

Clinical Trial Protocol

Iranian Registry of Clinical Trials

07 Sep 2026

The effect of micro-osteoperforation on the rate of orthodontic tooth movement. A randomized clinical trial

Protocol summary

Study aim

Assessing the effects of micro-osteoperforation on the rate of tooth movement.

Design

Randomised, superiority, parallel group trial with simple randomization and concealed randomization using opaque envelopes.

Settings and conduct

The study was conducted in the department of orthodontics, school of dentistry at Mashhad University of Medical Sciences.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: 18-45 years of age; probing depth less than 3 mm Exclusion Criteria: systematic disease; poor oral hygiene; history of long-term use of Phenytoin, Cyclosporin, systemic corticosteroids and bisphosphonates; evidence of bone resorption; history of periodontal disease; smoking

Intervention groups

Control Group: Canine retraction towards the extracted first premolar space Intervention Group: Canine retraction towards the extracted first premolar space in addition to three micro-osteoperforations in distal of canine with at least five millimeters of depth and 2mm space between them. The MOP is performed right before canine retraction and four and eight weeks after the beginning of canine retraction.

Main outcome variables

The amount of canine movement in relation to the first molar before retraction and 2, 4, 6, 8, 10 and 12 weeks after the beginning of retraction.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20171220037973N1**

Registration date: **2018-10-11, 1397/07/19**

Registration timing: **registered_while_recruiting**

Last update: **2018-10-11, 1397/07/19**

Update count: **0**

Registration date

2018-10-11, 1397/07/19

Registrant information

Name

Erfan Bardideh

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 51 3882 9501

Email address

bardidehe951@mums.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-09-18, 1397/06/27

Expected recruitment end date

2018-10-29, 1397/08/07

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of micro-osteoperforation on the rate of orthodontic tooth movement. A randomized clinical trial

Public title

Effect of micro-osteoperforation on rate of tooth movement.

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Periodontal probing depth ≤ 3 mm 18-45 years of age

Exclusion criteria:
Existence of a systematic disease Poor oral hygiene
History of long-term use of Phenytoin, Cyclosporine,
systemic corticosteroids and Bisphosphonates Evidence
of bone resorption History of periodontal disease
Smoking

Age
From **18 years** old to **45 years** old

Gender
Both

Phase
N/A

Groups that have been masked
No information

Sample size
Target sample size: **48**
More than 1 sample in each individual
Number of samples in each individual: **2**
Two different samples, one the rate of movement of the
left canine and the right canine would be attributed to
each person

Randomization (investigator's opinion)
Randomized

Randomization description
A five digit number would be allocated to each patient
and after simple randomization using a statical software,
allocation concealment would be done using opaque
white envelopes.

Blinding (investigator's opinion)
Not blinded

Blinding description

Placebo
Not used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Mashhad University of Medical
Sciences

Street address

Vakilabad blvd, Azadi square, Mashhad, Iran.

City

Mashhad

Province

Razavi Khorasan

Postal code

9185836393

Approval date

2018-06-12, 1397/03/22

Ethics committee reference number

IR.MUMS.DENTISTRY.REC.1397.008

Health conditions studied

1

Description of health condition studied

Orthodontic tooth movement

ICD-10 code

M26.4

ICD-10 code description

Malocclusion, unspecified

Primary outcomes

1

Description

Canine tooth movement in relation to first molar

Timepoint

Right before retraction and 2, 4, 6, 8, 10 and 12 weeks
after retraction.

Method of measurement

Using a digital caliper with 0.2 mm accuracy the distance
between the tip of canine and the mesiobuccal cusp of
the first molar and also the distal of the canine bracket
and mesial of the molar tube will be measured.

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Three micro-osteoperforations will be
made on the distal of the left and right canines using a
miniscrew (self-threading (1.2x6 mm Jeil, Korea)). The
perforations will be 2 mm apart and will have at least a
5mm depth. The process will be done under local
anesthesia (lidocaine with 1:100,000 epinephrine 2%).
The location for MOP and their distance from each other
will be measured using a periodontic probe. If there is
any discomfort, the patient is advised to take
acetaminophen for pain management. Then the canines
will be retracted using a 150g Ni-Ti close spring between
canine and first upper molars' hooks. The MOPs will be
repeated at 4 and 8 weeks later and the tooth movement
will be measured at every 2 weeks.

Category

Treatment - Other

2

Description

Control group: Canines of these patients will be retracted
using a 150g Ni-Ti close spring which will be placed
between canine's hook and the first molars' tube on a

19X25 stainless steel arch wire.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Orthodontic Department of the Mashhad University of Medical Science

Full name of responsible person

Mostafa Abtahi

Street address

Vakilabad blvd, Azadi square, Mashhad, Iran.

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Postal code

9185836393

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+98 51 3841 2081

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abtahim@mums.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Mashhad University of Medical Sciences

Full name of responsible person

Mohsen Tafaghodi

Street address

No, 18 Daneshgah Ave, Mashhad University of Medical Sciences

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tafaghodim@mums.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Mashhad 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

Mashhad University of Medical Sciences

Full name of responsible person

Erfan Bardideh

Position

Orthodontics Resident

Latest degree

Medical doctor

Other areas of specialty/work

Dentistry

Street address

No. 274/1, 35th Seyed Razi Ave., Mashhad

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Person responsible for scientific inquiries

Contact

Name of organization / entity

Mashhad University of Medical Sciences

Full name of responsible person

Erfan Bardideh

Position

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Person responsible for updating data

Contact

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is a plan to make this available

Informed Consent Form

Yes - There is a plan to make this available

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

Only primary outcome measures will be shared.

When the data will become available and for how long

About 1 year after the data summary have been published.

To whom data/document is available

Everybody who makes an inquiry, regardless of academic or business employees.

Under which criteria data/document could be used

The data for use in systematic reviews and meta-analyses, after assessment by Erfan Bardideh will be made available.

From where data/document is obtainable

The people who want access to the data can contact relevorance@yahoo.com for inquiry.

What processes are involved for a request to access data/document

After providing the title and protocol for the systematic review, or the protocol number in Prospero, the data will be available in a maximum of one month.

Comments