Interproximal periodontal intrabony defects

Prevalence, localization and etiological factors

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Abstract. The purpose of the present investigation was to study the distribution of interproximal periodontal intrabony defects as related to age, sex and localization, and to examine the relationship between some possible etiological factors and the occurrence of intrabony defects.

A total of 209 adult patients presenting for dental treatment at the Royal Dental College in Aarhus participated in this study. The patients were subjected to a questionnaire and were examined clinically and radiographically. All osseous defects in the radiographs were recorded but only those with a depth and width of at least 2 mm were considered periodontal intrabony defects. Only 18% of the participants had one or more periodontal intrabony defects but the prevalence was higher in older than in younger age groups. While periodontal intrabony defects occurred with the same frequency on the various tooth types, more defects were found on distal than on mesial surfaces. The presence of periodontal intrabony defects correlated with loss of attachment, increased tooth mobility, a wide interproximal space and open mesio-distal contact relationships between the teeth.

Destructive periodontitis caused by bacterial plaque involves resorption of alveolar bone supporting the teeth. The resorption of bone may occur to the same extent around a number of adjacent teeth. However, in some cases the resorption occurs to a varying extent on neighboring teeth or tooth surfaces resulting in the formation of intrabony defects. Deepened periodontal pockets associated with these defects are named intrabony pockets.

The presence of intrabony pockets presents specific therapeutic problems. Elimination of these pockets often requires extensive surgical correction of bone resulting in sacrifice of bone support for the involved and the adjacent teeth (Friedman 1955, Goldman & Cohen 1958), although a study by Rosling et al. 1976 has indicated that surgical pocket elimination using a Widman flap operation (Ramfjord & Nissle 1974) followed by meticulous postoperative plaque control results in healing of intrabony defects with new attachment and bone fill. Elaborate surgical procedures aimed at regenerating lost periodontal tissues in intrabony defects have also been advocated for elimination of intrabony pockets (Schallhorn 1968, Robinson 1969, Haggerty & Maeda 1971, Ellegaard et al. 1974).
Deep and narrow osseous irregularities:
  $AC > 2$ mm, $BC \leq 2$ mm, $CE > 1$ mm.
Wide and shallow osseous irregularities:
  $AC \leq 2$ mm, $BC > 2$ mm, $CE > 1$ mm.

Das Diagramm zeigt Haltepunkte die angewendet wurden, um die auf den Röntgenbildern sichtbaren knöchernen Defekte morphologisch als intraossöse Defekte oder knöcherne Unregelmäßigkeiten ansprechen zu können.
A bezeichnet das am weitesten koronal befindliche Niveau mit normaler Breite des Desmodont. B bezeichnet das am weitesten koronal befindliche Niveau der Knochenleiste. C bezeichnet den Schnittpunkt zwischen der Wurzeloberfläche und einer Geraden durch B.
Diese Gerade ist parallel zu der Konstruktionsgeraden (DE) gezogen worden, die die Schmelz- zementgrenzen der Nachbarzähne des Defektes miteinander verbindet.

Parodontale intraossöse Defekte:
  $AC > 2$ mm, $BC > 2$ mm, $CE > 1$ mm.
Tiefe und enge knöcherne Unregelmäßigkeiten:
  $AC > 2$ mm, $BC \leq 2$ mm, $CE > 1$ mm.
Breite und flache knöcherne Unregelmäßigkeiten:
  $AC \leq 2$ mm, $BC > 2$ mm, $CE > 1$ mm.

Diagramme illustrant les repères utilisés sur les radiographies des lésions osseuses pour distinguer les lésions parodontales intra-osseuses des irrégularités osseuses, en se basant sur la morphologie.
A représente le niveau le plus coronaire où l'espace desmodontal présente une largeur normale. B indique le niveau coronaire de la crête alvéolaire. C est le point d'intersection de la surface radiculaire avec une ligne passant par B et parallèle à une ligne de construction (DE) reliant les jonctions cément-émail des dents adjacentes à la lésion.
Lésions parodontales intra-osseuses:
  $AC > 2$ mm, $BC > 2$ mm, $CE > 1$ mm.
Irrégularités osseuses profondes et étroites:
  $AC > 2$ mm, $BC \leq 2$ mm, $CE > 1$ mm.
Irrégularités osseuses larges et peu profondes:
  $AC \leq 2$ mm, $BC > 2$ mm, $CE > 1$ mm.

