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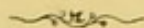
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ON
CONSERVATIVE AURAL SURGERY.

BY
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ON CONSERVATIVE AURAL SURGERY.

"AURAL surgery is simply surgical common sense." So wrote one who dignified the practice of aural surgery by his matchless talent.¹ This aphorism, valued most by those who are competent to appreciate its truth, is yet, I venture to say, incomplete in its definition. As it stands, I fear that to many of my professional brethren, whose surgical talent is limitless, it may prove misleading, because hitherto, if one may be permitted to judge by results, surgical common sense, even combined with undoubted talent, has not coped successfully with the more important diseases of the ear. It is at this point, that the truth as well as the incompleteness of the aphorism as a definition of aural surgery becomes apparent. No amount of surgical common sense can possibly avail the surgeon in the domain of aural therapeutics, if he lacks the necessary special knowledge to guide him in the right application of the principles of his art in the treatment of the diseases of the ear. But right application means special knowledge; so that the practice of aural surgery consists, in fact, in the application of the general principles of surgery, guided by a special training to a special purpose. Therefore, were I asked to define aural surgery, I should be disposed to add to the pithy expression which I have already quoted, and to say that aural surgery is simply surgical common sense *rightly applied*.

In claiming for aural surgery, and indeed for aural therapeutics in general, that it is in principle conservative, I am prepared for some degree of opposition from those of the profession who have not studied the natural history of ear diseases; but as those objectors cannot deny that *all* intelligent general surgery is possessed of this principle, and as aural surgery is clearly nothing but general surgery plus special knowledge, it is to me difficult to understand the grounds upon which they could rest their opposition. Doubtless, in general surgery the conservative principle, that seems always to underlie its application, does not at once arrest the passing gaze. If this is so in general surgery, it is otherwise in

¹ Hinton, in his "Questions of Aural Surgery." Alas! this simple-hearted, self-sacrificing man, and consistent-living philosopher, has gone from our midst while the above was being written. He died on 16th December 1875, in the Azores. As his pupil and a close friend, I may be pardoned for revering his memory as I have done.

the treatment of the organs of special sense; then, this principle in the treatment of their diseases stands out quite prominently, so much so, indeed, as to ensure the notice of the most superficial observer.

In saying that aural surgery is eminently conservative, I do not mean that it is pre-eminently so over the special surgery of other organs of the body; but this I do say, that in their treatment, the principle of conservatism does not receive a more beautiful illustration, than it does in the early surgical treatment of some of the affections of the tympanum and Eustachian tubes. Nor is this statement without explanation. That explanation is, that ear diseases do not of themselves tend towards a natural cure, but to become progressively worse and more serious in their consequences; and further, that of the diseases of the ear amenable to our art, those alone are preventable and curable which admit of surgical treatment. Startling as these two propositions may appear, they rest, nevertheless, upon the reliable observation of trustworthy data; their truth, moreover, will be readily conceded by those, who have had special opportunities of studying the origin and process of evolution, that characterize the pathological changes in the ear. To those who have not had this opportunity, it will be sufficient for the purpose I have in view, to ask them to consider the probabilities and possibilities of simple inflammatory action in an organ whose position and construction, as well as vital relations, are similar to those of the ear.

Surrounded by the most important structures, and separated from them by osseous walls of varying thickness and degrees of development, it need not be a subject for wonder that serious and even fatal consequences can follow simple inflammation of the tympanic cavity; indeed, the closeness of the union that exists between the soft tissues lining this cavity, and the bones forming its walls, renders it an utter impossibility that the former can become diseased, however slightly, without the latter becoming involved in the morbid process. Thus it is that every congestion of the lining membrane of the tympanum is a periostitis, and every ulceration of it a caries of the osseous walls, that may lead to the most serious consequences. Now, inasmuch as these consequences are preventable by timely surgical interference, I claim for aural surgery that it is in truth conservative in aim, and that it does not exist, as a scientific pursuit, if it lacks this principle.

