



Le Fort 1 osteotomy and calvarial bone grafting for severely resorbed maxillae



M. Schlund ^{a, b, *}, R. Nicot ^{a, b}, L. Lauwers ^{a, b}, G. Raoul ^{a, b, c}, J. Ferri ^{a, b, c}

^a Université Lille 2 Droit et Santé, F-59000 Lille, France

^b Oral and Maxillofacial Department, Roger Salengro Hospital, CHU Lille, F-59000 Lille, France

^c INSERM, U1008, Controlled Drug Delivery Systems and Biomaterials, F-59000 Lille, France

ARTICLE INFO

Article history:

Paper received 24 September 2015

Accepted 11 April 2016

Available online 22 April 2016

Keywords:

Le Fort 1 osteotomy

Edentulous maxillae

Dental implant

Alveolar ridge augmentation

ABSTRACT

Introduction: Long standing maxillary edentulism leads to alveolar ridge resorption which prevent implant placement and causes prosthetic malocclusion. The aim of the study was to assess vertical and transversal bone increase following Le Fort 1 osteotomy associated with calvarial bone grafting.

Materials and methods: 66 patients who presented severely atrophic maxillae were treated with Le Fort 1 osteotomy with bone grafting from 2003 to 2014. Vertical and transversal bone level was measured preoperatively and 6 months post-operatively to calculate the alveolar ridge augmentation. Follow up ranged from 10 months to 11 years.

Results: The mean increase of bone height was 9.3 mm and the mean increase of bone width was 6 mm. 417 endosseous implants were placed in the grafted maxilla. Mean endosseous implant length was of 10.7 mm at the first molar site (range: 8–16 mm). A total of 25 implants failed, the overall implant survival rate is of 94%. The definitive prosthesis was fixed in 65% of the patients and removable in 35% of the patients.

Discussion: Le Fort 1 osteotomy associated with calvarial bone grafting is the main treatment option able to offer fixed bridge and perfect class 1 occlusion in cases of severe maxillary atrophy.

© 2016 European Association for Cranio-Maxillo-Facial Surgery. Published by Elsevier Ltd. All rights reserved.

1. Introduction

Dental rehabilitation of atrophic edentulous maxillae is a challenge. Edentulism leads to alveolar bone loss (Atwood, 1971) although the alveolar ridge is paramount for prosthesis stability by means of implant insertion. That condition led to the creation of pre prosthetic surgery. Alveolar bone loss is also present in the sagittal plane, creating an inverted interarch relationship with class 3 malocclusion needing correction for satisfying prosthesis function and aesthetics.

The first use of the Le Fort 1 osteotomy associated with bone grafting to correct the class 3 malocclusion of an edentulous patient was first described by Bell et al., in 1977 (Bell et al., 1977). Sailer in 1989 (Sailer, 1989) refined the technique by adding the immediate

endosseous implant insertion during the Le Fort 1 osteotomy associated with bone grafting. Then Cawood et al., in 1994 (Cawood et al., 1994) showed that better outcome was achieved with two steps procedure.

In most of the studies, iliac bone is used; little is published on calvarial bone harvesting.

In this study, the aim is to assess the vertical and transverse bone increase following Le Fort 1 osteotomy associated with calvarial bone grafting.

2. Materials and methods

2.1. Patients

The study was conducted as a retrospective analysis considering consecutively every patient who underwent Le Fort 1 osteotomy associated with calvarial bone grafting from 2003 to 2014. Four

* Corresponding author. Université Lille 2 Droit et Santé, F-59000 Lille, France.
E-mail address: schlund.matthias@wanadoo.fr (M. Schlund).

patients were excluded for incomplete documentation. All of them presented severely atrophic maxillae at the first molar site (Cawood class 5 or 6) preventing implant placement and an inverted inter-arch relationship (Figs. 1 and 2). They were all operated in the same unit of Oral and Maxillofacial surgery, Centre Hospitalier Universitaire et Regional de Lille, France.

Initial bone level was assessed with pre operative computed tomography scanning: vertical and transversal bone levels were measured at the first molar site.

2.2. Surgical protocol (Ferri et al., 2010)

The first surgical step was the bone harvesting procedure. Strips of cortical bone from the external layer of parietal bone were harvested associated with calvarial bone scraping.

The Le Fort 1 osteotomy was the second step. A vestibular incision was made from the first premolar region from one side to the other and a mucoperiosteal flap is raised in order to access to the maxillary bone. The osteotomy was performed with an oscillating saw and was followed by a careful down fracture without any prior sinus lifting. The sinus mucosa was completely removed from the floor of the sinus.



Fig. 1. Pre-operative profile picture of a patient.

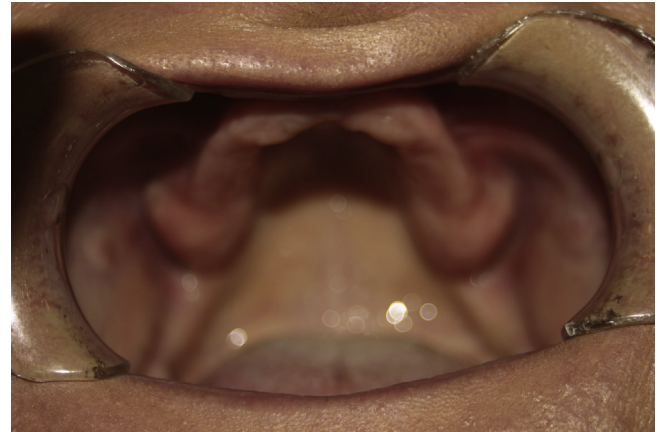


Fig. 2. Pre-operative alveolar ridge picture.

The sinus was filled by scraped calvarial bone, which was then covered by strips of cortical calvarial bone placed parallel to the sinus floor. Those strips were fixed with titanium micro screws.

The grafted maxillary was then moved downward and forward to the determined location and secured with two titanium micro plates on each side of the nasal cavity (Figs. 3–5).

Endosseous implant placement was performed 6 months after surgery (Fig. 6). The prosthetic step began at least 6 months after the second surgery (Figs. 7–9).

2.3. Evaluation

Vertical and transversal bone levels were measured with computed tomography scanning at the first molar site 6 months after grafting procedure (Fig. 10). This is the standard procedure for all patients who underwent this surgery in the department.

The number of endosseous implant placed in the maxilla, their length and the type of prosthesis were recorded. Follow up ranged from eleven months to nineteen years.

3. Results

A total of 66 patients were included. The group consisted of 18 males and 48 females aged from 21 to 77 years old (mean 53.8

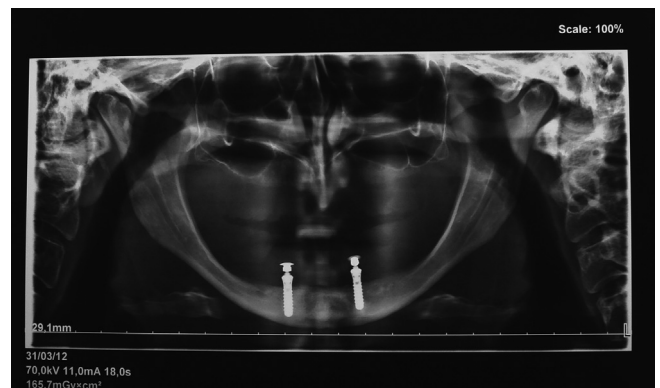


Fig. 3. Pre-operative orthopantomographic X-ray.

Download English Version:

<https://daneshyari.com/en/article/3142258>

Download Persian Version:

<https://daneshyari.com/article/3142258>

[Daneshyari.com](https://daneshyari.com)