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Marsupialization of mandibular cystic lesions, clinical observations of 23 cases*

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Abstract

1. Marsupialization was performed on 23 cases of cystic lesions of the jaw at the Department of Oral Surgery, Okayama University Hospital in the recent five years. 2. These patients were divided into 4 groups according to their age; namely, group A of those under 15 years old, group B of those between 15 and 30 years old, group C of those between 31 and 60 years old, and group D of those over 61 years old, and the results of postoperative findings were compared with those of preoperative ones. 3. In group A of the four groups the most favorable results were obtained after marsupialization and reduction of the tumor was remarkable, even in a case of ameloblastoma, as compared with groups B, C and D. 4. Cure of lesions took somewhat a longer period of time in group B than in group A, but all the cystic lesions were reduced favorably after operation. 5. The reduction in cysts in groups C and D was markedly slower when compared with that in groups A and B, but the marsupialization surgery seems to be desirable in some cases.

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MARSUPIALIZATION OF MANDIBULAR CYSTIC LESIONS
— **CLINICAL OBSERVATIONS OF 23 CASES** —

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As a conservative treatment in the field of oral surgery Partsch method (marsupialization) has been used for many years in the treatment of various cystic lesions of the jaw, but as for marsupialization attempted for the treatment of ameloblastoma there have been a few descriptions, such as those by SELDIN (1944) (9, 10), OBATA (1962) (6, 7), TOMITA *et al.* (1963) (12) and NISHIJIMA *et al.* (1969) (4, 5). Only the paper by NISHIJIMA *et al.* was on a comparative study on the follow-up results of this technic among various lesions in children, adults and persons of advanced age.

The present paper deals with the results of our marsupialization applied to some cases of ameloblastoma and other cystic lesions during the recent five years in our department.

MATERIALS AND METHODS

Subjects of this study are only those with cystic lesions whose systemic examinations have indicated that operation is possible and only those who have shown no malignancy.

Local anesthesia was used in most of these cases, but general anesthesia was applied to a few cases with extensive tumors.

Marsupialization was made in the oral cavity, particularly, at a thinner portion of the bone wall of the superficial layer in order to minimize postoperative functional disturbances as much as possible. Extent of marsupialization depends upon the size of tumor. All the tumors were of over thumb tip size and the marsupialization was about 10 mm × 10 mm or more.

As postoperative managements acrylic tubes or gauze was inserted through

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the opening in order to prevent shrinkage, and tumors were curetted and irrigated daily for one week after operation. Thereafter patients were instructed to visit us periodically once or twice a week for postoperative care and observation. In addition, antibiotics were administered for prevention of infection.

CRITERIA FOR DETERMINATION OF TUMOR SHRINKAGE AFTER
OPERATION

For the purpose of comparing the preoperative facial expression, oral findings and x-ray findings with those after marsupialization, these findings and the state of the tumor shrinkage or the radiolucent area through the local site were observed. In some cases of extensive cysts, concurrently preoperative and postoperative cephalometric tracings are observed to see the extent of cyst shrinkage in the radiolucent area.

