

## Mucocele of the Frontal Sinus

Goro MOGI and Kozo TAKEDA

*Department of Otolaryngology,  
Yamaguchi University School of Medicine  
(Received July 31, 1968)*

Mucocele of the paranasal sinuses is not uncommon in our practice. It occurs typically in the frontal sinus or ethmoidal cells and less frequently in the maxillary antrum and extreme rarely in the sphenoidal sinus (Heatly<sup>1)</sup>, Parker<sup>2)</sup>, and Neffson<sup>3)</sup>).

A case which will be reported here is interesting in symptomlessness in spite of its large expansion.

### CASE REPORT

The patient, a 65 year-old female, was seen at our clinic on Jan. 16, 1968, with a two months history of a swelling on the forehead on the right side. She first noticed the swelling on the forehead, slightly right-lateralized, complaining of no otherwise troubles of headache, pain of the eye, blurring of vision, or proptosis at the beginning of Nov. 1967, and a few weeks later a painless swelling, a soy bean sized, appeared on the right inner canthus. On Dec. 10, 1967, she was seen by a physician because these swelling slowly increased in size, who made a puncture on the large one of them and obtained nearly 20 ml. of mucous secretion, resulting to reduce the swellings. She was recommended to be examined at our clinic by the physician and admitted to our clinic on Jan. 17, 1968.

For a long time, she occasionally had nasal and postnasal discharge and bilateral nasal stiffness.

There was a history of endonasal operation on both sides performed on about 10 years ago.

Physical examination revealed that the patient was of somewhat smaller than normal stature, but in apparent good health.

On inspection the forehead was not prominent as shown by Fig. 1. On palpation a round defect, approximately 2 cm. in diameter, was detectable. Neither displacement of the eyeball nor exophthalmos was present. There was slight tenderness on pressure of the frontal area. Intranasal and postnasal examinations were almost normal except for moderate swelling of the left middle turbinate, but wide meatuses. Secretion could not be seen in the nose.

Examination of the blood disclosed 42.3 % hematocrit,  $458 \times 10^4$  red blood cells, and 6,100 white blood cells, with a differential count of 65.5 % segmented neutrophils, 0.5 % eosinophils, 0.5 % basophils, 30.5 % lymphocytes and 3.0 % monocytes. Systematic blood chemical tests showed low A/G ratio. Consultant's findings to the ophthalmology revealed a loss of vision on both sides which was due to senile cataract.

A puncture was done on the bony defective part of the forehead and demonstrated about 1 ml. of yellow and very viscous secretion which was sterile by the following study for bacilli.

X-ray examination of the nose and paranasal sinuses including tomograph showed a large diffuse cloudiness, a hen egg shaped and moderate to well demarcated, over the both frontal, ethmoidal and right orbital areas (Fig. 2, 3). It seemed to be filled with fluid. In these x-ray films the septum sinuum frontalis disappeared.

On Jan. 23, 1968, an external operation on the right frontal sinus was performed on under general anesthesia. Before commencing the procedure a Belocq's tampon was placed in the nasopharyngeal area and both eyes were filled with vaseline in order to prevent blood from running into them. After local injection of xylocaine solution an incision was made in the eyebrow of the side affected, commencing a half way to the outer angle, then carried medially down to the bony of the supraorbital ridge and curved downwards on the nose, about midway between the crest of the nasal ridge and the inner canthus of the eye. It was carried down to the nasal wall to a point about 1 cm., below the inner canthus. This procedure was done carefully through the periosteum because the bleeding in this area is frequently exceedingly troublesome. The periosteum was then separated from the downwards on to the nose, just above the orbital ridge. By using a flat chisel the nasal bone and the orbital ridge on the right side were exposed enough for the procedure. There was a bony defect, about 2.5 cm. in diameter, on the frontal area on the right side, just upwardly the orbital ridge, in which an incision was made by a nasal tip knife. Immediately after this a large amount of fluid, yellow and mucous in nature, sprang up from the frontal sinus, which was taken into a test tube to sent pathology. The frontal sinus was washed by warm saline solution and oxyful. It was found that there was no wall dividing both frontal sinuses which was enlarged by a mucocele let alone for long years and separated from the brain by a dura mater. In addition we were able to see a piece of mass which seemed to be condensed the mucous fluid which was sent to pathology (Fig. 4) Search was made for enlargement of the orbitaethmoidal cells and naso-frontal duct. For this purpose the removal of the ethmoidal cells was downwards until the route to the nostril was given good enough. A vinilon tube was inserted into the frontal sinus for drainage. The skin sutures were done. The patient went to the ward in good condition.

(Fig. 6)

Postoperatively, the frontal sinus operated was irrigated with an antibiotic solution consisting of ilotycin 250 mg per 2 ml. every 8 days through the vinilon tube placed in the time of the surgery. The tube was removed postoperative 9 day. The external wound of the frontal area was clear healed.

The mass taken from the frontal sinus is shown by Fig. 4 and its photomicrograph is Fig. 5 which disclosed diffuse mass consisting of exuded fibrins partially associated with necrosis. This finding suggests that the mass was condensed mucous secretion.

