

ABSOLUTE REPOSE OF THE JAWS AS A TREAT-
MENT FOR TRAUMATIC PAROTID
SALIVARY FISTULÆ.*

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In the *Revue de Laryngologie* for March 5, 1916, we published an initial work on the important question of the parotid salivary fistulæ, and we proposed immobilization or absolute repose of the jaws as the preferable treatment, the result of the experience acquired under the direction of Professor Moure, head of the Otorhinolaryngologic Section of the 18th Region. A new year has brought us new cases which, since all have been treated systematically in the same manner with success, urge us to return to our initial study for the review of maxillofacial prosthesis.

We agree with Morestin in considering a salivary fistula present when a permanent abnormal orifice connects the passages for the saliva with the outside.

Relatively rare in times of peace, salivary fistulæ are, on the other hand, quite frequent in times of war; history shows us that they have been from antiquity up to the present time a subject of constant study for the practitioner who is called upon to remedy them.

Galen, ignorant of the existence of the parotid gland, had already observed that in wounds of the cheek a clear liquid was discharged which might well be saliva, and that is all.

Fabricius, of Aquapendente, in an analogous case, tells us quite simply: "Whence it comes and whither it goes, surely I don't know."

*Translation made in the office of the Surgeon-General of the Army from the original which was published in *La Restauration Maxillo-faciale*.

Ambrose Paré wrote: "There was a soldier who had received a sword thrust across the superior mandible, and when the wound healed there remained only a very little hole near the conjunction of the inferior and superior mandible, not larger at most than the head of a pin, from which when talking or masticating, there came out a large quantity of very clear water, and I have oftentimes seen it."

When Stenon had discovered and described the excretory duct of the parotid gland a new era was soon established for treating parotid fistulæ and chiefly those in which the duct only was injured.

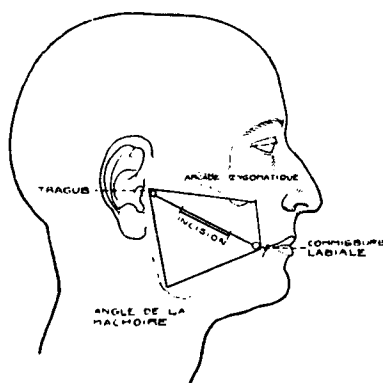


Fig. 1. Schematic plan for repair of Stenon's Canal.

The proceedings of the Académie Royale de Chirurgie, in 1757, have much to say about this question. Then followed in rapid succession the inauguration of new methods of operation, both in France and in foreign countries, by Deroy in 1760, Déjerine in 1811, Larrey-Désault, Vercy, Atti, Béchard, Gosselin, Trélat, Malgaigne, Lefort, Pozzi, Mollière, Richelot, etc. Finally, in these more recent years, the works of Fris, Coursier of Paris, Tussau of Lyons, Delarue of Paris, Joncour and Baillif of Bordeaux and many others, doubtless, whom I pass over without naming, by their number and diversity showing how difficult the question is to solve.

It is advisable to recognize two types:

- (a) The fistulæ of Stenon's duct;
- (b) The fistulæ of the parotid gland proper.

The first affect only the extraglandular portion; the second, on the contrary, affect the intraglandular part, which explains the great variation in the seat of the trouble which forms the subject of our study.

The extraglandular region of the parotid duct, or Stenon's duct, is the portion that extends from the anterior border of the parotid gland to the buccal orifice. Where it issues from the gland, Stenon's duct proceeds over the outer surface of the masseter, following a course somewhat obliquely upwards and forwards, drawing nearer to the zygomatic arch, from which

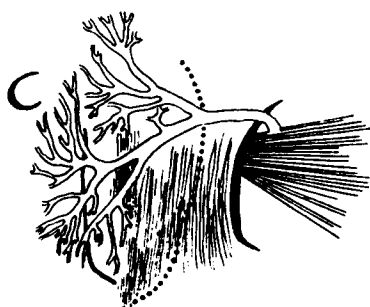


Fig. 2. Stenon's Canal and its principal branches after dissection.

it always keeps about a centimeter and a half away; at the level of the malar bone this distance may be reduced to five or six millimeters. When it arrives at the anterior border of the masseter it encircles it and the fat-ball of Bichat, where it hollows out into a deep fossa. It finally returns on the external surface of the buccinator and, resuming in the interior of this musculature its original anteroposterior direction, it opens upon the surface of the buccal mucous membrane through a narrow orifice, the exact location of which it is difficult to determine, for it varies according to the individual; nevertheless its most usual place is in the space between the first and second large molar. Application of a solution of cocain with ten per cent adrenalin to the mucosa renders the catheterization of it easier.

