Clinical Trial Protocol
Iranian Registry of Clinical Trials

17 Sep 2026

The effect of implant preparation with piezoelectric and conventional drilling on auto graft cell viability

Protocol summary

Summary

The purpose of this study is assessing the effect of two methods of bone harvesting during implant preparation surgery on cell viability of graft. Inclusion criteria include having no systemic disease and progressive periodontal disease and having good oral hygiene. Exclusion criteria include smoking, pregnancy, history of radiotherapy/chemotherapy and having bone anomalies. 90 patients, that refer to periodontology department of Dentistry Faculty of Hamadan University of Medical Science for implant insertion surgery in 2015-2016, will be selected for this study. Patients will be divided randomly to two groups of 45 patients. During implant preparation surgery, in the first group, bone particle will be harvested using implant surgery micromotor and in the second group it will be harvested by piezosurgery device. Then cell viability will be assessed by using MTS Cell Proliferation Colorimetric Assay kit and spectrophotometer device in the wavelength of 490 nm.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2015102624726N1**
Registration date: **2015-11-18, 1394/08/27**
Registration timing: **registered_while_recruiting**

Last update:
Update count: **0**

Registration date

2015-11-18, 1394/08/27

Registrant information

Name
Masume Nikkhah Rankoohi
Name of organization / entity
Hamadan Univercity of Medical Sciences
Country
Iran (Islamic Republic of)
Phone
Email address
m.nikkhah@edu.umsha.ac.ir

Recruitment status

Recruitment complete

Funding source
Hamadan University of Medical Sciences

Expected recruitment start date

2015-11-11, 1394/08/20

Expected recruitment end date

2016-01-10, 1394/10/20

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of implant preparation with piezoelectric and conventional drilling on auto graft cell viability

Public title

The effect of two method of implant site preparation on graft cell viability

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria: No systemic disease ; No smoking ; No pregnant female ; No periodontal disease ; Appropriate oral hygiene ; No radiotherapy/chemotherapy ; No taking immunosuppressive drugs Exclusion criteria: Patients with systemic diseases such as diabete mellitus and bone anomalies and diseases and progressive periodontal disease ; Pregnancy ; Smoking ; Unacceptable oral hygiene ; Radiotherapy/chemotherapy ; Taking immunosuppressive drugs and prolonged steroid therapy

Age
No age limit
Gender
Both

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **90**
Randomization (investigator's opinion)
Randomized
Randomization description
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
Hamadan University of Medical Science
Street address
In Front of Mardom park- Shahid Fahmide Ave- Hamadan
City
Hamadan
Postal code
654178-38741
Approval date
2015-08-15, 1394/05/24
Ethics committee reference number
IR.UMSHA.REC.1394.248

Health conditions studied

1

Description of health condition studied
Implant treatment
ICD-10 code
K08.1
ICD-10 code description
Loss of teeth due to accident, extraction or local periodontal disease

Primary outcomes

1

Description
Maintain of graft cell viability
Timepoint
Immediately after intervention
Method of measurement
Based on cellular titre in percentage

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: Harvesting of bone particle by drills of piezosurgery device and analysis of bone cell viability by MTS kit Control group: Harvesting of bone particle by conventional drills and analysis of bone cell viability by MTS kit
Category
Treatment - Surgery

2

Description
Control group: Bone paticle harvesting during implant preparation using conventional drill and assessing viability of bone cells using MTS kit
Category
Treatment - Surgery

Recruitment centers

1

Recruitment center
Name of recruitment center
Dentistry Faculty of Hamadan University of Medical Science
Full name of responsible person
Masume Nikkhah Rankoohi
Street address
Dentistry Faculty of Hamadan University of Medical Science, in front of Mardom Park, Shahid Fahmide Avenue, Hamadan
City
Hamadan

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Hamadan University of Medical Sciences
Full name of responsible person
Dr. Shahin Kasraii
Street address

Dentistry Faculty of Hamadan University Of Medical Science

City

Hamadan

Grant name

Grant code / Reference number

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

Yes

Title of funding source

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

Hamadan University of Medical Science

Full name of responsible person

Dr. Masume Nikkhah Rankoohi

Position

post graduate student

Other areas of specialty/work

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Postal code

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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