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IMPLANT THERAPY OUTCOMES, SURGICAL ASPECTS

Comparative evaluation of bony window preparation and coverage in maxillary sinus floor augmentation

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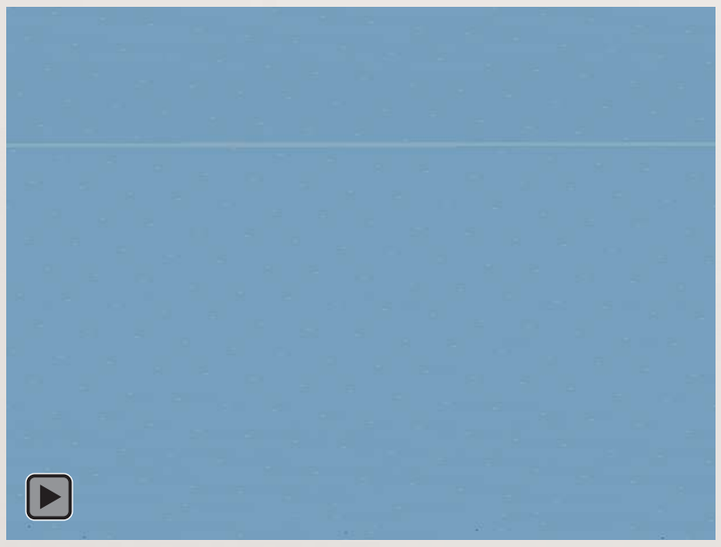
Background

Lateral bony window coverage utilizing collagen membranes in maxillary sinus floor augmentation by lateral approach delivers favorable results (Pjetursson et al. 2008). The piezoelectric approach allows for repositioning the sinus bony wall (Choung et al. 1997), nevertheless data is scarce on the efficacy compared to collagen membrane coverage. The preliminary clinical results of an ongoing prospective, randomized, controlled clinical, radiographical and histological trial are presented.

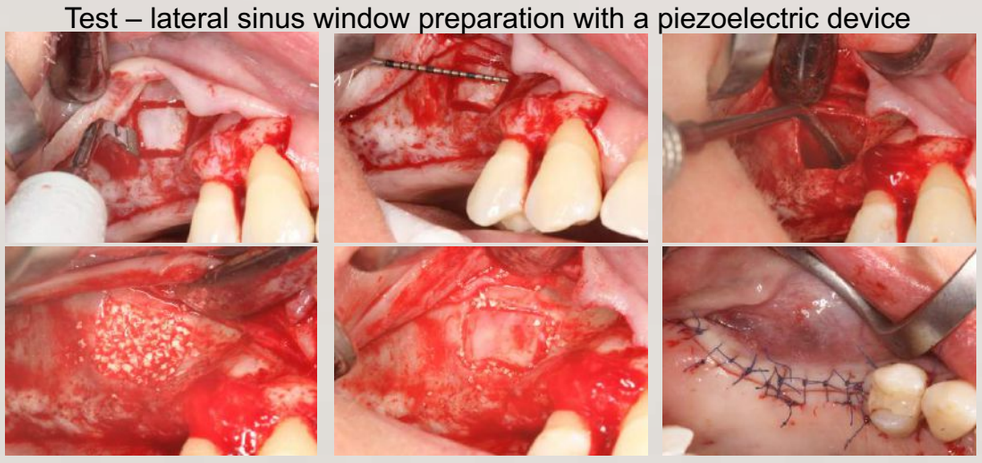
Aims



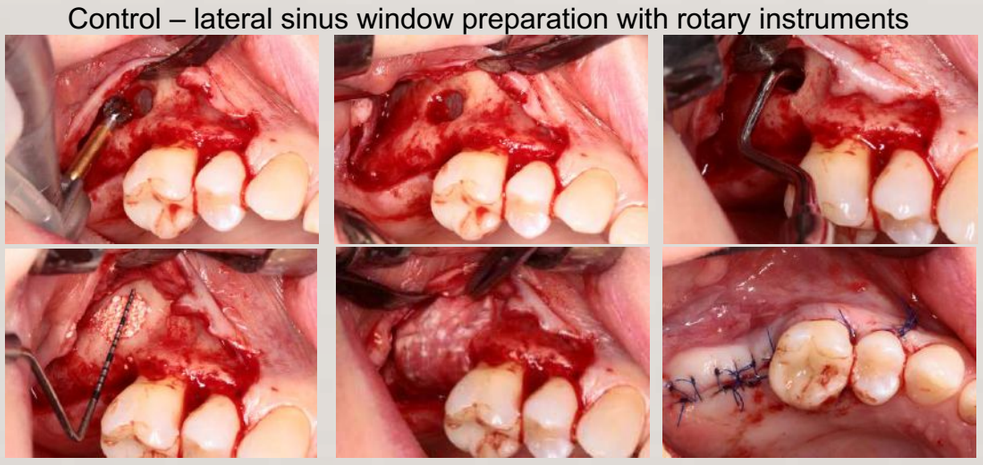
Our aim is to demonstrate the non-inferiority of bony wall repositioning compared to collagen membrane coverage in maxillary sinus floor augmentation. Primary outcome parameter: Histological evaluation. Secondary outcome parameters: duration of surgery, window preparation, frequency of perforations, postoperative patient complaints.

