A Case of an Ectopic Tooth in the Maxillary Sinus

by

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Developmental anomalies of teeth are divided into five types; anomalies in size and shape, number, position and occlusion, eruption, and in hypoplasia of the teeth. Among them, we sometimes find impacted teeth including ectopic teeth as anomalies in position of the teeth[1]. Usually, impacted teeth are located in or adjacent to the normal site. It is uncommon for an impacted tooth to be located or erupt in a place remote from the normal site and this condition is called “ectopia”[2]. It is associated with secondary lesions, such as inflammation, and at times other anomalies of the teeth are revealed such as shape and size.

Recently, we experienced a case of an ectopic malformed tooth of a left impacted third molar which was located in the maxilla adjacent to the infraorbital region associated with sinusitis.

Case Report

A 45-year-old Japanese woman was admitted to the Dental Clinic of Asahi General Hospital because of pain and swelling in the left buccal region in July, 1979. On her past medical history she suffered from an ovarian tumor which was surgically removed about 10 years ago. She was operated on for right and left maxillary sinusitis at the Otolaryngologic Clinic of Asahi General Hospital in 1978. But in January, 1979, she noticed pain and swelling of the buccal regions again and had an operation for right and left maxillary sinusitis at another hospital. In spite of the operation, the symptoms never improved until readmission to Asahi General Hospital. At the time of her first visit to the Dental Clinic of Asahi General Hospital a diffuse swelling in the left buccal region was found. Slight swelling of the mandibular lymphnodes was noticed on both sides.

The following was seen intraorally:

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<th>Bridge</th>
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<td>Cr</td>
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In: Inlay, Cr: Crown, Af: Amalgam Filling

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She had never had her upper third molars extracted. A panoramic radiograph revealed an impacted upper left third molar in the left maxilla adjacent to the infraorbital regions (Fig. 1). Division frontal tomography also showed that this tooth was bordering on the sinus of the left maxillary bone (Fig. 2).

Treatment

On August 20, 1980, she had an operation to extirpate the impacted tooth and maxillary sinusitis under local anesthesia. At the time of operation, the tooth was located in the same position as pointed out by the X-ray film and a part of it projected into the maxillary sinus. A complete extraction was done. The symptoms of the left maxillary sinusitis improved. Macroscopically, the extracted tooth revealed a bizarre shape with a malformed crown on both the upper and lower sides. Each side had
three cusps (Fig. 3). A radiograph of the extracted tooth showed the presence of a small, narrow pulp chamber (Fig. 4).

Discussion

Impacted teeth are common findings among patients seen in dental practice. KRAMER & WILLIAMS[3] revealed that 18.2% of 3,745 patients had one or more impactions and among them 62.6% were maxillary third molars. A similar report was presented by AITASALO[4]. The most affected areas of impaction are maxillary third molars, followed by mandibular third molars, maxillary canines and mandibular first and second premolars[2]. However, other reports have stated that maxillary canines are the most frequently impacted teeth[1].

As for the location of maxillary impacted teeth, it is uncommon in the maxillary sinus. Eight cases of maxillary ectopic teeth have been reported according to our investigation. Their details are shown in Table 1: [5], [6], [7], [8], [9], [10], [11]. They have variable symptoms, for example, pain, swelling and TMJ syndrome. In the maxillary region, especially when an impacted tooth is situated in the maxillary sinus, nasal symptoms are sometimes remarkably presented if it shows an inflammatory condition. The present case showed the symptoms of maxillary sinusitis.

The etiology of ectopic teeth is not very clear but several theories have been proposed to explain the phenomenon. Most ectopic teeth are derived from tooth germs, whereas a few come from dermoid tissue. As for the former, in the early stages of tooth development, a tooth germ develops in an abnormal direction, and later or at the time of eruption, the tooth changes direction due to trauma and other reasons[12]. STRAETEN & APPELMANS[6] reported on one case in which an ectopic tooth was situated along the orbital floor associated with the sphenomaxillary fissure. They

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<th>Authors</th>
<th>Year</th>
<th>Sex</th>
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<tr>
<td>Harvey[5]</td>
<td>1927</td>
<td>Male</td>
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<td>Orbital floor in association with the maxillary sinus.</td>
<td>Pain and discharge into the mouth from the region of the right molar teeth.</td>
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<td>Thoma</td>
<td>1969</td>
<td>No detail</td>
<td></td>
<td>Maxillary sinus.</td>
<td>No detail.</td>
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<tr>
<td>Kawana et al.</td>
<td>1985</td>
<td>Female</td>
<td>45</td>
<td>Maxillary sinus.</td>
<td>Pain and swelling in buccal region.</td>
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conjectured that the cause of the ectopia was that there was an upward migration of one or two dental follicles during development, so that the future tooth from such follicles would make its appearance in an abnormal situation in their assumption. A similar case was also reported by Volmer\(^1\). Then Thoma\(^2\) reported that the mobile force of impacted teeth was due to the growing power of the dental follicle. Sutton\(^3\) suggested that the force directed toward the crown as a result of a reversal in the direction of blood flow passing through the pulpal vessels, could be a mechanism which could produce migration and eruption of non-erupted teeth. Regarding the latter, Subramaniam\(^4\) described that the cause of an ectopic eyelid tooth in his report originated from dermoid tissue due to the presence of skin and skin appendages, such as hair follicles and sebaceous glands, in the lesion. Because it is difficult to explain the presence of teeth in this case, the former explanation is suitable for the genesis of the present case since our case had no dermoid tissue. Probably it was formed and migrated to that position at an early stage because it was located in an ectopic position and associated with other abnormalities of the tooth due to tooth development at the time of formation.

Generally, ectopic and impacted teeth reveal similar tendencies to that of original tooth formation. However, the present case also had other anomalies in the shape of the crown showing tri-cuspid on both sides. It is said that anomalies in shape are connected with the enamel organ and differentiation, proliferation and metabolic activity of Hertwig's epithelial sheath\(^5\). Tooth anomalies are derived from systemic developmental causes, pathological causes and mutation.

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References