TABLE 1. SUMMARY OF 23 CASES

Case No.	Group A Age Sex	Histologic Diag.	First Visit Exam.	Preop. Findings
1	13 ♂	Epidermoid cyst (MIM areas)	11/7/64	Asymmetrical facial contour due to swelling of lt. cheek Large bilat. radiolucent area of the mand.
2	12 ♀	Ameloblastoma (lt. mand.)	VI/10/64	Asymmetrical facial contour due to bone-like hard swelling of the mand. angle Definitive radiolucent area
3	14 ♂	Ameloblastoma (lt. mand.)	VII/23/64	Asymmetrical facial contour due to bone-like hard swelling of the cheek and alveolar ridge of lower lt. molar region Definitive round radiolucent area
4	12 ♀	Follicular cyst (lt. mand.)	IV/6/66	Asymmetrical facial contour due to swelling of the lt. mand. angle, bone-like hard Definitive round radiolucent area
5	13 ♀	Radicular cyst (lt. max.)	IV/4/66	Swelling of the infraorb. region and max. molar of lt. side Extension of radicular cyst into lt. antrum
6	9 ♂	Ameloblastoma (rt. ant. max.)	X/20/66	Diffuse swelling of infraorb. region, and a painless swelling in the gingiva of the max. rt. ant. region A round radiolucent area with indistinct boundary, including the area <u>3-1</u>
7	7 ♂	Ameloblastoma (lt. mand. angle)	VII/10/67	Diffuse swelling of the lesion, swelling at <u>6</u> region, a round radiolucent area in the lt. body of mand.
8	14 ♂	Follicular cyst (lt. ant. max.)	11/3/68	Normal facial contour, swelling at the <u>1-3</u> gum region, a round radiolucent area in the same region
9	8 ♂	Follicular cyst (lt. ant. max.)	IX/19/68	Swelling of the lesion at the upper lip-cheek region, a round radiolucent area including <u>23</u>
10	6 ♂	Follicular cyst (lt. ant. mand.)	XI/6/68	Normal facial contour No dentition of <u>21</u> , a round radiolucent area at the <u>21</u> root region
11	13 ♂	Globulo-maxillar cyst (lt. ant. max.)	VI/18/69	Swelling of the lt. upper lip, pain of the lt. side Fluctuation at <u>123</u> mucolab. fold A round radiolucent area at the <u>3+3</u> root-end of the teeth

REPORT OF CASES

Twenty-three cases consist of 8 cases of follicular cyst, 6 of ameloblastoma, 4 of radicular cyst, 2 of epidermoid cyst, 1 of retention cyst and 2 of others (Table 1). In order to compare postoperative progress according to patients' age, they were divided into the following four groups:

- group A (< 15 yrs. old) 11 cases
- group B (15—30 yrs. old) 6 cases
- group C (31—60 yrs. old) 2 cases
- group D (> 61 yrs. old) 4 cases

The number of Group C was so small that comparative studies were made only among Groups A, B and D. Clinical progress of each group is shown in Table 1.

MARSUPIALIZATION OF CYSTS

Size of Tumor (roentgenogram)	Time Operated	Postop. Findings
hen's egg	III/13/64	4 mos. postop.: Almost invisible scar 1 yr. postop.: Bone appears to have normal structure 2 yrs. postop.: Enucleation of tumorous tissue on both sides of ridge. No recurrence, completely cured
hen's egg	VII/13/64	Progressing favorably, shrunken tumor removed from mand. (at a certain university clinic) Thereafter, following became impossible
hen's egg	VII/31/64 IX/6/68	2 mos. postop.: Shrinkage of the tumorous cavity 4 yrs. 3 mos. after the first operation: Size of the tip of an index, soon the tumor will be excised
hen's egg	IV/9/66	4 mos. postop.: Almost invisible scar 7 mos. postop.: Complete bone regeneration, enucleation of [7], completely cured, still being followed up
pigeon's egg	V/31/66	Mucosa of antrum; normal, cyst removed, marsupialization, the window closed, completely cured
walnut	XII/9/66	1 wk. postop.: Facial swelling disappeared 2 yrs. postop.: Enucleation of <u>4-1</u> region, no radiolucent area, completely cured
hen's egg	VII/21/67	5 mos. postop.: No more facial swelling, radiolucent area: size of pigeon's egg 1 yr. 4 mos. postop.: Radiolucent area decreased to the size of a walnut
walnut	IV/5/68	8 mos. postop.: Completely cured, normal roentgenographic finding
walnut	X/15/68	1 mos. postop.: Shrinkage of tumor, regeneration of bone 9 mos postop.: Completely cured, plan to reconstruct irregular teeth
tip of an index	XI/13/68	15 dys. postop.: Enucleation of <u>21</u> region, tumor shrunk 8 mos. postop.: Completely cured
golf-ball	VI/24/69	1 mos. postop.: Macroscopically the tumor atrophied to 1/2 the original size, radiolucent area tended to decrease and the boundary became somewhat indistinct

