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R.—Extracti hyoseyami,
Zinci oxidi, āā ℥ij. M.

Divide into eleven pills. Begin with one pill morning and evening, and increase to twenty or thirty of them daily. These, known as the Meglin pills, have a good reputation in Germany.

One of the most intractable of the neuralgiæ of the scalp ever met with in the practice of the author, yielded to compression of the facial arteries.

Methodical rubbing, massage, of a neuralgic seat is recommended by Dr. S. Weir Mitchell.

In a case, noted by that author, of contusion of the ulnar nerve subject to intense neuralgia, the nerve being hardened and enlarged, tender, and enduring no application of electricity, the pain was relieved by hypodermic injections; but after using many remedies, and at last the actual cautery over the nerve-trunk without altering its size or tenderness, slow and careful manipulation was tried to test if it could be enabled to bear pressure. After a course of gentle friction, lasting half an hour, the object was attained, three sittings enabling the parts to be rubbed and even kneaded quite roughly.

A case of neuralgia of seventeen weeks' standing, the seat of pain being the lumbar muscles, was instantly cured by the author on relieving the pregnant uterus found caught by the promontory of the sacrum. The patient, when met, was found propped on all sides by pillows, not having been able for the period named to touch a foot to the floor. Correction of the misplaced womb allowed her at once to go about as usual.

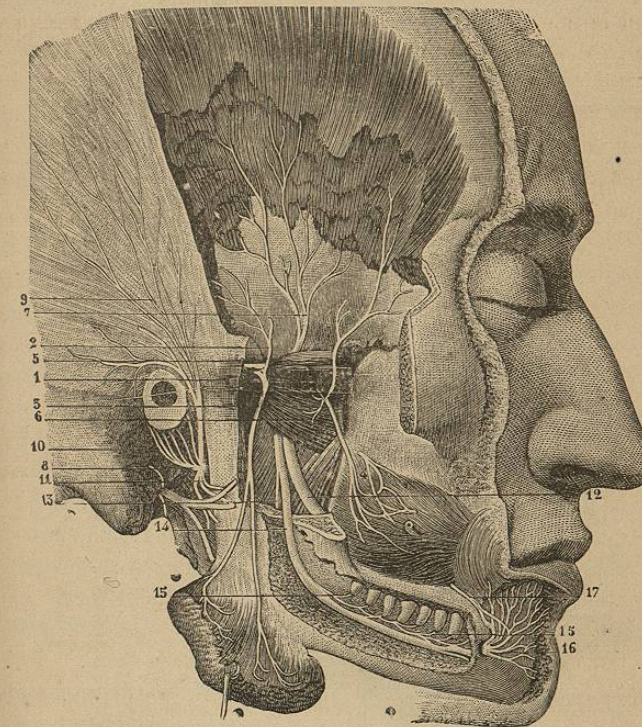
CHAPTER LVIII.

NERVE LESIONS PROPER AND THEIR TREATMENT BY SECTION.

NEURALGIA arising out of disease of a nerve incurable by medical means finds remedy in removal of the affected part; otherwise, by section made between the seat of lesion and sensorium. (See *Neuralgia*.)

Inferior Maxillary Nerve.—Fig. 541 shows the location of this nerve

FIG. 541.

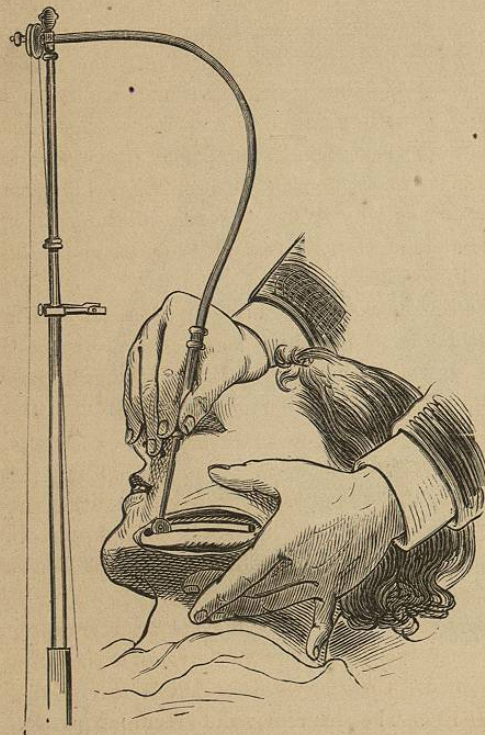


Refer for description to page 75.

