LXIX.

INSERTION AND SEAT OF RHINOPHARYNGEAL FIBROMATA.*

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Considering the number of years that surgeons have been concerned with fibromata of the postnasal chamber, evoking study after study, it may seem superfluous to take up from a rhinologic standpoint a question which many regard as finally settled.

No one will deny, however, that the ablation of these tumors through the natural passage, whenever possible, has markedly improved their prognosis, and the accomplishment of this with safety has been due to the persevering efforts of specialists. To improve still further the technic of eradicating rhinopharyngeal fibromata, our efforts should be directed toward ascertaining their seat and attachments. On this point classic statements are, as we shall see, far from constantly corresponding with the facts.

At present it is customary to assume that rhinopharyngeal polyps are tumors with a pharyngeal seat, primarily arising from the basilar process in the roof of the cavum, and only secondarily pushing forward into the nasal cavity.

"These are tumors," says Morell-Mackenzie (1882) "of a fibrous structure, which generally arise from the vault of the pharynx, often extend into the nasal fossæ and even the antrum, or descend into the pharynx as far as the epiglottis."

"We fully accept," says Gerard-Marchand in Duplay and Reclus' treatise (1891), "the modern conclusion that while in the immense majority of cases rhinopharyngeal fibromata are inserted into the basilar area, they may also originate upon the posterior orifice of the nasal fossæ, on the internal wing of the pterygoid process."

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More recently still, Mickulicz, in Heymann's *Manual of Rhinology and Laryngology* (1899), formulates an analogous opinion. "They are tumors," says he, "which take their origin from the thick, fibrous, chondroid covering of the cranial base, and belong structurally to the group of fibromata. Their seat of election is the basilar portion of the occipital bone, which corresponds to the most anterior region of the rhinopharyngeal roof. More rarely fibrous masses of the same nature are seen in the neighborhood of the choanæ and in the sphenopalatine fossa. Still more exceptionally they are attached to the anterior aspect of the first two vertebral bodies, which are covered with a similar fibrous layer."

I believe it is useless to multiply citations. The unanimous sentiment of general surgeons still rests today upon the assertions of Nelaton and his school (1850), corroborated by the anatomic observations of Tillaux. "The inferior surface of the basilar process is covered," says the latter, "with a fibrous layer of considerable thickness. Its form is triangular. Its apex lies between the basilar process and the odontoid process. Its base looks toward the pharynx cavity. Its width in the adult is about 18 mm.; height, about 27 mm. The importance of this fibrous tissue comes from the fact that it is nearly always the point of origin of rhinopharyngeal polyps, those singular tumors which have a marked predilection for the male sex and for adolescents."

In sum, until lately, the customary opinion in surgical pathology was that hard, bleeding polyps, with a large base, in the postnasal space, necessarily took origin in the strong ligaments which unite the occipital to the first cervical vertebrae. All other attachments were adventitious. The tumor, born in the epipharynx, only secondarily invaded the face cavities.

True, the exclusivism of this conception was tempered with some reservations on the part of a few operators. Without mentioning the cases of Robert, of Michaux (Louvain), in which they saw pharyngeal fibromata with a cervicorachidian insertion, it is fair to recall that Gosselin admitted that these tumors sometimes arose from the back part of the ethmoid, and belong then to nasal pathology. For him their place of origin went in all directions much beyond the basilar covering, which, however, remained the center of the territory.

Now in place of the classic idea of a basilar origin and

primary pharyngeal seat for juvenile hemorrhagic fibromata, there has been for some years a tendency to substitute a new view, which I have endeavored to disseminate in various writings, namely, that of an ethmosphenoidal insertion and primary nasal seat of these neoplasms.

Without prejudging the operative and postmortem findings which should be determinative as a last resort, it is permissible to draw attention to certain clinical facts that are not harmonious with the generally accepted hypothesis.

On carefully reading again the published cases we notice constantly in the histories that one of the nasal fossæ is obstructed early, while respiratory embarrassment appears in the opposite side only at a relatively late stage of the trouble. Does an ordinary primary tumor of the epipharynx behave thus, for example a sarcoma of the pharyngeal tonsil, whose origin is exactly superposed upon the basilar fibrous coat? We know that in such a case the obstruction to respiration simultaneously involves both sides of the nose with a slight predominance on one or the other side, according to the case. On the other hand, experience teaches us that antral mucous polyps with a pharyngeal evolution produce a progressive nasal dyspnea successively upon the two sides, and not simultaneously, identical with the course observed in rhinopharyngeal fibroma.