Methods and Materials

Test – lateral sinus window preparation with a piezoelectric device

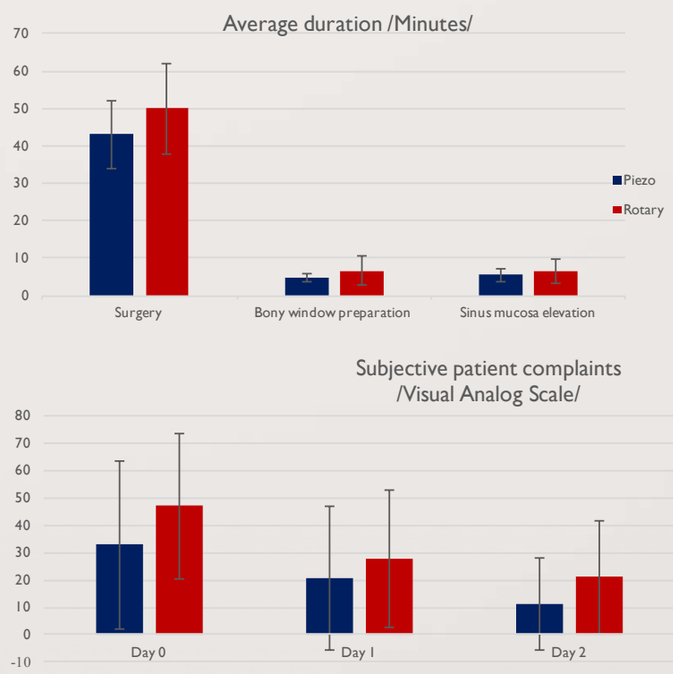


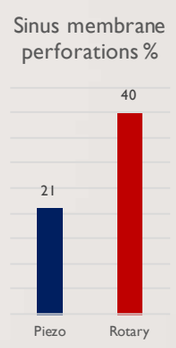
Control – lateral sinus window preparation with rotary instruments



29 healthy patients with at least one missing maxillary premolar or molar with residual bone height below the maxillary sinus not exceeding 5mm were treated at the Department of Periodontology, Semmelweis University, Budapest, Hungary by lateral maxillary sinus floor augmentation. Patients were treated in two randomized groups: Test (14 patients): lateral sinus window preparation with a piezoelectric device (NSK Variosurg 3), sinus bony wall repositioning. Control (15 patients) lateral sinus window preparation with round burs at 400 rpm, bony window covered by a resorbable collagen membrane (Botiss Colprotect). Hard tissue grafting was performed using a particulate xenogenic material (Botiss Cerabone) in both groups. Following parameters were registered: duration of surgery, bony window and sinus mucosa preparation in minutes; percentage of sinus membrane perforations, postoperative patient complaints subjectively evaluated by visual analogue scale (VAS), objectively evaluated by number of non-steroid inflammatory drugs taken.

Results





Primary intention wound healing occurred in all cases, no postoperative infections were observed.

Duration of surgery was 43±09 min in test compared to 50±12 min in control.

Duration of window preparation was 4.7±1 min in test compared to 6.7±3.7 min in control.

Duration of sinus mucosa elevation was 5.4±1.6 min in test compared to 6.5±3.4 min in control.

Percentage of sinus membrane perforations was 21% in test compared to 40% in control. All perforations were treated successfully by the placement of a non-resorbable collagen membrane (Botiss Colprotect).

Postoperative patient complaints subjectively evaluated by visual analogue scale (VAS) was 32.79±30.85 in test compared to 46.93±26.47 in control on the day of surgery, 20.71±26.20 in test compared to 27.73±25.30 in control 1 day postoperatively, 11.07±16.65 in test compared to 21.13±20.58 in control 2 days postoperatively, 8.79±14.18 in test compared to 14.73±20.18 in control 3 days postoperatively.

Postoperative patient complaints objectively evaluated by number of non-steroid inflammatory drugs taken was 1.36±0.63 in test compared to 1.60±0.83 in control on the day of surgery, 0.93±1.00 in test compared to 1.00±0.85 in control 1 day postoperatively, 0.57±0.76 in test compared to 0.87±0.99 in control 2 days postoperatively, 0.29±0.61 in test compared to 0.60±0.83 in control 3 days postoperatively.

Conclusions

According to the preliminary clinical results of the ongoing prospective, randomized, controlled clinical, radiographical and histological trial, duration of surgery, duration of window preparation, percentage of sinus membrane perforations were lower in test compared to control. Subjective and objective postoperative complaint evaluation showed more favorable outcomes in the test with less patient morbidity following piezoelectric sinus window preparation and bony wall repositioning.

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References

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