Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Comparison of the effect of Nd:YAG laser, Diode laser and CPP/ACP on treatment of patient with dentin hypersensitivity: a randomized clinical trial

Protocol summary

Summary

Objectives: To assess the effect of Nd:YAG laser, Diode laser and CPP/ACP on treatment of patient with dentin hypersensitivity. Design: A randomized clinical trial. Setting and conduct: The eligible patients dentin hypersensitivity who will refer to the School of Dentistry during the study period will be enrolled into the trial. Inclusion criteria: Age of 18 to 65 years; dentin hypersensitivity; suitable plaque index with no packet. Exclusion criteria: Pregnancy or breastfeeding; systemic disease; periodontal surgery during the last 6 months; whitening treatment of teeth in the last 6 months; using anti-hypersensitivity and anti-inflammatory mouthwash or tooth paste during the last 72 hours; using anti-depressive drugs; using orthodontic devices; the presence of fractures, cracks, decay and deep repair in the teeth and adjacent teeth. Intervention group 1: Two teeth in every patients are treated with Nd:YAG laser, with 1064 nm wave length, power of 1 W; pulse width of 300 sμ, frequency of 15 Hz, irradiation time of 30 seconds through contact mode, with a hand piece of 300 μ and a density of 294 j/cm with sweeping movement. Intervention group 2: Two teeth in every patients are treated with Diode laser, with 940 nm wave length, power of 1 W; pulse width of 300 sμ, frequency of 15 Hz, irradiation time of 60 seconds through contact mode, with a hand piece of 400 μ and a density of 294 j/cm with sweeping movement. Intervention group 3: Two teeth in every patients are treated with casein phosphopeptide phosphate calcium amorphic jell for 5 minutes. Control group: Two teeth in every patients are considered as control group without treatment. Primary outcome: Assessing the dentin hypersensitivity with visual analog scale (VAS) one hour after intervention. Randomization: Eight teeth are selected in each patient. Then, every two teeth are randomly allocated through drawing of lots to intervention groups (three groups) and control group (one group). Blinding: Not possible.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT201707269014N176**
Registration date: **2017-07-31, 1396/05/09**
Registration timing: **registered_while_recruiting**

Last update:
Update count: **0**

Registration date

2017-07-31, 1396/05/09

Registrant information

Name

Jalal Poorolajal

Name of organization / entity

Department of Epidemiology & Biostatistics Hamadan University of Medical Sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Vice-chancellor for Research and Technology, Hamadan University of Medical Sciences

Expected recruitment start date

2016-10-31, 1395/08/10

Expected recruitment end date

2017-08-25, 1396/06/03

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the effect of Nd:YAG laser, Diode laser and CPP/ACP on treatment of patient with dentin hypersensitivity: a randomized clinical trial

Public title

Comparison of the effect of Nd:YAG laser, Diode laser and CPP/ACP on treatment of patient with dentin hypersensitivity

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: Age of 18 to 65 years; dentin hypersensitivity; suitable plaque index with no packet. Exclusion criteria: Pregnancy or breastfeeding; systemic disease; periodontal surgery during the last 6 months; whitening treatment of teeth in the last 6 months; using anti-hypersensitivity and anti-inflammatory mouthwash or tooth paste during the last 72 hours; using anti-depressive drugs; using orthodontic devices; the presence of fractures, cracks, decay and deep repair in the teeth and adjacent teeth.

Age

From **18 years** old to **65 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **7**

Randomization (investigator's opinion)

N/A

Randomization description

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Randomization: Eight teeth are selected in each patient. Then, every two teeth are randomly allocated through drawing of lots to intervention groups (three groups) and control group (one group). Blinding: Not possible.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Hamadan University of Medical Sciences

Street address

Vice-chancellor for Research the Technology, Hamadan University of Medical Sciences, Shahid Fahmideh Ave

City

Hamadan

Postal code

Approval date

2016-10-29, 1395/08/08

Ethics committee reference number

IR.UMSHA.REC.1395.335

Health conditions studied

1

Description of health condition studied

Dentin hypersensitivity

ICD-10 code

K03.8

ICD-10 code description

Other specified diseases of hard tissues of teeth

Primary outcomes

1

Description

Assessing the dentin hypersensitivity

Timepoint

one hour after intervention

Method of measurement

with visual analog scale (VAS)

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group 1: Two teeth in every patients are treated with Nd:YAG laser, with 1064 nm wave length, power of 1 W; pulse width of 300 sμ, frequency of 15 Hz, irradiation time of 30 seconds through contact mode, with a hand piece of 300 μ and a density of 294 j/cm with sweeping movement.

Category

Treatment - Other

2

Description

Intervention group 2: Two teeth in every patients are

treated with Diode laser, with 940 nm wave length, power of 1 W; pulse width of 300 sμ, frequency of 15 Hz, irradiation time of 60 seconds through contact mode, with a hand piece of 400 μ and a density of 294 j/cm with sweeping movement.

Category

Treatment - Other

3

Description

Intervention group 3: Two teeth in every patients are treated with casein phosphopeptide phosphate calcium amorphic jell for 5 minutes.

Category

Treatment - Drugs

4

Description

Control group: Two teeth in every patients are considered as control group without treatment.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

School of Dentistry

Full name of responsible person

Mohammad Farokhi Rad

Street address

School of Dentistry, Hamadan University of Medical Sciences, Shahid Fahmideh Ave.

City

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice-chancellor for Research and Technology, Hamadan University of Medical Sciences

Full name of responsible person

Dr Saeid Bashirian

Street address

Hamadan University of Medical Sciences, Shahid Fahmideh Ave

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Hamadan

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 and Technology, Hamadan 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

Mohammad Farokhi Rad

Position

Student of Dentistry

Other areas of specialty/work

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Person responsible for scientific inquiries

Contact

Name of organization / entity

School of Dentistry

Full name of responsible person

Dr Zahra Khamverdi

Position

Orthodontics

Other areas of specialty/work

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Web page address

Person responsible for updating data

Contact

Name of organization / entity
Department of Epidemiology

Full name of responsible person
Dr Jalal Poorolajal

Position
Associate Professor

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