Clinical Trial Protocol
Iranian Registry of Clinical Trials

05 Jul 2026

Influence of postoperative low-level laser therapy using laser diode 940 nm on crestal bone levels around dental implants

Protocol summary

Study aim
Influence of postoperative low-level laser therapy using laser diode 940 nm on crestal bone levels around dental implants

Design
Randomization in the present study will be performed in Balance Block Randomization.

Settings and conduct
For each individual on the opposite side of a jaw in a region similar to each side of each side of an implant, and immediately using the mouse split method, the low-power laser of the diode is 940 nm in the power output of 0.5 watts with energy density J / cm2 6 in 6 areas. Around the implants of one side of the jaw receive radiation and does not receive any laser treatment and is considered as an area of control. In order to blind, laser tube is placed on both sides, but only laser laser. Craft's bone surface immediately after the placement of the implants (T0) after 6 weeks (T1) after 6 months (T2) and through parallel-in-oral periapic radiography with parallel technique.

Participants/Inclusion and exclusion criteria
The applicants of implant treatment that two-sided in a jaw in a similar area have lost tooth. Any systemic illness that contraindicates surgery.

Intervention groups
For each individual on the opposite side of a jaw in a region similar to each side of each side of an implant, and immediately using the mouse split method, the low-power laser of the diode is 940 nm in the power output of 0.5 watts with energy density J / cm2 6 in 6 areas. Around the implants of one side of the jaw receive radiation and does not receive any laser treatment and is considered as an area of control.

Main outcome variables
Cestal bone levels at 4 time 1) immediately after receiving of 940 nm laser (T0) 2) 6 weeks after receiving laser diode 940 nm (T1) 3) 6 months after receiving low-laser diode 940 nm (T2) Using parallel-based digital periametic radiography, measured by parallel technique.

General information

Reason for update
Acronym
IRCT registration information
IRCT registration number: **IRCT20220205053946N1**
Registration date: **2022-05-09, 1401/02/19**
Registration timing: **retrospective**

Last update: **2022-05-09, 1401/02/19**
Update count: **0**

Registration date
2022-05-09, 1401/02/19

Registrant information
Name
Shabnam Zarei
Name of organization / entity
Country
Iran (Islamic Republic of)
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Recruitment status
Recruitment complete
Funding source

Expected recruitment start date
2022-02-09, 1400/11/20
Expected recruitment end date
2022-02-20, 1400/12/01
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date

empty

Scientific title
Influence of postoperative low-level laser therapy using laser diode 940 nm on crestal bone levels around dental implants

Public title
Influence of postoperative low-level laser therapy on crestal bone levels around dental implants

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
The applicants of implant treatment that two-sided in a jaw in a similar area have lost tooth. tooth extraction at least 6 months before implant surgery; nongrafted implant site; type 2 or 3 bone quality according to the Lekholm and Zarb classification, adequate space with buccolingual width of minimum 6 mm and mesiodistal width of minimum 7 mm; inter-occlusal distance greater than 7 mm.

Exclusion criteria:
Pregnant women. Any mental illness and psychological and behavioral conditions, which is the absolute contraction of implant treatment. Any systemic illness that contraindicates surgery; uncontrolled diabetes mellitus; bisphosphonate therapy; history of radiotherapy in the maxillofacial region within last 12 months; smoking; para-functional habits; poor oral hygiene with full mouth plaque score and full mouth bleeding score ≥25%, periodontally compromised patients with attachment loss ≥3 mm, and/or radiographic bone loss ≥30% of root length in ≥30% of sites and those who refused to return for follow-up were excluded from this study.

Age
From **20 years** old to **55 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Participant
- Investigator
- Outcome assessor
- Data analyser
- Data and Safety Monitoring Board

Sample size
Target sample size: **9**
More than 1 sample in each individual
Number of samples in each individual: **2**
Right and left in a jaw in a similar area

Randomization (investigator's opinion)
N/A

Randomization description

Blinding (investigator's opinion)
Triple blinded

Blinding description
People participating in the study are aware of the laser treatment, but they are not aware of the quadrant that the jaw is radiated. The oral and maxillofacial surgeon that performs implant treatment is not aware of the quadrant that the jaw is radiated. People who Evaluate the outcomes (student and the oral and maxillofacial radiologist) are not aware of the quadrant that the jaw is radiated. People who analyze the data (Statistical specialist) is not aware of the quadrant that the jaw is radiated. Only the oral and teeth specialist who performs laser treatment will be aware of the quadrant that the jaw is radiated.

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics committee Arak University of Medical Sciences

Street address
No.30, Shahid Shiroudi Ave, Alam-o-Alhoha ST, Arak, Iran

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Province
Markazi

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3819693345

Approval date
2021-12-26, 1400/10/05

Ethics committee reference number
IR.ARAKMU.REC.1400.279

Health conditions studied

1

Description of health condition studied
loss of teeth

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description
Measuring crestal bone levels around dental implants by radiography.

Timepoint
Crestal bone level at 4 time 1) immediately after receiving of 940 nm (T0) laser (T0) 2) 6 weeks after receiving laser diode 940 nm (T1) 3) 6 months after receiving low-laser diode 940 nm (T2) Using parallel-

based digital periametic radiography, measured by parallel technique.

Method of measurement

Using parallel-based digital periametic radiography, measured by parallel technique.

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: An implant is placed on each side on opposite sides of a jaw in the same area, and immediately, using the split-mouth method, with a low-power 940 nm diode laser with a power output of 0.5 watts with 6 j/cm2 energy density in 6 areas around one implant of one side of the jaw (control side), radiation is received. For blinding, the laser tube is placed on both sides, but only on one side of the laser will radiate. Crestal bone level is measured immediately after implant placement (T0), after 6 weeks (T1) and after 6 months (T2) by intraoral digital periapical radiography using a parallel technique. All surgeries are performed by an experienced surgeon with the same technique. All radiographs are performed in a specialized center for oral and maxillofacial radiology by an experienced specialist. All laser treatments are performed by an experienced specialist with the same technique. All patients use the same antibiotics and painkillers.

Category

Treatment - Surgery

2

Description

Control group: The control group is actually the sides of the patients' jaw that is not exposed to the laser beam. Crestal bone level is measured immediately after implant placement (T0), after 6 weeks (T1) and after 6 months (T2) by intraoral digital periapical radiography using a parallel technique. All radiographs are performed in a specialized center for oral and maxillofacial radiology by an experienced specialist. All patients use the same antibiotics and painkillers.

Category

Treatment - Surgery

Recruitment centers

1

Recruitment center

Name of recruitment center

Arak University of Medical Sciences, Faculty of dentistry

Full name of responsible person

Dr. Ehsan Momeni

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Arak University of Medical Sciences

Full name of responsible person

Alireza Kamali

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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

Arak 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

Arak University of Medical Sciences

Full name of responsible person

Dr. Ehsan Momeni

Position
Associate professor
Latest degree
Specialist
Other areas of specialty/work
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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
Undecided - It is not yet known if there will be a plan to make this available
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
Undecided - It is not yet known if there will be a plan to make this available
Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available