

IMMEDIATE RECONSTRUCTION WITH A. C. P AND ILIAC BONE GRAFT AFTER PARTIAL MANDIBULECTOMY ON RECURRENT AMELOBLASTOMA.

Haeng-Gyu, Moon , D. D. S., M. S. D., Hwan-Ho Yeo, D. D. S., M. S. D.,
Beug-Dong Kill, D. D. S., Woon-Gyu Kim, D. D. S.

Dept. of Oral and Maxillofacial Surgery, College of Dentistry chosun university.

Abstract

The ameloblastoma is the most common form of the odontogenic tumors exhibiting minimal inductive change in connective tissue, it comprising 1% of all tumor and cysts of the jaws. It is a true neoplasm, generally considered to be a benign but persistent or, locally malignant lesion. The tumor occurs most commonly in persons between the age of 20 and 50 years. 80% and 90% of all lesions are in the mandible. The presenting clinical signs and symptoms of the ameloblastoma vary from patient to patient, but most common symptom was swelling, followed by pain, draining sinuses, and superficial ulcerations.

It is a slow-growing lesion, and the radiographic features of the ameloblastoma depend large one the nature and the local bone reaction to the particular tumor. Recurrence rate is about 33%, but this is probably due to incomplete initial removal of lesion. We had operated a patient ; 29-year-old female immediate reconstruction combined with autocompression plate and iliac bone graft and screw fixation after hemimandibulaectomy with recurred ameloblastoma involving from premolar to ascending ramus at right side mandible. We obtained favorable results of good function, short intermaxillary fixation periods and easy operation procedure than the other reconstruction methods.

INTRODUCTION

A true neoplasm of enamel organ tissue, the ameloblastoma is the most common form of the epithelial odontogenic tumors that dose not undergo differentiation or induction of mesodermal derivatives^{2,4,18,20}. The term ameloblastoma was introduced by Ivy and Churchill^{6,17}, in 1930, although first mention of the tumor can be dated back to 1868 and Broca's report. This lesion comprises approximately 1 percent of the tumors and cysts seen in the mandible and maxilla and is the most common of the epithelial odontogenic tumors. Sixty-five percent occur in the 20 to 50 year age range, with nearly half in the third and fourth

decades of life.

Like all tumors of its group, the ameloblastoma arises from the dental lamina or a derivative of the lamina, enamel organ, epithelial rests, follicular cysts⁴.

The tumor is slow growing, the average duration before treatment being five to eight years. Clinically the affected site may appear normal or be enlarged with displacement and malocclusion of regional teeth. The mucosa covering the tumor mass is normal. The lesion is usually painless. Since the first report by Cahn (1933)⁵, of an ameloblastoma developing in dentigerous cyst, numerous cases have been reported to occur in this manner (Castner et al., : Dresser and

Segal, 1967 ; Gardner and Pecak, 1980 ; Hutton, 1967 ; Gordner and Pecak, 1980 ; Lee, 1970 ; Quinn and Fourret, 1969 ; Taylor et al., 1971)¹⁹⁾. About 25% to 30% arise in preexisting follicular cysts, and 5% to 6% of the follicular cyst show ameloblastic proliferation. Recurrences are common (about 33%), but this is probably due to incomplete removal⁴⁾. There may be areas of radiolucency that are unicystic or multicystic. Bony septa may extend into these areas and impart a soap bubble appearance. It usually occurs in the mandible than in the maxilla. According to Small and Waldron (1955)³⁰⁾, the former was involved in 81% and the latter in 19%, and the Blacks are commonly affected than the white person. The tumor develops insidiously in the bone. It is slowly destructive, ultimately causing expansion, but it seldom causes neurologic symptoms. Some ameloblastomas reach an extremely large size³²⁾. Although the roentgen examination is of great value to determine the extent of involvement, it is not always of definite diagnostic value. Ameloblastomas must be differentiated from cysts.