Again, it is hard to understand how, on the hypothesis of a tumor originating from the roof of the cavum, there should be such a marked invasion of one of the nasal fossæ, and its upper annexes in particular, by a benign neoplasm whose weight ought to drag it downward into the free cavity of the pharyngeal tunnel. Above all, how shall we explain the perforations of the roof met with by many operators?

Such an evolution with such complications agrees admirably, we must confess, with the notion of fibrous proliferations implanted upon the upper wall of the nose. True, in the nasal portion of the cranial base there are no fibrocartilaginous layers comparable to those which cover the vertebral body of the occipital and upper spinal structures. But is such a layer necessary for fibromatous neoplasia, such as the narrow conception of Nelaton seems to demand? Do we not see fibrous tumors similar to rhinopharyngeal polyps, if not so vascular, arise from aponeuroses, from the periosteum, and even from the tegumentary connective tissue?

Further, fibromata of the nasal fossæ themselves have been noted and described by a number of authors. Morell Mackenzie has observed one indisputable case. I myself have recently observed two remarkable cases. One of these was a man beyond thirty. The growth had been present for six years, and only latterly had it invaded the cavum. It was inserted into the mesial aspect of the superior turbinal. The other was met with in a girl of eight. It started from the anterosuperior region of the ethmoid and had enlarged the glabella. In course of extirpation the rupture of a large cyst gave rise to a momentary suspicion of an unrecognized meningocele.

But before going further into the discussion, it is indispensable, I think, to state precisely what we understand by fibromata of the nose and pharynx. With the majority of authors I designate by this appellation tumors of generally firm consistence, usually tough, of fibroid texture, rich in vascular lacunæ, and having a thick, resistant pedicle directly attached to the bone. Development is slow and progressive; it leads at length to skeletal deformity by pressure. Histologically there is a hyperplasia of fibrous tissue with parallel fasciculi, generally poor in cells. Not rarely may be observed places of cellular proliferation with a sarcomatous appearance, or, again, foci of degeneration whose softening may end in the formation of cystic spaces, wholly different from those of true glandular cysts, of which mucous polyps furnish us such frequent examples. In places, also, may be seen connective fibers, dissociated by the edema, and on superficial examination resembling a simple irritative infiltration of the mucous chorion, analogous to that which gives rise to benign polyps.

These casual and partial analogies do not justify, to my mind, an association of true fibromata, the rhinopharyngeal polyps, with the diffuse hyperplasias, infiltrated with serum, which primary or secondary vasomotor disorders cause to arise in the mucosa of the ethmoidal region. These are hyperplasias which have been designated edematous fibromata after establishing the fact that they are myxomatous in appearance only. I differ, then, from Heymann (of Berlin) when he confounds in the same chapter of his *Manual of Laryngology* all the soft benign tumors of the nasal fossæ. I hold that there is room to distinguish clinically fibrous polyps or "rhino-

pharyngeal fibromata," from mucous and fibromucous polyps or "edematous fibromata."

Parenthetically, we must acknowledge that certain features attributed to rhinopharyngeal polyps by former writers are less absolute than is customary to admit, such as spontaneous hemorrhage, which may be lacking throughout, such as the narrow limitation of the 25th year for the period of accretion, and, finally, such as the exclusive predilection for the male sex.

A second point likewise demands precision. What is understood by "insertion" of rhinopharyngeal polyps? For a long time it has been observed that these tumors adhere to the walls of the face and neck cavities, not in one place only, but generally several places, which in a particular case justified employing the term, elsewhere abusive, of "polyps" as a designation. However, these multiple attachments are far from possessing the same significance. Some, variable in situation, are only adventitious, and result from secondary coalescence of surfaces eroded by reciprocal pressure. The others, much more fixed in situation, as we shall see, alone represent the primary insertion, the point of origin of the neoplasm. The extent varies in both, but the degree of resistance is quite characteristic in each class. The secondary adhesions scrape off easily with the nail or spatula from the subjacent tissue, especially from bone. Such detachment is impossible at the true pedicle, whose eradication inevitably brings with it osseous particles or even entire lamellæ of the compact substance. This is the pedicle in question when we discuss the insertion of rhinopharyngeal polyps.

