

# Comparing the loss of bone around Straumann BLT® implants with direct connection to the implant versus those with an intermediate connection

<b>Submission date</b> 01/05/2023	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 26/05/2023	<b>Overall study status</b> Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 26/05/2023	<b>Condition category</b> Oral Health	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

This study aims to determine if using higher abutments (the piece that connects the crown to the implant) can reduce bone loss around Straumann BLT® implants in the back of the mouth for patients with missing teeth. The study will compare the use of intermediate abutments versus direct connection to the implant. The study will also look at the effect of abutment height on other factors such as probing depth, bleeding on probing, and the width of the gum tissue around the implant. The goal is to see if using higher abutments can provide more space for soft tissue to adapt and reduce bone loss.

### Who can participate?

Patients attending the International University of Catalonia, School of Dentistry, requiring a posterior implant rehabilitation in order to replace maxillary and mandibular molars and premolars will be included in the study. 48 patients will be selected with partial edentulism in the maxilla or mandible, requiring two dental implants in the posterior areas.

### What does the study involve?

In this study, patients will be randomly assigned to one of two groups to investigate the effect of using prosthetic screw abutments on bone loss around Bone Level Tapered implants (BLT® Roxolid® SLActive® guided implants, Straumann Dental Implant System, Institut Straumann AG, Basel, Switzerland). Partially edentulous patients will receive fully guided and tooth-supported surgical stents to guide the implant position according to the final prosthesis design, reducing the risk of errors and standardizing the implant placement process. After the implants have fully integrated with the bone and second stage surgery healing time has passed (8 weeks post-implant placement), digital impressions will be taken to make the final screw-retained prosthesis. Standardized intraoral periapical x-rays will be taken at the day of surgery, 4, 6, 12, 24, and 36 months post-surgery to measure the bone level around the implant. This will be done by measuring from the implant platform to the first contact with the bone using Image J software by a trained examiner. The implant threads will be used to standardize the images.

What are the possible benefits and risks of participating?

Possible benefits: Placement of two BLT Straumann implants with fully guided surgery and the corresponding fixed restoration with a price reduction for be included in this clinical trial.

Possible risks (and solutions):

- Loss of implant osseointegration: The implant will be replaced free of charged in agreement with our study sponsor (Straumann)
- Patients dissatisfied with esthetics due to exposure of the prosthetic interface: The prosthetic interface would be changed free of charge in agreement with our study sponsor (Straumann) and the patient would be excluded of the study
- Biological problems (mucositis and periimplantitis): Patients would be treated according to the protocols of the University
- Prosthetic problems: Patients would be treated according to the protocols of the University.

Where is the study run from?

The University Dental Clinic of the International University of Catalonia, School of Dentistry. Sant Cugat-Barcelona, Spain.

When is the study starting and how long is it expected to run for?

Who is funding the study?

Institut Straumann AG, Peter Merian-Weg 12, 4002 Basel, Switzerland

Who is the main contact?

Dr. Jordi Gargallo-Albiol, [jgargallo@uic.es](mailto:jgargallo@uic.es)

## Contact information

### Type(s)

Principal Investigator

### Contact name

Prof Jordi Gargallo-Albiol

### ORCID ID

<http://orcid.org/0000-0002-9307-8258>

### Contact details

C/ de Josep Trueta  
Sant Cugat del Vallès, Barcelona  
Spain  
08195  
+34 637434270  
[jgargallo@uic.es](mailto:jgargallo@uic.es)

## Additional identifiers

### EudraCT/CTIS number

Nil known

**IRAS number****ClinicalTrials.gov number**

Nil known

**Secondary identifying numbers**

CIR-ECL-2016-03

## **Study information**

**Scientific Title**

Evaluation of the marginal bone level change of Straumann Bone Level Tapered® implants using different screwed abutment height in partially edentulous patients: a randomized controlled clinical trial

**Study objectives**

The use of a prosthetic abutment on fixed implant restoration reduces the marginal bone loss compared to direct implant connection in partially edentulous patients in the posterior area.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

Approved 07/06/2017, Sant Cugat del Vallès (Barcelona, Spain), Ethical Committee of Clinical Research (Universitat Internacional de Catalunya, C/ de Josep Trueta, 08195 Sant Cugat del Vallès, Barcelona, Spain; +34 935 04 20 00; ceim@uic.es), ref: CIR-ECL-2016-03

**Study design**

Single center randomized controlled clinical trial with 3 year follow-up

**Primary study design**

Interventional

**Secondary study design**

Randomised controlled trial

**Study setting(s)**

Dental clinic

**Study type(s)**

Treatment

**Participant information sheet**

Not available in web format, please use the contact details to request a patient information sheet.

