Compound Odontoma

—Report of Three Cases—

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It is said that odontoma was first reported in 1821 by Oudet. Clinical and histopathological reports have been made by many researchers. This tumor is proved to be rare one among odontogenic ones¹⁾. In three cases of compound odontoma, being comparative rare, clinical and histopathological studies are made on it and outline is to be reported with analysis of available literature hoping to add some amount of study to the studies made by our forefathers.

Case Report

Case 1:

The patient, a 11-year-old Japanese girl, was sent to the First Department of Oral Surgery, Fukuoka Dental College Hospital, on March 21, 1980, for discomfort in the lingual side of gingiva on the left mandible, premolar site. She had a slight abnormality in the lingual gingiva of the lower premolar on the left since around March 10, 1980. Intraoral examination revealed that $\overline{cd}$ were still existing and $\overline{34}$ were not erupted yet. Bone-like hard painless swelling, approximately 5mm in diameter, was recognized by palpation in the lingual gingiva of $\overline{d}$. The surface was rough and gingiva around it looked slightly red.

With orthopantomogram and dental radiograph, a impacted tooth was observed at the apex area of $\overline{11}$, which was considered to be $\overline{3}$. Furthermore, various sizes and shapes of calcified mass were observed in the area between apex of $\overline{2}$ and crown of $\overline{4}$. They were mostly the size of the tip of a thumb and the border area was not clear (Fig. 1).

The family, past history and clinical examination were not remarkable.

Treatment and prognosis; The operation was performed on March 27, 1980 under general anesthesia. Cervix reaching $\overline{2-6}$ was opened horizontally. Then vertical incision was made from central buccal in crown of $\overline{2}$ and $\overline{6}$ towards transitional buccal gingiva to retract gingiva periosteum valve buccally. Then the impacted $\overline{3}$ and the remaining $\overline{cd}$ were extracted. When the bone covering the swelling lump was removed with a chisel the swelling lump was visible, which was surrounded with connective tissue like film and was the size of the tip of a thumb. The lump was in an ordinary completely removed method together with connective tissue like film. The

Fig. 1 Case 1 : Radiographic findings
(Orthopantomogram)

Fig. 2 Case 1 : Postoperative radiographic
findings after 2 years

extraction cavity was temporarily closed as done in immediate autotransplantation of bone-chips graft. $\overline{4-2}$ were splinted with metal wires to prevent mobility, and finalized the operation. Postoperative condition was fair and the patient left the hospital 6 days after the operation. The splint was removed on the 43th postoperative day. Now, the 2nd postoperative year, $\overline{4}$ erupted and the prognosis seems to be favorable clinically and radiographically as shown in Fig. 2 (Fig. 2).

Macroscopic observation of the extracted mass; The extracted swelling mass was the size of the tip of a thumb and was covered with thick connective tissue. In the inside of the tumor there were 84 different shapes of denticles and particles. When the mass was radiographically examined, in the comparatively large denticles, the finding like pulp cavity was observed (Fig. 3).

Histopathological findings; A few extracted mass shown in Fig. 3 were decalcified and embedded in paraffin. $8\mu\text{m}$ of the cut specimens were stained with hematoxylin

Fig. 3 Case 1 : Macroscopic observation of the extracted mass.

and eosin for microscopic examinations. The enucleated tissue which had a shape of a tooth was mainly of dentin. It also had pulp cavity with remarkable atrophied pulp. Dentinal tubules on pulp side run partially irregularly. Cement exists in the root with apical foramen at the tip. Enamel is supposed to have existed at the crown before decalcification. The enucleated tissues which were not in the shape of a tooth were of enamel, dentin, and cement with pulp cavity. The constitution seems histologically quite normal. The findings assumed to be those of some remains of organic component of enamel and enamel organs are observed at the crown where enamel was supposed to have been existing before decalcification. With above observations, this case was diagnosed as compound odontoma (Fig.4).

Case 2:

The patient, a 8-year-old girl, was sent to the First Department of Oral Surgery, Fukuoka Dental College Hospital, on January 31, 1981, for delayed eruption of 21. Although she had noticed eruption of 12 in February, 1980, she had no treatment because of no subjective symptom. However, her family dentist has pointed out a delayed eruption of 21 and she was referred to our hospital for evaluation. Intraoral examination revealed that ba were still existing and 21 were not erupted yet. Bone-like hard painless swelling was recognized by palpation in the labial gingiva of a. The surface was smooth with slightly red.

