

Lateral Ridge Augmentation using Autogenous Bone Block Grafts in Maxillary Esthetic Zone: A 5-Year Prospective Case Series Study

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Background

Severe alveolar ridge atrophy following tooth extraction or trauma requiring implant rehabilitation. Autogenous onlay bone block remains the gold standard for the reconstruction of large horizontal bone defects. Minimizing bone volume changes at the implant site over time is the cornerstone for successful implant rehabilitation. In the literature, there is a lack of well-documented long-term studies measuring the conservation of the augmented bone volume over time.

OBJECTIVE

The present study was conducted to assess horizontal bone augmentation using autogenous block bone graft and the rate of block bone graft resorption 5 years after ridge augmentation, in maxillary anterior and premolar ridge defects using cone-beam computed tomography (CBCT).

METHODS

A staged horizontal alveolar ridge augmentation was carried out in 6 healthy patients, partially edentulous (missing one or two teeth) evincing severe horizontal bone atrophy using autogenous onlay block grafts, harvested from the symphysis, protected by demineralized bovine bone minerals (DBBM) only. Implants were placed 6 months after bone augmentation. The crest width was evaluated radiographically using cone beam computed tomography (CBCT) at one-week post-operative, at re-entry after 6 months and after 5 years.

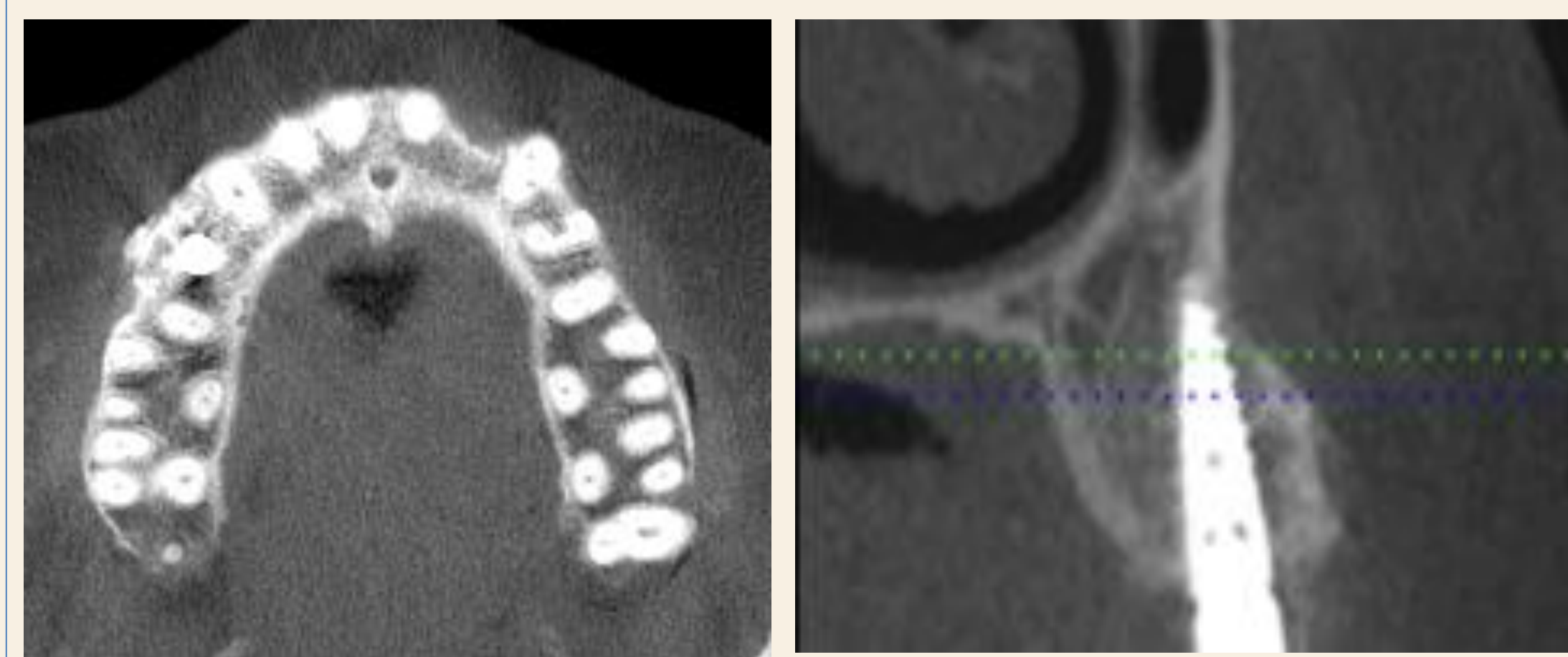
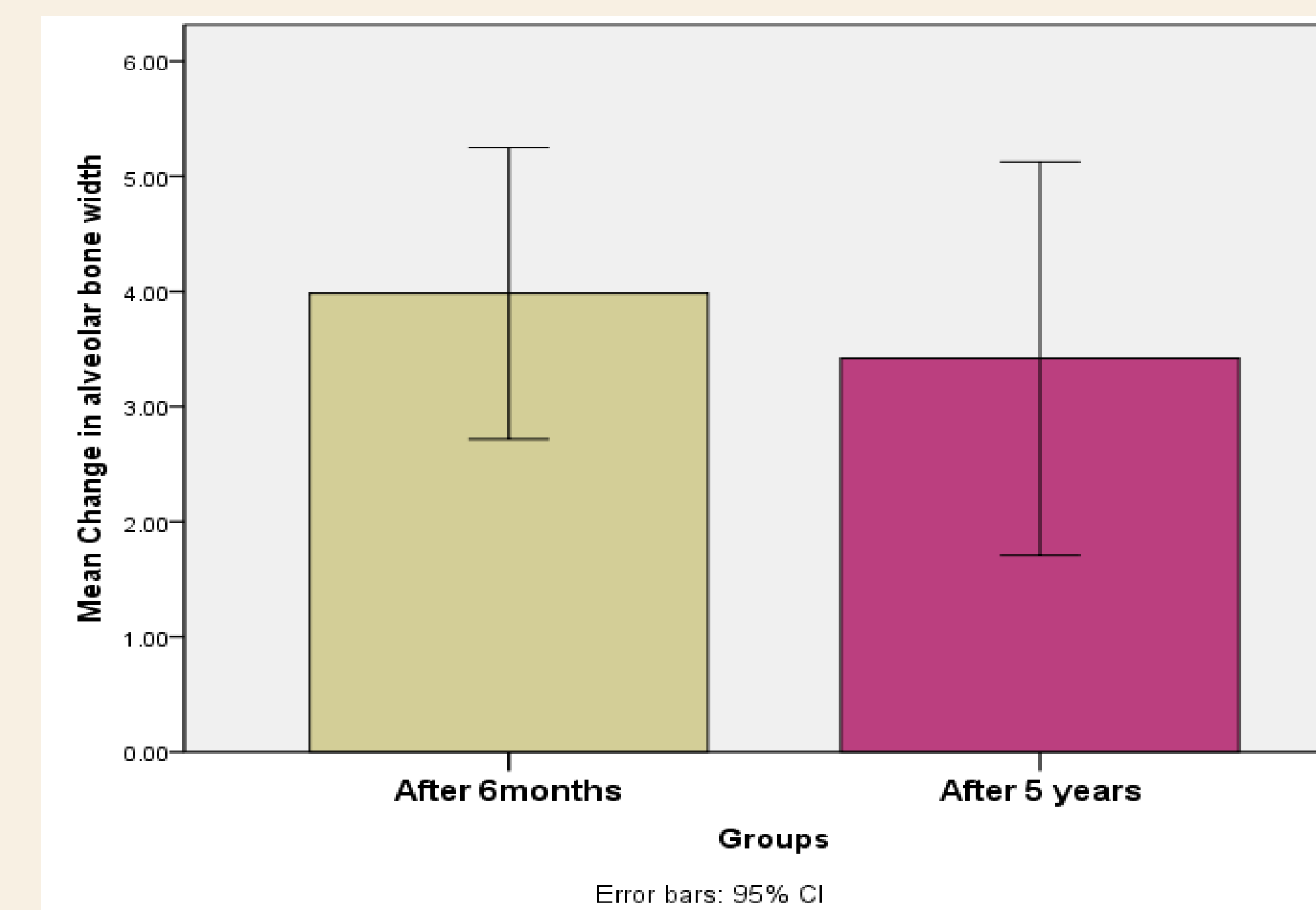
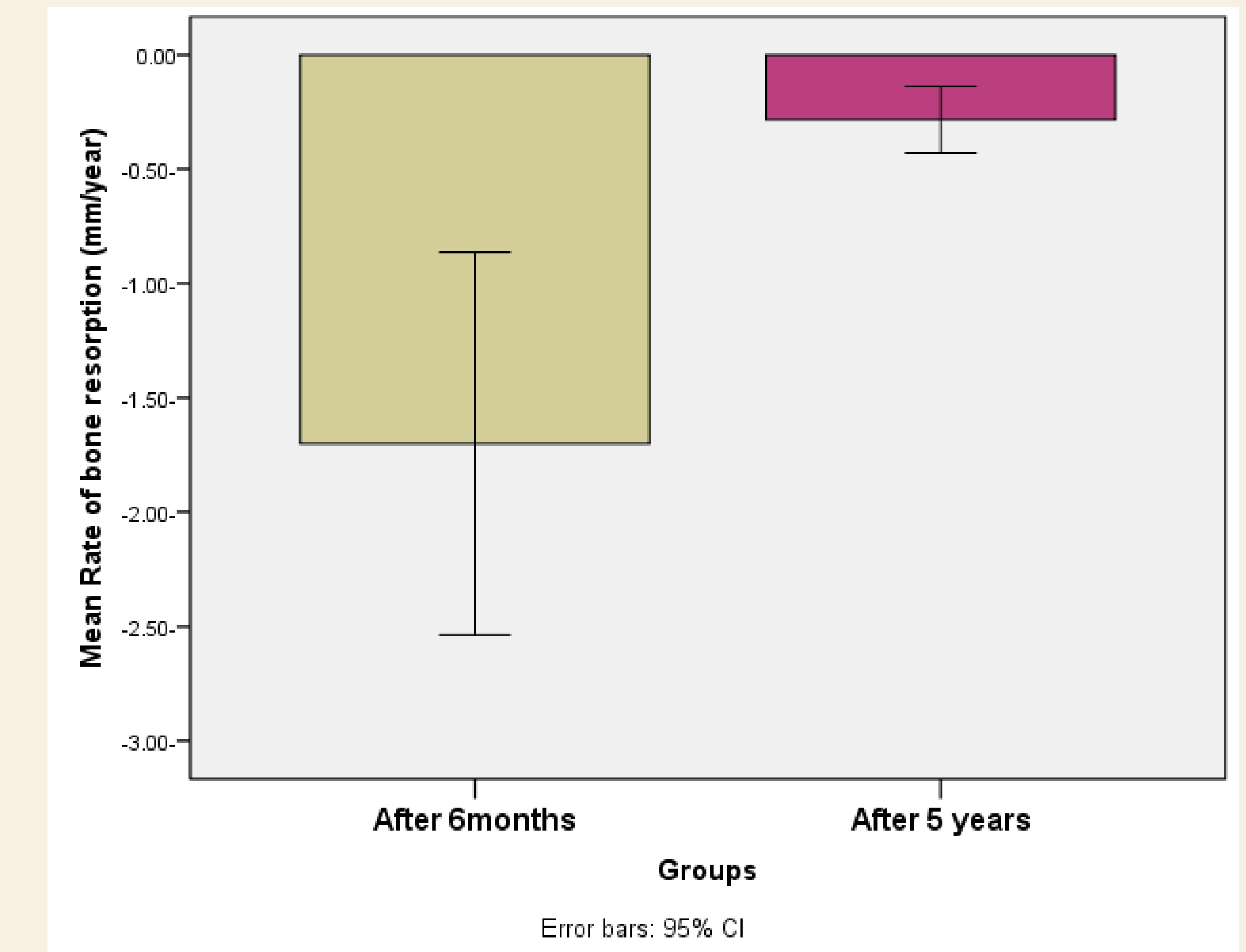


FIGURE showing CBCT after 5 years

RESULTS

Change of the alveolar ridge width from baseline to 6 months and from baseline to 5 years: A higher mean value of change was recorded from baseline to 6 months post-operative (3.98 ± 1.21), compared to from baseline to 5 years post-operative (3.42 ± 1.63), with no significant difference between both intervals ($p=0.509$).

Rate of bone resorption mounted after 6 months and after 5 years (mm/year) and Percentage of bone resorption after 6 months and after 5 years: A higher mean value of percentage change of bone resorption (%) was recorded from immediately post-operative to 5 years post-operative ($-14.95 \pm (8.53)$ %), compared to from immediately post-operative to 6 months post-operative ($-8.71 \pm (4.01)$ %), with no significant difference between both intervals ($p=0.240$).



CONCLUSIONS

Lateral ridge augmentation with autogenous onlay block grafts protected by demineralized bovine bone minerals (DBBM) only is a predictable technique for augmenting horizontal ridge deficiency in the maxillary esthetic zone, with a mean block graft resorption rate of $14 \% \pm (8.53)$ after 5 years.

REFERENCES

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