Epidemiological data indicating how often intrabony defects may present a complication in general dental treatment are sparse. An increasing frequency of periodontal intrabony defects with age has been observed in studies of human skull material (Saari et al. 1968, Larato 1969, 1970a).

Periodontal intrabony defects have also been observed in skulls of children (Larato 1970b). As regards the teeth and tooth surfaces most frequently involved, varying findings have been reported (Larato 1969, 1970a).

On the basis of clinical examination,
the half-circle with a radius of 2 mm, the osseous defect was recorded as a periodontal intrabony defect.


Une grille calibrée destinée à faciliter la distinction entre les différents types de lésions osseuses est projetée sur une radiographie montrant une lésion parodontale intra-osseuse. La grille est placée de manière à ce que les lignes horizontales soient parallèles à une ligne imaginaire reliant les jonctions cément-émail des dents adjacentes à la lésion. La ligne inférieure de la grille passe par le niveau coronaire de la crête osseuse interproximale, et le centre du demi-cercle est placé sur la surface radiculaire de la dent atteinte. Lorsqu'il n'y avait pas de tissu osseux dans le demi-cercle (rayon 2 mm), la lésion était enregistrée comme lésion parodontale intra-osseuse.

Prichard (1960) reported that intrabony defects occur most frequently on the posterior teeth and particularly on first molars in the mandible. In a similar study, Manson & Nicholson (1974) observed more intrabony defects in the maxilla than in the mandible. In a clinical investigation employing x-rays, Gilmore (1970) found a prevalence of periodontal intrabony defects of 10% in a group of patients presenting for general dental treatment. Most of the defects were located in the mandible. He also reported that a correlation exists between periodontal intrabony defects and loss of periodontal attachment, increased tooth mobility and dental calculus. This study seems to be the only one in the literature in which possible etiological factors are related to the occurrence of intrabony defects. The contradictory results on the occurrence and distribution of periodontal intrabony defects may be due to differences in the material examined, the methods of examination and the criteria used to define an intrabony defect.

The purpose of this study was to examine in radiographs the distribution of interproximal periodontal intrabony defects as related to sex, age and localization, and to
Table 1. Sex distribution of 209 individuals with and without interproximal osseous defects
Geschlechtsverteilung bei 209 Probanden mit und ohne approximale Knochendefekte
Distribution par sexe des 209 sujets avec et sans lésions osseuses interproximales

<table>
<thead>
<tr>
<th></th>
<th>With defects</th>
<th>Without defects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>24 21%</td>
<td>91 79%</td>
<td>115 55%</td>
</tr>
<tr>
<td>Males</td>
<td>23 24%</td>
<td>71 76%</td>
<td>94 45%</td>
</tr>
<tr>
<td>Total</td>
<td>47 23%</td>
<td>162 77%</td>
<td>209 100%</td>
</tr>
</tbody>
</table>

$x^2 = 0.21$
N.S.

examine the relationship between possible local etiological factors and the occurrence of periodontal intrabony defects.

Material and Methods

A total of 209 individuals between 15 and 70 years of age presenting for dental treatment at the Royal Dental College in Aarhus were included in this study. Before any treatment was undertaken they were subjected to a questionnaire and were examined clinically and radiographically. Besides information about name, age, sex, and occupation, there were questions about bruxism, smoking habits, food impaction and the history of previous dental treatment. The clinical examination was performed by one of the authors (IMN) and comprised the following assessments:

Oral hygiene status – Plaque Index (Silness & Löe 1964).
Gingival conditions – Gingival Index (Löe & Silness 1963).
Retention factors – Retention Index (Björby & Löe 1967).
Tooth mobility – Mobility Index (Ramfjord 1959).
Pocket depth – Pocket depth measurements to the nearest millimeter with a 0.8 mm thick periodontal probe which was marked at 3, 5, 7, 9, 11, 13 and 15 mm (Glavind & Löe 1967).
Attachment level – Distance from the cemento-enamel junction to the bottom of the pocket measured with the same probe as the pocket depth (Ramfjord 1959, Glavind & Löe 1967).
Tooth contact relationships – Scored according to the following criteria by use

