One Case Report of Maxillary Sinusitis of the Newborn Infant

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Maxillary sinusitis of a newborn infant is rather rare disease, however, it is well known as serious disease showing high fever, marked swelling around the eyelid, facial fistula formation and prolonged cessation of the pus discharge or sepsis in an unfortunate case even though antibiotic managements.

This disease is also called as osteomyelitis neonatorum, because it is in most part due to the peculiarity of the anatomical structure of the maxilla which is still in way of development, pneumatization with a small maxillary cavity, air space, and a part of bone marrow.

On a clinical standpoint of veiw, the swelling of the soft tissue of the face, especially an abscess around the eyelid of a baby is not infrequently mishandled with an incision of the regional facial skin producing fistular tract, prolonged pus discharge and then bizzare scar formation of the face.

Recently, in the Department of Otolaryngology, Yamaguchi University School of Medicine I have experienced a case of osteomyelitis neonatorum with facial fistula, which is present in this paper.

CASE REPORT

A 3 month-old female infant was admitted to our Dept., because of the persistent drainage through the fistula at the right outer canthus after reference of the orthopedic clinic, on June 25, 1967.

Her mother gave us the following history :

On the fifteenth day after birth, April 19, 1967, the patient complained of a swelling over the infraorbital region on the right side which suddenly increased in size with elevated body temperature (39°C). On the following day, she was admitted to some Pediatric clinic with a diagnosis of dacryocystitis. Soon after that admission her symptoms became more severe and nasal discharge of purulent nature from the right nostril was developed. Ten days later, she had an incision on the right infraorbital region by some surgeon. By this management her sustained fever and swelling were reduced to almost normal, however, fistula remained.

On June 10, she was admitted to Orthopedic clinic of our hospital for management of the fistula of the cheek. After consultation from the orthopedic clinic on the remained fistula, the diagnosis of the maxillary sinusitis of infant, suspected osteomyelitis neonatorum was made, and then she was transfered to our clinic.

Physical examination on admission revealed there was a fistula at the outer canthus of the right eye lid and pus drainage (Fig. 1). The ears were clear. The pharynx and larynx were normal. General condition was apparently normal. No exophthalmus was seen. X-ray films (Fig. 2) showed no definite maxillary sinuses. Bacteriological examination of pus in the fistula disclosed Staphylococcus aureus. Drug-sensitivity test showed no sensitivity for Pennicillin, Streptomycin, Teracycline, Sulfonamid compounds and Polymixin B. Chloramphenicol and Erythromycin were only sensitive. Routine blood examination disclosed 441×10^4 red blood cells and 12300 white blood cells; slight leucocytosis was noted.

Fig. 1. The patient's face. The incision scar is seen on the infraorbital region.

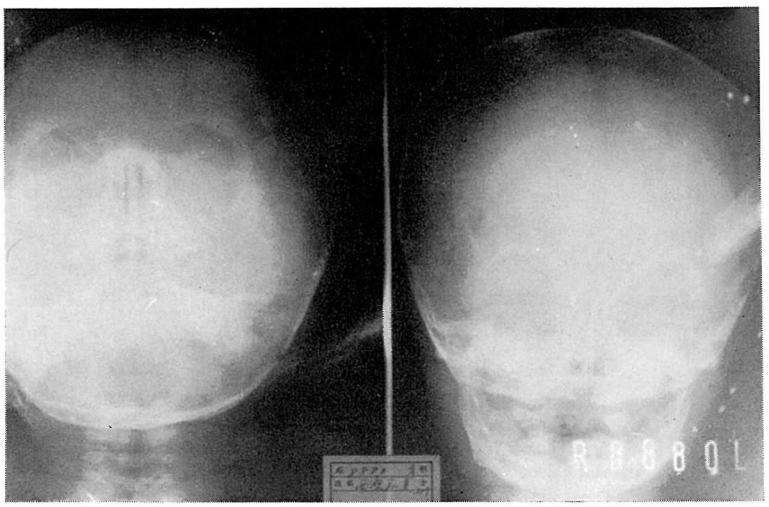

Fig. 2. X-ray of the nose.

On June 27, she had curetting of the fistula. Postoperatively washing of the fistula was done every day, but pus from the fistula didn't stopped to flow out.

