

Science Flash

Xenograft shown to be effective and reliable in maxillary sinus augmentation for dental implantation in a retrospective clinical study and case report.

RESEARCH QUESTIONS

1. How do changes in the height of two xenogenic bone grafting materials compare over time when used in a sinus lifting procedure?¹
2. What is the longitudinal result of sinus grafting using demineralized bovine bone material in sinus lift procedures?²

METHODS

1. In the clinical study:¹
 - a. Sinus lift procedure sites were treated with one of two xenogenic bone grafting materials (Bio-Oss® or OCS-B, sold as Straumann® XenoGraft) in combination with platelet-rich plasma prior to implantation
 - b. Implants were placed 6-8 months after the sinus lift
 - c. Clinical and radiographic examination of implant sites evaluated changes in implant length/bone length ratio at four time points: right after implant surgery, then 7-12 months, 13-24 months, and 25-48 months after prosthetic loading
2. In the case report:²
 - a. Retrospectively, 12 patients were observed following maxillary sinus graft surgery using demineralized bovine bone material
 - b. The interval between sinus graft surgery and prosthetic loading was an average of 8.6 months
 - c. Observation periods ranged from 27 to 75 months

RESULTS

- Changes in bone length/implant length showed a statistically significant decreasing tendency over time¹
- No significant difference was observed in height change between the two graft materials used in the clinical study (Figure 1)¹
- In the retrospective analysis, no patients showed severe resorption of graft material or infection during the observation period, and no implants showed a biologic failure²

CONCLUSIONS

- The two bone grafting materials show comparable resorption results with no statistically significant differences when used in sinus lift procedures (Figure 1)¹
- Xenograft materials resorb over time (Table 1)—but without resorption to the apex of the implant, so the graft material consistently supports the implant structure¹
- DBBM is an effective grafting material for maxillary sinus lift procedures, demonstrating good healing responses and reliable results during the entire follow-up period, which averaged 43.3 months (Table 2)²

| | Baseline | 7-12 months | 13-24 months | 25-48 months |
|---------|----------|-------------|--------------|--------------|
| BL (mm) | 23.50 | 21.97 | 20.63 | 20.00 |
| IL (mm) | 15.29 | 15.29 | 15.29 | 15.29 |
| BL/IL | 1.54 | 1.44 | 1.35 | 1.31 |

Table 1: Changes in bone level and implant length over time using xenograft materials in the clinical study¹

| Patient | Age | Gender | Location of implants | Graft-loading (months) | Observation period (months) |
|-----------|-------------|-------------|----------------------|------------------------|-----------------------------|
| 1 | 59 | M | 15, 16, 17 | 9 | 36 |
| 2 | 53 | M | 26, 27 | 11 | 32 |
| 3 | 50 | M | 16, 17 | 7 | 52 |
| 4 | 62 | F | 26, 27 | 8 | 49 |
| 5 | 54 | M | 25, 26, 27 | 9 | 75 |
| 6 | 57 | M | 16, 17 | 8 | 60 |
| 7 | 59 | M | 15, 16, 17 | 8 | 40 |
| 8 | 49 | M | 26, 27 | 11 | 40 |
| 9 | 65 | M | 25, 26 | 8 | 41 |
| 10 | 60 | M | 15, 16 | 7 | 32 |
| 11 | 60 | M | 15, 16 | 8 | 27 |
| 12 | 40 | M | 16, 17 | 9 | 36 |
| Mean ± SD | 55.7 ± 6.88 | M=11 F=1 | Total 27 implants | 8.6 ± 1.3 | 43.3 ± 13.6 |

Table 2: Summary of 12 patients who received sinus graft surgery using new deproteinized bovine bone materials (DBBM)²

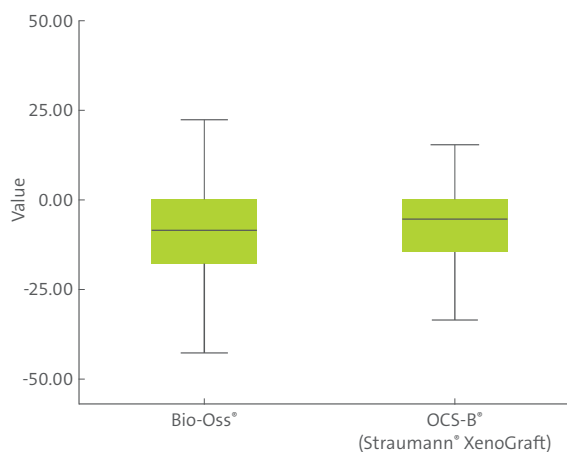


Figure 1: The clinical study showed that over time there was no statistically significant difference between the two bone grafting materials¹

REFERENCES:

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2. Seung-Yun S, You-Jeong H, Jung-Hoon K, Young K, Yang-Jo S. Long term results of new demineralized bovine bone material in a maxillary sinus graft procedure: Case report. *J Periodontal Implant Sci.* 2014;44:1-6.

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