as situated in the maxillary bone (14). The part removed, to secure exposure, is the external plate. The old ways of uncovering this nerve have been so surely succeeded, as the writer cannot help but feel, by an operation devised by himself and practised now on many occasions, that the single manner is presented.

Having a patient seated in a reclining chair with the body thrown back at an angle of about fifty degrees, the side of the face to be operated on being turned toward the light, the operator feels for the notch upon the jaw, over which runs the facial artery. The vessel found its position is marked by a line corresponding with its direction. Next a second line is made upon the neck parallel with the plane of the lower jaw and immediately beneath it. A succeeding step draws this line upward until it rests upon the body of the bone, when, the finger-nail guarding the artery, an incision, reaching to the bone, is cut as far forward as the position of the cuspid tooth. The wound thus made is separated by retractors, and search is made for the anterior, or mental, foramen. This hole exposed and the terminal position of the nerve thereby accurately ascertained, a succeeding step lifts the roof from the canal in which the nerve lies. This last manipulation is accomplished in one of two ways. Using a raspatory to scrape away the periosteum the operator

FIG. 542.—THE AUTHOR'S OPERATION FOR EXPOSURE OF INFERIOR MAXILLARY NERVE.



employs a circular-saw revolved by the engine, or, he may gain the same end with chisel and mallet.

Adopting the first means the saw is put in rapid motion, and two lines, corresponding to the width of the canal, are made, as shown in the cut, from the circular black opening in front, representing the foramen, as far back as it is desired to go. These lines are joined posteriorly by a trephine-cut. The roof of the canal, as will be understood, has thus been freed and it only remains to lift it away; the vessels and nerve lying freely exposed by the operation to the eye of the surgeon.

A modification of the above-described operation consists in employing a bur. The bone being denuded of its periosteum, and the foramen exposed, the canal is opened by burring away its roof. This latter performance is easier of accomplishment by the inexperienced than is the former; the exposure of the nerve can be made equally perfect.

The second manner employs a sharp chisel, the lines shown in the diagram being cut with that instrument propelled by blows from a mallet.

Exposure thus secured the cord is lifted and severed; otherwise treated as indicated.

Where bleeding results from the cutting of the dental artery it is readily controlled by the use of a pledget of sponge thrust into the canal; an attached string hanging from the wound to facilitate subsequent removal.

The immediate operation done a succeeding step rounds the two edges of bone, and, after well washing the parts with a view of getting away all debris, closes the external wound, which, when the stitching is complete, is found to be upon the neck and in a situation that shows no scar.

The author assumes that the diagram serves fully to familiarize the surgeon with the manipulations, and further that the operation is of a character to show and speak for itself.

SECTION OF INFERIOR MAXILLARY NERVE AT OVAL FORAMEN.—The author practises and highly commends the following manner of exposure: Open the nerve-canal in the inferior maxilla as just directed. Pick up the nerve on a tenaculum and cut it. Seize next with bull-dog forceps, and, preserving the continuity, follow the line of nerve and canal until the dental foramen is reached. Enlarge now the foramen, using bur and engine, and follow nerve to dental foramen. At that point in the operation where enlargement of the foramen has been secured any convenient instrument is taken up with a view of isolating the nerve from its surroundings; a delicate knife-handle has been used by the writer. When the base of the skull is reached, and the nerve seen to stand clear, a pair of eye-scissors or the blade of a tenotome completes the section.

