CONSERVATIVE SURGICAL MANAGEMENT OF AMELOBLASTOMA OF THE MANDIBLE – REPORT ON THREE CASES

G. C. FOO
C. H. SIAR
K. C. LING
C. T. CHIN

SUMMARY

Features of the typical ameloblastoma of the mandible are outlined. Three cases managed by conservative surgical treatment maintaining the continuity of the mandible are described. The factors taken into consideration when instituting this method of treatment are discussed. Results obtained are encouraging.

INTRODUCTION

The ameloblastoma is an odontogenic neoplasm believed to have arisen from the dental lamina or its derivatives. [1] It is usually detected between 20-50 years of age. [2] There is no sex predilection. It has a predilection for the mandible rather than for the maxilla. In the mandible it is found predominantly in the molar region. [3,4] In Nigerians, [5] the tumour is more commonly located in the symphyseal and pre molar regions of the mandible.

Radiographically, it may present as either unilocular or multilocular radiolucency. Sonesson [6] stressed the significance of a patchy sclerosis of the periphery and bony septa of an ameloblastoma. It may be associated with an unerupted tooth. Root resorption of the involved teeth usually occurs.

Clinically, the typical ameloblastoma appears insidiously as a slow growing central tumour of the jaw. As it grows, it destroys the bony jaw and induces cortical expansion both lingually and labially in the mandible. Once the bony cortex is eroded, it appears as a soft tissue fleshy growth.

In the past, ameloblastoma which was treated by simple enucleation had a high recurrence rate of 50-100% probably due to incomplete removal. Consequently block resection of the jaw became popular to achieve a cure for this locally aggressive tumour. Kramer [7] provided the clue to the rational approach to this tumour when he demonstrated that the ameloblastoma invades medullary bone readily but only erodes cortical bone. This means that the clinical and radiographic extent of the tumour is the true limit of the tumour in cortical bone. Following this histopathological finding, attempts at conservative surgical treatment of the ameloblastoma preserving the continuity of the lower border of the mandible has gained popularity. [8,9,10]

REPORT OF CASES

Case 1

A 14-year-old Malay girl was seen on 30.6.82 with a complaint of a fleshy growth of 1.5 cm diameter in the buccal sulcus of 36. The patient was first seen on 9.11.79 with a complaint of a swelling of the left mandible at the molar region. The lesion was diagnosed histologically as a

G. C. Foo, BDS, D. Orth., FDSRCS, MSc
K. C. Ling, BDS, FDSRCS, MDS
Lecturers, Department of Oral Surgery
Faculty of Dentistry
University of Malaya, Kuala Lumpur

C. H. Siar, BDS, MSc, FDSRCPS
Lecturer, Department of Oral Pathology and Oral Medicine
Faculty of Dentistry
University of Malaya, Kuala Lumpur

C. T. Chin, BDS, FDSRCS
Dental Specialist
Dental Unit, General Hospital
Kuala Lumpur

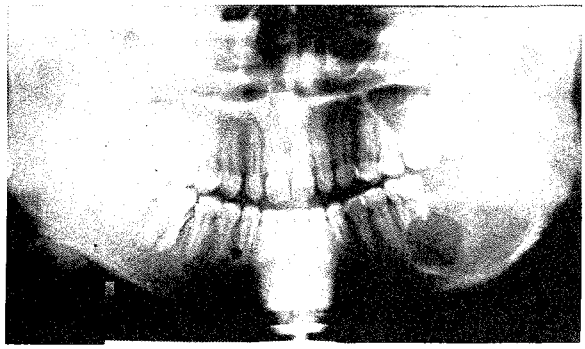

Fig. 1 Pre-operative panoramic radiograph showing radiolucency extending from 36 to 1 cm below left sigmoid notch (Case 1).

