Jarvis (W. C.)

THE PATHOLOGY AND SURGICAL TREATMENT OF HYPERTROPHIC NASAL CATARRH

DESCRIPTION OF A NEW OPERATION FOR THE RADICAL CURE OF NASAL CATARRH

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THE PATHOLOGY AND SURGICAL TREATMENT OF HYPERTROPHIC NASAL CATARRH.*

DESCRIPTION OF A NEW OPERATION FOR THE RADICAL CURE OF NASAL CATARRH.

IN my endeavor to find a simple method for the relief of the exceedingly annoying symptoms caused by the presence of hypertrophied tissues in the chronic form of nasal catarrh, I have had constructed a wire-snare écraseur, and have been so much encouraged by the success attending its use, that I now venture to present it to the Association, in connection with other instruments devised by myself to facilitate the operation. Before proceeding with the description of the method made use of for the cure of hypertrophic nasal catarrh, I desire to refer to the indications justifying surgical interference. From observations made at the extensive throat clinic of Bellevue Hospital, I have been led to the conclusion that chronic nasal catarrh, before it has lapsed into the atrophic form, is invariably accompanied by a pathological condition consisting in some form of hypertrophy of the intranasal tissues.

This hypertrophy, though slight in the recent stage of the catarrhal affection, steadily increases with a rapidity depending upon the degree of irritation and congestion to which the nasal mucous membrane is subjected, until, as sometimes happens, the nasal tissues will be found to have become enlarged to such an extent as to completely block up the posterior nares, and even to encroach very considerably upon the naso-pharyngeal space.

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Owing to their inferior position, *the tissues over the lower turbinate become more hypertrophied than those over the other bones.* (Fig. 1.)

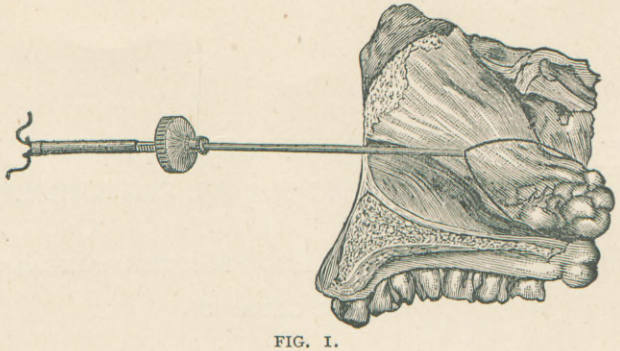

FIG. 1.

Drawing from a pathological specimen in possession of author showing post-inferior turbinate hypertrophy, with wire snare in position.

Indeed, so great is this tendency of the inferior turbinated to become hypertrophied, that I have been induced to adopt the rule of looking for an increase in its dimensions as an indication of the extent and chronicity of the disease. This peculiarity, I think, may be in part accounted for, if we consider some of the many forms of irritation to which the lower turbinates are subjected, viz.: inhalation of vapors, dust, and gases; exposure to an alternately high and low, or continuously low temperature; but, more especially, the action of acrid nasal secretions collected about and retained in contact with their surfaces; on account of the obstruction in the nares, the removal of this secretion is rendered extremely difficult, or even impossible, as the means usually made use of for that purpose, that of forced inspiration and expiration, cannot here be brought into play. Hence a slight amount of hypertrophy of the tissues over this bone is often met with, when there is no perceptible increase in the size of the others.

Hypertrophy of the tissues over the posterior portions of the turbinated bones is more frequently met with than any of the other forms of hypertrophy. (Fig. 1.)

