scars for one hour. This procedure is repeated 4 times with intervals of 4 weeks.
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Clinics of Skin and Stem cell Research Center of Tehran University of Medical Sciences
Full name of responsible person
Maryam nouri
Street address
No 4, Maryam Alley, South Kamraniyeh Street, Tehran, Iran
City
Tehran
Province
Tehran
Postal code
1937957511
Phone
+98 21 2221 5558
Email
m.nouri3023@gmail.com

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Tehran University of Medical Sciences
Full name of responsible person
Abbas Ali Karimi
Street address
Tehran University of Medical Sciences, Keshavarz blvd
City
Tehran
Province
Tehran
Postal code
1417653761
Phone
+98 21 81631
Email
tums_edu@tums.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Tehran University of Medical Sciences
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact

Name of organization / entity
Skin and Stem cell Research Center of Tehran University of Medical Sciences

Full name of responsible person
Maryam Nouri

Position
Researcher

Latest degree
Medical doctor

Other areas of specialty/work
Dermatology

Street address
No 4, Maryam Alley, South Kamraniyeh Street, Tehran, Iran

City
Tehran

Province
Tehran

Postal code
1937957511

Phone
+98 21 2223 9387

Email
m.nouri3023@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Skin and Stem cell Research Center of Tehran University of Medical Sciences

Full name of responsible person
Mohammad Ali Nilforoushzadeh

Position
Professor

Latest degree
A Level or less

Other areas of specialty/work
Dermatology

Street address
No 4, Maryam Alley, South Kamraniyeh Street, Tehran, Iran

City
Tehran

Province
Tehran

Postal code
+98 901 588 6740

Phone
+98 21 2223 9387

Email
nilforoosh@sina.tums.ac.ir

Person responsible for updating data

Contact

Name of organization / entity
Skin and Stem cell Research Center of Tehran University of Medical Sciences

Full name of responsible person
Mona mahmoudbeyk

Position
Researcher

Latest degree
Ph.D.

Other areas of specialty/work
Cell Developmental Biology

Street address
No 4, Maryam Alley, South Kamraniyeh Street, Tehran, Iran

City
Tehran

Province
Tehran

Postal code
1937957511

Phone
+98 21 2221 5558

Email
mmahmoodbeyk@yahoo.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available

Study Protocol
Undecided - It is not yet known if there will be a plan to make this available

Statistical Analysis Plan
Not applicable

Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available

Analytic Code
Not applicable

Data Dictionary
Not applicable