

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

Effects of diode laser (980 nm) on orthodontic tooth movement

Protocol summary

Summary

The aim of this study is to evaluate the effects of low-level laser therapy on the velocity of orthodontic tooth movement (OTM) and the interleukin-6(IL-6) concentration in gingival crevicular fluid (GCF) during orthodontic treatment. In this randomized double blind clinical trial, 11 female patients who need first premolar extraction and canine retraction will be selected. The GaAlAs laser (diode laser, 980 nm, 100 mW, 5.6 J/cm², 6 points, 56 seconds, and continuous mode) will be used in the canine retraction phase in one quadrant (LG). The other quadrant is considered as the control group (CG). The laser will be applied on day 0,7th, 14th, 21st, 28th days each month during canine retraction phase. Dental casts will be made at different time points during the treatment and the amount of tooth movement will be measured. GCF samples will be obtained from the distal side of maxillary canine teeth on both sides at the beginning of the trial, the end of aligning phase and at the 21st days of each month during canine retraction, to evaluate the levels of IL-6.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2015100324324N1**
Registration date: **2016-01-25, 1394/11/05**
Registration timing: **retrospective**

Last update:

Update count: **0**

Registration date

2016-01-25, 1394/11/05

Registrant information

Name

Farzaneh Eslami

Name of organization / entity

Shahid Sadoughi university of medical science

Country

Iran (Islamic Republic of)

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+98 35 3623 5775

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Recruitment status

Recruitment complete

Funding source

Vice chancellor for research of Shahid sadoughi university of medical science

Expected recruitment start date

2014-04-05, 1393/01/16

Expected recruitment end date

2014-07-17, 1393/04/26

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effects of diode laser (980 nm) on orthodontic tooth movement

Public title

Effects of laser on tooth movement

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: patients with bimaxillary dentoalveolar protrusion who need first premolar extraction and canine retraction; no systemic disease; no previous permanent teeth extraction; not being under medical treatment that could interfere with bone metabolism such as NSAIDs or doxycycline; a good level of oral hygiene; no periodontal disease or radiographic evidence of bone loss, 7- no pregnancy during treatment; signing the informed consent by the patient or her parents Exclusion criteria: lack of patient interest; inappropriate oral hygiene;

prolonged drug consumption during treatment; not coming for their appointment; repeated bracket debonds

Age

From **14 years** old to **25 years** old

Gender

Female

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **11**

Randomization (investigator's opinion)

Randomized

Randomization description

Blinding (investigator's opinion)

Double blinded

Blinding description

Placebo

Used

Assignment

Parallel

Other design features

the selection of the laser and control group was randomly done, according to the flipping a coin.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of shahid sadoughi university of medical science

Street address

shahid bahonar squire, Yazd

City

Yazd

Postal code

Approval date

2014-05-11, 1393/02/21

Ethics committee reference number

17/1/31871

Health conditions studied

1

Description of health condition studied

orthodontic tooth movement

ICD-10 code

z51.8

ICD-10 code description

Other specified medical care

Primary outcomes

1

Description

accelerating tooth movement

Timepoint

4 times oer month

Method of measurement

from dental cast

2

Description

interluekin6

Timepoint

1 time per month

Method of measurement

sampling from gingival crevicular fluid

Secondary outcomes

empty

Intervention groups

1

Description

in laser group, the diode laser is used to accelerate tooth movement

Category

Treatment - Other

2

Description

in control group ,laser is not used.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Faculty of Dentistry, Shahid Sadoughi University of Medical Sciences

Full name of responsible person

Farzaneh Eslami

Street address

City

Yazd

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Research vice chancellor of Shahid Sadoughi

University of Medical Science

Full name of responsible person

dr.Mmehrparvar

Street address

shahid bahonar square, Yazd

City

Yazd

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Research vice chancellor of Shahid Sadoughi University of Medical Science

Proportion provided by this source

100

Public or private sector

empty

Domestic or foreign origin

empty

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

empty

Person responsible for general inquiries

Contact

Name of organization / entity

Faculty of Dentistry, Shahid Sadoughi University of Medical Sciences

Full name of responsible person

Farzaneh Eslami

Position

orthodontic resident

Other areas of specialty/work

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

empty

Study Protocol

empty

Statistical Analysis Plan

empty

Informed Consent Form

empty

Clinical Study Report

empty

Analytic Code

empty

Data Dictionary

empty