CALCULI IN THE SALIVARY DUCTS; REPORT OF A CASE.*

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Obstruction of a salivary duct is a condition not infrequently observed by the surgeon, a very familiar example of which is that condition called ranula. Any one of the ducts, the parotid, submaxillary or the sublingual, may be the site of the obstruction. Swelling at or near the mouth of a duct, caused by an inflammatory process, or an inspissation of the secretion, or the entrance of a foreign body into the mouth of the duct, are the usual causes of the obstruction.

The result of the obstruction is a retention of the normal secretion more or less complete, depending on the character of the obstruction, and a consequent swelling between the point of obstruction and the salivary gland. As for example, in ranula we observe a bluish-white-transparent swelling close to and at one side of the frenum linguæ, this being due to retention of the secretion of either the sublingual or submaxillary glands, or both, by some obstruction to its flow at the outlet of the duct of these glands. These, then, are the usual obstructive lesions observed in the salivary glands and their ducts. Much more rarely is seen the obstruction of a duct by the inspissation of the secretion and the deposition of salts, the normal constituents of the salivary secretion, constituting a salivary calculus.

Both of these varieties of salivary obstruction may exist for a long time without producing symptoms, and it may not be until the cyst in the one case and the calculus with the retained salivary secretion in the other becomes so large as to interfere with other functions in the mouth, that the abnormality is recognized. In some cases, however, and especially may this be so in the calculi cases, symptoms of much annoyance persist for a considerable time before the true nature of their causation is recognized.

Among the annoying symptoms may be mentioned periodic swelling in the region of the gland whose duct is the seat of the obstruction. As, for example, around the ear in case of obstruction of Steno's duct; on the floor of the mouth close to the ramus of the jaw in the case of obstruction to Wharton's duct; and on the

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floor of the mouth close to the frenum linguæ where the sublingual duct is obstructed. These periodic swellings are sometimes accompanied by severe pain. More frequently the sensation described is that of an unpleasant fullness, giving rise to much discomfort.

The obvious explanation for these periodic swellings and abatements is complete retention, followed by relaxation of the duct and release of the secretion. In some cases this explanation is made the more convincing by the statement of the patient, that at the time of the diminution of the swelling there is always a coincident outpouring of saliva into the mouth, as was stated by the patient whose case is reported tonight.

While the symptoms caused by the obstruction to a salivary duct is usually as stated, more of discomfort than pain, there are records of cases in which serious and urgent symptoms have accompanied it. Myles' reports the case of "a very stout man, with a short, thick neck, in whom there was serious interference with respiration. The epiglottis was swollen and pressed up by a large teat-like swelling on the lowermost part of the base of the tongue. A small fistula was to be seen in the floor of the mouth near the last molar tooth. The oedematous epiglottis was incised in several places with a protected laryngeal bistoury, and the swelling rapidly subsided to about half its former size. The projection at the base of the tongue was seized with a lingual tonsillotome and its apex cut away. It contained a burrowing cystic abscess filled with salivary and muco-purulent secretion. All the alarming symptoms rapidly subsided." Later, by bi-manual palpation and probing, he was able to detect a calculus in the submaxillary gland. This latter was removed in small pieces by dilating the duct and curetting. The symptoms were entirely relieved and the patient recovered.

The etiology of salivary calculi is obscure; there are probably several causes. Alteration of the secretion in the gland, causing inspissation, is a factor. This may arise from inflammatory or other initiative processes. Diminution of the normal calibre of the duct of a salivary gland from an inflammatory process, thereby retarding the natural flow and causing inspissation of the secretion and deposition of salts. The entrance of a foreign body into the duct, serving as the nucleus for the deposition of the normal salts of the salivary secretion, has been dwelt upon by some observers. The

¹Myles. THE LARYNGOSCOPE, December, 1904, p. 916.

more modern views as to the causation of diseased processes, namely, by the intervention of bacteria, prevail here, and are the most commonly accepted by recent investigators.

