Formation Ability of Secondary Dentin in Deciduous Teeth

by

Sohiti ISOKAWA* and Yoshiisa TODA*

Histological researches of teeth which have been published so far are concerned with permanent teeth in most cases. Consequently, milk teeth are not so often employed as a material, because most dental histologists have ignored the significance of deciduous teeth up to date. It is not too much to say that our present knowledge of dental histology is chiefly derived from that of permanent teeth. Of late, teeth of children have come to receive a new notice with the rapid strides in the realm of pedodontics. Also in the field of dental histology, deciduous teeth have been gradually brought into the limelight by many investigators from various points of view. Some items regarding deciduous dentition were investigated by the present authors. One of them which deals with the formation ability of secondary dentin is reported in this paper.

In spite of the significance of formation ability of secondary dentin in the operative dentistry on children, this problem has not hitherto been given any attention on the part of dentists and dental investigators. That is the reason why most of them have followed opinions of CHURCHILL and others. These opinions maintain that the pulp tissue of deciduous teeth reacts without bringing about any formation of protective dentin to external stimuli.

The authors have regarded a possibility very important whether or not the formation ability of secondary dentin takes place in deciduous teeth. Therefore, this problem had been examined from the statistical viewpoint. As a result of this examination, the following conclusion is obtained that the formation ability of secondary dentin in deciduous teeth is all the same with that of permanent teeth.

Materials, Methods and Results

For study purposes, one hundred and eighty (180) extracted teeth from a number of children patients in several dental offices were used. Most of them showed their resorpted teeth for tooth-exchange. These resorpted roots showed to various extents, and their crowns were diversely abraded through mastication. Conspicuously decayed teeth were all omitted from the material selection.

Longitudinal ground sections were made from these teeth both labiolingually and buccolingually and stained with carbol-fuchsin.

After the minute microscopical observation of these sections, it has been revealed that the formation of secondary dentin took place also in deciduous teeth to various extents; that is to say, remarkable, moderate, slight and negligible degrees. The findings of secondary dentin formation thus obtained were statistically recorded. For the present

* 磯川宗七, 戸田善久 : Dept. of Anatomy, Nihon Univ. School of Dentistry
purpose histological findings and formation degrees of secondary dentin are not included in this report.

The specimens were classified into the following two categories: secondary dentin positive group and negative group. It is very difficult to judge where the tooth had located in the jaw due to deformations through root resorption and crown abrasion. Therefore, these isolated deciduous teeth were roughly divided into 3 groups regardless of their being upper and lower, right and left. That is, they are milk incisors, milk canines and milk molars. As regards the formation ability of secondary dentin, these 3 groups were compared one another. The results of this comparison are given on the following table.

TABLE 1

<table>
<thead>
<tr>
<th>No. of teeth</th>
<th>Milk Incisor</th>
<th>Milk Canine</th>
<th>Milk Molar</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation-negative</td>
<td>79 (2.5%)</td>
<td>53 (5.7%)</td>
<td>48 (8.3%)</td>
<td>180 (9.0%)</td>
</tr>
<tr>
<td>Formation-positive</td>
<td>77 (97.5%)</td>
<td>50 (94.3%)</td>
<td>44 (91.7%)</td>
<td>171 (95.0%)</td>
</tr>
</tbody>
</table>

Discussion

Up to recent years, some dentists of old school have vaguely thought that there is no evidence that the deposition of protective dentin takes place in deciduous teeth. However, in 1941 Ireland detected in some cases the secondary dentin formation in deciduous teeth. He mentioned that deciduous teeth have the ability of secondary dentin formation as well as permanent teeth. Therefore, the authors have undertaken the present study to confirm whether the former or the latter statement is true. The results of this research is given on Table 1. Based on this result, the formation ability of secondary dentin is considered to be nearly equal among the teeth of these 3 groups. To be more in detail, secondary dentin is found in teeth over 90 percent out of each group. According to this result, the authors are inclined to conclude that the opinion of Ireland is scientifically sound. The authors eagerly hope that this evidence will be accepted as a fact in the operative dentistry of children.

References