Table 2. Age distribution of 209 individuals with and without periodontal intrabony defects
Altersverteilung bei 209 Probanden mit und ohne approximale Knochendefekte
Distribution par âge des 209 sujets avec et sans lésions parodontales intra-osseuses

<table>
<thead>
<tr>
<th>Age in years</th>
<th>With defects</th>
<th>Without defects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–29</td>
<td>3 4%</td>
<td>68 96%</td>
<td>71 34%</td>
</tr>
<tr>
<td>30–44</td>
<td>11 18%</td>
<td>52 82%</td>
<td>63 30%</td>
</tr>
<tr>
<td>45–59</td>
<td>13 29%</td>
<td>32 71%</td>
<td>45 22%</td>
</tr>
<tr>
<td>60–</td>
<td>11 37%</td>
<td>19 63%</td>
<td>30 14%</td>
</tr>
<tr>
<td>Total</td>
<td>38 18%</td>
<td>171 82%</td>
<td>209 100%</td>
</tr>
</tbody>
</table>

$x^2 = 19.68$
$P < 0.001$
Table 3. Distribution of 38 individuals with periodontal intrabony defects as related to the number observed in each person

<table>
<thead>
<tr>
<th>Number of defects</th>
<th>Number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

of dental floss, and a periodontal probe with a thickness of 1 mm:

0: Close contact where dental floss could hardly pass
1: Close contact where dental floss could easily pass
2: Open contact where the point of the probe could not pass (Corresponding to less than 1 mm)
3: Open contact where the probe could easily pass (more than 1 mm).

The radiographs taken according to the method described by Eggen (1971) were examined using an x-ray viewer which magnified the picture two times. Interproximal osseous defects in the radiographs were recorded and divided into the following three types on the basis of morphology as indicated in Fig. 1:

Periodontal intrabony defects defined as defects with a depth (AC) and width (BC) of 2 mm or more. The distance CE should be at least 1 mm.

Narrow and deep osseous irregularities are defects with a depth (AC) of at least 2 mm and a width (BC) smaller than 2 mm. The distance CE should be at least 1 mm.

Wide and shallow osseous irregularities are defects with a depth (AC) smaller than 2 mm and a width (BC) of 2 mm or more. The distance CE should be at least 1 mm.

The differentiation among the various types of defects was facilitated by a template mounted on the x-ray viewer. The design and use of the template are shown in Fig. 2. In addition the width of the interproximal space was measured at the level of the bone crest (B in Fig. 1). Each radiograph was examined independently by two of the authors (IMN and TK). Agreement in classification of the various types of defects

Table 4. Localization of periodontal intrabony defects as related to tooth type and tooth surface

<table>
<thead>
<tr>
<th>Molars</th>
<th>Premolars</th>
<th>Canines and Incisors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mesial</td>
<td>distal</td>
</tr>
<tr>
<td>Maxilla</td>
<td>3</td>
<td>4 %</td>
</tr>
<tr>
<td>Mandible</td>
<td>6</td>
<td>8 %</td>
</tr>
<tr>
<td></td>
<td>12 %</td>
<td>16 %</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>55 %</td>
</tr>
</tbody>
</table>

χ² = 5.88  P < 0.02 (mesial/distal surfaces)
χ² = 0.57  N.S. (Molars/Premolars/Canines and Incisors)
χ² = 0.65  N.S. (Maxilla/Mandible)
Table 5. Distribution of 21 individuals with deep narrow osseous irregularities as related to the number observed in each person

<table>
<thead>
<tr>
<th>Number of irregularities</th>
<th>Number of individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

was obtained in 90% of the cases. In cases of disagreement the radiographs were studied by the two examiners together and a decision made on the basis of discussion.

Results

The sex distribution of individuals with or without periodontal osseous defects is shown in Table 1. Twenty-one percent of the females and 24% of the males demonstrated at least one osseous defect. Since there was no statistical significant difference between the prevalence of defects in males and females, the data from the 209 individuals analyzed in the study were pooled.