Let us see now what a careful study of these facts teaches us:

About fifteen years ago I begged my colleague and friend, Prof. Moure, to operate by the natural passages upon a boy treated for several months in my clinic by electrolysis for a typical rhinopharyngeal polyp provoking copious hemorrhages. The operation revealed that the pedicle of the tumor went up into the right nasal fossa and was fixed in the sphenoid region. Moure, on that occasion, gave out the opinion that juvenile fibromata of the cranial base arose more often from the border of the nasal and pharyngeal cavities than from the roof of the cavum, an opinion which he affirmed the following

year at the French Society of Laryngology, elaborated later in the theses of his pupils, Latour (1901), Gautier (1904) and Duverger (1905).

Struck with the contradiction of the classic theory by my patient, I resolved to try to determine as exactly as possible the manner and place of insertion of rhinopharyngeal polyps which might come to my hands for operation. In May, 1908, I was able to present to the French Laryngologie Society six cases personally operated upon and cured. In all my patients the principal attachment was upon the anterior aspect of the sphenoid body, and extended more or less toward the root of the internal wing of the pterygoid apophysis, without involving in any way the body of the occipital. During the discussion of my paper a number of French and foreign special surgeons gave the support of their experience to the theory which I maintained (Moure, Beco, Lafitte-Dupont, Texier, Raoult, Castex). It was different at the French Surgical Society the same year, where I raised the question in answering an important paper presented the year previous by Prof. Tedenat of Montpellier. This author, out of 32 cases observed or operated on by him, in 26 found the insertion exclusively basilar; in 4 the place of attachment could not be exactly determined, and in the 2 others the tumor was fixed to the vomer and root of the pterygoid. Admitting the fewness of the cases personally observed, but carefully studied and all entirely concordant, I feel a right to conclude that the basilar insertion has at least frequent exceptions, that there is ground for inquiring if the classic notion did not originate from cases seen under especially unfavorable conditions, and that the theory of rhinologists who, along with Capart, Moure, Apert, Escat and Broeckeaert, localize the pedicle to the sphenoid, does not contain more of truth.

It does not appear that my arguments sensibly affected the Nelaton theory in the minds of the general surgeons, judging by the discussion which took place two years later in the same society over a report by Prof. Rouvillois, of Val de Grace. This was an interesting case in a young soldier who recently died in his care, following repeated hemorrhages from a pharyngeal fibroma. Autopsy showed that the insertion of the polyp was upon the anterior aspect of the sphenoid body, encroaching somewhat interiorly upon the vomer and laterally

upon the root of the pterygoid. The floor of the sphenoid antrum was destroyed and an intrasphenoidal lobule of the growth adhered to the internal border of the excavation. The basilar process was entirely exempt.

Responding to this suggestive contribution, Prof. Kirmisson conceded that rhinopharyngeal fibromata, beside their basilar insertion, may extend their attachment to the border of the choanæ. It is seen that the dogma of a basilar origin for juvenile fibromata remains untenable. I also deemed it well to publish last year two new cases of mine, completely according with the others, making eight cases with eight sphenoidal insertions and no basilar insertion. This, it must be agreed, is something more than a fortunate coincidence.

Meantime (1909) Escat has brought to the support of my assertion a case observed by him from 1898 on, of a purely nasal fibroma, operated upon *per vias naturales*, which recurred at its pedicle, inserted in the posterior part of the nasal roof, and subsequently evolved into a typical rhinopharyngeal polyp which caused death by hemorrhage.

Since then Prof. Sieur (paper) and Prof. Gaudin (oral) have aided in confirming my theory by their personal statistics.

Let us sum up briefly the facts in this short discussion of the anatomic origin of rhinopharyngeal polyps.

The great majority of general surgeons at present still hold to the old doctrine based upon the teachings of Nelaton and his school, that the site of election of rhinopharyngeal polyps is the vault of the pharynx between the tubercle of the atlas and the beak of the sphenoid. They arise from the fibrous tissue which covers the basilar process in that region, and upon which rests the pharyngeal tonsil. Hence they are primarily pharyngeal tumors, but they may secondarily invade the nasal fossæ and their sinuses. Exceptionally their insertion may exceed the limits of the basilar coat, and descend to the bodies of the first cervical vertebræ, or advance upon the pterygoid, the choanal arch, or the vomer. Lastly, there is an extrapharyngeal variety (*extra cavital*) which originates in the fibrocartilaginous tissue of the irregular anterior opening (Bensch) and develops in the soft parts of the pterygo-maxillary fossa.

