REGENERATIVE THERAPY USING BOVINE BONE MINERAL SHOWS STABLE LONG-TERM RESULTS
A RETROSPECTIVE CLINICAL COHORT STUDY

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Objective
The objective of this retrospective cohort study was to evaluate whether evidence from randomized clinical trials on the successful treatment of intrabony defects by regenerative therapy can be transferred to patients in a private periodontal practice.

Methods
In 191 patients a total of 1099 teeth with intrabony defects were treated using bovine bone mineral with or without collagen membrane. Defects were classified as 1- and 2-wall and as shallow (<6 mm), moderate (6-11 mm) and deep (>11 mm).

A total of 1088 defects in 176 patients were monitored clinically and radiographically for collection of 1-year short-term, mid-term (2-4yrs) and long-term (5-10yrs) data. Baseline measurements were taken clinically and radiographically for standardisation of defect size. IMAGE J Software allows measurement accuracy of 0.01 mm.

During supportive periodontal therapy, measurements were recorded from 1y post-operative x-rays (N=1008) and at following investigation stages, up to 10 years (mean 5.2 years). Change in radiographic bone levels was used as primary outcome parameter. Due to lack of compliance or supportive care alo loco, 15 patients (91 teeth) were excluded from analysis.

Results

Patient related data
Long-term evaluation, most severe defects

ΔBL [t1/t3] = 5,04mm
ΔBL/rel = 54,45%

Significant bone level change BL/t1 and BL/t3: p<0,005 shown in all defect types

No significant bone level change shown for t2/t3, t2/t1, t3/t2

Interaction effects:
n.s. shown for smokers (29%)
n.s. shown for n.wall
n.s. shown for treatment variations

Overall a mean radiographic bone fill of >50% was observed. Deep and moderate defects showed a higher degree of radiographic bone fill than shallow defects (54,5% vs. 50% vs. 43,3%). Radiographic bone gain obtained at 1year remained stable during mid-term and long-term follow-up.

Tooth loss amounted to 2.6% and was dependent on initial defect size (1.2% for shallow, 1.4% for moderate, 5.7% for deep defects) and occurred mainly due to endodontic failures.

Conclusions
Under conditions of daily periodontal practice, regenerative treatment using bovine bone mineral with or without collagen membrane can lead to a mean defect resolution of greater than 50%, based on radiographic (2D) measurement. A 3D defect reconstruction of approximately 75% can be assumed from related data.

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References

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