Out of a total of 47 (23%) individuals with osseous defects, 38 (18%) presented one or more intrabony defect (Tables 1 and 2). The age distribution of individuals with or without periodontal intrabony defects is shown in Table 2. Intrabony defects occurred most frequently in the older age groups.

Thirty-seven percent of the individuals older than 60 years had at least one periodontal intrabony defect, whereas this was found in only 18% of those between 30–44 years of age. The difference in prevalence of defects among the age groups was statistically significant ($P < 0.001$).

In the 38 individuals presenting one or more intrabony defects, a total of 75 periodontal intrabony defects was found. The distribution of individuals as related to the number of defects in each person is seen in Table 3. Most of the individuals had only one defect.

The localization of the 75 intrabony defects as related to tooth type and tooth surface is shown in Table 4. Only small variations were observed in the frequency of

Table 6. Localization of deep narrow osseous irregularities as related to tooth type and tooth surface

<table>
<thead>
<tr>
<th></th>
<th>Molars</th>
<th></th>
<th>Premolars</th>
<th></th>
<th>Canines and Incisors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mesial</td>
<td>distal</td>
<td>mesial</td>
<td>distal</td>
<td>mesial</td>
<td>distal</td>
</tr>
<tr>
<td>Maxilla</td>
<td>0</td>
<td>0 %</td>
<td>2</td>
<td>6 %</td>
<td>1</td>
<td>3 %</td>
</tr>
<tr>
<td>Mandible</td>
<td>0</td>
<td>0 %</td>
<td>4</td>
<td>11 %</td>
<td>1</td>
<td>3 %</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0 %</td>
<td>6</td>
<td>17 %</td>
<td>2</td>
<td>6 %</td>
</tr>
</tbody>
</table>

$x^2 = 23.56$  $P < 0.001$ (mesial/distal surfaces)

$x^2 = 11.86$  $P < 0.001$ (Molars/Premolars/Canines and Incisors)

$x^2 = 13.44$  $P < 0.001$ (Maxilla/Mandible)
Fig. 3. Plaque index, gingival index and retention index for teeth with periodontal intrabony defects and contralateral teeth without defects.

Plaqueindex, Gingivalindex und Retentionsindex für Zähne mit parodontalen intraossösen Defekten und für kontralaterale Zähne ohne Defekte.
Indice de Plaque, Indice Gingival et Indice de Rétention pour les dents avec lésions parodontales intra-osseuses et pour les dents controlatérales sans lésions.

defects on the various tooth types, but a significantly higher number occurred on distal surfaces than on mesial surfaces ($P < 0.02$).

A total of 46 osseous irregularities were found in 31 individuals. Thirty-six of these defects were narrow and deep irregularities. Their distribution as related to the number in each person is seen in Table 5. As for periodontal intrabony defects most individuals had only one osseous irregularity. As can be seen in Table 6, a significantly higher prevalence of narrow and deep irregularities was observed adjacent to anterior teeth than to other tooth types ($P < 0.001$) Narrow and deep irregularities also occurred more frequently on distal than on mesial tooth surfaces ($P < 0.001$) and most frequently in the mandible ($P < 0.001$). Only 10 wide and shallow irregularities

Table 7. Loss of attachment and width of the interproximal space for teeth with periodontal intrabony defects and contralateral teeth without defects

<table>
<thead>
<tr>
<th></th>
<th>Tooth with defect</th>
<th>Control tooth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{x}$ mm</td>
<td>s.d.</td>
</tr>
<tr>
<td>Loss of attachment</td>
<td>8.39</td>
<td>2.20</td>
</tr>
<tr>
<td>Interproximal space</td>
<td>4.60</td>
<td>3.49</td>
</tr>
</tbody>
</table>
were observed in the examined patient population. Therefore the frequency of these defects was not subjected to statistical analysis.