If not thought necessary to open the canal in front of the masseter muscle a line vertical with the posterior border of the ramus may be cut. Fig. 543, a drawing of much merit made for the author by Mr. Faber, allows the performance to be clearly understood. The isolation of the nerve, after the dental foramen is enlarged, is seen to carry the instrument of the operator between the external and internal pterygoid muscles. (See Fig. 541.)

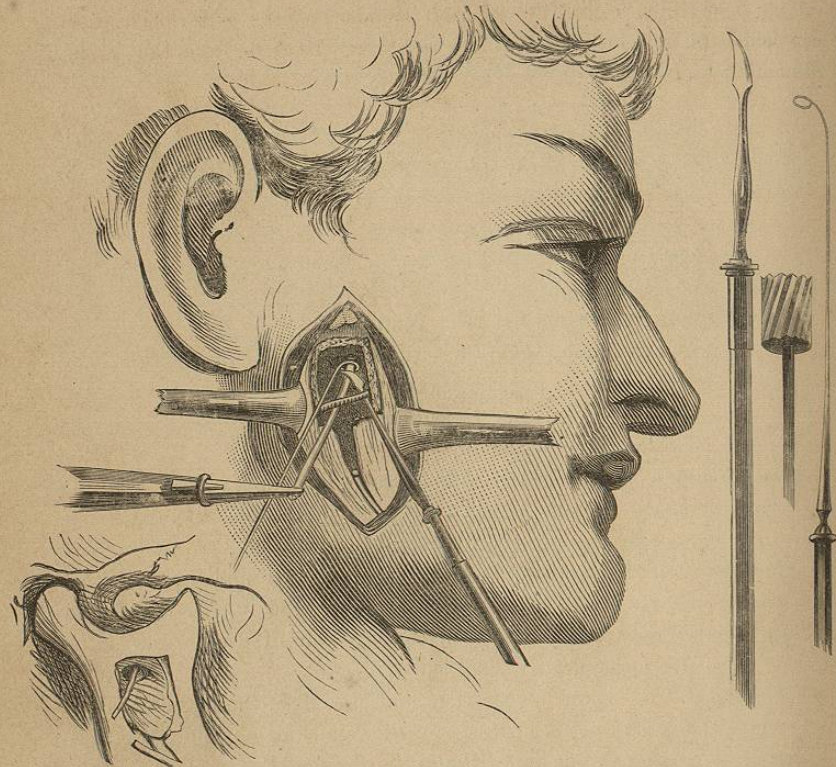
The enlargement of the dental foramen does not interfere with either the health or the offices of the condyloid or coronoid processes, while it exposes the nerve quite as freely, as exhibited in the diagram, as when these bodies and as well a portion of the ramus have been removed.

Referring to the diagram the anatomy as well as the operation are to be clearly appreciated. The opening in the bone shows the nerve up to the point of emergence from the oval foramen. Crossing it externally is the internal maxillary artery. Accompanying it is the dental vessel. Running parallel with it (see Fig. 541), is the lingual nerve. In the operation, as here shown, the nerve, after being cut, is passed through the fenestrated instrument exhibited, and by means of which it is isolated up to the base of the skull. The knife used to cut it is very small and of sickle shape. To

cut the lingual nerve implies simply the use of a hook with which to pick it out.

Neuralgic pain persistently located in the lower lip, one side or the other

FIG. 543.



of the mesian line, is oftentimes successfully treated by section of the affected nerve at its exit from the mental foramen. The operation is accomplished by sinking a bistoury to the proper depth adjoining the second bicuspid tooth and shaving the bone as far forward as the cuspis.

FIG. 544.