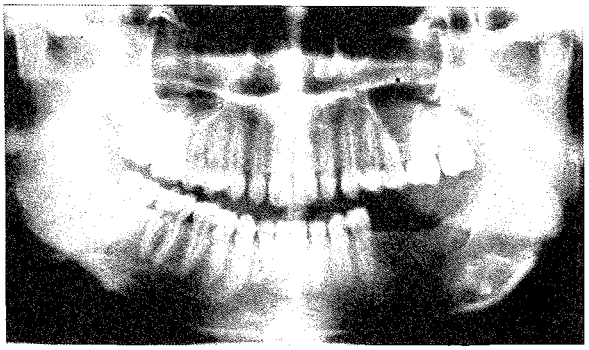

Fig. 2 14 months post-operative panoramic radiograph showing complete bony healing in the region of the mandible from which the ameloblastoma was removed (Case 1).

dentigerous cyst and was marsupialised on 14.12.79. Subsequently, a fleshy mass was noted in 36 region on follow-up. Biopsy revealed it to be an ameloblastoma.

The patient was admitted to hospital on 11.8.82. Her medical history, physical examination and laboratory tests were all within normal limits. Orthopantomogram showed root resorption in 36 (Fig. 1).

At operation the tumour was enucleated and the underlying surface of the bone burred with a vulcanite bur. 35, 36, 37 and 38 were removed. Ribbon gauze soaked in Whitehead's varnish was packed in the wound and changed twice at three weekly interval. Healing was uneventful. Follow-up 14 months post-operatively did not show presence of recurrence clinically or radiographically (Fig. 2).

Case 2

A 21-year-old Malay lady was seen on 4.2.82 with a complaint of a swelling in the right side of the face. The patient noticed the swelling in July 1981. On examination, the swelling of about 3 cm diameter was bony hard in consistency. The overlying skin was normal. On intraoral examination, expansion of the right mandible extending from 36 posteriorly for 4 cm to the ascending ramus was noted. Both buccal and lingual cortical plates were expanded. A discharging sinus was present posterior to 36 on the buccal shelf. Radiographic findings revealed a multilocular radiolucent area from 36 to the left sigmoid notch (Fig. 3). An incisional biopsy done on 6.2.82 showed it to be an ameloblastoma. Medical history, physical examination and laboratory investigations were normal. On 5.3.82 the tumour was enucleated *in toto*. 34 and 35 were

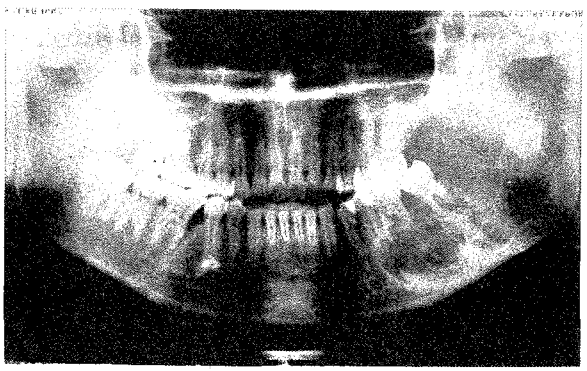

Fig. 3 Preoperative panoramic radiograph showing multiloculated radiolucency from 35 to the left vertical ramus (Case 2).

extracted. The exposed surface of the bone was meticulously burred with a vulcanite bur. Both lingual and inferior alveolar nerves were preserved. The wound was packed with 3 cm ribbon gauze soaked in Whitehead's varnish. The pack was changed twice at three weekly interval. Recovery was uneventful and no recurrence was detected clinically or radiographically 18 months postoperatively (Fig. 4).

Case 3

A 27-year-old Malay man was seen in the dental clinic with a request for treatment for an ameloblastoma of the right side of the mandible. According to the patient, the lesion was diagnosed four years ago in Perlis and it was suggested to him that the jaw be resected by a hemimandibulectomy operation followed by grafting the defect with a hip graft. The patient rejected the proposal. The biopsy report was traced and it confirmed the patient's history.