During the past decade, in the rhinologic world, minute clinical and operative investigations have developed an opin-

ion decidedly divergent from the old conception, big with operative importance, if not appreciable pathogenic deductions—rhinopharyngeal fibromata are tumors originating in the nasal fossæ, only invading the cavum after acquiring some size, and comporting themselves, as a whole, relative to their evolution, in a manner absolutely identical with that which we are accustomed to see in so-called “fibromucous” or “choanal” polyps. They arise from the most posterior portion of the middle meatus, and, dragged down by their weight, descend into the epipharynx, obstructing the choanæ successively, and sending digitations forward which fill the meatus of the corresponding nasal fossa. However, being less plastic than the other sort, rhinopharyngeal fibromata soon deform the wall of their originating cavity by a process of erosion from compression. Further, we see the vomer, its rear portion pushed toward the healthy side, thinned at its interchoanal border. The same is true of the sinus-nasal partition, which is thinned or destroyed, giving way to the continuous push of the neoplasm, which fills most of the pneumatic spaces of the affected side, by moulding itself into their irregularities.

From my personal investigations, in accord with numerous observations by rhinologists, it follows that the insertion is ordinarily a thick fold of tough tissue, with parallel fibers in the most posterior part of the nasal roof. The point most commonly involved seems to be the anterior surface of the sphenoid body, and more particularly the sphenoethmoidal recess. From this central point attachments may radiate to the upper choanal arch, the base of the vomer and pterygoid, the fossa of Rosenmueller (Moure), the posterior ethmoid, the sphenoid antrum and even the maxillary sinus.

Diverticular expansions of the growth are the rule; the most important and most constant being into the sphenoid cavity, which it sometimes considerably distends to a size equal to that of the intranasal lobe. The fact is easy to understand when we know the close connection of the fibroma with the sphenoid body. The posterior ethmoid cells are invaded with almost equal frequency, and imprint their septa upon the external surface of the polyp, giving it a lobulated aspect. The maxillary antrum also often conceals a voluminous prolongation whose entrance seems to be through the broken-

down posterior part of the ethmoid, rather than through a dilated accessory hiatus. The anterior ethmoid cells are less often attacked, and the frontal sinus usually escapes invasion.

Extranasal prolongations enter either the cranial cavity through the destroyed nasal roof, or the orbit through the resorbed papyraceous lamina, or the zygomatic and temporal fossæ, creeping through the distended sphenopalatine foramen (personal case).

Secondary adhesions may occur at any points where the growth touches a resisting wall; they are met with especially on the vomer portion of the septum.

Finally, as regards the seat of rhinopharyngeal fibromata, I have noted their marked predilection for the left side, a fact pointed out by divers authors, and especially by Escat, whose statistics entirely confirm my own (7 left sided cases, 1 right).

If the rhinologic cases favoring a sphenoidal origin of rhinopharyngeal polyps are at present sufficiently numerous and concordant to enforce conviction, the basilar origin is still firmly supported in the minds of general surgeons, by even more numerous reports and just as categorical. Now, the question of singular coincidence, of a fortuitous series, could not be invoked to reconcile these two distinct views. So I am tempted to explain the divergence by erroneous interpretation on the part of the older writers. How much is explained by the difficulty of confirming with precision the exact attachment of a tumor which at once fills the pharynx, the nose and its annexes, after distending them, deforming the cavity and dislocating the walls? How can we determine the true pedicle in the midst of adventitious adhesions, often extensive, in the depths of an operative cavity flowing with blood from the operation wound as well as the tumor itself? We should not forget that the cases reported by the surgeons were diagnosed late in an advanced stage, and extirpated, as Kirmisson says, by operators "desirous above all of acting quickly, operating under chloroform, tearing, curetting and cauterizing in a bloody field."

And, speaking of the easy confusion in recognizing the point of attachment, I myself have been a victim. In the course of one of my operations I got the impression for a moment that fixation of the neoplasm extended to the roof of the cavum;

an illusion caused by enormous enlargement of the left choana, hindering both finger and eye from exactly finding the limits of the nose and pharynx. Whatever skill one may have in rhinoscopy, it is sometimes singularly hard to orient oneself in a region so greatly changed by erosion and displacement of the vomer, lowering of the pharyngeal roof, distension of the choana, with atrophy and flattening of the turbinates, effacing gradually the demarcation between the nasal fossa and the pharynx cavity.