### COMMENT

It is well recognized that mucocele of the paranasal sinuses is the result of obstruction of the ostia caused by trauma, infection or growth, and of cystic dilatation of a mucous gland by many authors.<sup>1)2)3)4)5)</sup>

If the nasofrontal duct or ducts of the ethmoidal sinuses is complete blocked by causes mentioned above, however, some instances the obvious cause obscure, mucous secretion cannot drain to the nose and resulted slow development of swelling above and medial to the eyeball. This swelling is erosive or destructive to the floor of the frontal sinus or the lateral wall of the ethmoid cells as a result of pressure from the retained mucous secretion. The eye is slowly pushed downward and out, eventually giving rise to exophthalmos and diplopia. This is usual consideration for the development of mucocele (DeWeese).<sup>6)</sup> Patients with mucocele of the paranasal sinuses may first consult with ophthalmologist, because the initial symptom of this condition may be ocular. Healy<sup>1)</sup> stated that the swelling characteristically occurs at the upper inner angle of the orbit at the point where the walls of the frontal sinus or ethmoidal cells are thinnest.

The cystic expansion may displace the eye and ocular motion is limited, with the development of diplopia, epiphora, edema, sluggish pupil, congestion and various other symptoms due to intraorbital pressure.

In sphenoid sinus mucoceles these eye symptoms are mostly striking.<sup>3)</sup>

Alyea<sup>5)</sup> described on that headache is prominent in symptoms of the paranasal sinuses mycocele, although there is a observation that there is usually no pain.<sup>4)</sup>

The dura is often exposed by the destruction of the expansive pressure of the cyst, and intracranial symptoms of headache and blurring of vision develop.

In the case reported here, the course was symptomless, only small swelling and slight tenderness of the frontal area presented, even though the cystic lesion was extensive with destruction of the anterior and posterior walls of the frontal sinus.

## SUMMARY

A case with frontal sinus mucocele was presented, seen in a 65 year-old female. It is interesting that there was no ocular symptom and headache, nevertheless the cyst was very large and destroyed the anterior and posterior walls of the sinus, the latter causing exposing the dura.

## REFERENCE

- 1) Heatly, C.A.: Mucocele of the Accessory Nasal Sinuses. *Arch. Otolaryng.*, 7: 150-155, 1928.
- 2) Parker, L.S.: Mucocele of the Right Maxillary Sinus with Proptosis of the Right Eye. *J. Laryng. Otol.*, 75: 507-509, 1961.
- 3) Neffson, A.H.: Mucocele of the Sphenoid Sinus. *Arch. Otolaryng.*, 66: 157-164, 1957.
- 4) Scott-Brown, W.G., Ballantyne, J. and Groves, J.: *Diseases of the Ear, Nose and Throat*, 1, 1965, Butterworths, London.
- 5) Alyea, O.E.V.: *Nasal Sinuses, An Anatomic and Clinical Consideration*, 1951, McWilliam and Wilkins Co, Baltimore.
- 6) DeWeese, D.D. and Saunders, W.H.: *Textbook of Otolaryngology*, 1950, Mc C.V. Mosliy Co. St. Louis.

Fig. 1. Photograph of the patient, showing no deformity or swelling.

Fig. 2. Roentogenogram of the nose showing a large and moderate demarcated shadow over the frontal and orbital areas.

Fig. 3. Tomograph of the nose, 2 cm. deeply, showing a large shadow.

Fig. 4. The mass taken from the frontal sinus seeming to be condensed mucous fluid.

Fig. 5. Photomicrograph of the mass taken from the frontal sinus, showing diffuse mass consisting of exuded fibrins partially associated with necrosis (low power).

Fig. 6. Photograph of the right frontal sinus, revealing the exposed dura mata.



Fig. 1.

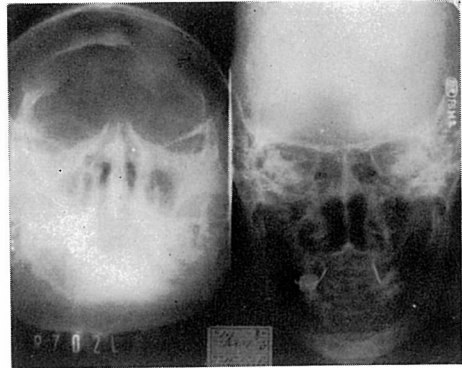


Fig. 2.



Fig. 3.

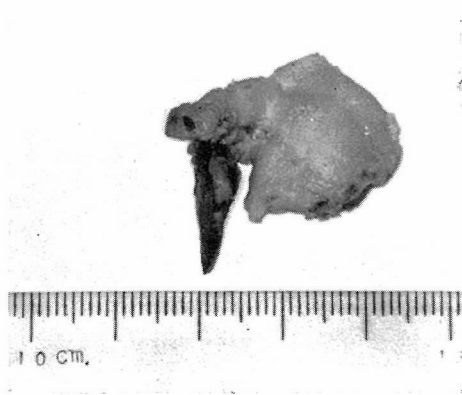


Fig. 4.



Fig. 5.

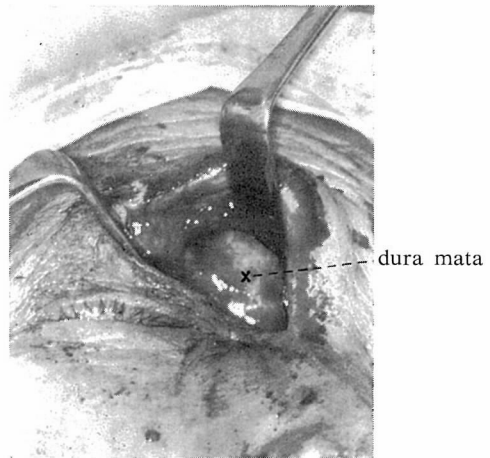


Fig. 6.