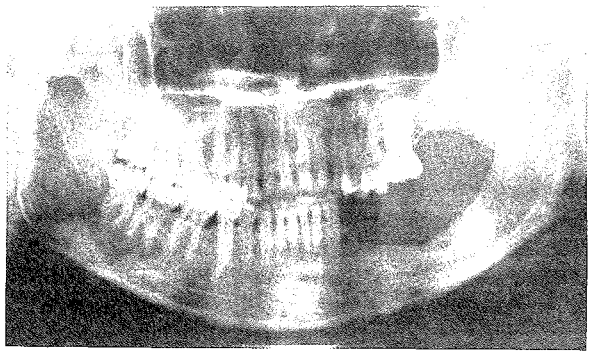

Fig. 4 18 months post-operative radiograph showing good bony deposition in the region of the mandible from which the ameloblastoma was removed (Case 2).

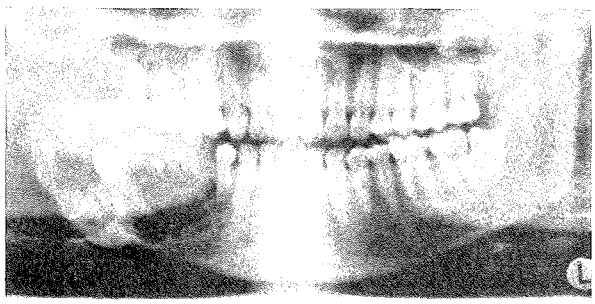

Fig. 5 Preoperative panoramic radiograph showing multiloculated radiolucency from 43 to the right sigmoid notch (Case 3).

Extraoral examination revealed a bony swelling on the right side of the mandible. The overlying skin was normal. Submandibular lymph nodes were palpable, mobile and non-tender. Intraoral examination revealed a swelling due to expansion of both buccal and lingual plates extending from just beneath the right sigmoid notch to 43. The overlying mucosa was normal except in the region of 46 where the tumour tissue had perforated through the cortical bone. Radiographic examination showed a large multiloculated radiolucent area from the sigmoid notch to 43. The apices of 43, 43 were resorbed and 48 was present (Fig. 5).

The patient was admitted to hospital on 26.4.83. Past medical history, physical examinations and laboratory investigation were within normal limits. Patient was operated on 28.4.83. A marginal resection of the right mandible from the sigmoid notch to 43 was done and the tumour with 48 was enucleated from the lower border of the mandible. The exposed inferior alveolar neurovascular bundle lying on the surface of the bone was excised from

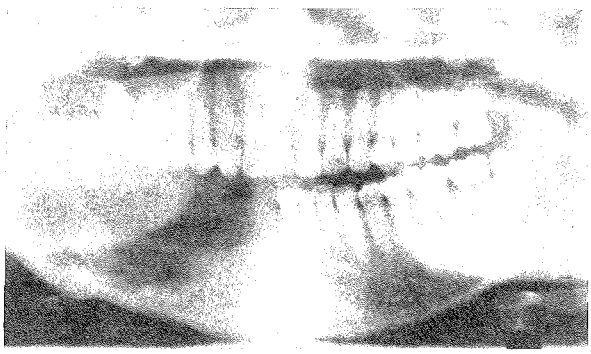

Fig. 6 6 months post-operative panoramic radiograph showing healing in the region of the mandible from which the ameloblastoma was removed (Case 3).

the mandibular foramen to the mental foramen. Three circular soft tissue pockets showing through the inferior border of the mandible were burred with a vulcanite bur. The exposed bony surface was run over meticulously with a vulcanite bur. The wound was packed with 3 cm ribbon gauze soaked in Whitehead's varnish. The pack was changed twice at three weekly interval. No recurrence was detected clinically six months postoperatively. Radiographic examination showed the mandibular defect to be filling up with bone (Fig. 6).

DISCUSSION

The typical ameloblastoma is a locally invasive odontogenic tumour that does not metastasise. [11] Conservative surgical treatment aims at eradicating all tumour tissue and is a very attractive alternative to multilating resection of the jaw.

