Healing of intrabony defects following treatment with a new bovine derived xenograft combined with a new collagen membrane

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Aim

To clinically evaluate the healing of deep intrabony defects following regenerative periodontal surgery with a new bovine derived xenograft (BDX) combined with a collagen membrane of porcine origin (CM).

Material and methods

- 7 patients (8 defects) diagnosed with severe chronic periodontitis were enrolled in the present study
- Inclusion criteria:
  - patients had to present at least one intrabony defect with a probing depth (PD) ≥ 6 mm
  - an associated intraosseous defect ≥ 3mm
  - good oral hygiene (Full Mouth Plaque Score ≤ 25%)
- Following therapy was performed:
  - nonsurgical periodontal therapy including full-mouth scaling and root planing (SRP) under the concept of “full-mouth-disinfection” followed by systemic administration of amoxicillin and metronidazol (500mg, 3 x 1/d, for 7 d)
  - 3 months after SRP, reevaluation of the periodontal status
  - Surgical regenerative periodontal therapy according to the clinical indication (clinical images above A-E):
    - After local anaesthesia, full thickness flaps were raised by preserving the interdental soft tissues
    - Careful scaling and root planing was performed
    - Granulation tissue was removed
    - Defects were filled with BDX (Cerabone®, Botiss Dental, Germany) and covered with CM (Collprotect®, Botiss Dental, Germany)
- Using a rigid periodontal probe (PCPUNC 15, HuFriedy, Chicago IL, USA) the following parameters were recorded at six sites per tooth prior to 6 months after surgery:
  - Probing pocket depth (PD), clinical attachment level (CAL) and vertical probing bone level (PBL)
  - Gingival Bleeding Index, Full Mouth Plaque Score, Bleeding on Probing were also determined
  - Periapical radiographs were taken at the same time points.

Results

- Healing was uneventful in all cases.
- Membrane exposure, exfoliation or inflammatory reactions related to the used biomaterials were not observed in any of the cases.

Clinical and intraoperative parameters (mean ±SD)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Baseline (prior to surgery)</th>
<th>6 months after surgery</th>
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<tbody>
<tr>
<td>PD</td>
<td>7.25 ± 1.28</td>
<td>4.37 ± 1.30</td>
</tr>
<tr>
<td>CAL</td>
<td>8.62 ± 2.44</td>
<td>6.62 ± 2.13</td>
</tr>
<tr>
<td>IDD</td>
<td>5.68 ± 2.56</td>
<td>-</td>
</tr>
<tr>
<td>IDW∟</td>
<td>2.93 ± 1.05</td>
<td>-</td>
</tr>
<tr>
<td>IDW ││</td>
<td>7.5 ± 1.58</td>
<td>-</td>
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</tbody>
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PD= pocket depth; CAL= clinical attachment level; IDD= intrabony defect depth; IDW∟= intrabony defect width perpendicular to root surface; IDW ││= intrabony defect width parallel to the root surface

- At six months, substantial clinical improvements evidenced by
  - CAL gain of up to 6 mm (37.5% sites; up to 3 mm 37.5% ; 3.50 ± 1.30, mean ± SD)
  - PD reduction up to 5 mm (25%, up to 3 mm 37.5% ; 3.12 ± 1.24, mean ± SD)
  - PBL of up to 5 mm were measured
  - The periapical x-rays revealed a defect fill of up to 97% (68.66 ± 18.72%, mean ± SD).

Conclusion

Treatment of deep intrabony defects with BDX and CM was characterized by excellent early wound healing and resulted in substantial clinical improvements.

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