According to Baillif,¹ the region on the cheek that corresponds to the course of Stenon's duct is almost quadrilateral in form. "Its upper limit is marked by a line running slightly obliquely downward and forward, which follows the inferior border of the zygomatic arch and the malar bone. The inferior limit is marked by a line running from the labial commissure to the angle of the maxillary bone. The posterior limit is constituted by a line running somewhat obliquely downwards and forwards, which follows the posterior border of the ramus of the inferior maxillary. Finally the anterior limit is formed



Fig. 3. Wound of the face involving the parotid region and that of Stenon's duct.

by a line parallel to the posterior border of the quadrangle. The tragus lies at the posterior superior angle, and the labial commissure at the anterior inferior angle. The tragus and the labial commissure are two landmarks; a straight line between these two points shows the direction of Stenon's duct."

This quadrangle embraces two regions which are called the masseteric and buccinatory. We need not pay special atten-

1. Baillif: Thèse de Bordeaux, 1898-98.

tion to these if we are not operating on fistulæ of Stenon's duct; but we ought to mention them, for these two regions play a leading part in mastication and speaking; and our treatment depends on the absence of these two actions.

The direction of Stenon's duct is not always as precise as that just indicated. Baillif states that, in the investigations he made on the cadaver, under the direction of Professor Princeteau, he happened to find one instance in which the



Fig. 4. Site of the fistula in the posterosuperior portion not involving the excretory canals of the parotid.

direction followed a line running from the tragus to the ala of the nose.

Joncour¹ studied with care the intraglandular part of the parotid duct; like all anatomists who have studied the site of the parotid gland, he states that this gland is very irregular, and for this reason hardly to be designated by any well known geometric form. In the same person it may even present an absolutely different form on the right side and on the left.

1. Joncour: Thèse de Bordeaux, 1898-99.

As the original branches of Sténon's duct proceed from different parts of this gland we may form an idea of the varied character of their number and arrangement.

In order to study the intraglandular part of the parotid duct in detail, Joncour injected colored gelatin after taking care to dissect Stenon's duct somewhat at its buccal orifice, so as to fix firmly the point of his syringe by means of a ligature.

The excretory duct, he says, "as far as the course in the interior of the gland is concerned," shows numerous divergences.



Fig. 5. Mutilation of the face; the entire parotid excretory system involved.

Generally the intraparotid duct has an oblique course upwards and forwards, and its point of emergence is at the junction of the upper and middle third of the anterior border of the parotid gland. (Figure 2.)

Further the intraglandular median duct, which is quite superficial at the anterior part of the parotid gland, becomes deeper and deeper as it approaches its point of origin.

The diagnosis is self-evident. The history of the patient exhibits the nature of the trouble.

Actinomycosis, in particular actinomycosis at the entrance of Stenon's duct, and the lymphatic fistulæ of this region, to mention only these two affections, have characters clearly differentiated, and the regularity of the flow upon which mastication practically has no influence, or chemical analysis of the liquid secreted is sufficient to establish a definite diagnosis.

During the intervals between meals the condition is bearable, but when the least gustatory stimulation takes place, the



Fig. 6. Fistula in the middle third involving the entire parotid substance.

flow becomes truly a torture. The patient is really inundated and is required to put compresses over the opening of the fistula, which must be changed frequently on account of the abundance of the flow; he no longer dares to appear in public and condemns himself to an isolation which soon becomes harassing, so that he no longer dares to eat or to talk.

Certain authors, especially Morestin, have made investigations to find out how much of the liquid is secreted in the course of a meal.