In order to satisfy those who may justly object to some of the statements which I have advanced, I propose to sketch the natural history of a form of ear disease which is typical of the congestive diseases of the ear generally, and one, moreover, with which every member of the profession is more or less familiar. I refer to that form of ear disease arising out of scarlatina, properly named exanthemal katarrh of the tympanum and its appendages. I have chosen this form of ear disease to illustrate the preceding remarks, not only because it may be accepted as typical of the congestive

diseases of the organ, as I have already said, but because the general experience of it will bear me out when I speak, by-and-by, about its frequency and destructiveness; and also for the further reasons, that the surgical treatment of this ear affection is that which is alone successful, and that aural surgery first appears as a conservative art in connexion with its treatment. Let it not be supposed, however, for a moment that the principle of conservation in aural surgery is only applicable or visible in the treatment of this affection of the organ. In all the congestions of the tissues of the apparatus of hearing it is called for, and in none, for example, more urgently, than in those of the mastoid cells or external auditory meatus, out of which most of the serious and fatal consequences develop themselves—consequences nearly always avertable, by the timeous incision of the congested tissue in the initial stage of the primary disease.

Scarlatinal ear disease, the most destructive of all the ear diseases, and the one most frequently met with in general practice, arises out of the naso-pharyngeal affection, which is so marked a complication of this exanthem. The propagation of this congestion along the Eustachian canal into the cavity of the tympanum, and thence to the mastoid cells, must have been frequently witnessed, even by practitioners not specially interested in the practice of this department of our art. When this, the initial step in the causation of the ear disease, has taken place, its progress and development proceed with extraordinary rapidity. The Eustachian canal, as a result of this tumefaction of its tissues, becomes concentrically closed; in consequence, there is a rapid increase in the congestion of the tympanic lining membrane, owing to the disturbance which a closed Eustachian tube causes in the balance of the tympanic air-pressure. Inspection of the *membrana tympani* at this stage shows it to be, in general, unaffected by the congestion of the tympanic lining membrane. The temperature of the patient at this period is considerably increased towards evening, without a corresponding fall in it in the morning; there is much restlessness, rolling of the head, and more or less delirium, generally out of proportion to the violence of the general febrile attack. If now the interior of the ear be examined, the *membrana tympani* being still unaffected, except in a very slight degree, by the general congestion, it is generally possible to recognise through it the deeply purple-coloured tympanic lining membrane. As yet, there is no effusion into the cavity of the middle ear, although its outflow is imminent. Up to this point in the progress of the malady, it is possible by the timeous use of the knife to bring about resolution of the diseased action; failing this favourable and more desirable termination, the certainty nevertheless remains, that by this means the disease is deprived of its power to commit damage. This stage in the treatment of the disease, I call that of resolution and prevention.

The next step in the onward progress of the affection is more characteristic, is surrounded with more risk, and is of shorter duration than the preceding one; and because the resolution of the disease is no longer attainable, nor all the dangers to which it gives rise preventable, as they were in the earlier stage, I have named it the stage of preservation or cure. It is now that, owing to a marked increase in the hyperæmia of the tissues, and a diminution of the support usually afforded to the engorged vessels, there takes place an exosmosis of serous-looking fluid, which speedily fills the tympanum and mastoid cells. The pressure from this accumulation, constantly increasing as the fluid becomes greater in quantity, causes at last ulcerative absorption of one or several points in the parietes of the tympanic cavity or mastoid cells; a process, I may remark, that goes on with astonishing rapidity, and, as may readily be supposed, leads to serious consequences. Indeed, the future of the case is determined in great measure by this process, and the nature of the tissue in which it is set up; if it be the membrana tympani alone that suffers from the destructive process, less danger, both present and prospective, is likely to follow, than where the bony wall is broken down or perforated. The general symptoms, from which the patient suffers in this stage of the disease, are much graver than in the former one; there is usually agonizing pain complained of; in the intervals of freedom from this symptom, there is often wild delirium, and not seldom a state of coma, due to the pressure of the effusion upon the labyrinth. Pain, as a symptom, however, is not by any means a constant one; when it is present, it usually indicates periosteal or meningeal hyperæmia. If the membrana tympani be now inspected, it will be found no longer possible to see the purple-coloured lining membrane of the tympanum, by reason of the changes which have taken place in the membrana tympani itself. It is now of a bottle-green colour, with more or less bulging outwards; or it may assume a yellowish colour, if the contents of the tympanum have degenerated into pus.

It is in this stage of the disease that aural surgery, as a preservative, displays its advantages over the *laissez-faire* method of treatment. A free incision through the bulging membrane gives exit to the fluid, and arrests the destructive processes that may have been set up in some vital part of the organ. On the other hand, when the nature of the case is unrecognised, nature relieves herself by discharging the pus,—happily for the patient if it be through the membrana tympani with no other damage to the organ, even though a life-long otorrhœa is the consequence.