X-ray examination revealed that impacted 21 were observed at the apex of ba and various sizes and shapes of calcified mass were observed. This mass was identified

Fig. 4 Case 1 : Histopathologic findings
A. enucleated tissue which had a shape of a tooth.
B. enucleated tissue which was not in the shape of a tooth.

Fig. 5 Case 2: Radiographic findings

Fig. 6 Case 2: Postoperative radiographic findings after 1 year.

Fig. 7 Case 2: Macroscopic observation of the extracted mass.

and irregularly formed (Fig. 5).

The family, past history and clinical examination were not remarkable.

Treatment and prognosis; The operation was performed with the patient under local anesthesia. An incision was made in the reflection of the oral mucosa at the alveolar border underneath ba. The tumor was detached from the bone and the wound was closed as done in immediate autotransplantation of bone-chips graft. Postoperative condition was fair (Fig. 6).

Macroscopic observation of the extracted mass; The extracted swelling mass was the size of a pea and was covered with thick connective tissue. In the inside of the tumor were 37 different shapes of denticles and particles. When the mass was radiographically examined, in the comparatively large dental denticles, the finding like pulp cavity observed (Fig. 7).

Histopathological findings; This case was similar to case 1 and was diagnosed as compound odontoma (Fig. 8).

Case 3:

The patient, a 28-year-old woman, was sent to the First Department of Oral Surgery, our hospital, on March 12, 1982, for unpleasantness in the region of $\overline{23}$. She had been taken a dental film by her family dentist, which showed a calcified mass, therefore, she was referred to our Oral Surgery for evaluation. Intraoral examination revealed that the gingival on the buccal side of $\overline{23}$ was a swelling of the size of the tip of a small finger and of osteoid hardness with a normal color. On the left side the two permanent incisors and canine were present without percussion pain.

X-ray examination revealed that a calcified mass was existed between $\overline{2}$ and $\overline{3}$. This mass was identified and irregularly formed. The family, past history and clinical examination were not remarkable (Fig. 9).

Fig. 8 Case 2 : Histopathologic findings

- A. enucleated tissue which had a shape of a tooth.
- B. enucleated tissue which was not in the shape of a tooth.

Fig. 9 Case 3 : Radiographic findings

Fig.10 Case 3 : Postoperative radiographic findings after 4 months.

Treatment and prognosis; The patient was admitted to the hospital, and on April 8, the tumor were excised with the patient under general anesthesia. An incision was made in the labial gingiva, and a periosteal flap was retracted. The alveolar bone was then removed by usually means. After the tumor was removed, immediate auto-transplantation of bone-chips graft was done in the bone cavity. The wound was primarily closed. Postoperative condition was uneventful (Fig. 10).

Macroscopic observation of the extracted mass; The tumor mass was similar to the case 2, however, in the inside of the tumor there were 18 different shapes of denticles and particles (Fig. 11).

Fig. 11 Case 3 : Macroscopic observation of the extracted mass.

Fig. 12 Case 3 : Histopathologic findings

- A. enucleated tissue which had a shape of a tooth.
- B. enucleated tissue which was not in the shape of a tooth.

Histopathological findings; This case was also similar to case 1 and was diagnosed as compound odontoma (Fig. 12).

Discussion

Odontoma is generally considered to be tumor-like proliferation mainly consisted of dental hard tissue and a sort of histo-malformation or hamartoma¹⁾.

Odontoma is grouped in many ways by several Scholars. Perthes (1907)²⁾ groups it into Simple and Complex, the former into Independent and Adherent. The adherent type is also grouped into Crown Type and Root Type.

The American Academy of Oral Pathology grouped it in 1950 into geminated, compound, complex, dilated and cystic³⁾, and Thoma and Goldman (1946)⁴⁾ into compound and complex. Recently, Gorlin *et al.* (1961)⁵⁾ and Lucas (1976)⁶⁾ grouped it into complex, compound and ameloblastic odontoma, but Ishikawa (1982)¹⁾ claim that complex and compound are transitional and are not exactly distinctive. In the case handled here, numerous number of tooth-like fabrics in various sizes are found as described before, and, moreover, this tumor could be segregated to each calcifications. Therefore, this case seems to be classified as 'compound' according to Thoma and Goldman's classification⁴⁾, compound odontoma as classified by Ishikawa¹⁾.