The time when the intracystic tumor formed in a dentigerous cyst can be recognized by the displacement of the involved teeth. The displacement in most cases occurs before the tumor has formed, since it is due to pressure exerted by the cystic fluid which generally is not present in the tumor. We must consider the lesion as a local malignancy, the progressive expansion of the tumor and tendency to recur, which is caused by tumor cells remaining in the adjacent parts of the bone not visible in the x-ray film. The recurrent tumor is likely to break through the cortex of the bone³²⁾. The death rate in ameloblastoma is low but neglect will ultimately result in mutilating operations. Rankow and Hickey (1954)³²⁾, reviewed 29 cases and noted an incidence of 91% recurrence if only local curettage had been used initially whereas there had been no recurrence if resection was used (18 cases). The procedures that may be used for the treatment of ameloblastoma are described below.

Enucleation is not a very safe procedure. Most ameloblastomas should be excised rather than enucleated^{4,14)}. If a sizable piece of the mandible has to be sacrificed and if this can be done without perforating the oral mucosa, a block excision may be combined with an immediate bone graft. In many large ameloblastomas perforation of the bone with the tumor invading the surrounding tissue or extreme expansion make peripheral osteotomy inadequate. Condyle may be saved. This has the advantage that the bone graft used later to restore the lost part of the jaw may be attached to it furnishing a well functioning³²⁾. We report the immediate reconstruction combined with autocompression plate and iliac bone graft after hemimandibulectomy with recurred ameloblastoma involving from premolar to ascending ramus at right side mandible.

CASE REPORT

Patient ; S.J. Lim 29 years old female.

First examined date ; 1986.9.9. Chief complaint ; slightly tenderness and bony expansion on Rt. mandibular angle and ramus.

Past history ; As described above, this 29 year old female patient who had been suffering from pain and swelling on Rt mandibular angle area was visited to our department via local clinics. She was performed X-ray taking and bone biopsy at 1986.9.10. and was treated surgical enucleation three times at 1986.9.26., 1988.3.18. and 1989.1.16.

Present illness and intraoral examination ; There was paresthesia on Rt. lower lip and tender swelling on Rt. mandibular angle. There was fistular formation on the right retromolar pad area.

Familial history ; nonspecific, X-ray finding ; panoramic and intraoral view ; There is relative defined huzed cystic cavity on Rt. mandibular angle and ramus area. There is cortical bone expansion on anterior border of ramus and discontinuity of radiopaque line on this area.

Mandibular C-T scan ; Bony expansion is seen in the right mandible with fistular formation. Surrounding low density is seen in the mandibular bone defect with air pocket formation.

Laboratory finding ; Hematologic examination ; WBC 7500/mm³, RBC 3470000/mm³, Hemoglobin 11.0 gm/dl hematocrit 31.0% other's not remarkable. Urinalysis and blood chemistry is nonspecific.

Treatment and procedures ; Recurrent ameloblastoma of mandible treated by hemimandibulectomy and iliac bone graft.

The operation was performed with the patient under general anesthesia (N₂O and Halothane). After the usual preparation of the face and neck, an incision was made below mandibular inferior border and the subcutaneous tissue was divided.

The periosteum was incised and stripped away from the outer surface, exposing the involved lesion. The mandible was decorticated to create the resected margins, against which the iliac bone graft could be placed. We had contoured the autocompression plate and had removed a piece of the crest of the ilium using a pattern previously prepared to obtain bone of the right size and shape.

The graft was shaped to furnish the proper contour of the face. The graft was firmly fastened to the mandible by means of stainless steel sutures which were inserted into previously drilled hole. The end of the wires were cut short and turned in.

Previously contoured A.C.P. was fixed on mandible with screw. The periosteum then was sutured into position. The subcutaneous tissue was closed with dermalon sutures. Furazon gauze was applied on the wound. Mandible was immobilized by intermaxillary fixation. Pressure dressing with an ice pack was applied. The patient was given antibiotics during 17 days in the hospital and was discharged on the seventeenth postoperative day. The intermaxillary fixation was maintained for 2 weeks. When discontinued, the patient had good function of the jaw. A postoperative x-ray film showed a good result.