In the presence of this incertitude, finding the pharyngeal tonsil intact, which is easily recognizable in the young, furnishes high testimony that the subjacent basilar covering is a stranger to fibroma. By observing integrity of Luschka's tonsil I was able to enlighten myself in a case where the roof of the cavum, lowered by a large intrasphenoidal prolongation, at first caused me to regard it as the tumor itself extending down the posterior wall of the pharynx.

I believe, then, that contrary to the classic notion, the point of origin of rhinopharyngeal polyps should usually be sought for about the posterior recess of the nasal roof, and that only exceptionally their attachments go back of the choanal plane and extend onto the basilar process of the occipital. Contrary affirmations no doubt rest upon errors of judgment or observation.

Besides the array of material facts, the theory I hold would be greatly strengthened if these facts could be connected with some special anatomic peculiarity of the region involved, thus explaining the singular predilection of hemorrhagic fibromata for it. But, up to the present at least, no such peculiarity has been found which does not apply equally to the basilar region.

Rhinopharyngeal fibromata, to my mind, are only simple irritative proliferations of accidental cause, like mucous polyps. Their tendency to recurrence and to penetration of surrounding regions ought to class them among the tumors proper, while the constant absence of generalization separates them distinctly from the cancer group. They present themselves, then, as a result of a metabolic superactivity of part of the bony cranial base in the course of its normal period of rapid evolution. Why does this excessive superactivity of the periosteum prefer the sphenoid body to the body of the occipital? Bensch contents himself with saying that for unknown

reasons, a circumscribed region of the cranial base, prevented from making bone tissue, vents its formative activity by producing fibrous tissue. This proposition is more acceptable, to my mind, with its vagueness, than the seductive and precise theory of Tillaux concerning the occipitorachidian network.

I do not know how many other explanations for the pathogeny of rhinopharyngeal polyps have been advanced. Dr. Delsaux has acquainted me with an original conception in a report, as yet unpublished, to the Belgian Laryngologic Society. According to him the term "rhinopharyngeal polyp" covers a multitude of tumors that are different histologically and different in their malignity and course. They doubtless take origin in various tissues, epithelial or connective tissue remnants establishing temporarily, in the course of embryonal development, communications between the cephalic intestine and the cranial cavity across the vault of the pharynx.

It would be desirable if our histopathologic knowledge were better supported in respect to these neoplasms, and no doubt a methodical effort in that direction would dispel much obscurity and theoretical discussion. I would object, however, to my colleague's view, by saying that the "communications" he speaks of are doubtful, except Rathke's diverticulum, which, contrary to Romiti's opinion, seems rather should be localized between the two sphenoids and not in the pharyngeal fossa of the occipital. In any event, the frankly lateralized beginning of juvenile nasal fibroma seems to me to set aside in most cases the hypothesis of embryonal origin from diverticula.

Still, the course of these peculiar tumors agrees very well with the notion of an exaggerated accidental proliferation during adolescence, of a connective tissue mass precisely localized, probably the periosteum of this curious region about the cranial base, which corresponds to the anterior extremity of the notochord, and marks the limit between the primitive base of the membranous skull (sphenoccipital portion) and the superadded part, following the progressive incurvation of the cephalic end of the cerebral vesicle envelopes (ethmoid portion).

If we follow the fetal development of the limited region which, in the embryo, on the brain side, contains Rathke's median cranial pillar, and on the intestinal side the hypophyseal pharyngeal diverticulum, we recognize that it corresponds to

the junction of the bony outlines of the two sphenoids to the basal cartilaginous plaque. There converge from each side the two ossification centers of the presphenoid and the five centers of the basisphenoid. There persists on the ventral side, between the sphenoids which are fused above, a fibro-cartilaginous mass which disappears only after birth.

To conclude from this simple fact that there is a pathogenic relation would be to exceed our information. Only from anatomic and anatomopathologic research in the future can we expect explanation and confirmation of the condition to which I am content to direct attention, by reason of its immediate practical interest, that is to say:

The fibrous tumors of adolescence known as rhinopharyngeal polyps usually have their origin in the rearmost part of the nasal roof and not the roof of the cavum. They are inserted principally upon the anterior surface of the sphenoid body, and not upon the basilar coverings. They early invade the nasal annexes and particularly the sphenoid sinus, before involving the epipharynx.