But it is not always that the case terminates so favourably; more often the violence done to the tissues by the long-continued pressure, or the outbreak of the imprisoned fluid sweeping away the essential parts of the organ, entails a life of misery in total deafness, or it may be death if the carotid or jugular are opened in the process of ulceration.

I have finished my sketch of the natural history of this form of ear disease. It is imperfect, but it is broad and true to nature, and, inasmuch as it differs from a description of other tympanic diseases in a few unimportant points, it may suffice to portray them as well.

If it be asked, are the evils that arise out of this and other congestive affections of the tympanum avertable? It may be replied, that they are; that all the structural changes and functional disturbance that follow such affections of that part of the ear, are preventable by the means that I have already pointed out. By them, one may, at the outset of the disease, procure its resolution; or failing this, in the latter stages, can, by free incision, undoubtedly limit its ravages.

To obtain the full benefit of the method of treatment here recommended, it is a necessary condition that the incision in the membrane be performed early in the progress of the disease; by so doing, one anticipates, it may be, by a few hours, the full violence of the disease; but the integrity of the organ is preserved by such prompt action, and the patient is saved.

Pertinently enough, one may demand to know the symptoms by which this condition of the ear can be readily recognised. It is not "readily recognised" in the sense in which that expression is generally used. But it is really recognised without difficulty, by careful examination by means of reflected light and the usual speculum. This method of examination is absolutely necessary, and happily not difficult; otherwise, one must fail to diagnose this ear affection. Remember, there is no pain in the early stage of the disease, or so little as not to annoy or distress the patient or his attendant, whose attention, by the way, is likely enough to be engrossed by the more general symptoms of the fever. If one trusts to this complaint being made before examining the condition of the ears, the treatment here recommended may be too late to prevent, perhaps even to preserve, the tissues from serious damage. As a rule, when pain has set in, it may be concluded that the full violence of the disease has manifested itself, and that the results of the treatment which I propose will prove somewhat less satisfactory. Even in such a case, if the membrana tympani be intact, and the tympanum filled with fluid, do not hesitate to incise the former, with the hope that, though this proceeding may be too late to preserve, it is yet in time to save the tissue from utter destruction. The value of early incision in the treatment of the congestive affections of the ear, cannot be too much insisted on. Were it generally adopted, as I hope yet to see it, I do not hesitate to say, that in the future, by its aid, myriads of lives would be saved from the direst misery, even from death; for the lives that have been sacrificed in the past, and the consequences of this disease that I have pointed out, are as truly preventable by early incision, as certain fevers are by quinine.

The operation which has been chosen, for reasons previously

mentioned, to represent the principle of conservatism in this special department of the science of surgery, is that of parakentesis of the membrana tympani; the history of which is as follows:—¹

Prior to 1649, aural surgery did not exist save in name only; all therefore was chaos in aural therapeutics. In that year, however, the first seed of scientific aural surgery was sown by Jean Riolan (died in Paris in 1657), and to-day we reap the harvest, which has been growing slowly in the two hundred years that have elapsed since then.

Riolan proposed to break down the membrana tympani in those incurably deaf by ordinary means, in order to cure them of their infirmity.² This proposal of Riolan's caused a storm of opposition, that lasted well nigh into the following century, and even yet, in some places, has not quite died out. But the seed was germinating; for in this century we find Willis and Cheselden experimenting on animals as to the effect produced by puncturing the membrane on the function and the life of the creature.³ The first ray of conservatism seems to me to appear just at this time. Dienert, in France (the same who disputes with Busson), recommended the operation of incision of the membrana tympani to give exit to blood or pus contained in the tympanum.⁴ The ray of light which Dienert emitted seems to have got extinguished; so I would infer, from the proposal made by Eli in 1760, to perforate this membrane, in order to permit of the passage of the sonorous waves—a proposal, then as now, followed by non-success. Eight years after, viz., in 1768, Portal (*Précis de Chirurg. Pratique*, t. ii. p. 480, 1768), and in 1775 Sabatier (*Traité Complet d'Anatomie*, vol. ii.), neither having seen the light referred to as coming from Dienert, are asking whether it would be allowable to make a small opening in this structure, and if success would attend the operation in relaxed membrane.

Henceforth, the divergence from what I consider the true object of this operation becomes wider and wider. Carl Himly in 1797, and our own Sir Astley Cooper in 1801, recommended its performance for the cure of deafness due to closure of the Eustachian canal, just as Eli had done forty years before them. On the continent

¹ The history of the operation in the text is abridged from my paper, "On Parakentesis of the Membrana Tympani," in the *Glasgow Med. Jour.* 1874.