There is a spectrum of conservative surgical treatment for ameloblastomas of the jaws. The choice would depend on a number of variable clinical factors like the size of the lesion, site of the lesion, age and temperament of the patient, follow-ups and recurrences.

In case 1, the lesion was detected two years subsequent to a marsupialisation of a dentigerous cyst in the same region. Ameloblastoma is a very rare odontogenic tumour in children under 15 years of age. [12] As the lesion was small, only the bony region affected by the tumour was removed. This method of treatment did not jeopardize the condylar growth centre and the periosteal growth of mandible. [13,14] At 14 months follow-up postoperatively, no facial assymmetry except for the loss of 45, 46, 47, 48 and no recurrence was detected.

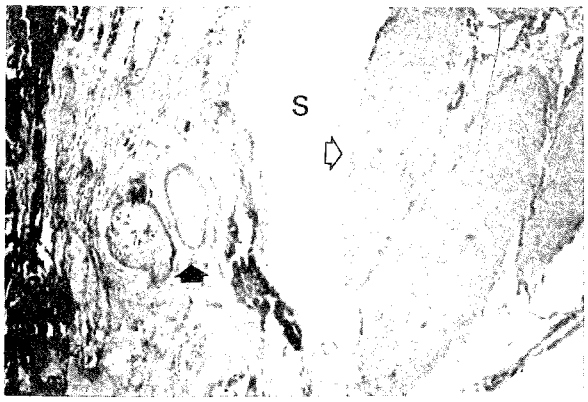

Fig. 7 Showing two islands of ameloblastoma (dark arrow) in the perineural tissues of the inferior alveolar neurovascular bundle. (Case 3) - H & E x 160. Light arrow - nerve bundle S - Artefactual space created during slide preparation.

In the second case, the lingual and buccal cortical plates were preserved as advocated by Crawley and Levin. [9] The inferior alveolar neurovascular bundle was left intact. At 18 months follow-up postoperatively no recurrence was detected and the mandible had remodelled itself.

The third case was a very large ameloblastoma affecting almost the whole side of the right mandible. Radiographic findings indicated the presence of sound cortical bone maintaining the continuity of the right mandible. The fact that the patient absconded when it was suggested to him that his jaw be resected four years ago, the current trend away from jaw resection for ameloblastoma, his tumour was cystic and not of the solid type persuaded us towards conservative surgical treatment as the first initial treatment. Histologically tumour tissue was found on the surface of the resected coronoid process but not invading into the bone depths. Although it is said that ameloblastoma does not invade soft tissue until a late stage, the inferior alveolar neurovascular bundle was resected because tumour tissue might be stuck to it. Histopathological findings confirmed our suspicion. The tumour cells had penetrated the perineural tissue (Fig. 7). In retrospect, the soft tissue pockets showing through the lower border of the mandible could have been better treated by electric cautery. No recurrence was detected six months postoperatively.

All three patients are resident in Kuala Lumpur. Thus regular follow-up is possible. It is imperative to recall these patients at regular intervals for a period of 25 years as ameloblastoma had been reported to recur 25 years postoperatively. [15]

According to Waldron, [16] recurrence after currettage does not necessarily imply failure because these recurrences are usually small and could be treated conservatively. Non-conservative surgery on the original large lesions would have been more mutilating.

These are cases of ameloblastomas of the mandible that had not been treated before until now. Ameloblastomas of the maxillae especially when they are found in difficult surgical regions are treated more aggressively on initial diagnosis. Sedhev *et al* [17] stressed the problems encountered in ameloblastoma in inacessible surgical sites in the maxilla.

The results obtained in the light of this experience are promising. Conservative surgical treatment of the typical ameloblastoma of the mandible is a strong contender as the first line of treatment in selected cases. We hope to provide more convincing results at a later date with more cases and longer periods of follow-up.

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