Posterior turbinated hypertrophy is of such common occurrence that I have been forced to recognize it as a

distinct peculiarity of the disease, especially when it is connected with enlargement of the inferior turbinate. It is more frequently found standing alone, in the summer than in the winter months. The common occurrence of this form of hypertrophy may be in part accounted for, if we take into consideration the looseness of the mucous folds over the inner portions of the turbinated bones, and the thinness of these folds toward their anterior extremities. Such an anatomical arrangement would favor extensive posterior hypertrophy, but would militate against the occurrence of the anterior form. Another anatomical difference, that of the blood supply, will also help to explain the condition, for it has been conclusively demonstrated that the most numerous venous spaces are to be found in the inner portions of the turbinated bones, and that the blood-vessels passing to their posterior borders are larger, and exceed in number those running anteriorly. Occasionally, however, the tissues over the anterior parts of the turbinated bones will be found to be hypertrophied to a considerable extent, whilst the deeper portions are but slightly affected. I have, therefore, divided hypertrophy of the tissues over the turbinated bones into two varieties: *anterior and posterior hypertrophy.*

As the surgical treatment of each variety is different, the division will be found a convenient one. In making this distinction between the two forms of hypertrophy, I do not desire to convey the impression that I recognize the anterior and posterior varieties as being absolutely independent of each other; this would, of course, from the direct continuity of their tissue, be impossible, but I wish to be understood as taking advantage of the opportunity offered of making this division, through the excess in growth of one part of a turbinated bone over another portion of its own substance. Hence, it may, in a number of instances, prove a relative one; the variations, however, in these cases, will be found to be so slight as not to interfere with its integrity. This has been repeatedly borne out in my own experience, as well as in that of those who have tested it.

It is chiefly with the posterior form of hypertrophy that I have to deal, for this is, on account of its frequency and persistence, the more important of the two. Located, as it is, in one of the most inaccessible parts of the nasal cavity, special remedial measures must be adopted for its relief.

The stenosis caused by turbinated hypertrophies may be partial or complete, permanent or temporary.

Many cases of catarrh come into notice, in which the patients suffer with an alternate stoppage and patency of the nostrils. The stenosis in these instances is nearly always anterior, and is evidently dependent upon expansion of the veins forming part of the erectile structure of this tissue. Anything that favors a flow of blood to the part will give rise to this condition; hence we find that persons will complain of inability to breathe in bed through the side of their nose which is lowermost. This condition may continue only a few hours or for several days (temporary stenosis). The continuation, however, of the venous fluxion may lead to an actual stasis, and this, in its turn, to a state of hypertrophy, *anterior hypertrophy* (permanent anterior stenosis). Although posterior stenosis in the majority of cases is found to be incomplete, nevertheless, the obstruction to breathing, caused by the presence of this thickened tissue in the posterior nares, is apt to prove a source of great inconvenience. In some persons it will take on a variable nature, perhaps allowing them comparative freedom of respiration in dry weather, but, on account of its hygrometric nature, swelling and causing obstruction to breathing in damp weather. I have taken advantage of this latter circumstance to operate upon the more sessile forms of hypertrophy in damp weather, their increased size sometimes making it possible to snare them. As soon as these growths have reached a size that will bring them in contact with each other, or with any part of the intranasal mucous membrane, they are apt to enlarge with increased rapidity.

Hypertrophy of the tissue over the septum is the result of pressure.

Although the turbinates, in these cases, may not be found pressing upon this tissue, the existence of this form of hypertrophy is, nevertheless, to my mind, clear proof of contact at some period of the disease; a certain amount of turbinated hypertrophy is always found in connection with it. I have a drawing taken from a patient, the right side of whose vomer was occupied by a cup-shaped hypertrophy, the depression on its surface being the impress of the inferior turbinate lying opposite; the inferior turbinate bone of the other side was enlarged and pressed against the vomer, the tissue over which had already commenced to thicken.