On August 1, she was performed on a radical operation of the maxillary sinus for toiletting sequesterum and granulation with closure operation of the facial fistula.

After labiogingival incision as usual way, separation of the periosteum of the canine fossa revealed bony defects at the lateral wall and at just below the infraorbital bony margin (Fig. 3.) Curetting and toiletting of the destructed bony contour of the maxilla and zygomatic process in part were done removing several sequestrum and flaccid granulation (Fig. 4).

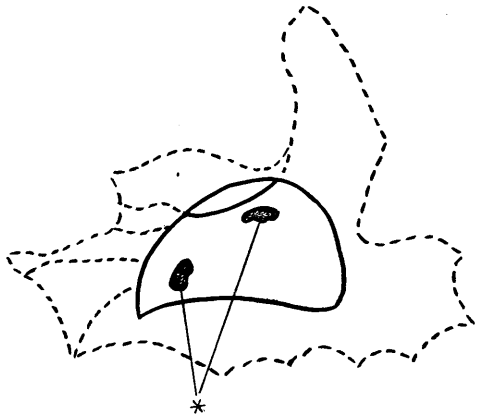

Fig. 3. Model of the maxillary bone.*) Bony defect. Flaccid granuration therein.

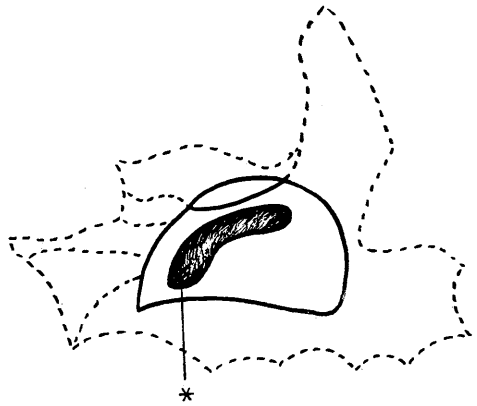

Fig. 4. Model of the maxillary snius.*) Bony defects after curetting and toiletting of the destructed bony contour of the maxilla.

Then, curetting of the inner surface of the fistula was done meticulously to denude and remove the epithelialized linings of the fistula. Sutures of the refreshed fistula wound was done.

Finally, relatively wide and large drainage route was made to the oral vestible through the incision wound and rubber tube (Nelaton's No.7) was inserted with a short ribbon gauze.

After this operation, the fistula of the face was closed, but other fistula appeared on the labiogingival incision wound and from where small sequestrums were ejected (Fig. 5). In spite of these treatments, the fistula of the labiogingival incision has not been closed and recently purulent discharge has been flowing out in the right inferior meatus. On Nov. 30, a piece of the sequestrum (Fig. 6,a) was removed from the inferior meatus on the right side and also on Dec. 1,a small one (Fig. 6,b) was taken out from the same meatus. After that she complained of no nasal discharge.

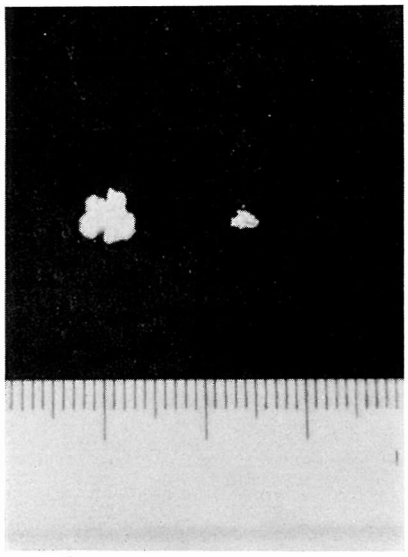

Fig. 5. Sequest from the fistula of the labiogingival incision.

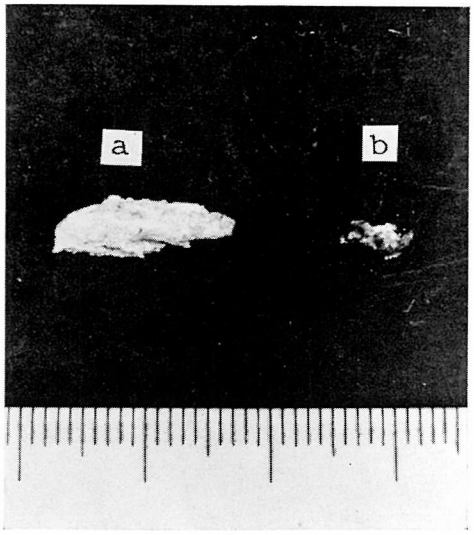

Fig. 6. Sequest from the inferior meatus on the right side
a) removed on Nov. 30
b) removed on Dec. 1

COMMENTS

The maxilla and maxillary sinus of newborn infant showed peculiarities as developmental and anatomic matter.

