

Clinical Trial Protocol

Iranian Registry of Clinical Trials

02 Jul 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 University 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

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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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Person responsible for scientific inquiries

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Name of organization / entity

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Other areas of specialty/work

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Phone

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Fax

Email

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