ACUTE OSTEOMYELITIS OF THE MAXILLA IN INFANCY

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Acute osteomyelitis of the maxilla in infants is an uncommon but distinct clinical entity. Its onset, clinical course, and bacteriology are so constant that no surgeon who is aware of the clinical picture should fail to diagnose the condition at an early stage.

Less than one hundred cases have been reported in the English and American literature since the condition was first described by Rees in 1847, and reference has been found to only thirteen cases since the introduction of penicillin. Asherson (1939), in a comprehensive review, stated that he saw only four cases during ten years work at two London hospitals. Lacy and Engel (1939) reported one case and summarised thirty-six cases reported between 1922 and 1939. Table I summarises the cases reported since 1928.

Before the introduction of chemotherapy, the mortality in this condition was estimated at between 25 and 30 per cent. In the last thirteen cases recorded since 1945, there has been only one death. The disease, however, varies in severity, and fulminating cases occur in which only the early administration of the correct antibiotic is likely to save the life of the infant. In many cases a prompt diagnosis and efficient chemotherapy would in all probability cut short the course of the disease and avoid the disfiguring complications which have attended so many of the cases in the past. Penicillin-resistant strains of the staphylococcus aureus are becoming increasingly common to-day, and in the light of our present knowledge it appears that aureomycin is the antibiotic of choice when the resistance of the organism to penicillin has been established in the laboratory.

CLINICAL FEATURES

The disease is essentially an acute inflammation of the maxilla with a spreading thrombosis of its nutrient vessels, followed ultimately by sequestration of necrotic bone and tooth follicles. In mild cases, or when the acute phase has been cut short by early chemotherapy, the inflammatory process may subside without sequestration, but in the past such a clinical course has been exceptional. In severe cases the disease may rapidly become septicaemic, leading to death within a few days. Most cases pursue a relatively chronic course, characterised by a short acute stage lasting a few days, which is followed by a stage of prolonged purulent discharge and sequestrum formation.

The primary stage—The disease occurs in infants at any time from shortly after birth up to twelve weeks of age. The onset may be preceded by skin infection in the child or mother, but many cases have been reported in which no definite etiology has been established. The first sign is the appearance of swelling and redness below the inner canthus of the eye in the lacrimal region with, a short time later, oedema of the eyelids on the affected side. There is a sharp pyrexia, with severe malaise, and it is at this stage that a mistaken diagnosis of acute dacryocystitis or orbital cellulitis may be made. The early diffuse swelling and inflammation of the cheek are characteristic of acute osteomyelitis; they are not observed in orbital cellulitis, and are seen only as a late sign in infection of the lacrimal sac.

The next sign is swelling of the alveolar margin in the region of the canine fossa and first deciduous molar tooth, followed within a day or so by a sinus discharging pus, which yields a pure growth of staphylococcus upon culture. Simultaneously, or even before this stage, a sinus forms below the inner canthus and, if a probe is passed upwards from the