DISCUSSION

The ameloblastoma is perhaps the most important odontogenic tumor. It usually occurs as a central tumor of the jaws. Extrasosseous ameloblastomas, however, may develop from the ectodermal lining of the oral cavity. The ameloblastoma may form the basal cells of the surface epithelium, form cell rests of the dental lamina, epithelial debris of Malassez, remnants of the sheath of Hertwig contained in the periodontal ligament of the erupted teeth, the enamel organ itself, and very frequently from the epithelium of cysts^{5, 9, 13, 15, 22}. Various histologic varieties may be distinguished : primitive strands, the plexiform, stellate and follicular type, the latter with microcytes, or squamous metaplasia and massive growth any swelling of the cyst wall^{4, 10, 11, 12, 20}, called mural thickening by Cahn (1933), should be investigated. Aisenberg and Inman (1960) reported an ameloblastoma which had developed in globulomaxillary cyst.

Many theories have been advanced about causal factors, most of which have not been shown conclusively to be correct. Trauma, extraction of teeth, ill fitting dentures or bridges, malocclusion, periodontal disease, loss teeth, rickets, oral infection, unerupted third molars, and supernumerary teeth have all been implicated. The presenting clinical signs and symptoms of the ameloblastoma vary from patient to patient, but Mehlich et al, (1972) reported that the most common symptom was swelling, which occurred in 75% of the patients, followed by pain in 33%, draining sinuses in 28%, and superficial ulceration in 10%.

Patients exhibiting tumors of the maxilla had symptoms such as nasal obstruction, bleeding, trismus, and maxillary sinus involvement. The ameloblastoma is a neoplasm that causes expansion more than destruction of bone. However, there is a certain degree of local invasion of the surrounding bone. In the absence of proper treatment, this tumor can grow to a great size, but still remain localized. Recurrences

are common, depending on the tumor's size, location, length of duration, and initial form of treatment.

Treatment methods of ameloblastoma are curettage, enucleation, radiation therapy, cauterization by electrics or chemical agents, cryosurgery, surgical resection, and combined methods^{15, 18, 25, 27, 32}. Surgical treatment is accomplished by complete local excision and cauterization after a preoperative incision biopsy¹⁸. To outline and direct the bone cuts accurately the area of excision of the overlying mucoperiosteum is outlined by a scalpel blade cutting to bone. A burr in a microhandpiece is used to make the initial bone cuts accurately. These are deepened using a small reciprocating stryker saw blade for the vertical cut.

They are then completed through the lingual aspect using an osteotome and mallet. The block of bone containing the tumor and overlying mucoperiosteum is removed in one piece³. The inferior dental nerve may well have to be included in the block. The excision site may be covered by underimining and advancing the soft tissue of the floor of the mouth and by use of a buccal flap after periosteal release^{1, 8, 16, 21, 23}. Excised defect was reconstructed with an autocompression plate, iliac bone graft. Compression plating will provide greatest stability²⁸. Advantage of compression plating for treatment of mandibular resected defect²⁰ are 1) early mobilization of mandible, decreasing trismus after poststabilization, 2) immediate return to normal route of alimentation, 3) early return to work without limitations, 4) normal access to airway without interference of intermaxillary fixation.

SUMMARY

Mandibular ameloblastoma treated by resection, immediated reconstruction with autocompression plate, and bone grafting are reported.

By the prosthetic implant operation, favorable results were good function, short intermaxillary fixation periods and easy operation than the other reconstruction methods.