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Group B

Case No.	Age	Sex	Histologic Diag.	First Visit	Preop. Findings
1	15	♂	Periodontal cyst ($\frac{43}{32}$) Follicular cyst ($\overline{23}$, $\overline{78}$)	III/23/67	Normal facial contour Incision wound at $\overline{18}$ gum Round radiolucent areas at $\frac{43}{43}$; $\overline{23}$, $\overline{78}$ regions
2	17	♀	Epidermoid cyst (lt. mand.)	III/24/67	Asymmetrical facial contour due to bone-like hard swelling of the lt. mand. Oral cavity: Fluctuation at $\overline{67}$ gum Multilocular radiolucent area
3	17	♂	Follicular cyst (lt. max.)	XI/13/67	Normal facial contour Oral cavity: Swelling at $\overline{67}$ region
4	19	♂	Follicular cyst accompanied by odontoma (median ant. mand.)	VII/19/68	Normal facial contour Oppressive pain at mental region and swelling at $\overline{3-3}$ mucolab. fold, a round radiolucent area at median mand.
5	24	♀	Ameloblastoma (lt. mand.)	IX/24/68	Normal facial contour Swelling at $\overline{17}$ gum, a round radiolucent area at mand. angle
6	15	♂	Ameloblastoma (rt. mand.)	II/6/69	Diffuse swelling at rt. mand. angle Swelling at $\overline{8-4}$ gum
7	19	♀	Follicular cyst (lt. ant. max.)	VIII/4/69	Diffuse swelling at lt. wing of nostril Swelling at $\overline{1-3}$ mucolab. fold Definitive round radiolucent area

Group C

Case No.	Age	Sex	Histologic Diag.	First Visit	Preop. Findings
1	43	♀	Cyst (chronic inflammation) (lt. mand.)	I/6/69	Normal facial contour No dentition at $\overline{567}$, a light swelling and bone-like hardening at the same site
2	58	♀	Radicular cyst (rt. ant. max.)	IV/3/69	Diffuse swelling and oppressive pain at the upper lip, a round radiolucent area at $\overline{3-1}$ root region

Size of Tumor (roentgenogram)	Time Operated	Postop. Findings
tip of an index at $\frac{43}{32}$ regions	III/28/67	3 mos. postop. : Radiolucent area practically disappeared 1 yr. 8 mos. postop. : Completely cured
tip of a thumb at $\frac{123}{78}$ regions		
duck's egg	IV/7/67	2 wks. postop. : Asymmetry of facial contour disappeared, shrinkage of the cystic tumor, 1 yr. 7 mos. postop. : Practically cured
walnut (connecting to antrum)	XII/8/67	No visit to clinic after operation, hence the postoperative course, unknown
hen's egg	VIII/9/67	Surgical-treatment at a certain dental clinic, postoperative course unknown as the patient did not visit us
hen's egg	IX/27/68	2 mos. postop. : Tumor tended to shrink slightly 10 mos. postop. : Tumor shrunk to the size of the tip of an index, oral cavity is normal
hen's egg	II/21/69	6 mos. postop. : Radiolucent area decreased to the size of the tip of an index, facial contour returned completely normal at the fenestrated site
walnut	VIII/5/69	Still being followed up
Size of Tumor (roentgenogram)	Time Operated	Postop. Findings
pigeon's egg	VI/13/69	2 mos. postop. : Treated for 2 mos. but thereafter the patient did not visit us
walnut	VI/2/69	2 mos. postop. : Shrunk to the size of the tip of a thumb, swelling at the upper lip disappeared completely. Follow-up observations being continued

Group D

Case No.	Age	Sex	Histologic Diag.	First Visit	Preop. Findings
1	69	♀	Radicular cyst (rt. mand.)	VII/9/66	Asymmetrical facial contour Painful swelling at rt. mand. angle A round radiolucent area at the same site
2	80	♂	Radicular cyst (median ant. max.)	XII/14/67	Normal facial contour Fluctuation at <u>2-2</u> mucolab. fold A round radiolucent area at medial palate
3	68	♀	Retention cyst (rt. max.)	IX/5/68	Normal facial contour Tumor of pigeon's egg size at the palate A round radiolucent area in hard palate
4	79	♀	Ameloblastoma (median ant. max.)	IX/19/68	Swelling of pigeon's egg size at the medial mand. Honey-comb shaped radiolucent area

Note: lt=left, rt.=right

DISCUSSION

Marsupialization can be considered as a modified Partsch method, and it is mostly applied to the treatment of cysts. And there have been very few descriptions of its application to the treatment of ameloblastoma, such as those by SELDIN (9, 10), OBATA (6, 7), TOMITA *et al.* (12) and NISHIJIMA *et al.* (4, 5). Curettage is mostly employed as a conservative measure for ameloblastoma (2, 11, 12).