² For the history of the origin of Riolan's suggestion, see *Encheiridion Anat. et Path. Lugd. Bat.* 1649, p. 290, and Sabatier, vol. ii. p. 127. In the lengthened notice of Riolan's works, in Portal's *Histoire d'Anatomie*, there is no mention of the subject, and in it the account of the *Encheiridion* is very exhaustive. I failed to procure a copy of the original work to consult; I have quoted it on the authority of Professor Schwartz, because I have no doubt of his accuracy; see also his paper in *Arch. für Ohrenheil.*, b. ii. 1865.

³ Willis's experiments are criticised by Valsalva in his celebrated "*Tractatus de Aure Humana*," c. p. 5, 1740. For Cheselden's, see "*Anatomy of the Human Body*," p. 306, 1750.

⁴ Itard gives this honour to Julien Busson aforesaid, but I fail to find any remark upon the subject in Busson's works. See Itard's *Traité des Maladies de l'Oreille*, etc.

of Europe, at this time, the operation became quite fashionable for all forms of deafness, whether real or imaginary. Carl Himly (Commen. de Perfor. Mem. Tymp.), however, by a timely warning of the dangers attending the operation, put an end to the folly (Ueber die Durchbohrung des Trommelfells, 1810). From this time in Germany, till a comparatively recent period, the operation was frequently performed for such purposes as medication of the tympanum, inspection of its interior, passage of the sound waves, etc.

In France, Itard approached the subject from its conservative aspect, by proposing to remove accumulations of mucus from the tympanum by this operation. Saissy (1822) and Deleau (père) advise the operation, but do not describe the nature of the cases in which it is recommended. In 1843, the operation in France was abandoned, chiefly owing to the memoir of Hubert Valleroux (*Sur l'Abus et sur les Dangers de la Perforation du Tympan. etc.*, 1843).

In Germany, about this time, Kramer, Rau, Lincke, Frank, and others were operating with the same objects as their predecessors and contemporaries, and with like ill success; all, however, failed to see in the operation a valuable conservative remedy.

Retracing for a moment our steps in this history, we find that Sir A. Cooper had abandoned the operation on account of his ill success (although his labours were rewarded by the Royal Society's Gold Medal). In the midst of the storm that these failures caused to rise against the operation, a voice cried once more on its behalf, as a conservative proceeding, and, alas! cried in vain. Saunders, whose voice it was, and whom I may style the father of English scientific aural surgery, proposed to perform the operation in cases of scarlatinal ear disease in order to limit its ravages. Although he does not describe, as I have done, the stages in which it may be employed with the greatest advantage, to him, nevertheless, belongs the honour of being the first to recognise in it the principle of conservation. His recommendation, and his remarkable work on the ear, at once a monument to his name and an honour to our country, fell unheeded; thenceforth aural surgery entered upon a period, lasting well nigh to our own time, which may be justly called the dark age of Otology.

In this interval, there is no evidence that the operation was ever performed in England. Curtis, an ignorant pretender, certainly praises it in his book, but the grounds of his laudation are not discoverable; for it is not doubtful that he never had performed the operation himself. With the appearance of Toynbee passed away for ever the age of quackery in this department of our art, and aural surgery, as a scientific pursuit, assumed its true position. It is, however, remarkable, that this truly scientific aural surgeon did not recognise in the operation the principle which I have so often named. But so it is; for although he points out, with great clearness, a wider range of pathological states than his predecessors had done, in which it was likely to be serviceable, he seems never to

have adopted it for the purpose recommended by the gifted Saunders, to whom I have already drawn attention.

In 1865, the operation was revived by Professor Schwartze, of Halle, in the treatment of subacute mucous katarrh of the tympanum in order to give exit to the mucus lying in the cavity of the tympanum. Shortly after this, it found favour, and was adopted for a similar purpose, by Von Tröltsch in Germany, Professor Politzer in Vienna, and lastly by our own distinguished Otologist, Hinton.

Till now, however, no one has insisted upon the value of this operation as a conservative measure; indeed, as the representative of conservative aural surgery; nor has any previous writer pointed out, as is done in this paper, the stages of scarlatinal ear disease in which it manifests its preservative effects.

The true aims and real strength of aural surgery, whether represented by simple incision of congested tissue, or the more pretentious operation whose history I have just related, are to prevent and to conserve.