Twenty to two hundred and eighty grams seem to be mod-

erate figures. Duplessis, for instance, was able to collect eighty-eight grams in eighteen minutes, and Duphoenix one hundred and twenty grams in twenty-eight minutes.

It seems clear, then, that salivary fistulæ, to which we are giving our attention, constitute a real infirmity by reason of interference with social life, not to mention the reaction upon the general condition in time; these justify all of the importance given to their treatment.

The prognosis of salivary fistulæ will vary according to the



Fig. 7. Transverse wound of the face with fistula of Stenon's duct.

site and direction of the wound caused by the producing instrument. The anatomic facts stated above show that a wound situated farther from the median main tract will affect quite a large number of collateral branches (Figure 3), while a wound in the upper or lower part of the gland will, especially if superficial, affect only canalicular branches of slight importance. These last are the fortunate cases; the external flow of saliva will be rather slight and spontaneous cicatrization comparatively easy. (Figures 4 and 5.)

If the wound is parallel to the principal parotid duct and

is situated a very short distance from it, the collateral branches proceeding from that portion of the gland will be affected above and below the lesion at the point where they unite into the main duct, and the saliva carried by these branches will flow externally instead of going down into the excretory duct.

As the flow of the saliva is produced abundantly during mastication, cicatrization will become very difficult if not impossible.



Fig. 8. Transverse wound of the face with punctiform fistula of Stenon's duct. Only by absolute fixation of the maxillary was it possible to stop the salivary secretion.

Let us assume that there is a vertical wound of the parotid gland; in this case the median duct will either be involved or not.

If the median duct is spared, the collateral branches involved will often be of little importance, and in all cases they will be rather few and the salivary flow from the gaping wound will be comparatively small and the cicatrization easy. (Figure 6.)

If, on the contrary, the traumatism includes the central duct

of the gland and destroys its continuity, the flow of saliva from the wound may be very abundant. (Figures 7 and 8.) All of the saliva poured down from the collateral branches above the intersection will continue to proceed towards the mouth to the level of the open wound through which it will flow. Further, as the presence of valves regulating the flow of the saliva in the excretory duct has not been demonstrated, a portion of this saliva collected by the collateral branches into the drain canal below the place of the traumatism will possibly flow

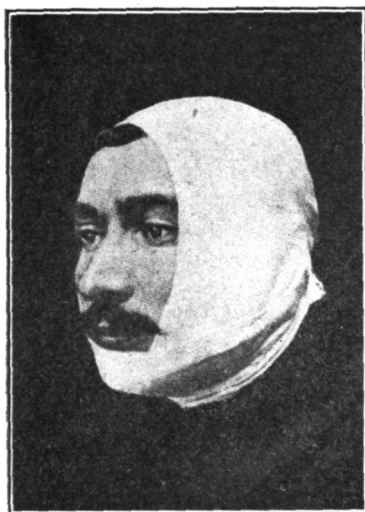


Fig. 9. Our dressing. The patient has a salivary fistula of the left parotid.

through the wound instead of being directed towards the mouth. Surgical intervention in this case, for example, in order to be successful, should endeavor to force the saliva poured into the canal behind the break in continuity to flow towards the mouth, and should also prevent at the same time the saliva poured into the anterior portion of the canal from flowing through this wound.

If the second part of the problem seems to be easy to realize, the first on the contrary appears impossible. The posterior

part of the gland becomes impaired and will continue to secrete and its secretion will prevent cicatrization, the result sought by the physician and so much desired by the patient.

Treatment.—The multiplicity of procedures proposed proves that none of them can be used in preference to the others for an assurance of cure.

In order to reduce the possibility of numerous subsequent procedures, it is well, in the succession of operations, to go from the simple to the complex. It is for this reason that the



Patient shown in Fig. 10 after the performance of Monre's genioplasty.

treatment applied by Professor Moure should be employed; it puts into practice the famous principle, alas! too often forgotten: *Primum non nocere*.

I have not found the procedure of the absolute repose of the jaws suggested in any of the papers which I have consulted on this subject.

The compression of the gland is advised by Maisonneuve,

whose method, although of little efficacy, is set forth at length by Rousseau.¹

Caustics and agglutinants—like the gold plate used by Malgaigne and Rodolphi's collodium—have had their day. For the sake of record, I mention also the compression of the carotid and the ablation of the parotid gland, without any comment.

