Critical-size defect models have been developed to assess the biologic potential, efficacy and safety of new regenerative approaches prior to their use in humans. The objective of this report is to describe the animal model used to study the regenerative potential of periodontal mesenchymal cells.

**OBJECTIVES**

- Critical-size defect models have been developed to assess the biologic potential, efficacy and safety of new regenerative approaches prior to their use in humans. The objective of this report is to describe the animal model used to study the regenerative potential of periodontal mesenchymal cells.

**METHODS**

- **Study Population**: 9 healthy male beagle dogs aging 12 - 14 months.
- **T0**: Surgical supra-alveolar critical defects creation (figures A-D).
  - 2 months ligature and soft diet to allow plaque accumulation and defect chronification.
- **T1**: Ligature removal, oral hygiene and systemic antibiotics 7 days prior to regenerative therapy.
- **T2**: Regenerative surgery with intrasurgical measurements of the chronified defect (figures E-I).

**RESULTS & CONCLUSIONS**

- As showed in the histogram and table, periodontal defects remained with evident loss of attachment and furcation exposure after chronification (figure E). There was no statistically significant differences in the parameters analyzed (CEJ-AB, F-AB) between T0 and T2 (Paired t test, p>0.05).

<table>
<thead>
<tr>
<th></th>
<th>CEJ - AB</th>
<th>F-AB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defect creation T0</td>
<td>5.19 (±0.38)</td>
<td>3.65 (±0.47)</td>
</tr>
<tr>
<td>Defect creation T2</td>
<td>4.64 (±2.8)</td>
<td>3.99 (±0.67)</td>
</tr>
</tbody>
</table>

**Defect measurement in mm**

- **CEJ**: Cemento Enamel Junction
- **AB**: Alveolar Bone Crest
- **F**: Furcation Fornix

**Conclusions**: The chronified supra-alveolar periodontal defect induced in the beagle dog closely resembles challenging periodontal defects in humans and proved to be a valid model for the study of periodontal regeneration with cell therapy.