Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

Effect of application of nano-silver particles in acrylic base plate of orthodontic removable retainers on oral microflora

Protocol summary

Summary

The aim of this study was to evaluate the effect of adding nano silver particles on acrylic base plate of orthodontic removable Retainers on the oral microbial flora. After fixed orthodontic treatment, 60 patients were randomly placed in two groups; group 1 (control group) received conventional removable acrylic plate. Group 2 (intervention group); this group received removable acrylic plate containing silver nano particles. Inclusion criterion: patients who complete their fixed orthodontic treatment and needs removable retainer. Exclusion criteria: smoking habits; presence of active caries or periodontal pockets; systemic diseases; antibiotics; prosthetic appliances. When the removable plate was delivered to the patient and 50 days after, dental plaque samples were taken from patients and cultured. The results were analyzed using paired T-test.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT201309239086N2**
Registration date: **2013-11-09, 1392/08/18**
Registration timing: **registered_while_recruiting**

Last update:
Update count: **0**

Registration date

2013-11-09, 1392/08/18

Registrant information

Name

Nasrin Farhadian

Name of organization / entity

Hamadan University of Medical Sciences

Country

Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

School of Dentistry, Hamedan University of Medical Sciences

Expected recruitment start date

2013-11-01, 1392/08/10

Expected recruitment end date

2014-04-21, 1393/02/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of application of nano-silver particles in acrylic base plate of orthodontic removable retainers on oral microflora

Public title

Antimicrobial effect of nano silver particles

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criterion: patients who complete their fixed orthodontic treatment and needs removable retainer. Exclusion criteria: smoking habits; presence of active caries or periodontal pockets; systemic diseases; antibiotics and prosthetic appliances.

Age

No age limit

Gender

Both

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **60**
Randomization (investigator's opinion)
Randomized
Randomization description
Blinding (investigator's opinion)
Single 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 Hamedan university of medical sciences
Street address
Hamadan , university of medical sciences
City
Hamadan
Postal code
Approval date
2013-10-29, 1392/08/07
Ethics committee reference number
2401/9/35/16/د/پ

Health conditions studied

1

Description of health condition studied
Dental caries
ICD-10 code
K02
ICD-10 code description
Dental caries

Primary outcomes

1

Description
Streptococcus mutans bacteria
Timepoint
When the removable plate was delivered to the patient and 50 days after
Method of measurement
cfu/saliva culture

2

Description
Candida albicans
Timepoint
At the end of study
Method of measurement
Colony count

Secondary outcomes

empty

Intervention groups

1

Description
Control group: received conventional orthodontic retainer and The patient was instructed to use her/his retainer full-time except when eating and brushing.Oral hygene will be instructed for all patients, including brushing with toothpaste containing fluoride . Dental biofilm sample of upper arch at the time of retainer delivery and after 50 days use of retainer(end of study) will be obtained for colony count and evaluated in culture medium.Also at the end of study upper removable retainer will be sent for candida assessment.
Category
Treatment - Devices

2

Description
Intervention group: similar as control group but they will receive removable orthodontic retainer containing nano silver particle and patient was instructed to use her/his retainer full-time except when eating and brushing. Oral hygene will be instructed for all patients, including brushing with toothpaste containing fluoride . Dental biofilm sample of upper arch at the time of retainer delivery and after 50 days use of retainer(end of study) will be obtained for colony count and evaluated in culture medium.Also at the end of study upper removable retainer will be sent for candida assessment.
Category
Treatment - Devices

Recruitment centers

1

Recruitment center
Name of recruitment center
Dental school of Hamadan university ,private orthodontic clinic
Full name of responsible person
Nasrin Farhadian
Street address
Dental school of Hamadan university , Shahid Fahmide Blvd. Hamadan
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Faculty of dentistry, Hamedan University of Medical Sciences

Full name of responsible person

Saeed Bashirian

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Faculty of Dentistry, Hamedan University of Medical Sciences, Shahid fahmide blv

City

Hamedan

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Faculty of dentistry, Hamedan 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

Hamedan University of Medical Sciences, Faculty of Dentistry

Full name of responsible person

Nasrin Farhadian

Position

Associated 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