REFERENCES

1. Adekeye, E.O. : Rapid bone regeneration subsequent to subtotal mandibulectomy : report of an unusual case. *Oral Surg., Oral Med. & Oral Path.*, 44 : 521, 1977.
2. Archer, W.H. : *Oral and Maxillofacial Surgery*, 5th ed., Saunders Co., 1975.
3. Arthur, R. Deway : Mandibular repair after radical resection, *J. Oral Surg. Anesth. & Hosp. D. Serv.* 20 : 34 - 40, 1962.
4. Bhaskar, S.N. : *Synopsis of Oral Pathology*, 5th ed., Mosby Co., 1977.
5. Cahn, L.R. : The dentigerous cyst as a potential adamantinoma, *Dent. Cosmos*, 7 : 889, 1933.
6. Churchill, H.R. : Histopathological Differentiation between certain Dentigerous Cysts and Ameloblastoma, *Dental Cosmos*, 76 : 1173, 1934.
7. Daniel, E. Waite. : *Textbook of practical oral and maxillofacial surgery.*, 3rd ed., 210 : 38 - 47, 1987.
8. D.L. Byrd, J.B. Holton : Immediate mandibular replacement with stainless steel mesh prosthesis : report of case, *J. Oral Surg.* 29 : L 436 - 4398, 1971.
9. Dolan, E.A. et al. : Recurrent ameloblastoma in autogenous rib graft : *Oral Surg.* 51 : 367, 1981.
10. Donald, R.M., David, C.D., & James, K.M. : Ameloblastoma : A Clinicopathologic Report, *J. Oral Surg.*, 30 : 9 - 22, 1972.
11. Gardner, D.G. : Peripheral Ameloblastoma. *Cancer*, 39 : 1625 - 1633, 1977.
12. Gardner, D.G. and Corio, R.L. : The relationship of plexiform unicystic ameloblastoma to conventional ameloblastoma. *Oral Surg.*, 56(1), 54 - 60, 1983.
13. Generson, R.M. et al : Mural odontogenic epithelial proliferation within the wall of a dentigerous cyst : Their significance, *Oral Surg.* 42 : 717, 1976.
14. Hair, J.A.G. : Radiosensitive adamantinoma, *Brit. Med. J.* 1 : 105 - 106, 1963.
15. Huffman, G.G., thatcher, J.W. : Ameloblastoma-

- the conservativ surgical approach to treatment :
Report of 4 cases. *J. Oral Surg.* 32 : 850, 1974.
16. Irving, B. Margolis : Reconstruction of defects of the mandible, *Surg.* 79 : 639 - 643, 1976.
 17. Ivy, R.H., & Churchill, H.R. : The need of a standardized surgical and pathological classification of tumors and anomalies of dental origin, *Am. Assoc. dent. Sch. Trans.*, 7 : 240 - 245, 1930.
 18. Kruger, G.O. : *Textbook of Oral Surgery*, 4th ed., Mosby Co., 1974.
 19. Laskin, D.M. : *Oral and maxillofacial surgery*, Vol. 2, Odontogenic tumor, Mosby Co., 627 - 636, 1985.
 20. Lore, J.M. : *An atlas of head and neck surgery*, 3rd ed., W.B. Saunders Co., 1988.
 21. Naumann, H.H. : *Head and neck surgery*, 2nd ed., vol 2, W%B. Saunders Co., 1980.
 22. Mehlisch, D.R. et al. : Ameloblastoma : A clinicopathologic report, *J. Oral Surg.* 30 : 9, 1972.
 23. Moore, J.R. : Moore, J.R. : *Surgery of the mouth and jaws*, 1st ed., Blackwell Scientific Publications, 709 : 30 - 41, 1985.
 24. Paul, J.K. : Recurrent dentigerous cyst evidencing ameloblastic proliferation : Report of a case, *J. Oral Surg.* 27 : 2111, 1969.
 25. Petriella, V.M. et al. : Gigantic ameloblastoma of the mandible : report of case, *J. Oral Surg.* 32 : 44, 1974.
 26. P.J. Boyne : Osseous reconstruction of the resected mandible, *Am. J. surg.* 132 : 49 - 53, 1976.
 27. Shafer, W.G., et al. : *A textbook of Oral Pathology*, 3rd ed., Saunders Co., 1974.
 28. Shim, K.S. : Immdiate reconstruction with metal plate after hemimandibulectomy, Vol. 14 - 1, 1988.
 29. Shteyer, A., Lustman, J., and Levin-epstein, J. : The mural ameloblastoma : a review of the literature. *J. Oral Surg.* 36 : 866 - 870, 1978.
 30. Small, I.A. and Waldron, C.A. : Ameloblastoma of jaws, *Oral Surg.*, 8 : 281, 1955.
 31. Smith, J.F. : Ameloblastoma : Report of 30 cases. *Oral Surg., Oral Med., & Oral Path.*, 13 : 1253, 1960.
 32. Thoma, K.H. : *Oral Surgery*, 5th ed., Mosby Co., 1969.