The significance of local factors which might possibly have some influence on the occurrence of intrabony defects was evaluated by comparing the occurrence of these factors on 62 teeth with periodontal intrabony defects and on contralateral teeth without defects. The sign test was used for statistical analysis of the observed differences. No significant differences were found as regards the plaque situation, gingival conditions, and retention factors (Fig. 3). However, significantly more loss of attachment, higher tooth mobility, more open contact relationships and a wider interproximal space were observed on teeth with intrabony defects as compared to the control teeth (Table 7, Fig. 4). The mean loss of attachment on surfaces with intrabony de-

**Table 8.** Distribution of the study population and the total Danish population* as related to occupation

<table>
<thead>
<tr>
<th></th>
<th>Study population %</th>
<th>Danish population %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-employed</td>
<td>4.8</td>
<td>8.7</td>
</tr>
<tr>
<td>Salaried employees</td>
<td>22.4</td>
<td>31.0</td>
</tr>
<tr>
<td>Skilled wage earners</td>
<td>7.5</td>
<td>7.8</td>
</tr>
<tr>
<td>Unskilled wage earners</td>
<td>14.3</td>
<td>19.4</td>
</tr>
<tr>
<td>Assisting wives</td>
<td>1.0</td>
<td>2.8</td>
</tr>
<tr>
<td>Not economically active</td>
<td>50.0</td>
<td>30.3</td>
</tr>
</tbody>
</table>

*Statistical Yearbook, vol. 82, Danmarks Statistik, Copenhagen 1978.
fects was 8.39 mm ± 2.20, whereas it was 6.31 mm ± 2.51 on the surfaces of the control teeth. No significant differences were found between individuals with and without periodontal intrabony defects as regards bruxism, smoking habits, food impaction and the history of previous dental treatment. All local factors examined occurred to the same extent on teeth with narrow and deep osseous irregularities as on contralateral teeth.

**Discussion**

In the patient population examined in the present study, the frequency of periodontal intrabony defects increased with age. This observation is in agreement with the results of previous studies of human skull material and radiographs of patients (Gilmore 1970, Larato 1970a).

Also the observation that approximately 60% of the individuals with periodontal intrabony defects had only one single defect corroborates reports presented by Gilmore (1970) and Larato (1970a). Thus, in general the formation of intrabony defects as a result of periodontitis seems to occur as an isolated phenomenon rather than a specific pattern of bone resorption.

In a clinical study on the effect of plaque control on the healing of intrabony defects, Rosling et al. (1975) recorded an average of approximately 12 intrabony defects in each patient. The higher number of defects observed by these investigators is most likely due to the fact that the examined patients all suffered from advanced periodontal disease. However, differences in the criteria used to define a periodontal intrabony defect may also have contributed to this variation.

In the present study only defects with a depth and width of at least 2 mm were considered as periodontal intrabony defects. A depth of 2 mm was chosen because there is a connective tissue attachment of 1–2 mm between the bottom of the periodontal pocket and the bottom of the intrabony defect (Waerhaug 1952). Thus, periodontal pockets associated with osseous defects of a depth less than 2 mm may in fact not extend below the level of the bone crest. This means that it is not an intrabony pocket which requires bone contouring or establishment of a new connective tissue attachment in order to be eliminated.

The requirement that the defects on the radiographs should be at least 2 mm wide reduces the risk of including defects representing a widening of the periodontal membrane space resulting from traumatic occlusion. Elimination of pockets associated with this type of defect also does not require bone contouring or establishment of a new connective tissue attachment in order to be eliminated.

The prevalence of intrabony defects observed in the present study (Table 3) is considerably lower than that reported by Larato (1970a). He observed a frequency of 36% in skulls of individuals between 17 and 29 years of age and 72% in those of individuals older than 60 years. This discrepancy is probably due mainly to the different methodology of examination.

Intrabony defects which do not involve the lingual or buccal cortical bone plate or are located on the lingual or buccal aspect of the teeth may not appear on radiographs (Goldman et al. 1957, Goldman & Stallard 1973). Therefore, in the present study, the frequency of periodontal intrabony defects is most likely underestimated. However, elimination of intrabony pockets placed interproximally generally represents greater problems in surgical treatment than those associated with defects on the buccal or lingual aspect of the teeth, since elimination of these pockets does not involve sacrifice of supporting bone on neighboring teeth. The results of the present study may
therefore offer a reasonably good expression of the extent to which intrabony defects may complicate surgical elimination of pathological, deepened pockets in various age groups of patients.