Hesse (1935)⁷⁾ claims that trauma is the cause for odontoma, and Burn and others (1937)⁸⁾ lack of Vitamin A, and Atkinson (1943)⁹⁾ found its cause in growth pressure. Ostrowski (1974)¹⁰⁾ also reports on irradiation theory, but none of these have found decisive factors. The author has found no decisive factor for odontoma in these cases either.

Hisano and others (1972)¹¹⁾ report from clinical case data that 34.6% of odontoma is found in the upper anterior site and 23.2% in the lower molar site. According to the statistics by Nakahata and others (1976)¹²⁾ 54% is found in the upper anterior site, 15% in the lower anterior site, 13% in the lower molar site, 6% in the upper premolar site, 5% in the lower premolar site, and 4% in the upper molar site. This shows compound odontoma is quite frequently found in the upper anterior site where supernumerary teeth are often found. In this report, compound odontoma was found in a short term, which is a comparatively rare and it is scientifically interesting.

Existence of impacted teeth around odontoma has been reported in many reports. The percentage of the case is 69.3% as reported by Hisano and others (1972)¹¹⁾ and 66% as reported by Nakahata and others (1976)¹²⁾. The number of odontoma with impacted teeth is about two times as large as those without impacted teeth. In this report, particularly, case 1 was found two impacted teeth were found, where permanent teeth were prevented from their eruption by odontoma. According to Nakahata and others' (1976)¹²⁾ statistic report, out of 195 case in 11 cases 2 impacted teeth existed in one odontoma. Its percentage is about 5% and it seems to have something to do with the time of the formation and the size of odontoma.

The number of denticles and particles of odontoma is reported in detail by Nakahata

and others (1976)¹²⁾ in their statistic study, in which Izumi and others (1960)¹³⁾ report 250 of them, Nihei and others (1972)¹⁴⁾ 106, and Kanai and others (1975)¹⁵⁾ 98. More than 20 were observed in only 39% of the cases, less than 19 were observed in 61% of the cases. In Hisano and others (1972)¹¹⁾ experiments, less than 19 were found in 78% of the cases. In our cases, the denticles and particles with number ranging from 84 to 18 were involved.

As Hirakawa (1964)¹⁶⁾ recommends, odontoma must be not only extracted, but also bone-chips graft should be immediately autotransplanted for quick healing of the extraction cavity.

Marsupialization for facilitating the eruption of impacted teeth is described in few reports, but in Japan, 2 cases of it are reported by Hisano (1972)¹¹⁾, 1 case by Nagasaka (1961)¹⁷⁾ and 1 case by Kitamura and others (1977)¹⁸⁾. In our case 1, considering the location of the impacted teeth and the age of the patient, marsupialization does not seem to be necessary for their eruption.

Conclusion

- 1) Three cases of compound odontoma were treated and its clinical, histopathological observations and review of literature are made.
- 2) Denticles and particles with the number ranging from 84 to 18, which are considered to be the cases with comparatively rare.
- 3) In those trearmenrs, the tumors were removed and the excised cavities were quickly healed by immediate autotransplantation of bone-chips graft.

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集 合 性 歯 牙 腫 の 3 例

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歯牙腫は1821年 Oudet によって、はじめて報告されたと言われ、爾来、多くの研究者により臨床的・病理組織学的報告がなされている。本腫瘍は一般に歯牙硬組織を主体とする腫瘍状増殖物と定義されており、一種の組織奇型即ち過誤腫に属するもので、歯牙腫瘍の中でも発現頻度は低いとされている。また多くの学者によって種々な分類が試みられている。

私達は最近、集合性歯牙腫の3例に遭遇したので、臨床的・病理組織学的所見ならびに文献的考察を加えて報

告した。

症例1は、11才女兒の左側下顎小臼歯部に発現し、84個の歯牙様構造物を含有していた。

症例2は、8才女兒の右側上顎前歯部に発現したもので、歯牙様構造物は37個認められた。

症例3は、28才女性の左側下顎前歯部に発現し、18個の歯牙様構造物を確認し得た。

以上3例共に一塊として摘出した後、摘出腔に即時自家骨小片移植を応用し、速やかな治癒経過を得た。