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Abstract

Background: Different implant bed drilling techniques have been proposed to increase the implant stability in order to facilitate better implant survival rates. Most of these techniques are indicated in areas with low bone density and aim at its increase.

Aim: The aim of this study was to evaluate the effect of two different implant osteotomy methods in terms of implant stability during the period of osseointegration in bone with low density.

Material and methods: This prospective randomized clinical study included 22 patients that received a total of 37 implants in the posterior maxillary region. They were divided into two groups: in 11 patients, 18 implants were placed using the under-drilling method (UD), while the other 11 patients received 19 implants using the osseodensification method (OD). Within the OD group, 10 implants were placed with simultaneous crestal sinus floor elevation (max 5 mm) without bone graft use. All implants were placed in a dual-stage manner. The implant stability was measured through their ISQ values at the time of surgery and at the time of their uncover, four months later. The data were analyzed using paired two-way ANOVA test and the probability value <0.0001 was considered statistically significant.

Results: The early implant survival rate was 94,6%, since 35 implants were osseointegrated. There was no statistically significant difference in the primary implant stability values between the two groups. The values of secondary implant stability were significantly higher in the OD group (p<0.05). Within the OD group, there were no statistically significant differences in the secondary stability values between the implants placed with and without sinus floor elevation.

Conclusion: The osseodensification method of implant osteotomy results in higher secondary implant stability values than the underdrilling method, which may have clinical relevance regarding the long-term implant survival. for a serif font.

Results

The differences between the primary implant stability ISQ values in the underdrilling and osseodensification group were not statistically significant. The secondary implant stability was statistically significantly higher in the osseodensification group (p<0.001). There were no statistically significant differences between secondary implant stability values in implants placed with and without crestal sinus floor lift within the osseodensification group.