TABLE I
REVIEW OF CASES REPORTED IN THE LITERATURE SINCE 1928

Author	Cases	Age	Predisposing factors	Organism	Treatment	Duration	Result	Complications
Bass (1928)	2	3 weeks	Impetigo	Staphylococcus aureus	Drainage	6 months	Recovery	Faulty dentition.
		10 weeks	—	Staphylococcus aureus	Drainage	1 month	Recovery	Unknown
Goldbloom and Bacal (1937)	1	3 weeks	—	Staphylococcus aureus	Drainage	3 months	Recovery	Deformity from sequestration of most of maxilla and malar
Lacy and Engel (1939)	1	1 week	Boils	Not known	Drainage	3 months	Recovery	Scar deformity
Asherson (1939)	4	10 weeks	Coryza	Not known	Drainage "Prontosil"	3 months	Recovery	Unknown
		2 weeks	—	Staphylococcus aureus	Drainage	5 days	Death	Broncho-pneumonia
		12 weeks	—	Staphylococcus aureus	Drainage Sulphonamide	7 months	Recovery	Unknown
		10 weeks	—	Staphylococcus aureus	Drainage Sulphonamide	6 weeks	Recovery	Marked toxæmia
Jacoby and Sagorin (1945)	2	3 weeks	—	Staphylococcus aureus	Penicillin	11 days	Recovery	None
		6 weeks	2 weeks premature	Staphylococcus aureus	Penicillin	10 days	Recovery	None
Dunphy and Fraser (1947)	1	9 days	—	Staphylococcus aureus	Penicillin Sulphathiazole	4 weeks	Recovery	None
Haworth (1947)	5	4 weeks	—	Staphylococcus aureus	Penicillin Drainage Sulphadiazine	6 weeks	Recovery	Unknown
		4 weeks	—	Staphylococcus aureus	Penicillin Drainage	2 weeks	Recovery	Unknown
		7 weeks	Septic finger	Staphylococcus aureus	Penicillin Drainage	4 weeks	Recovery	Unknown
		12 weeks	—	Staphylococcus aureus	Penicillin Drainage Sulphadiazine	18 days	Recovery	Unknown
		15 weeks	Coryza	Not known	Penicillin Drainage Sulphadiazine	30 days	Death	Gastro-enteritis, mastoiditis, otitis media
Howard and Robinson (1948)	1	2 weeks	—	Staphylococcus aureus	Penicillin	15 days	Recovery	Unknown
Cohen (1949)	1	3 weeks	After circumcision	Staphylococcus aureus	Penicillin	1 month	Recovery	Unknown
Macbeth (1951)	1	6 weeks	—	Staphylococcus aureus	Penicillin Drainage	Not known	Recovery	Stenosis of lacrimal duct
McCash and Rowe (1952)	2	4 weeks	5 weeks premature. Fed by nasal tube	Staphylococcus aureus	Drainage Streptomycin	3 months	Recovery	Minimal scar. Late effects not yet known
		4 weeks	Mother had acute mastitis	Staphylococcus aureus	Drainage Streptomycin Chloromycetin Aureomycin	3 months	Recovery	Minimal scar. Late effects not yet known

opening within the mouth, a communication may be established between the two sinuses. Finally, a unilateral nasal discharge begins upon the affected side, and in all probability indicates a spread of the infection to involve the antrum.

The swelling of the orbit commonly gives rise to exophthalmos accompanied by ophthalmoplegia and chemosis of the eyelids, but the globe of the eye itself is unaffected. In the mouth the swelling extends halfway across the palate, and other sinuses frequently appear along the alveolar margin, from which pus may be obtained by gentle pressure in the buccal sulcus or palate.

Radiological investigation is of no value in the primary phase, for the osteoporosis induced by the pathological process takes about three weeks to develop. The diagnosis must rest upon the characteristic clinical picture, the age of the patient, the consistent sequence of events and the constant nature of the organisms cultured from the pus.

The secondary stage—When free drainage has been established by natural or surgical means the temperature usually settles within a few days and the disease enters upon a prolonged chronic phase. This is characterised by a discharge from multiple sinuses within the mouth or below the inner or outer canthus of the eye. There is no marked evidence of toxæmia except during recurrent exacerbations which occur when free drainage is not maintained.

The secondary stage persists until sequestra or devitalised tooth buds are extruded naturally or removed surgically. The final sequestrum is commonly separated from below the outer canthus, and appears to consist of the outer third or two-thirds of the inferior orbital margin. The average duration of this stage is two to three months. The chronic suppuration may lead to adherent scars beneath the lower eyelid, and there may be permanent deformity from asymmetry of the maxilla and loss of teeth, which may require subsequent correction by plastic or dental surgery.

DIFFERENTIAL DIAGNOSIS

The condition is most commonly diagnosed as orbital cellulitis or dacryocystitis, but may occasionally be confused with ophthalmia neonatorum. The principal diagnostic features are set out in Table II.

SURGICAL ANATOMY

In the newborn infant the antrum is a rudimentary structure which occupies only a small part of the maxilla, whereas in the adult it occupies the greater part of the bone (Figs. 1 and 2). In the adult the orbital floor is thus separated from the tooth-bearing alveolus by the full depth of the antrum, but in the infant the orbital floor and the alveolar process are adjacent and almost continuous, the intervening area being filled with the crypts of the calcified but as yet unerupted deciduous teeth, and the developing tooth germs of certain of the permanent teeth. The antrum in the infant measures 10 millimetres antero-posteriorly, 6 millimetres in height and 4 millimetres in greatest width (Asherson 1939). It lies almost vertically above the crypt of the first deciduous molar tooth, which at that stage is larger than the cavity of the antrum, and forms a disproportionately prominent bulge in the alveolar margin. It will be appreciated, therefore, that infection developing in or around the crypt of the first deciduous molar tooth may rapidly involve both the antrum and the orbit, since both of these structures lie in close proximity to the tooth crypt and to each other.

