

Bone formation and remodelling rate following sinus augmentation with an equine-derived biomaterial: two independent studies.



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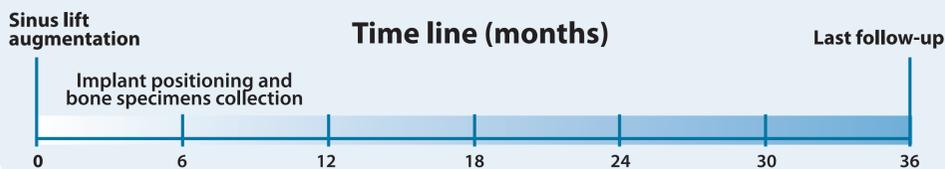


AIMS

To investigate new bone formation and graft remodelling rate after maxillary sinus augmentation surgeries with an enzymatically-treated equine bone (EDEB) featuring preserved collagen (Osteoxenon, Bioteck, Italy) and subsequent implant positioning. The 36-month implant success rate was also assessed.

Randomized Clinical Trial

21 men and 19 women with Cawood Class V atrophic ridges randomly received EDEB (n=20) or anorganic bovine bone (ABB; Bio-Oss, Geistlich, Switzerland; n=20) granules. Six months later, biopsies were obtained, and implants were placed. Bone specimens were subjected to histomorphometric analysis. Patients were followed up for three years after definitive prosthetic rehabilitation and implant success rate determined.

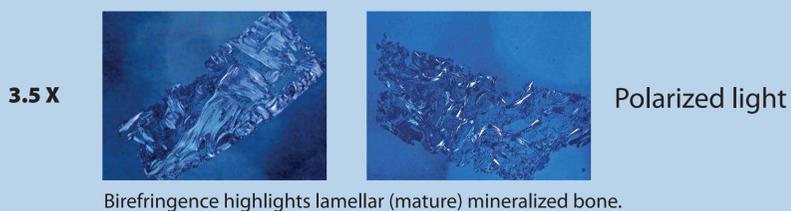
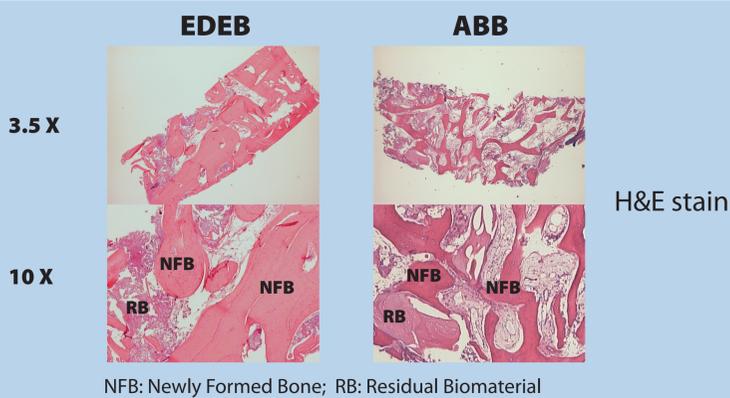


Retrospective Study

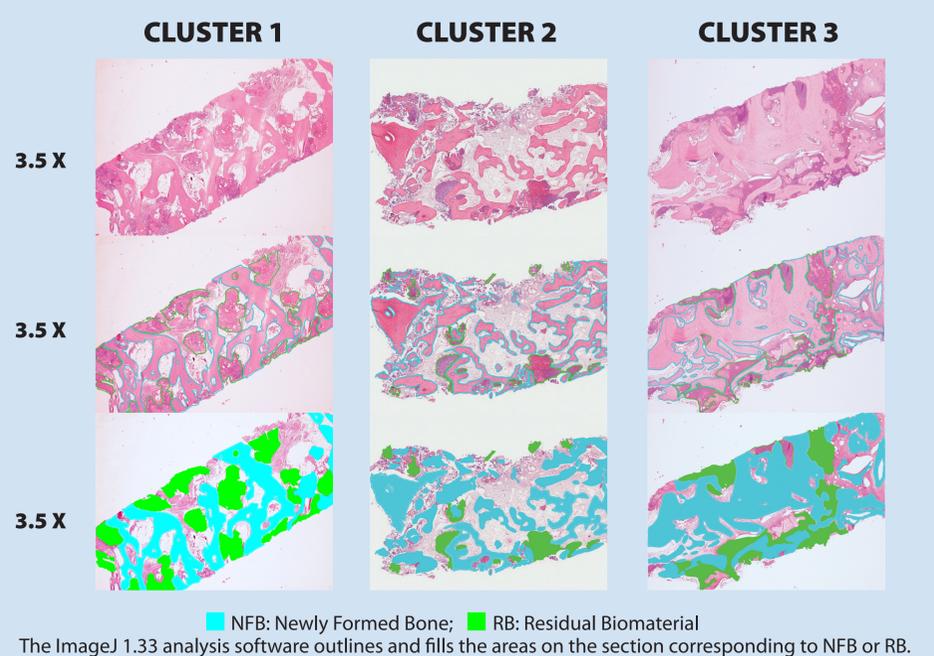
Records from 77 patients and 115 biopsies were retrieved. Patients underwent sinus lift with the EDEB graft and two-step implant placement between 3 and 12 months after surgery. Biopsies were obtained during implants placement and bone specimens subjected to histomorphometric analysis. Patients were recalled for control visits up to 36 months and implant success rate assessed. Data were clustered in three classes according to time of implant placement and bone collection.

	CLUSTER 1	CLUSTER 2	CLUSTER 3
Time from sinus lift	3-5 months	6-8 months	9-12 months
n	33	57	25

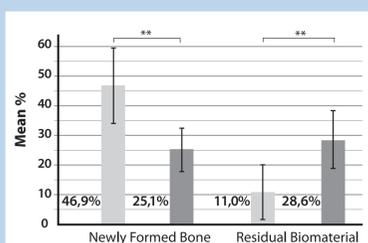
Histological analysis



Histological analysis



Histomorphometric results

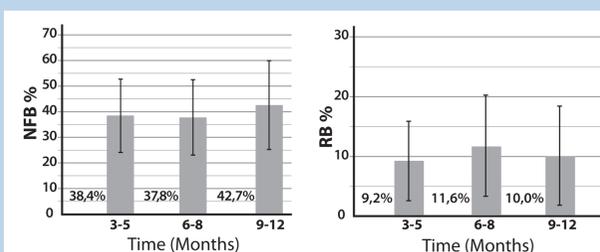


Difference between EDEB (light gray) and ABB (dark gray) were significant (**) for both NFB and RB at a p<.05 level of confidence.

At the 3-year follow-up the implant success rate in the two groups was the same.

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Histomorphometric results



The amount of NFB and RB did not significantly differ among the time clusters.

At the 3-year clinical follow-up no difference was found among the three clusters in terms of implant success rate.

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CONCLUSIONS

- 1 - EDEB was as effective as ABB for sinus lift and prosthetic rehabilitation.
- 2 - EDEB resulted in a greater quantity of NFB and a lower amount of RB compared to ABB. Results might be explained by the maintenance of native collagen in the EDEB graft.
- 3 - New bone formation was found to occur within 3 months after the augmentation surgery with EDEB.
- 4 - Implant positioning at an early time led to the same implant success rate than the delayed ones, suggesting that this step may be safely anticipated.