Marsupialization is generally applied in cases of younger age in order to elicit shrinkage or atrophy of the tumors. Even in the case of adults and persons of advanced age when radical operation is not indicated from general conditions, this method seems to be also the most appropriate one. In such cases the postoperative course must be carefully checked, and it seems only rational that radical operation be resorted to only when any real improvement in general conditions can not be expected.

In the authors' experience not only group A but also groups B, C and even D all have shown that marsupialization is markedly effective or fairly effective. Namely, among the four groups group A is the most suitable group for marsupialization which promotes the reduction of mandibular cyst quite rapidly and has the least influence on the growth of mandible.

In group A their postoperative course proves to be quite satisfactory when compared with those of groups B, C and D as shown in Table 1, and within several weeks after operation follicular cysts tended to shrink in all cases, and the same lesion began to show radiolucent area quite rapidly, clearly indicating the regeneration of trabecula. For example, in

Size of Tumor (roentgenogram)	Time Operated	postop. Findings
pigeon's egg	IX/22/66	1 yr. 4 mos. postop.: Cyst has shrunken to the size of the tip of a thumb 2 yrs. 4 mos. postop.: Shrunken to the size of the tip of a small finger. Cyst to be excised
walnut	XII/12/67	The patient went to a certain dentist for postoperative treatment. The course unknown as he no longer visits us
walnut	X/4/68	1 mos. postop.: Regeneration of the bone, the tumor tended to shrink, follow-up observations being continued
hen's egg	XI/5/68	2 mos. postop.: Shrinkage of tumor

the case of A-9 whose follicular cyst was of walnut size before operation the radiolucent area of the bone practically became indistinct in about 1 month after operation, indicating regeneration of the bone. It signifies that the course of healing processes is not dependent upon the size of tumor but rather upon the difference in age (the younger the patient, the more satisfactory is the postoperative course, as in Cases A-4; A-8). In group A, excepting the case with ameloblastoma, most of them were cured completely in about 2 years for complete cure.

Now, as regards a 14-year old boy with an ameloblastoma of a hen's egg size (A-3) developed in the mandibular ramus, it required about 4 years to reduce it to walnut size (Fig. 1), while in much younger Case A-7, a 7-year old boy, it took only about 1 year and 4 months after marsupialization to reduce hen's egg size down to a walnut size (Fig. 2). These findings suggest that active regeneration of the bone in younger age accounts for the early atrophy of the tumor after marsupialization. This is true in ameloblastoma as well as other cystic lesions, though there is some difference in the rapidity of cure. Nonetheless, in the case of ameloblastoma, differing from other cysts, its complete cure cannot be expected by marsupialization, and radical operation with thorough postoperative follow-up observation is required.

Then, group B, which were followed up after operation, were only 6 cases, but the postoperative course proved to be satisfactory in all of them. For example, in Case B-2, a 17-year old girl with a cyst the size of a duck's egg (Fig. 3) it took 1 and half years to cure it completely, which is slightly longer than with group A and in Case B-1, a 15-year old