PATHOLOGICAL FEATURES

Bacteriology—In the overwhelming majority of cases the staphylococcus aureus has been the causative organism. In some instances failure to secure adequate drainage has resulted in the culture of one of the common mouth contaminants—chiefly coliform organisms or diphtheroids—to which the infection has been incorrectly ascribed.

FIG. 1

Skull of newly born infant showing the anatomy of the maxillary region. (By courtesy of Mr N. Asherson).

FIG. 2

Antero-posterior radiograph of the skull of a newly born infant, showing the small maxillary antrum. The left antrum shows up clearly as a circular cavity and is indicated by the arrow. (By courtesy of Mr N. Asherson.)

TABLE II
DIFFERENTIAL DIAGNOSIS

	Osteomyelitis of the maxilla in the neonatal period	Orbital cellulitis	Acute dacryocystitis	Ophthalmia neonatorum
Age	Almost invariably within the first twelve weeks of life	Unusual before six months of age, but any age thereafter	At any age	Signs present about the third day in most cases
Organisms	Staphylococcus pyogenes aureus	Streptococcus	Streptococcus	Gonococcus; pneumococcus; staphylococcus
Orbital signs	Unilateral swelling of the upper and lower eyelids with proptosis, chemosis and ophthalmoplegia. The centre of the swelling is situated on the floor of the orbit at the inner or more rarely on the outer aspect	Unilateral swelling of upper and lower eyelids with proptosis, chemosis and ophthalmoplegia. The swelling is on the medial aspect near the floor of the orbit except in adults where it is nearer the roof	Unilateral swelling of the lower eyelid, which is initially confined to the vicinity of the lacrimal sac	Bilateral swelling of upper and lower eyelids, with purulent conjunctivitis and corneal ulceration in the later stages if untreated
Nasal signs	Unilateral nasal discharge on the affected side, appearing as a later sign; staphylococci can be cultured from the pus	Bilateral nasal discharge from which streptococci can be cultured	Simple catarrhal inflammation usually present, from which a mixed flora may be cultivated	—
Facial signs	Signs of inflammation are present over the canine fossa and cheek on the affected side. Later, the inflammation may spread to temporal fossa	—	The inflammatory process begins in the region of the lacrimal duct and sac, and spreads to involve the cheek later	—
Oral signs	Swelling and tenderness of the alveolus, buccal sulcus, canine fossa and palate on the affected side. Later, sinus formation and extrusion of tooth follicles and sequestra occur	—	—	—
Response to treatment	In early cases, with the correct chemotherapy, the condition may be aborted. Otherwise a chronic condition ensues with fistula formation and discharging sinuses. Removal of sequestra is essential	Response to chemotherapy and drainage is good; subsequent relapse and breakdown is uncommon	Response to chemotherapy in the acute stage is good. Chronic fibrosis in and around the sac may necessitate a subsequent dacryocystorhinostomy	Response to chemotherapy is good

Etiology—Many theories have been advanced concerning the route of infection and the exciting cause. Some writers consider that the infection is haematogenous, and spreads from an infection of the umbilical cord or from skin abrasions. Bass (1928) and Lacy and Engel (1939) have described cases in which a skin infection existed before the development of the osteomyelitis. Earlier writers ascribed the condition to an empyema of the antrum of Highmore, with later spread to the maxilla. But if this were so it would be expected that the nasal infection and discharge would precede the general signs, whereas in fact they appear after the inflammatory changes in the cheek and the formation of sinuses in the alveolus.

The involvement of the first deciduous molar tooth is a consistent feature, and the consensus of present opinion is that this tooth, or more precisely the region of the tooth follicle, is the central point from which infection spreads in the maxilla. The tooth is formed from a downgrowth of the dental lamina or anlage about the sixth week of intra-uterine life, and begins to calcify at the twenty-fourth week of intra-uterine life. As already mentioned, the crypt of the tooth forms a prominent bulge in the alveolar ridge of the maxilla of the newborn infant and lies in close proximity to the floor of the antrum, which it exceeds in size. A tract of epithelial cells persisting from the original anlage leads down to the crypt, and is known as the gubernaculum because the breakdown of these cells is thought by some authorities to assist in the eruption of the tooth. It is reasonable to suppose that the prominence occupied by this tooth is liable to trauma or abrasion from the manipulations of a mucous catheter, or from the finger nails of the nurse or mother during routine cleansing of the mouth after feeds. The introduction of a virulent pathogenic organism—derived perhaps from infected cracked nipples or from unsterilised feeding utensils—into such an abrasion might well be the exciting cause of the infection.