The maxillary sinus is small at birth because of incomplete development yet, which is surrounded by osseous construction with bone marrow.

According to Schaefer, (1936)[1], a newborn infant has a very small maxillary sinus, only 7 × 5 × 4 mm. in size in the maxilla (Table I). Also, Table 1 indicates the growth of the maxillary sinus from birth to age 18. It is of interest to note that the maxillary sinus reaches approximately adult measurements at a relatively early age. From birth to puberty the antero-posterior measurement of the sinus is always the greatest, the height and width following in order. In this case, the shadow of the maxillary sinus was not seen in X-ray of the paranasal sinus, therefore it was considered that the sinus was very small or not developed. In addition, it has been noted that a part of the sinus is made up of spongy bone included the marrow, and the wall around the sinus are thick in which there are many vessels. Because of these factors, osteomyelitis of the maxillary bone might be occured, when the sinus is infected and infection extends into the marrow.

Table 1. Growth of Maxillary sinus

Age (in years)	Length (mm.)	Height (mm.)	Width (mm.)
Newborn	7.0 – 8.0	4.0 – 6.0	3.0 – 4.0
9 months	11.0 – 14.0	5.0 – 6.0	5.0 – 5.5
1	14.0 – 16.0	6.0 – 6.5	5.0 – 6.0
2	21.0 – 22.0	10.0 – 11.0	8.0 – 9.0
3	22.0 – 23.0	11.0 – 12.0	9.0 – 10.0
6	27.0 – 2.80	16.0 – 17.0	16.0 – 17.0
10	30.0 – 31.0	17.5 – 18.0	19.0 – 20.0
15	31.0 – 32.0	18.0 – 20.0	19.0 – 20.0
18	31.0 – 33.0	20.0 – 21.0	19.0 – 21.0

(From Schaeffer, J.P.: Pennsylvania M.J., 39 395, 1936)

Kitajima[2] stated that there are two routes as to acute infection of the maxilla in newborn infant, such as direct and indirect one (heamatogenous). According to Kitajima the direct route is divided into four routes, that is, endonasal, dental, oral and traumatic one.

In this case, it is very difficult to know the route because no other local symptom was noted, such as infected tooth bud, or a dental abscess, nor was there any history of local trauma. Bacteriology in this case demonstrated a Chloramphenicol and Erythromycin sensitive staphylococcus aureus, which is the most common bacillus in this disease.

In treatment, there are three methods in this disease;
1) conservative treatment with antibiotics and only sequesterotomy is performed,
2) surgical treatment, radical operation of the maxillary sinus as early as possible,
3) after purulent discharge is flowed out by making incision, radical operation has to be done. It is different in each case that which method we must do, but in general we have to perform radical operation through the labiogingival incision as early as possible. Since there is no constancy in development, it's essential to know the degree of expansion of the alveolar recess of the maxillary sinus in a particular case when operative measures are attempted by way of the inferior nasal meatus.

Although the age of the child is a valuable guide, the rhinologist is largely dependent on the roentgenogram for information concerning the degree of pneumatization of the alveolar process in a particular patient. And we think that incision for flowing out purulent discharge should not be made on the facial skin but be made on the labiogingival mucosa, whether it is only the

purpose for flowing out the discharge or not, because it prolongs the days for heal this disease and besides very ugly scar must remain on the face.

SUMMARY

A case of maxillary sinusitis in newborn infant with facial fistula is present.

REFERENCES

1) SCHAEFER, J.P.: Clinical anatomy and development of the paranasal sinuses. *Pensylvania M. J.*, **39**: 395, 1936. (cited by Coates', et al, Otolaryngology 1957 (2))
2) KITAJIMA, T., et al.: A study on the so-called maxillary sinusitis of the newborn infant. *Otolaryngology* (Tokyo) **36**: 143-149, 1964.