Fig. 1. Preoperative facial photography.

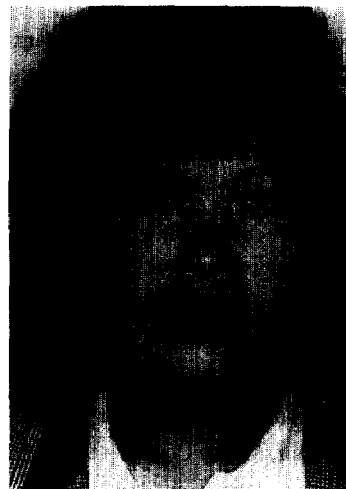


Fig. 2. Postoperative facial photography (6 months later).

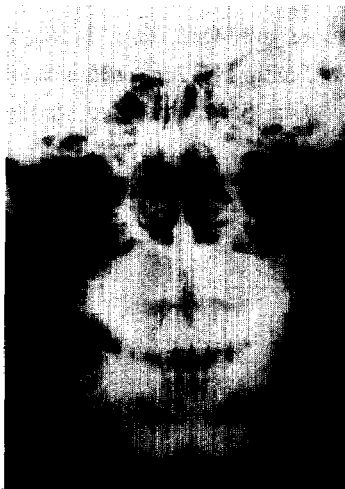


Fig. 3. Preoperative posterior and anterior view of mandible.

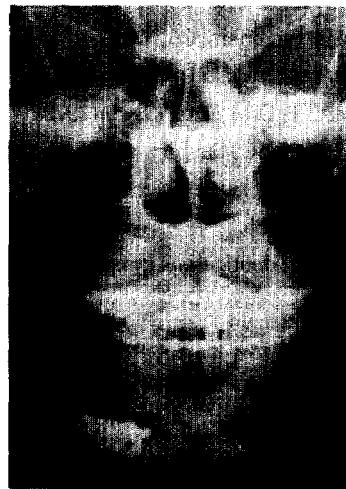


Fig. 4. Postoperative posterior and anterior view of mandible.



Fig. 5. Preoperative panoramic view.



Fig. 6. Postoperative panoramic view.

재발된 법랑아세포종 환자에서 하악골 부분절제술후 금속판과 자가장골을 이용한 즉시재건술에 대한 증례보고

조선대학교 치과대학 구강악안면외과학교실

문행규 · 여환호 · 김병동 · 김운규

국문초록

법랑아세포종은 결체조직에 최소의 유도적인 변화를 나타내며 양성이지만 지속성이나 국소적으로 악성양상을 띄는 가장 흔한 형태의 치계 종양이다. 호발연령은 주로 20세부터 50세 사이이며, 임상증상은 환자마다 다양하게 나타나며 상악보다 하악에 호발하며 완만한 성장 속도를 나타낸다. 법랑아세포종의 방사선학적 특징은 병소의 본질과 국소적인 골반응에 의하며, 재발은 약 33%로 흔하며 이것은 불완전한 병소부의 제거로 인한 것이다.

29세의 여성환자에서 하악 우측 소구치부터 하악지까지 발생한 재발성 법랑아세포종의 외과적 절제후 장골 이식과 금속판을 이용한 즉시 재건술을 시행한바 이러한 재건술을 이용하여 양호한 기능, 단기간의 약간고정 기간, 그리고 다른 재건술 보다 용이하였던 바 이에 지견을 얻어 보고 드리는 바입니다.