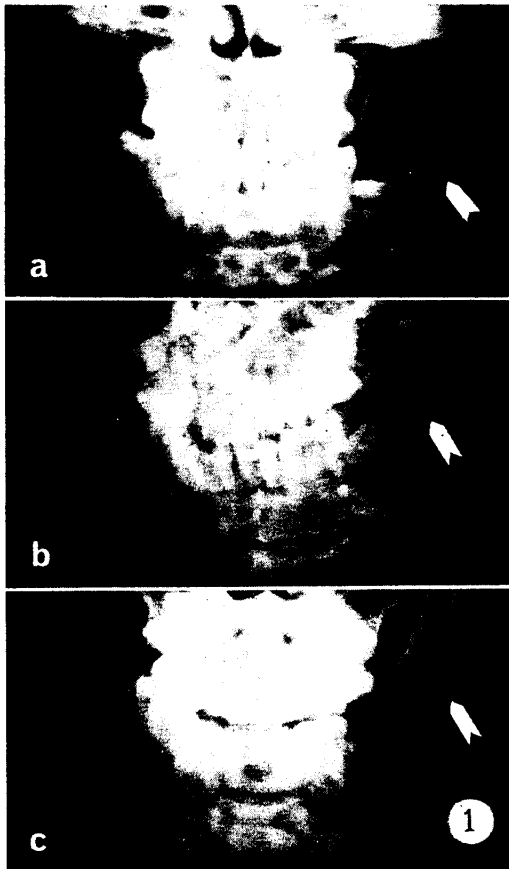


Fig. 1. Case A-3.
a. before operation
b. 4 years after operation
c. 4 1/4 years after operation

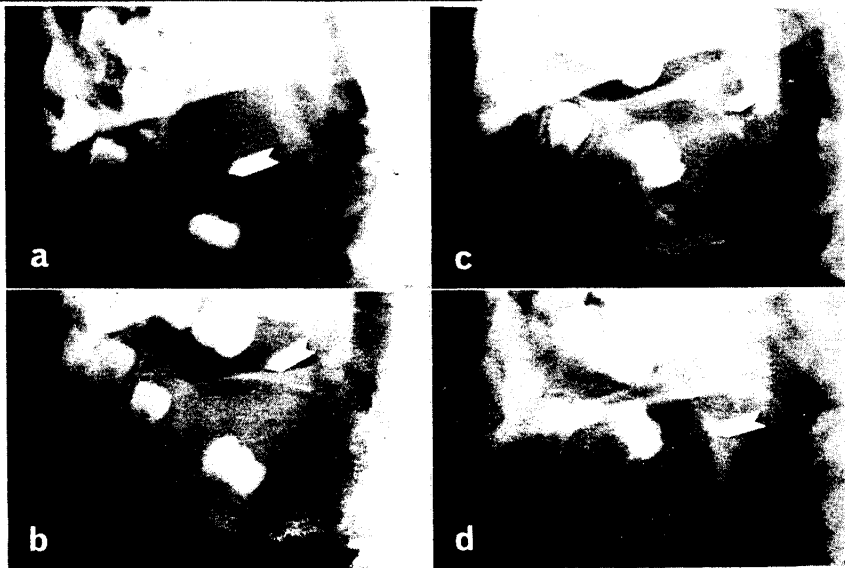


Fig. 2. Case A-7.
a. before operation
b. about 5 months after operation
c. 1 year after operation
d. 1 1/3 years after operation

boy, the cyst of thumb tip size disappeared only in 3 months. In group B ameloblastoma was found only in Case B-5, a 24-year old female. The tumor tended to reduce in about 2 postoperative months, and it atrophied to index finger tip size in 10 postoperative months (Fig. 4). From these results it seems that even in group B an attempt at marsupialization for the treatment of the cystic lesion is worthwhile.

Group C consisted of only 2 cases, but no definitive diagnosis could be made as biopsy section was insufficient. However, clinically both of them appeared to be the cases with cysts. The postoperative period being short, it is not possible to compare them with the other cases, but regarding Case C-2 (a 58-year old female), the cyst began to reduce its size in 2 months after marsupialization and the postoperative course is favorable.

Last cases of group D associated with some form of systemic lesions were not considered to be indicated for redical surgery.

