

DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

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FOCAL INFECTION OF ORAL ORIGIN

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THE IMPORTANCE which focal infection plays in the causation of systemic disease is becoming more apparent. A list which includes those diseases in which the relation has been definitely established and those in which foci of infection are thought to be important etiologic factors would cover many disorders, affecting nearly all organs of the body.

Among those diseases, whose definite relation to focal infection has been established, we may mention acute and chronic rheumatism, neuritis, acute and chronic nephritis, the cardiovascular diseases and chronic arthritis. Among the conditions in which focal infection is suspected to be an important etiologic factor are included: appendicitis, gall bladder infection, goiter, certain skin eruptions, anemia and bronchial asthma.

The principal regions in which we find foci of infection are the genito-urinary tract, the nasal accessory sinuses, the tonsils and teeth; consequently the oral surgeon and dentist should be alert in detecting these conditions in the mouth and know how best to correct them.

LATENCY OF INFECTION

Rosenow, in 1914, in *The Journal of Infectious Diseases* for January, states that the acute conditions are not so important and emphasizes the fact that the chronic conditions may remain unsuspected for a long time, and that it is the so-called blind abscesses and granulomata, which seldom give rise to noticeable symptoms, that favor the continuance of bacteria in these foci, which gradually increase in size and slowly produce absorption and disease of the adjacent bone substance.

In the *Journal of the American Medical Association* for September, 1916, Irons reports some interesting data bearing on this subject. In patients with

arthritic conditions 76 per cent had alveolar abscesses. In the group of cardio-renal 47 per cent had alveolar abscesses. Abnormal tonsils were found in 40 per cent of the arthritic cases and 24 per cent of the cardiovascular cases.

The effects of focal infection have been strongly impressed on the medical profession and the medical men are frequently censuring the dentists for improper care and treatment of oral infections; therefore it is necessary that the dentist improve his technic and study all cases carefully, so that both professions may come to some definite conclusions as to the best methods of treating certain oral conditions.

X-RAYS USEFUL IN DIAGNOSIS

One of the best means of aiding diagnosis is the use of x-rays by a competent operator, and the proper interpretation of these findings, and, better still, a series of radiograms during the course of treatment, so as to have a definite knowledge as to whether the case is progressing toward a cure or not. For example, an apical abscess, according to many dentists, can be cured by proper treatment without extraction of the tooth. A series of radiograms during, and subsequent to, the treatment would be of great value in determining what is the best method to follow. We personally doubt that most apical abscesses can be cured by drainage through the root canal; an apicoectomy may eradicate the infection, provided the abscess cavity is accessible and can be thoroughly curetted, but in many cases there is a pericemental abscess also, and it seems logical to a surgeon that the most certain method of cure is removal of the tooth and curettement of the alveolus.

There are many cases in which these apical abscesses remain dormant for a long time, and when for some reason the patient's resistance becomes lowered, the abscess assumes renewed vitality and produces systemic infection; therefore, when they are known to exist we should adopt measures to eradicate them thoroughly.

TREATMENT

The treatment of oral infections is both prophylactic and active. Prophylaxis should commence at birth and be continued throughout life. The nursing infant's mouth should receive scrupulous care; actively scrubbing it is unnecessary, flushing it out with normal salt solution or sterile water is advisable, but the important point to observe is to see that the breast, nipples and anything that enters the mouth is absolutely clean. During the period of dentition it is necessary to keep the teeth cleaned properly and at the same time not injure the mucous membrane. Proper breathing is essential and any pathologic condition that interferes with nasal breathing should be corrected, as mouth breathing is an important factor in oral sepsis. Cavities should be promptly filled and a dentist should be consulted at regular intervals.

The condition of the mouth in adults should be even more carefully regarded and in users of tobacco this is extremely important. The irritation of the gums and mucous membrane produced by tobacco predisposes to oral infection and recession of the gums.

The active treatment should consist in measures to restore diseased parts to normal conditions. Salivary calculi are probably responsible for the beginning of dento-alveolitis in many cases, and careful scaling at frequent intervals, in cases which have this deposit, is one of the best means to avoid oral infection. If the mouth condition has progressed so far that general symptoms are present, attention must be paid to both local and systemic manifestations.

The proper course to pursue in a patient suffering from a disease probably caused by oral infection may be outlined as follows: Have the tonsils examined by a competent laryngologist and removed if diseased. Procure good radiograms of all the teeth and their supporting structures, including the antrum, and then have these radiograms read by a competent person. If questionable areas are found a blood examination may be of some value, and in the differential count an increase in the polymorphonuclears from about 65 per cent to 72 per cent and over indicates infection. Now comes the important problem, and it must be decided whether the infection can be eliminated with retention of the teeth, or if extraction is indicated, with or without curettement.