Pathology—In the *acute stage* the marked inflammatory reaction causes a hyperaemia of the surrounding vessels, which are unable to dilate within the confines of the bone. A spreading infective thrombosis of the vessels occurs, and a progressively larger area is involved as the perivascular inflammation extends throughout the maxilla. The infection spreads to the cheek, where a diffuse cellulitis occurs, and to the antral floor. Suppuration occurs within twenty-four to forty-eight hours, and the pus breaks through the outer plate of the maxilla, taking the line of least resistance through the antero-medial and superior aspect of the tooth follicle. Pus collects close to the lacrimal gland but does not involve its structure, and a discharge occurs into the nose from the antrum, which by now has developed an empyema. The floor of the orbit is involved, and subperiosteal infection leads to oedema of the periorbital tissues. The infection may spread around the lateral aspect of the maxilla and pass distally to involve the pterygoid plexus, the infra-temporal fossa and later the temporal fossa, where a localised abscess may form. In the mouth, neighbouring tooth follicles usually become involved, and discharging sinuses form in the alveolus.

In the *chronic stage* necrotic bone and devitalised tooth follicles constitute a chronic focus of irritation around which a low-grade infection persists. These sequestra are eventually extruded or exfoliated, the last one often being the outer third of the inferior orbital margin. It is probable that the richer anastomosis in the region of the inner canthus protects the bone in this region from destruction. Cavernous sinus thrombosis and meningitis are rare complications, but a close watch must be kept for them.

CASE REPORTS

Case 1—Infant boy delivered five weeks prematurely by caesarean section after pregnancy complicated by toxæmia. Fed by nasal tube. Twenty-six days after birth, an area of redness was observed over the region of the left lacrimal sac, with swelling of the eyelids on the same side. Dacryocystitis was suspected and instillation of penicillin, with "sulphatriad" 0.25 gramme given four-hourly by mouth, was begun. Four days later the swelling was larger and the infant was admitted to hospital. The temperature in the groin was 100 degrees Fahrenheit and the child was obviously ill. *On examination*, it was found that thick pus was escaping from the upper buccal sulcus on the left side. Culture revealed only non-haemolytic staphylococcus albus. Radiographs showed some blurring of the maxillary margins. *Treatment*—Penicillin (100,000 units twice daily) and "sulphatriad" (0.125 gramme four-hourly by mouth) were given and the mouth was swabbed with gentian violet after each feed. *Operation* was undertaken the next day: an incision was made over the left lacrimal sac; pus escaped under tension. The left maxillary antrum was washed out, but appeared to be clear of infection. The first upper deciduous molar tooth on the left side was removed. After the operation the temperature returned to normal; both sinuses discharged freely.

The child was transferred to the Plastic and Oral Surgery Unit, Rooksdon House, on the eleventh day of the infection. At that time he was five weeks old. There was pyrexia of 100.2

degrees Fahrenheit. The weight was seven pounds and the general condition was poor. *On examination* there was diffuse swelling and redness of the left cheek, with proptosis, chemosis, and ophthalmoplegia of the left eye (Fig. 3). There was a fluctuant swelling over the left temporal fossa. The incision below the inner canthus from the first operation had closed but there was a profuse mucopurulent discharge from the left nostril. Within the mouth, there was oedema of the left buccal sulcus, with a sinus in the region of the first deciduous molar tooth from which pus could be freely expressed. There was slight swelling of the palate on the left side. A further operation to secure efficient drainage was considered necessary. *Operation*—An incision was made in the left buccal sulcus, and pus under considerable tension escaped. Sinus forceps passed easily upwards beneath the zygomatic arch to the temporal region. Two tube drains were inserted for irrigation. Culture of the pus revealed staphylococcus aureus in pure culture. The organism was not sensitive to penicillin but sensitive to streptomycin.

After operation the cavity was irrigated every two hours with normal saline followed by penicillin solution (2,000 units per millilitre). Penicillin (200,000 units twice daily) was given by

FIG. 3

FIG. 4

Case 1. Figure 3—Eleven days after onset. Figure 4—Appearance six months later.

injection pending the laboratory report on the sensitivity of the organism. Satisfactory improvement occurred in the clinical condition. Blood examination two weeks after the onset showed haemoglobin 64 per cent (8.96 grammes per cent), red blood corpuscles 2,520,000 per cubic millimetre, and leucocytes 12,000 per cubic millimetre.