Posterior hypertrophy is principally diagnosed by the use of the rhinoscopic mirror; hence movements of the soft palate sometimes prove a serious obstacle to the examination. I have been helped out of this dilemma by attention to the nature of nasal expiratory sounds. A partially stenosed nostril will naturally give a high-pitched note: high-pitched and near, anterior stenosis; distant to the ear, posterior stenosis. Facilities for anterior inspection make only the note caused by the existence of *posterior turbinated hypertrophy* of any value. The inequality of hypertrophy in the nasal cavities renders the sounds more distinguishable. The patient's nose is, of course, freed of mucus, and one nostril is closed by gentle pressure with the finger. The presence of nasal tumors and infractuosities will not interfere with this method, as they can be easily distinguished through the nasal speculum. By careful attention and practice, one should seldom fail to form a correct diagnosis, and he will be spared the annoyance and loss of time necessitated in tying up the soft palate.

Prominent among the troubles brought about by hypertrophied turbinated tissue, is difficulty of hearing. Partial deafness is of common occurrence in the extreme forms of nasal catarrh. It has been too often referred to and treated for middle-ear catarrh. Deafness in one ear, in connection with a hypertrophied turbinated bone impinging upon the Eustachian orifice of the side affected, has led me to believe

that this trouble is often due to pressure, especially when removal of the growth has been followed by complete restoration of hearing. I have the history of a patient upon whom I operated for the removal of large nasal hypertrophies. He complained of deafness in both ears of many years' standing, and had suffered with complete stenosis for fifteen years. Removal of the hypertrophied turbinates was immediately followed by a return of hearing.

Sections of the thickened turbinated tissue under the microscope, show the hypertrophy to be due to pathological changes caused by chronic inflammation. There is a hyperplasia of the connective tissue, the formation of new blood-vessels, and a general proliferation and infiltration of the epithelial elements of these growths.

INSTRUMENTS FOR THE OPERATION.

The instruments I generally make use of are: a wire-snare écraseur, a combined tongue-depressor and rhinoscopic mirror, and two steel clips for retaining cord tape around the palate.

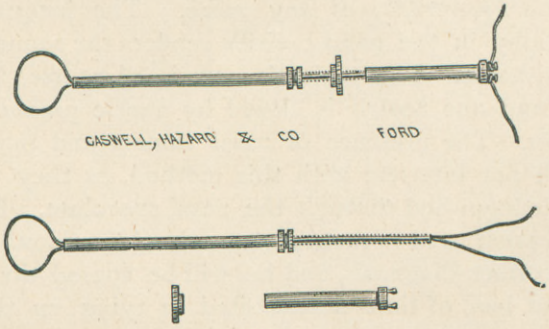

FIG. 2.

The écraseur (fig. 2) consists of two metal canulæ; the large one is six inches in length and flexible; the smaller, about four inches long, slides freely upon that part of the main one nearest the operator. The surface of the main canula occupied by the secondary one is threaded for the movement on its surface of a milled-nut. Wire is passed

through the main canula and attached to two retention-pins fixed to the proximal end of the small one. A slight indentation upon the small canula fits a corresponding surface on the large one. This arrangement prevents rotation of the secondary canula, and so overcomes the tendency of the wire to twist and become loosened from its attachment to the growth. The nut, when turned, pushes the outer canula before it, its speed varying from an imperceptible advance, to a rapid motion along the thread.

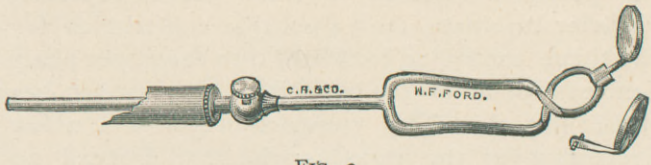

FIG. 3.

The combined mirror and tongue-depressor is shown in fig. 3. A stout wire, after being made to divide, and assume the form of a tongue-depressor, is crossed upon itself and then shaped into a pincette. Mirrors of different sizes are received between the pincette's blades. These mirrors can be placed at any desirable angle with the shaft.* The hinge-joint will permit the mirror to be fixed at the most favorable angle for viewing the posterior nares, and at the same time facilitate even depression of the tongue.

This instrument will be found a convenient one, as it enables the operator to bring the posterior nares into view with one hand, leaving the other free for the manipulation of the écraseur.