In terms of occupation, the study population was similar to that of the total Danish population (Table 8). This suggests that the frequency of periodontal intrabony defects observed in this study does not differ from that of a general Danish patient population.

In a radiographic study of patients attending the Tufts University School of Dental Medicine, USA, Gilmore (1970) observed that approximately 5% of patients between 30 and 44 years of age had one or more intrabony defect. This number is considerably lower than that observed in the same age group (18%) in the present study. This discrepancy may be explained partly by the fact that the study of Gilmore did not include the anterior segments of the jaws. However, variations in study population and methodology of study may also have contributed to the different findings.

Discrepancies also exist between the results of this study and that of previous studies regarding the distribution of defects by jaws, tooth type and tooth surfaces. In the present study the frequency of intrabony defects on the various tooth types was similar, while a higher prevalence has been reported on varying teeth in other studies (Saari et al. 1968, Larato 1969, Manson & Nicholson 1974).

The higher frequency of defects observed adjacent to distal than to mesial surfaces of the teeth is in disagreement with reports by Larato (1970a) who observed most defects on the mesial surfaces of the teeth. Furthermore, Gilmore (1970) did not find any differences between mesial and distal tooth surfaces.

The relationship between the presence of intrabony defects and various factors associated with periodontal disease has been studied (Gilmore 1970). Among all factors examined it was found that subgingival calculus, loss of attachment and increased tooth mobility were related to the occurrence of intrabony defects. In the present study, as in that of Gilmore (1970), the presence of intrabony defects correlated with increased tooth mobility and loss of attachment. In addition it was found in the present study that intrabony defects were associated with a wide interproximal space and an open mesio-distal contact relationship between the teeth. This observation corroborates the suggestion of Prichard (1967) that a wide interproximal bone septum predisposes to the formation of intrabony defects.

Studies have demonstrated that the microbial flora varies greatly from one tooth surface to another in the same mouth with respect to its composition (Listgarten & Helldén 1978, Listgarten et al. 1978). Since specific types of bacteria seem to be associated with periodontal disease, the scattered distribution of intrabony defects observed in this study may very well be explained by the establishment of a particular pathogen flora on individual tooth surfaces.

Zusammenfassung

Intraossöse, approximal-parodontale Defekte. Vorkommen, Lokalisation und ätiologische Faktoren

Die Verfasser vorliegender Untersuchung beabsichtigten die Verteilung intraossöser approximal-parodontaler Defekte auf das Lebensalter, das Geschlecht und die Lokalisation zu studieren und Zusammenhänge zwischen denkbaren ätiologischen Faktoren und dem Vorkommen dieser intraossösen Defekte zu untersuchen.

An dieser Studie nahmen zweihundertneun erwachsene Patienten, die die königl. zahnärztliche Hochschule in Aarhus zur Zahnbehandlung aufgesucht hatten, teil. Die Patienten füllten einen Fragebogen aus und wurden kli-

Résumé
Les lésions parodontales interproximales intra-osseuses.
Prévalence, localisation et facteurs étiologiques
Le but de la présente étude était de déterminer la distribution des lésions parodontales interproximales intra-osseuses par rapport à l’âge, au sexe et aux localisations et d’examiner la relation existant entre certains facteurs étiologiques possibles et la présence de lésions intra-osseuses.
Cette étude a été effectuée avec la participation de 209 patients adultes qui s’étaient adressés pour traitement dentaire à l’Institut Dentaire d’Aarhus. Les patients ont répondu à un questionnaire et ils ont subi un examen clinique et radiographique. Toutes les lésions osseuses visibles sur les radiographies ont été enregistrées, mais seules les lésions d’une profondeur et d’une largeur d’au moins 2 mm ont été considérées comme lésions intra-osseuses. Chez 18 % seulement des participants on a trouvé une ou plusieurs lésions intra-osseuses, mais la prévalence était plus élevée dans les groupes plus âgés que chez les plus jeunes. Alors que les lésions parodontales intra-osseuses se présentaient avec la même fréquence au niveau des différents types de dents, on a trouvé plus de lésions au niveau des faces distales que des faces mésiales. La présence de lésions parodontales intra-osseuses était en corrélation avec la perte de l’attachement, l’augmentation de la mobilité dentaire, l’élargisse-

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