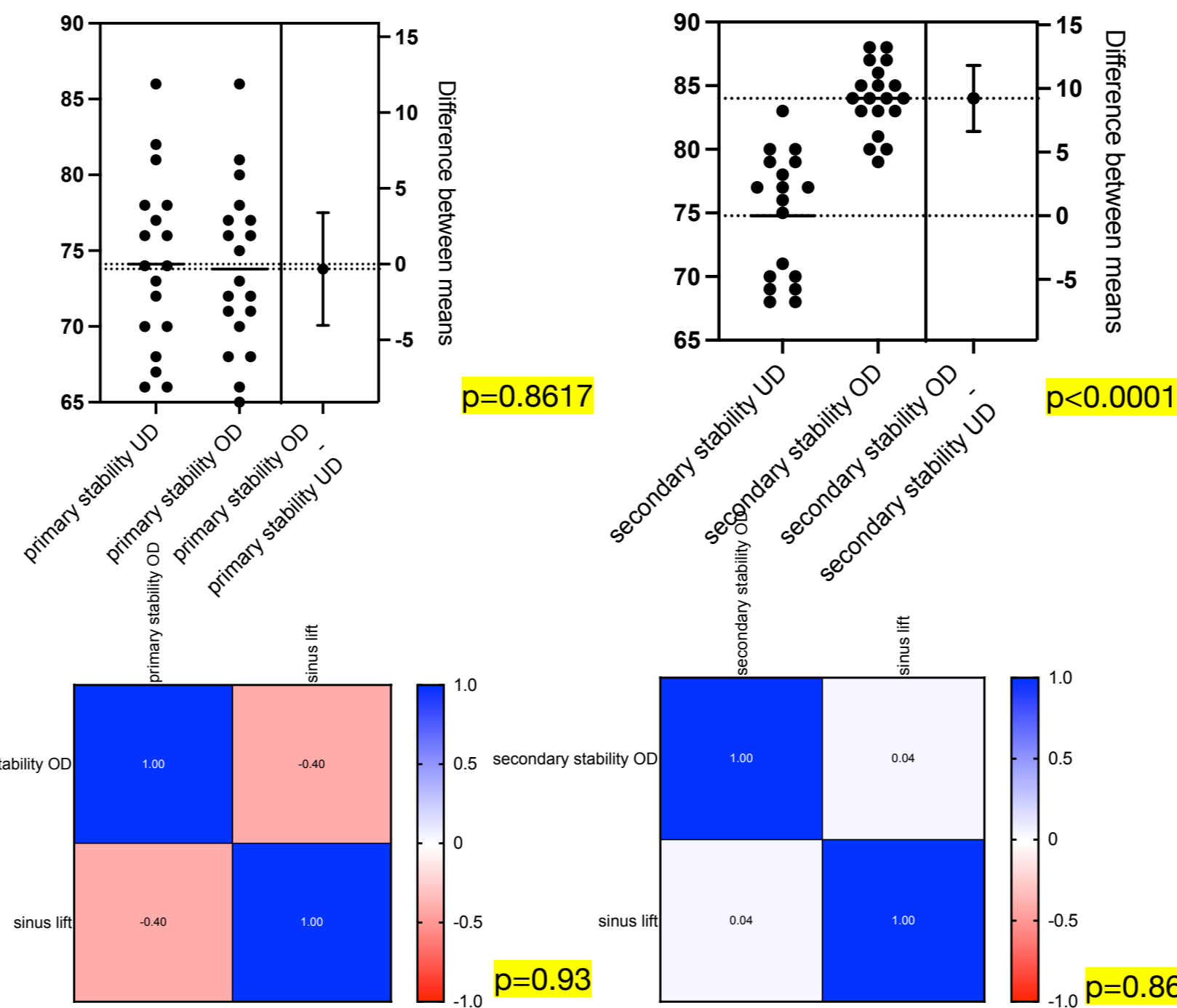


Fig. 1,2 Implant osteotomy

Fig. 3,4 Primary and secondary stability

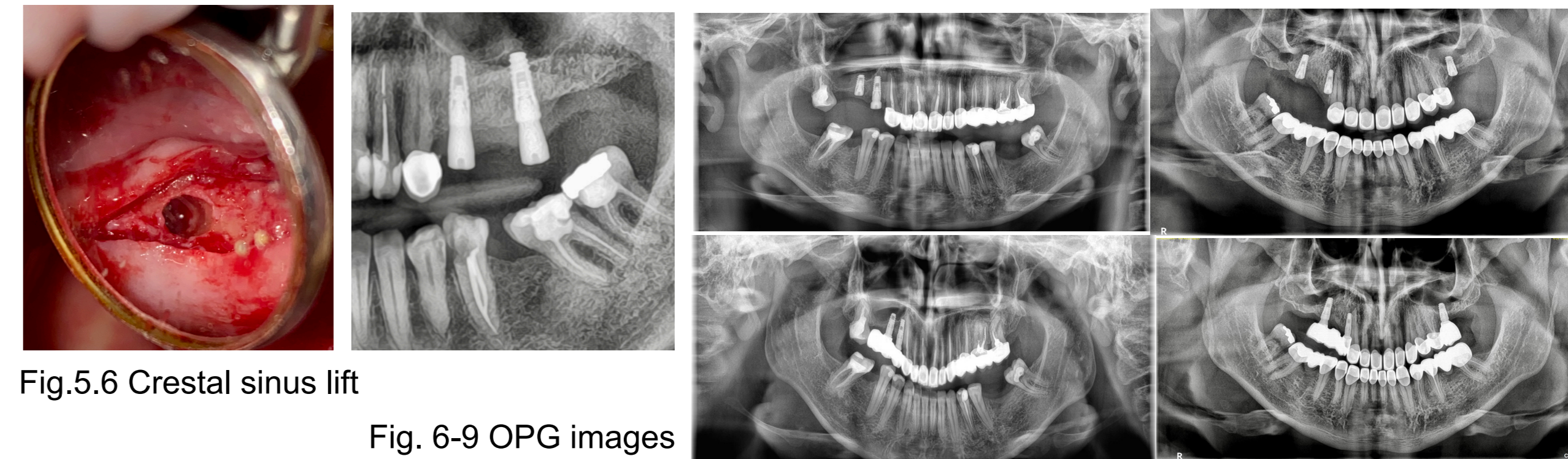


Fig.5.6 Crestal sinus lift

Fig. 6-9 OPG images

Background and Aim

The undersizing of the final implant osteotomy site – underdrilling (UD) as well as the relatively novel osseodensification technique (OD) are used to increase the primary implant stability, which results in better bone-to-implant contact (BIC) and successful osseointegration in sites with poor bone quality. This study aims at comparing the implant stability rates (ISQ) between implants placed with these two techniques in the posterior maxilla within the period of osseointegration.

Conclusion

The osseodensification method (OD) for implant osteotomy results in significantly higher secondary implant stability values than the underdrilling method, which may have clinical relevance regarding the long-term implant survival.

Methods and Materials

Twenty-two patients received thirty-seven bone level implants (Implantswiss, Yverdon-Les-Bains, Swiss) in a dual-stage manner, using two different methods. Eleven patients in the control group had nineteen implants placed with underdrilling, while in eighteen patients from the test group osseodensification method was applied, utilizing Densah burs (Versah, Jackson,MI, USA). Within the test group, ten implants were placed with minor crestal sinus elevation, without use of biomaterials.

The primary and secondary implant stability was evaluated through ISQ values, with Penquin ISQ (Gothenborg, Sweden) at the time of implant placement and four months later.

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