EXTENSION TO ANTRUM

We must consider infections in the antrum, as 75 per cent of these come from diseased teeth. If careful examinations are made we will often find that the apices of one or more teeth project into the antrum, consequently abscesses at the apices of such teeth would subject the antrum to infection and we cannot cure the patient by simply treating the tooth.

Ballenger states that the maxillary sinus is more frequently affected singly than any of the other sinuses, because in one-half of the cases it is infected from the teeth rather than from the nose, whereas the other sinuses are infected from the nose. It is especially important for the dentist, radiographer and surgeon to cooperate in these cases where there is no evidence of alveolar abscesses, and the teeth should be tested with heat and cold and transmitted light to determine the condition of the tooth pulp. The socket of any diseased root that may be extracted should be carefully disinfected and explored with a sterile probe, in order to determine whether there is an entrance into the antrum, and if the infection extends into the antrum it is best to enlarge this opening and provide adequate drainage. Where there is no necrotic bone in the antrum and it is not filled with polyps, drainage through the alveolar process is usually sufficient, but when either of these conditions exists, it is best to do a radical operation such as removing the anterior wall of the antrum in the region of the canine fossa.

ETIOLOGIC IMPORTANCE OF TONSILS

The tonsils play almost as important a part in causing systemic infection as do the teeth, and as their structure is especially suited to retain infection and still show little or no evidence they are frequently overlooked. The recognition of an acute tonsillar infection is an easy matter, but it is the chronic cases without any marked symptoms in the tonsils that are frequently overlooked.

When the tonsils are much enlarged the presence of tonsillitis is easily determined, but an enlarged tonsil does not always mean an infected tonsil. We often see tonsils in children that distinctly project into the pharynx and do not advise their removal when they are superficial and do not lie embedded between the folds of the soft palate. In adults we usually advise the removal of large tonsils, as they should have undergone retrograde absorption before adult life and only inflammation would cause them to retain their abnormal size.

In children enlarged tonsils are often due to inflammation and generally there is a history of tonsillitis, and these tonsils are generally markedly congested.

When tonsils are embedded they may be explored by a hook made of a bent probe, especially if the patient is made to gag, as gagging tends to protrude the tonsils into the pharynx and it is easier to explore the pockets for cheesy secretions which indicate chronic inflammation. When we find that the surface of a tonsil and the anterior pillar is congested, more so than the remaining mucous membrane of the pharynx, we may feel reasonably certain that there exists a state of chronic inflammation.

INDICATIONS FOR REMOVAL OF TONSILS

- I. In children when large enough to interfere with respiration.
- II. In children who have suffered from a serious systemic infection, such as endocarditis or an acute nephritis following an attack of tonsillitis.
- III. When there is a cervical adenitis and the tonsils show evidence of either acute or chronic inflammation.
- IV. In all cases where there is a history of recurring attacks of tonsillitis.
- V. In all cases where the tonsils are chronically infected, shown by congestion about the tonsils and the presence of cheesy concretions.

In adults the removal of the tonsils should be advised:

- I. In all cases where there is a history of recurrent attacks of tonsillitis.
- II. In cases in which the tonsils show signs of chronic inflammation, especially where there has been some systemic infection.
- III. In cases which show marked evidence of chronic inflammation, even though the patient has no systemic infection or local discomfort.

We cannot promise the patient that removal of the tonsils will always cure a systemic infection, but we should explain to him that the chances are that his condition will be improved by this procedure. This will also apply to infections in the antrum and around the teeth. The pathologic condition should not be present and its existence is sufficient reason for its elimination.

OPERATION FOR REMOVAL OF TONSILS

The practice of using a tonsillitome and amputating the tonsils has proved inadequate, as frequently the infection persists in the remaining tonsillar tissue and the patient has as much or more trouble than before operation. Complete excision of the tonsils is necessary, and for this purpose they must be dissected free from the pillars and are best removed with a snare. The Sluder instrument works well in removing tonsils that are not buried, but we have frequently

seen secondary hemorrhage following its use, and as it can be used only in selected cases, we feel that the snare is the most satisfactory and safest instrument.

Hemorrhage is seldom troublesome and is usually controlled by pressure or the application of a hemostat for a few minutes; all cases should remain in the operating room under observation for at least ten minutes after the operation is finished and hemorrhage is controlled.

The blood pressure should always be taken before operating on an adult, as high blood pressure increases the danger of hemorrhage. In both adults and children hemophilia must be eliminated and in any case with a suspicious history the coagulation time should be determined, and if it is delayed, proper measures should be taken to correct it before operation.

CONCLUSIONS

Defective teeth reduce physical efficiency. Dirty, suppurating mouths and other foci of infection are frequently responsible for many cases of rheumatism and other chronic affections. The dentist is no longer concerned solely with the repair, treatment, and replacement of teeth. He is concerned more seriously with his patient's health and life.

There should be cordial cooperation between the surgeon, the internist and the dentist in the treatment of these cases, as even with the most careful study many of them are obscure.