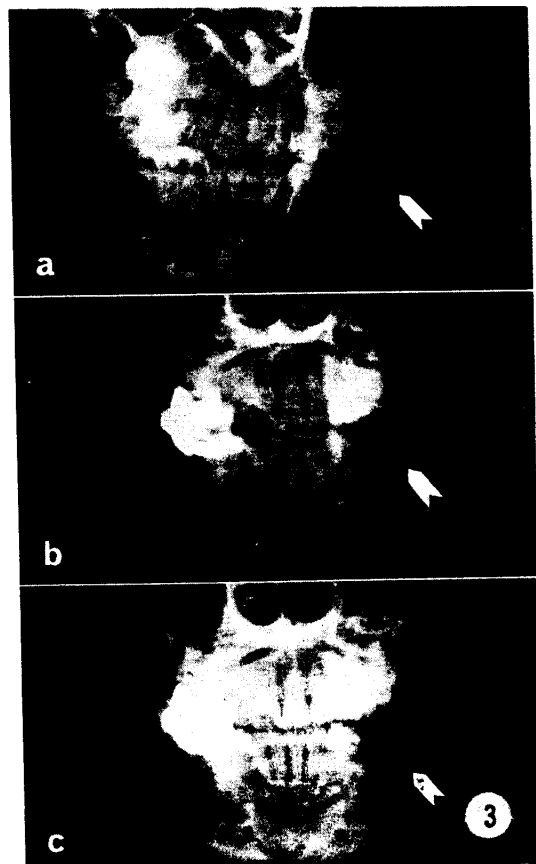


Fig. 3. Case B-2.
 a. before operation
 b. 5 months after operation
 c. 8 months after operation

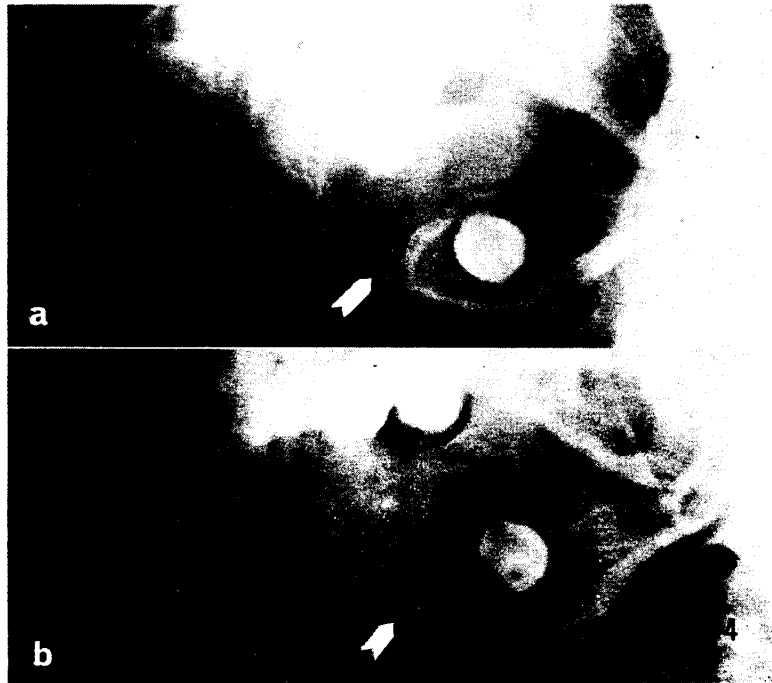


Fig. 4. Case B-5.
a. before operation
b. 2 months after operation

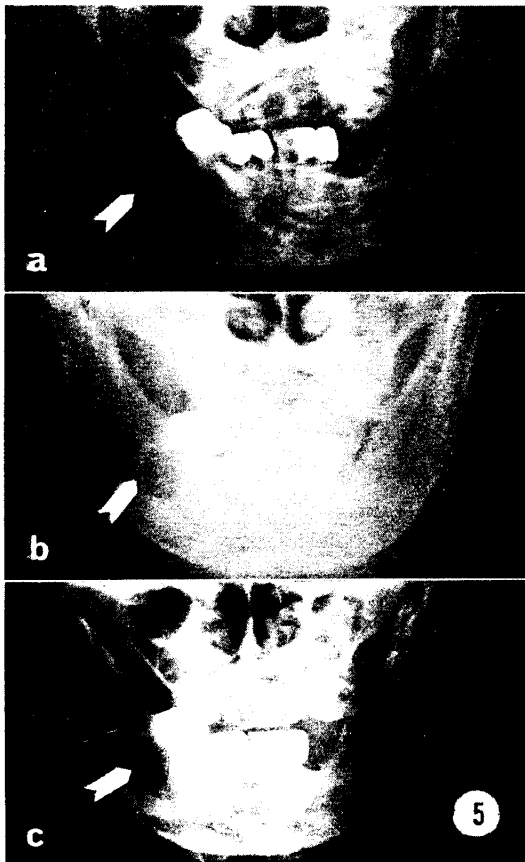


Fig. 5. Case D-1.
a. before operation
b. 2 months after operation
c. 2 1/2 months after operation