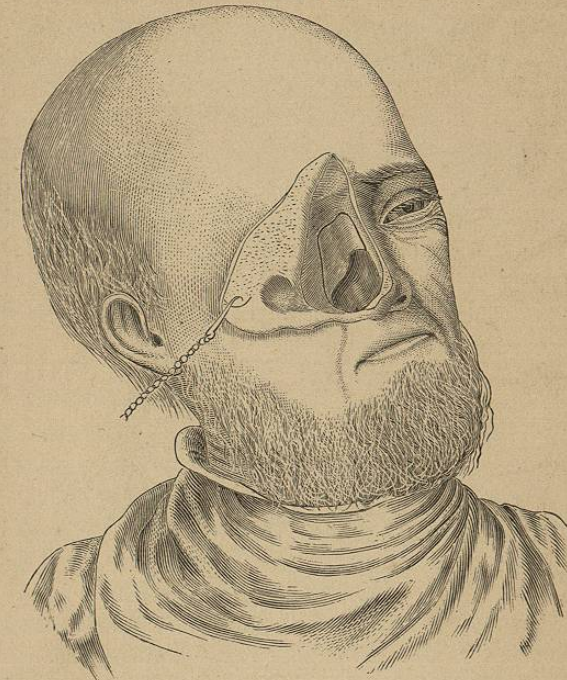


Superior Maxillary Nerve.—Section of the branches of the second portion of the nerve is made at various points as indicated by various conditions. Fig. 544 shows a neuroma diagnosed by the writer as existing upon the under surface of the nasal arch. In this case the neuralgia was of twenty years' standing. Fig. 545 exhibits the steps of an operation which exposed and removed the bone with which the tumor was related; the circular-saw and engine were used.

Neuralgia of parts supplied by branches external to the infra-orbital may find relief by section made at the foramen.

Parts innervated by branches coming from the canal demand section of the nerve within that channel. To expose the part the operator commences by dissecting a flap from the region of the antrum. The anterior wall of that cavity is next trephined. A succeeding step chisels away that portion of the orbital floor which makes the inferior boundary of the canal. The nerve, now laid bare, is to be excised. The section can be made from the inside of the mouth by trephining.

FIG. 545.



Nerve lesions existing in the maxillary sinus are exposed by dissecting the overlying parts within the mouth and trephining. Illustration 5 in the previous chapter is an example of a lesion so situated and treated.

Cases of neuralgia occur, where pain is so diffused over the track of the second division of the fifth nerve, and where the suffering of the patient is so intolerable, as absolutely to force the surgeon into operation even in the absence of a perfectly reliable diagnosis, and when it is felt that no section outside of the main branch may promise any good. In these instances, the results too frequently prove the worse than uselessness of what has been done; too often does continuous pain, transferred to some other part, show that the lesion is still back of the seat of operation. The author does not, however, condemn these operations: desperate evils call for desperate remedies. He would only enjoin that it be well understood that a desperate remedy is not to be unnecessarily employed, and that no man is to undertake the

section of the superior maxillary nerve until assured that he has mastered all that can be known of his case.

The exposure of the second branch of the fifth nerve was first practised in this country by Dr. Carnochan, of New York, and the plan originally adopted by that surgeon for the exposure is the same, with unimportant modifications, as is still employed.

Commencing this operation, a Y-shaped or simple curvilinear flap exposes the anterior wall of the antrum. A trephine, as large as may be used, is now made to cut out the wall. The posterior boundary thus exposed, a second trephine, necessarily somewhat smaller than the first, removes a section of this. The sphenomaxillary fossa thus exposed, the nerve is found and isolated from its surroundings and as much of it excised as may conveniently be effected. If, in the opening made through the antrum, space enough has not been secured by the trephine, the operator finds himself compelled to remove, by means of chisels and cutting pliers, the lower boundary of the infra-orbital canal; this will be found to enlarge the working space considerably.

In seeking in the fossa for the nerve, too much delicacy cannot be exercised, as above all things is it desirable to have, if possible, a healing of the parts without degeneration or destruction of the tissues.

A mode of exposing the antral wall, affording greater convenience in the succeeding steps of the operation, consists in dividing the lip and cheek by an incision leading directly from the labial commissure to the malar bone: two flaps are thus created, one being directed inward, the other outward.