FIG. 4.

The tape-holders (fig. 4) are intended to take the place of the unsatisfactory and disagreeable procedure of tying the ends of the tape, which passes around the palate. They are two small V-shaped spring clips,

* I am indebted to Dr. Wm. H. Arthur, U.S.A., for a useful suggestion in the construction of this instrument.

so arranged that the tape, passing through apertures in its blades, is caught by a tooth-like projection and firmly held. Pressure on the spring releases the catch and sets the tape free. One of the clips is provided with a rest for the écraseur.

PRACTICABILITY OF THE OPERATION.

The operation depends upon the shape of the hypertrophied turbinated bones.

The posterior surfaces of these bones, especially of the inferior turbinate, show a peculiar constriction formed by the tissue extending backward into the upper pharynx; the extreme point of the growth is thus thrown beyond its base (fig. 1). This constriction forms a nidus for the retention of the écraseur wire, and I recall no instance in which the wire, once made to occupy this position, has failed to finish the operation.

THE OPERATION.

In using the écraseur, pass the two ends of the wire through the main canula, entering them at its distal extremity, and twist them around the retention-pins. A loop is formed, whose size, of course, depends upon that of the growth. This loop should be flattened against the orifice of the canula, at the wire's two points of exit, so as to form a point of resistance for its fixation, when traction is made. It can now be placed in any desired position, and firmly held there by making a few turns of the nut. So we have an elastic ring formed, not to be permanently moved from its original position; on account of its elasticity, it can be made to accommodate itself to the narrowest and most tortuous passages. Giving the wire loop a twist toward the side of the nose occupied by the growth, it is fixed by a turn of the nut and passed into the nostril. Holding the rhinoscopic mirror in one hand, the position of the wire loop in the posterior nares is carefully watched, while it is steadily advanced with the other hand, until seen to encircle the growth. The

tip of the wire loop has already, by excurvation, been made to assume a point considerably to one side of the axis of the main canula; hence, firm pressure is exercised upon the anterior part of the base of the growth, by the end of the canula, and, at the same time, the apex of the wire loop is pressing firmly on its posterior border. On drawing the wire home, the tissue is cleanly divided, and, if not too large to pass through the nares, it will generally be drawn out clinging to the snare. Make traction very slowly, stopping at short intervals, in order to cause the slightest amount of hemorrhage.

The hemorrhage is trifling *provided slow traction is made.* It consists usually of one or two small clots, blown out upon the handkerchief. This is not to be wondered at, when we consider that the divided blood-vessels are mostly venous; very few arteries pass into the turbinated bones.

There is seldom much pain. A patient from whom I removed the largest growth of the kind I have ever seen, declared, with two attending physicians, that I had missed it. He shortly afterward hawked up the mass of hypertrophied tissue. Of course, patients vary in their susceptibility to pain, and some may complain, but I consider them to be in the minority. In operating, I make use of well-tempered piano wire, frequently No. 5, piano gauge. Sometimes, on account of the tendency to gag, it will be found necessary to tie up the soft palate. Wallace's method may be practised, or the improvement made by Doctor Bosworth, of substituting cat-gut for string. Once having passed a cord through the nares it is a very simple matter to supply its place with the rubber tape. One end of the tape is now passed through a slit in the upper blade of the tape-holder and knotted. The other end is passed first through the slit in the lower blade, and then through that in the crossbar. The tooth on the crossbar presses upon the tape, and so retains it when it is put upon the stretch. This little device has proved valuable, as it enables one, by a nice adjustment of the tape around the palate, to render its presence tolerable. The strain of the two tapes can be conveniently regulated and nicely

balanced, and should efforts at vomiting show themselves, the elastic cords can be quickly relaxed and the tendency at once overcome.

APPLICATION OF THE OPERATION.