As for Case D-1 (a 69-year old female) with cysts, it took as long a period as 2 years and 4 months for the cyst in the size of a pigeon's egg to reduce to the size of the tip of a small finger after marsupialization (Fig. 5). This means that marsupialization can at least help to reduce the size of tumor, though not to any remarkable degree, even at the advanced age as in this case. In Case D-3 (a 68-year old female) with a retention cyst, there could be observed a tendency of bone regeneration by about 1 year after marsupialization, but the reduction of the cyst itself could not be verified (Fig. 6).

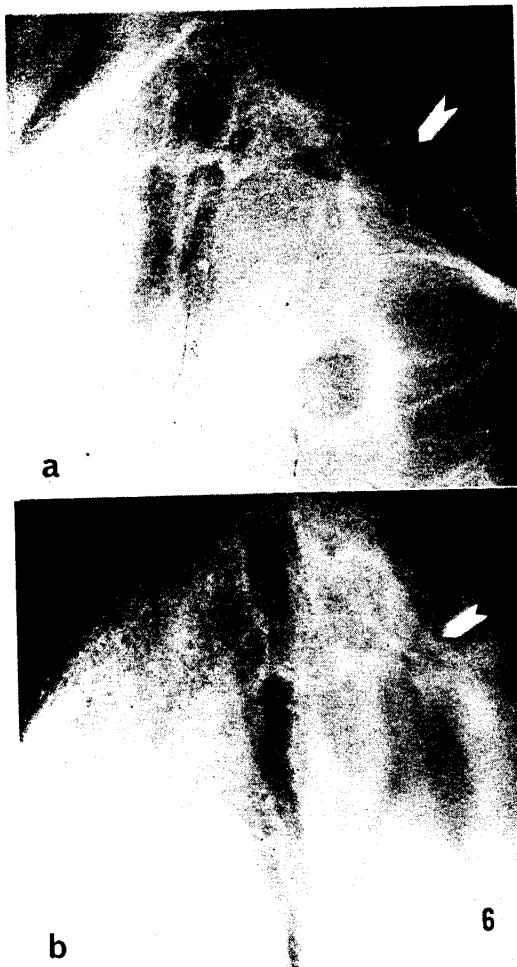


Fig. 6. Case D-3.

- a. before operation
- b. 1 month after operation

Since it takes such a long period of time for the cyst to reveal its atrophy by roentgenograms in group D, these cases present some difficul-

ties as compared with the other groups, but it seems nonetheless desirable to try marsupialization on them.

In Case D-4 (a 79-year old female) with ameloblastoma since the postoperative period is short, a change in the facial contour cannot be seen as yet, but the oral aspects reveal a gradual decrease in the cystic swelling.

SUMMARY

1. Marsupialization was performed on 23 cases of cystic lesions of the jaw at the Department of Oral Surgery, Okayama University Hospital in the recent five years.

2. These patients were divided into 4 groups according to their age; namely, group A of those under 15 years old, group B of those between 15 and 30 years old, group C of those between 31 and 60 years old, and group D of those over 61 years old, and the results of postoperative findings were compared with those of preoperative ones.

3. In group A of the four groups the most favorable results were obtained after marsupialization and reduction of the tumor was remarkable, even in a case of ameloblastoma, as compared with groups B, C and D.

4. Cure of lesions took somewhat a longer period of time in group B than in group A, but all the cystic lesions were reduced favorably after operation.

5. The reduction in cysts in groups C and D was markedly slower when compared with that in groups A and B, but the marsupialization surgery seems to be desirable in some cases.

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