An infectious process is inaugurated at some point in the gland or along the duct, which is invaded with myriads of bacteria; a collection of these bacteria form the nucleus of the stone. This condition has been verified by numerous observers. The bacteria found have been those which are usually found in the mouth under normal conditions.

The composition of a salivary calculus is both organic and inorganic. The nucleus is apt to be a cluster of bacteria or a foreign body surrounded by myriads of bacteria; superimposed upon this mass is layer upon layer of the usual salts found in saliva—mostly phosphate of lime. Calculi are of varying sizes and shapes; those in the glands are usually larger and more numerous than those in the ducts. Glandular calculi are also more irregular in their contour. Calculi in the ducts are more or less round in shape and vary in size from a millet seed to a grain of corn, or even larger.

The diagnosis of calculi is attended with some difficulty, since the cases are often obscure in the early part of their course. Unilateral swelling, often of an intermittent character, in the neighborhood of a salivary gland, should excite the suspicion that such an abnormality existed. This suspicion should lead to a careful examination along the course of the duct whose gland is the seat of swelling. If there is not too great oedema around the duct so that the calculi is imbedded, its presence will be detected by this means of examination.

The obvious treatment of calculi of the salivary duct is complete removal of the obstruction from the duct with as little injury as possible to the caliber of the duct and the surrounding mucous membrane, and an endeavor to effect a normal condition of the duct. Whenever possible the removal of the stone must be through the mouth. To accomplish this purpose, the calculus is grasped between the thumb and finger of one hand and the mucous membrane made tense over its surface. This incision is then carried down to the stone and the latter made to engage in it, from whence it is carefully extracted. Likely adhesions have formed around the stone and it is not so easily extracted as this description would seem to indicate. Care in dissection, however, will enable us in most cases to extract with little trouble. If very large, the stone may be crushed by a hemostat or other strong forcep and extracted piecemeal.

An effort should be made to find the duct and determine whether or not a stricture or any other condition diminishing its caliber exists. Should the duct be found abnormally contracted dilatation by means of graduated bougies may be employed. The wound made by the incision generally heals quickly.

Salivary fistulæ are a very unusual complication, but the possibility of such an accident should be borne in mind, because in some localities, e. g., in Steno's duct, it would be an unfortunate and disagreeable complication.

These desultory remarks have been suggested by the case, whose history is as follows:

J. W., aet. 27, came to see me because of a sore throat and an uncomfortable sensation below the angle of the jaw on the left side.

He stated that for a long time, perhaps a year or more, he has had discomfort at the angle of the jaw, accompanied by swelling below the angle and on the inner side of the jaw and floor of the mouth. This has not been continuous, but seemed to come on in attacks which would last for a time and then almost suddenly disappear.

He noticed that at the time of the subsidence of the swelling there was an unusual flow of saliva in the mouth.

These attacks, as he called them, seemed to come with increasing frequency, and the discomfort became more and more distressing, so that he became alarmed and decided to consult a physician.

Upon examination around the angle of the jaw, both inside and outside, no area of tenderness or swelling could be found.

From the history, however, it was thought there might be some interference with the function of the salivary glands, hence the finger was passed inside of the mouth from the angle of the jaw across the floor of the mouth in the direction taken by Wharton's duct. Almost at once the finger was arrested by the presence of a hard, unyielding body. This was found to be located on the floor of the mouth, midway between the inner surface of the ramus of jaw and the frenum linguae.

The mucous membrane around and over the foreign body was well cocaineized and the body grasped between the forefinger and thumb, making the mucous membrane tense. An incision was made down to the foreign body, which was found to be a calculus. Some difficulty was encountered in separating it from its bed, but after a little manipulation this was successfully accomplished and the stone removed.

The wound in the mucous membrane and duct healed promptly and the patient made an uninterrupted recovery. All the unpleasant symptoms disappeared and the patient has since remained well.

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