

Clinical Trial Protocol

Iranian Registry of Clinical Trials

17 Jun 2026

Comparison the effect of visible and invisible laser irradiation on sensitivity and color of teeth after bleaching in patients with discolored teeth: A randomized clinical trial

Protocol summary

Summary

Our main objectives are evaluation the effect of low power visible and invisible laser irradiation on the sensitivity and color of teeth after bleaching. This is a randomized, single blind and placebo-controlled study. Patients who agree to participate in the study will be chosen. Patients with six healthy sound maxillary anterior teeth will be included in the study and patients with tooth sensitivity before bleaching treatment and severe tooth discoloration will be excluded from the study. Patients will be divided into 3 groups randomly. Randomization will be performed by choosing sealed envelopes containing different treatment protocols. After isolation, the anterior maxillary teeth will be bleached with Hydrogen Peroxide 35% gel according to manufacturer's instruction. After the end of bleaching procedure, in experimental groups, the low power diode laser; "Thor" (with 660 or 810 nm wavelength, power density 800 mW/cm², energy density 12 J/cm², output power 200 mW) will be used on the cervical third of each tooth in contact mode with surface area of 0.25 cm² for 15 seconds. To consider the placebo effect in control group turned-off laser will be used in the same manner as experimental groups. For each patient two bleaching sessions with one week interval will be done. The pain intensity will be measured based on visual analogue scale immediately, 24 and 48 hours after the end of the bleaching procedure. The color change will be evaluated 30 days after the end of the bleaching procedure with optical and instrumental methods.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT201408131509N2**

Registration date: **2015-03-22, 1394/01/02**
Registration timing: **registered_while_recruiting**

Last update:

Update count: **0**

Registration date

2015-03-22, 1394/01/02

Registrant information

Name

Horieh Moosavi

Name of organization / entity

Dental School of Mashhad University of Medical Sciences

Country

Iran (Islamic Republic of)

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+98 51 1869 1500

Email address

moosavih@mums.ac.ir

Recruitment status

Recruitment complete

Funding source

Vice Chancellor for Research, Mashhad University of Medical Sciences

Expected recruitment start date

2015-02-20, 1393/12/01

Expected recruitment end date

2015-04-21, 1394/02/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison the effect of visible and invisible laser irradiation on sensitivity and color of teeth after bleaching in patients with discolored teeth: A randomized clinical trial

Public title

Effect of laser irradiation on sensitivity and color of teeth after bleaching

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: Patients with minimum age of 18 years who agree to participate in the study; Patients with at least six sound maxillary anterior teeth Exclusion criteria: Patients who have not received bleaching treatment previously; Pregnant and lactating women; patients having cardiac pacemaker; patients who receive drugs affecting the perception of pain (analgesic, anti-inflammatory, etc.); patients with heavy occlusion and bruxism; patients with tooth sensitivity before bleaching treatment; patients with severe tooth discoloration (tetracycline, fluorosis, etc.); Patients with gingival and periodontal problems and history of periodontal surgery in the past 6 months

Age

From **18 years** old to **50 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **54**

Randomization (investigator's opinion)

Randomized

Randomization description**Blinding (investigator's opinion)**

Single blinded

Blinding description**Placebo**

Used

Assignment

Parallel

Other design features

The study is single blind and the patient will not aware of irradiation the visible or invisible lasers and will mark her/his sensitivity in the questionnaire by visual analogue scale. Randomization will be performed by choosing sealed envelopes containing different treatment protocols.

Secondary Ids

empty

Ethics committees**1****Ethics committee**

Name of ethics committee

Ethics Committee of Mashhad University of Medical Sciences

Street address

Ghoraishy Building, University St.

City

Mashhad

Postal code**Approval date**

2014-05-24, 1393/03/03

Ethics committee reference number

921922

Health conditions studied**1****Description of health condition studied**

Sensitivity after tooth bleaching

ICD-10 code

Y56.7

ICD-10 code description

Dental drugs, topically applied

Primary outcomes**1****Description**

Sensitivity after tooth bleaching

Timepoint

Immediately, 24 and 48 hours after end of bleaching

Method of measurement

Visual analogue scale

Secondary outcomes**1****Description**

Tooth color

Timepoint

30 days after end of bleaching

Method of measurement

Optical and instrumental methods

Intervention groups**1****Description**

Using visible laser with 660 nm wavelength

Category

Treatment - Other

2**Description**

Using invisible laser with 810 nm wavelength

Category

Treatment - Other

3

Description

Using turned-off laser

Category

Placebo

Recruitment centers

1

Recruitment center

Name of recruitment center

School of Dentistry of Mashhad

Full name of responsible person

Dr.Hoorieh Moosavi

Street address

School of Dentistry, Opposite of Mellat Park, Vakil
Abad Blvd

City

Mashhad

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice Chancellor for Research, Mashhad University of
Medical Sciences

Full name of responsible person

Dr.Mohsen Tafaghodi

Street address

Ghoraishy Building, University St.

City

Mashhad

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Vice Chancellor for Research, Mashhad University of
Medical Sciences

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

School of Dentistry

Full name of responsible person

Dr.Hoorieh Moosavi

Position

Associate Professor

Other areas of specialty/work

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Person responsible for updating data

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Web page address

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