I have removed growths varying in size from a small projection above the mucous membrane, about the size of a split-pea, to a large mass of hypertrophied tissue, totally occluding one postnasal orifice, and reaching beyond the vomer across the other. Very fine steel wire will be required for snaring the smaller hypertrophies. Smooth and firm sessile thickenings are not amenable to the operation. Soft sessile hypertrophies, occurring in any part of the nostril, can be easily removed, as the wire readily sinks into the tissue and takes a firm hold on the growth. The time and labor required to snare the smaller hypertrophies will be hardly repaid by the good result.*

The existence of anterior temporary stenosis does not necessarily call for an operation unless the trouble recurs at short intervals.

In this connection, I will add that the écraseur is particularly adapted for the removal of gelatinoid polypi. The elastic loop can be easily made to enter a nostril pressed out of shape by impacted polypi, and the fine steel ring will, with absolute certainty, engage each polyp in turn until the meatuses are completely cleared. It is not necessary to follow the loop with the eye, for when even a small part of a polyp has been encircled by the snare, each turn of the nut will draw the wire nearer to the pedicle. The great strength of the steel piano wire enables one to remove nasal fibrous tumors. A growth of this kind, of the densest consistence, was cut through by Dr. Bosworth, and the wire was unaffected by the enormous strain brought to bear upon it.

RESULTS OF THE OPERATION.

The wounded surfaces rapidly heal, and the good results

*Since reading this paper, I have devised a very simple but effective operation for the removal of nasal hypertrophies of every size and description, in connection with the use of the écraseur. Reference to the method can be found in Doctor Bosworth's paper on nasal catarrh, *Med. Rec.* for November 6, 1880. I will give a full description of the operation at some future time.

of the operation soon manifest themselves. The immediate result of the operation is a restoration of free nasal respiration. As the nature of turbinated hypertrophies renders their return almost impossible, the establishment of free nasal breathing is apt to be permanent. This is made more certain by the cicatricial contraction which follows. Since the most intense inflammatory processes are centred in the tumefied tissues, their removal does away with the active source of the disease. The remarkable cessation of the catarrhal secretion, which often follows the removal of these growths, points to the cause and seat of the disease. Pressure exerted by the hypertrophied turbinated tissue is of itself an active agent toward the excitation of undue nasal secretion. Relief of the pressure naturally relieves the discharge. The multiplicity of the glands in the turbinated tissue hardly makes it necessary to look for any other source for the secretion. I believe chronic catarrh of the accessory cavities of the nose, as compared with the form of the disease attacking the turbinated tissue, to be of infrequent occurrence, and when met with, to be always complicated with an ozæna or atrophic catarrh. If cessation of the secretion does not immediately follow the operation, the opening of the nasal gutter, the inferior meatus, will favor the discharge of that which is left, and also enable one to effectively make use of atomization. I consider the spray-producer, when used properly and with discrimination, the very best cleansing and medicating agent that can be employed in the treatment of nasal catarrh. Its inconsiderate use has, however, given rise to much prejudice against its efficiency.

CONCLUSIONS.

In concluding, I would urge the adoption of this simple but effective method for the removal of most intranasal growths, as it possesses manifold advantages over the other modes hitherto recommended. The painlessness of the operation, the small amount of blood lost, the ease with which it is performed, and the decided and beneficial results obtained, all combine to make it a valuable one. The bar-

barous method of evulsion, with all its train of terrible suffering and torn and bleeding tissues, needs no comment. The use of the ligature and injection of acids, followed by the intended result, a mass of putrefying tissue in the delicate organ of smell, cannot be too strongly condemned.

Those who have witnessed the manipulation of a galvano-cautery battery, with all its world of complicated attachments and ingenious movements, may, with reason, demand a simpler and more reliable mode of operating, and one that will cause less terror to the patient and more consideration for human suffering. I have intentionally omitted some of the minutiæ of the operation, but trust and believe that by giving it a fair trial you will be satisfied with its results and convinced that the statements made in regard to the superiority of my method are not exaggerated.

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