Progress—Five days after the second operation the washouts were clear and the drains were removed. But two days later there was a recurrence of infection in the cheek, and a leucocyte count of 24,000 per cubic millimetre. A further operation was undertaken. The sinuses in the mouth and buccal sulcus were reopened and a drain inserted. A transfusion of 50 millilitres of whole blood was given. In view of the insensitivity of the organisms to "sulphatriad" and penicillin, a course of streptomycin (0.75 gramme twice daily) was begun.

Two days after this third operation a further abscess developed below the outer canthus of the left eye. An incision was made below the outer canthus, and a drain inserted. Six weeks later (nine weeks after the onset of the infection) two sequestra were extruded from the sinus in the cheek. The larger piece appeared to be part of the outer third of the inferior orbital margin. The sinuses now soon closed and remained completely healed. The general condition returned to normal and at discharge from hospital eleven weeks after the onset the weight was

twelve pounds. When seen six months later the infant was in good health. Apart from a slightly depressed scar at the outer orbital margin there was no deformity (Fig. 4).

Case 2—Infant girl born at full term after normal pregnancy. Birth weight 6 lb. 11 oz. The infant was breast-fed for one week, but this was discontinued owing to the development of an acute breast abscess. Bottle feeding was then begun with half-cream national dried milk.

Three weeks after birth a swelling of the cheek on the right side was observed. Penicillin (300,000 units once daily) was given for three days. During this period a right periorbital swelling developed, and towards the latter part of the period a unilateral nasal discharge began upon the affected side. Orbital cellulitis was suspected, and the child was admitted to a general hospital. At that time the general condition was poor; there was pyrexia of 104 degrees Fahrenheit. There was cellulitis of the lower lid and the soft tissues immediately infero-lateral to the outer canthus. Over the temporal fossa there was an indurated swelling one centimetre in diameter. No direct orbital involvement was apparent. Examination of the mouth revealed a small discharging sinus in the upper right alveolus. The leucocyte count was 17,200 per cubic millimetre (polymorphs 56 per

FIG. 5

FIG. 6

Case 2. Figure 5—Two months after onset, in stage of chronic infection. Figure 6—Appearance three months later.

cent, lymphocytes 25 per cent). Bacteriological examination of the pus revealed coliform organisms resistant to penicillin, but sensitive to sulphonamides, streptomycin and chloromycetin. Streptomycin and chloromycetin were given, but with little clinical improvement. One week after the onset the swelling was fluctuant and operation to secure drainage was undertaken. An incision was made in the right alveolar margin, and gentle pressure on the right lower lid resulted in a free flow of pus. Culture revealed staphylococcus aureus and coliform organisms, both sensitive to chloromycetin. After operation the cellulitis of the lower lid subsided and the temperature returned to normal.

Two weeks after the onset of the disease there was a sudden recurrence of the periorbital infection with an associated pyrexia; the drainage of the intra-oral wound appeared to have ceased. The original incision was re-explored with sinus forceps and drainage again established. As the organisms were sensitive to aureomycin, a course of this antibiotic was begun. Attempts were made to aspirate the pus from the orbital region through the incision in the mouth. A week later a stab incision was made at the outer angle of the lower right eyelid, and a small rubber drain inserted. The periorbital cellulitis subsided, leaving a small circumscribed swelling beneath the lateral half of the right lower lid, which discharged profusely. There was also a constant

discharge of pus from the nose on the same side, and from the sinus in the alveolus. After another two weeks a further incision was necessary beneath the lower right lid to maintain drainage. Three weeks later the child was transferred to Rooksdown House.

Condition on admission—At that time the child was three months old and the infection had been present for two months. The general condition was good, he was taking feeds satisfactorily and gaining weight. Temperature 99.5 degrees Fahrenheit. The sinus below the outer canthus of the right eye was still discharging pus. There was oedema of the lids, but no marked proptosis or chemosis (Fig. 5). Profuse purulent nasal discharge was present.

FIG. 7

Case 2—Sequestra and first deciduous upper molar tooth removed at operation ten weeks after the onset of the disease.

Examination of the mouth showed three sinuses on the alveolus of the maxilla, from which pus could be expressed. A probe inserted into the sinuses detected bare bone, which did not appear to be separated from the maxilla. *Investigations*—Radiographs suggested that there was erosion of the maxilla on the right side, but the appearances were not conclusive. *Bacteriological* culture from the nasal discharge gave staphylococcus aureus, penicillin-resistant.