Borel tells us of the ligation of Stenon's duct which was made by Viborg and which seems to have been accepted by Velpeau.



Fig. 10. Same patient as in Fig. 9 showing binding appliance.

The obliteration of Stenon's duct by a foreign body was the method proposed by Julliard who, in the *Annales médicales de la Suisse romande*, for 1883, reported good results by the introduction of salts of laminary into the canal.

Injections to produce atrophy were recommended in 1884 by Mollière of Lyon. He used phenolated oil, and a little later Settimio Cocchini gave preference to turpentine, either pure or mixed with olive oil.

1. Rousseau: Thèse de Paris, 1909.

The surgical procedures which depend on the source of the saliva remain to be discussed. The source is often illusive, for the permeability of Stenon's duct does not always follow with a pleasing result after intervention, so that one may often be right in thinking that Stenon's duct, buried in cicatricial tissue, has quite simply disappeared, as if it had been ligated.

I say nothing of these surgical procedures, thinking that before trying to change the course of the saliva, it is more logical to try to lessen its production.

It will be best to first diminish the production of this saliva as far as possible by the absolute repose of the jaws, through the agency of our mask (Figure 9), at the same time suppress-

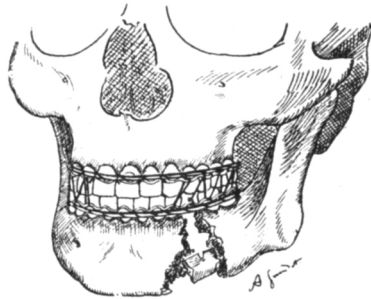


Fig. 11. Model of fixation appliance.

ing all gustatory sensation and putting the patient entirely upon a liquid diet for several weeks by means of a long tube, and imposing upon him absolute silence as far as possible.

Feeding is resumed afterwards gradually, beginning with porridges, pastries, milk foods, and eventually bread and food that require mastication.

The headpiece that we use is very simple. It is a sewed bandage which prevents opening the mouth. It is well to pad the regions connected with the ear, and sometimes also to arrange a pad of gauze on a level of the fistula. This mask shall be renewed whenever it is deemed advisable and immediately replaced by one exactly like it.

In certain cases accompanied by fractures of the maxillary it will be possible to combine with advantage the headpiece and the fixation of the jaws according to the method used with

success at the Stomatologic Center of the Eighteenth Region. (Figures 10 and 11.)

By limiting in this extreme and almost absolute manner the physiologic functions of the parotid gland and exercising a little patience, the fistula will dry up, then close or in case of failure there will still be time enough to employ the surgical procedure of choice to turn the course of the saliva which by its presence prevents the cicatrization of the fistula. (Figures 12 and 13.)



Fig. 12. Patient shown in Fig. 9 on arrival at the hospital. The saliva flows copiously from a crater like granulating wound at the slightest movement of mastication.

We do not know what happens to the parotid gland in the course of our treatment, but we think that it becomes adapted quite simply to the condition of repose, and when mastication is resumed, if the excretory duct is permeable, the normal function returns as the parotid gland on the opposite side. In the cases where there has been no infection, can we assume an atrophy of the gland? I do not think so.

The atrophy of a gland after the ligation of its excretory

duct comes about only very slowly, physiologists tell us, and there should be the same conditions in cases where a parotid fistula is little or not at all infected, while, on the contrary, in cases of parotiditis consequent upon traumatism, the destruction is rapid and permanent.

In most of the cases which we have had to treat, we think the glandular tissue proper becomes sclerotic and adheres firmly to the tissue framework which before had acted as a support pure and simple, but this is an hypothesis which histologists may verify.

Conclusion.—Can we say that this way of treating parotid salivary fistulæ by an absolute repose of the jaws is infallible? This is far from our opinion, in spite of the uniform success up to the present time, but it is so harmless, so easy to employ, and the results obtained are so encouraging that we believe it is worthy of trial and, at least, of interesting even the most skeptical.

The figures which illustrate this article are taken from among the most characteristic of the thirty-eight cases observed and cured.