**Health condition(s) or problem(s) studied**

Prevention of marginal bone loss around fixed implant restorations in partially edentulous patients

## **Interventions**

Patients with partial edentulism attending the International University of Catalonia, School of Dentistry, requiring a total of 2 implants in the posterior maxilla or mandible (molar and/or premolar) are recruited. The total sample consists of 48 patients (96 implants), divided in two study groups:

- 1) Control group (direct to implant connection);
- 2) Test group (screw retained abutment).

The test group was also divided into two subgroups according to two abutment heights: 1mm height abutment (7 patients) and 2.5mm abutment height (11 patients).

The patients will be randomly divided into two groups in order to study the influence of prosthetic screw abutment in marginal bone loss (MBL) around Bone Level Tapered implants (BLT® Roxolid® SLActive® guided implants, Straumann Dental Implant System, Institut Straumann AG, Basel, Switzerland).

Marginal bone loss will be measured through periapical x-rays at the day of the surgery, 4, 6, 12, 24 and 36 months; using ImageJ® software by one calibrated examiner (M.Z).

The randomization sequence will be created by means of computer-generated randomization codes and concealed in sealed non-transparent consecutively numbered envelopes. The randomization envelopes were opened after preparation of the osteotomy sites by a designated study nurse in the presence of a witness (the surgeon). The sealed master randomization list will be provided by an external data management company.

## **Intervention Type**

Procedure/Surgery

## **Primary outcome measure**

Marginal bone level (MBL) change: Standardized intraoral periapical x-rays will be taken at the day of surgery, 4, 6, 12, 24 and 36 months following surgery. These will be used to measure the periimplant bone level by measuring from the implant platform to the first bone to implant contact. Measurements will be performed using Image J by one calibrated examiner. Implant threads will be used for normalization of the images.

## **Secondary outcome measures**

Probing depth, bleeding on probing and keratinized mucosa width will be measured at the day of surgery, 4, 6, 12, 24 and 36 months following surgery in 3 different buccal points (M, C and D)

## **Overall study start date**

01/05/2016

## **Completion date**

30/06/2027

## **Eligibility**

### **Key inclusion criteria**

1. Signed informed consent
2. Overall, healthy subjects
3. Females and males of at least eighteen-years
4. Requiring a minimum of two implants (molar and/or premolar teeth)
5. Adequate oral hygiene (less than 15% FMPS)

6. Able to follow instructions and attend a regular compliance
7. Enough bone to place a standard implant of 4.1 mm diameter

**Participant type(s)**

Patient

**Age group**

Adult

**Lower age limit**

18 Years

**Sex**

Both

**Target number of participants**

48 patients will be selected with partial edentulism in the maxilla or mandible, requiring two dental implants in the posterior areas (molars and premolars). Each patient will be randomly allocated in one of the two groups: test group (n=72) or control group (n=24)

**Key exclusion criteria**

1. Acute local infection
2. Occlusal overload with parafunctional activity (assessed clinically)
3. Large occlusal discrepancies
4. Untreated periodontal disease assessed by Socransky et al. parameters ( $\geq 2$ mm clinical attachment loss in two consecutive visits within 1 year)
5. Smokers (more than 10 cigarettes/day)
6. Drug and/or alcoholic dependencies
7. Medical conditions contraindicating implant surgery
8. History of head and/or neck radiation
9. Bisphosphonate therapy

**Date of first enrolment**

01/06/2017

**Date of final enrolment**

30/06/2023

**Locations****Countries of recruitment**

Spain

**Study participating centre**

Universitat Internacional de Catalunya

C/ de Josep Trueta

Sant Cugat del Vallès, Barcelona

Spain

08195

# Sponsor information

## Organisation

Universitat Internacional de Catalunya

## Sponsor details

C/ de Josep Trueta  
Sant Cugat del Vallès, Barcelona  
Spain  
08195  
+34 935 04 20 00  
jgamon@uic.es

## Sponsor type

University/education

## Website

<https://www.uic.es/en>

# Funder(s)

## Funder type

Industry

## Funder Name

Institut Straumann AG

# Results and Publications

## Publication and dissemination plan

Planned publication in a high-impact peer-reviewed journal: MARGINAL ALVEOLAR BONE LOSS AROUND STRAUMANN BLT® GUIDED IMPLANTS WITH DIRECT IMPLANT CONNECTION V/S INTERMEDIATE ABUTMENT. A RANDOMIZED CONTROLLED CLINICAL TRIAL WITH 2-YEARS FOLLOW-UP; and the 3 YEAR-FOLLOW-UP.

## Intention to publish date

01/12/2024

## Individual participant data (IPD) sharing plan

The datasets generated during and/or analyses during the current study will be available upon request from Jordi Gargallo-Albiol; [jgargallo@uic.es](mailto:jgargallo@uic.es)

**IPD sharing plan summary**  
Available on request