Treatment and progress—In view of the chronic nature of the condition it was decided to await

clinical evidence of separation of the sequestra before undertaking operation, and to withhold further chemotherapy until the time of operation. For three weeks the general condition remained satisfactory, the temperature fluctuating between 98 and 99.5 degrees Fahrenheit. After this time the sequestra appeared ready for removal. The blood picture at this stage showed: haemoglobin 80 per cent, red blood cells 4,000,000 per cubic millimetre, and leucocytes 11,600 per cubic millimetre. *Operation* was undertaken under aureomycin cover. An incision was made in the buccal sulcus on the right side and the alveolar margin gently explored. Two sequestra and the crown of the first deciduous molar tooth were removed (Fig. 7). The cavity was found to communicate with the sinus below the right lower eyelid; a tube was inserted through this sinus, emerging through the incision in the buccal sulcus.

After operation the tube was irrigated with normal saline every four hours, and removed after forty-eight hours. The temperature rapidly settled, and the wounds healed. Two months later there had been no relapse and the child was in good health: weight 15 lb. The only defect was a slight adhesion of the overlying tissues to the inferior orbital margin (Fig. 6).

DISCUSSION

Both cases presented the typical features of osteomyelitis of the maxilla in infants, and in both an incorrect diagnosis was originally made—in one case dacryocystitis, and in the other orbital cellulitis. Chemotherapy in the early stage was inadequate, and was instituted too late in the disease to have been able to prevent necrosis and subsequent sequestrum formation. The bacteriological picture was confused owing to a failure to cultivate the organisms contained in the true pus, as a result of which staphylococcus albus was initially cultivated in the first case from the skin, and coliform organisms from the oral cavity in the second case. Only after expression of the underlying pus, and its subsequent cultivation, was the characteristic pure growth of staphylococcus aureus obtained.

In each case persistent discharge continued until the necrotic bone separated, and recurrent exacerbations occurred as a result of incisions being allowed to close and consequent inadequate drainage. After removal of the sequestra there was rapid healing. In both cases the first deciduous molar tooth was involved; it was removed early in the first case and at the time of sequestrectomy in the second.

In assessing the significance of blood examination in young infants it is important to recall the normal blood picture at birth, and during the first three months of life. Average figures are shown in Table III.

A leucocytosis is normal in infancy and more reliance must be placed upon a relative polymorphonuclear leucocytosis replacing the normal relative lymphocytosis of infancy in assessment of the response to acute infection. This is illustrated by the findings in Case 2, in which a total white count of 17,200 per cubic millimetre included 56 per cent of polymorphonuclear leucocytes and only 25 per cent of lymphocytes, a reversal of the normal ratio in infancy. Moreover the physiological anaemia of infancy must be borne in mind when assessing the haemoglobin readings. Within a period of twelve weeks the haemoglobin drops from 140 per cent at birth to 70 per cent at three months of age, but after the first month the red cell count should remain at 5,000,000 per cubic millimetre, so that variations in this figure are possibly of greater value in assessing the haemolysis resulting from toxic infection.

TABLE III
AVERAGE COMPOSITION OF THE BLOOD IN YOUNG INFANTS

	At birth	One month	Three months
Haemoglobin (per cent)	140	100	70
Red blood corpuscles (per cubic millimetre)	7,000,000	5,000,000	5,000,000
Leucocytes (per cubic millimetre)	18,000	15,000	15,000

The authors consider that the present high incidence of penicillin-resistant staphylococcal infections merits the immediate exhibition of aureomycin in an attempt to prevent bone necrosis, and to cut short the disease. Though of bitter taste, aureomycin can be given without difficulty dissolved in a few drachms of the infant's feed. The dose is 25 milligrams per kilogram body weight.

SUMMARY

1. The literature on acute osteomyelitis of the maxilla in infants is reviewed and the improvement in the prognosis since the introduction of chemotherapy is noted.
2. The clinical features, diagnosis, surgical anatomy, pathology, and bacteriology are discussed and the constant pathogenicity of the staphylococcus aureus stressed. It is suggested that the first deciduous molar tooth is the centre of the early bone infection, and that the infection begins in the mucosa overlying this tooth.
3. Two cases are reported. Both were caused by a penicillin-resistant staphylococcus aureus.
4. The early use of aureomycin in an attempt to abort the infection is advocated.

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