An operation devised by Langenbeck for section of this nerve, being, however, one that is scarcely likely to meet with much favor, consists in the use of a stout tenotome, which is thrust, with its point directed downward and

FIG. 546.



backward, immediately beneath the external palpebral ligament, being kept in close contact with the outer wall of the orbit until it reaches the sphenomaxillary fissure, this being recognized in the cessation of resistance. The edge of the knife is now turned so as to shave the surface of the bone, the nerve being cut by a sawing motion as it enters the orbital canal. A cut opening the canal is now to be made through the floor of the orbit, and with a hook the nerve is to be caught and pulled from its bed.

The elder Pancoast's operation for exposure of the second and third branches of the trifacial is performed as follows: First, as exhibited in Fig. 546, a trap-like flap is made across the ramus of the lower jaw. This being raised and

reflected, the masseter muscle is shaved from its attachment, and the coronoid process exposed; this process is next sawed off at its root, and, having detached from it the temporal muscle, is removed; the muscles being thrust upward out of the way. This series of manipulations exposes the zygomatic fossa, across which, but overlaid with some fatty tissue, passes the internal maxillary artery, which a succeeding step picks out and ligates. The next use of the knife is found in detaching from the great ala of the sphenoid bone the external head of the pterygoid muscle; this accomplished, any soft parts found in the way are to be pushed aside with the finger, after which attention is to be given to stanching the hemorrhage and oozing.

The parts thus exposed and dried, the nerves of the sphenomaxillary fossa are plainly visible, and may be excised by using a pair of curved scissors.

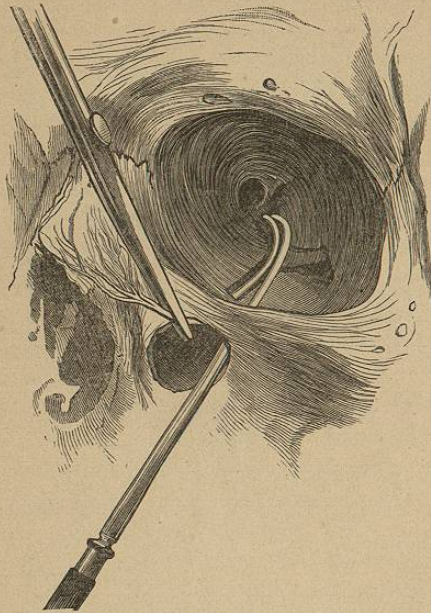
An operation practised by the author for making section of the second branch of the fifth nerve immediately as it emerges from the foramen rotundum, being a manner superior to, and easier of accomplishment than any described, is as follows: Place the patient on a pallet and etherize. Next expose the anterior face of the antrum by a trap cut in the cheek, which trap is to open towards the eye, and is to hold the branchlets of the infra-orbital nerve, which nerve is dissected out, and held uncut out of the way. Hemorrhage being controlled by ligatures, styptics, or other means, the face of the antrum is cut away by use of bur (Fig. 547) revolved by the surgical engine. Following this, the infra-orbital nerve is caught and held in the grasp of bull-dog forceps. With the nerve thus secured for a guide, the floor of the infra-orbital canal is cut away, and the guide followed to and along the floor of the orbit. The posterior wall of the antrum reached, the bur is passed backward through it; the nerve still being preserved intact. A succeeding step removes, by means of the bur, such extent of posterior wall as to allow isolation of the superior maxillary nerve, thus exposed, to a diameter that permits the passage of a tenotome beyond Meckel's ganglion, when the section is made and the nerve withdrawn. In performance of this operation, great care is required to avoid cutting the nerve prematurely by the rapidly revolving bur. The figure shows the stage of operation when the bur has reached and perforated the posterior boundary of antrum, and where a fenestrated instrument encircles the nerve and has been pushed along it until stopped by the base of the skull.

If, turning from this cut, the student will take up a skull, he will find that the sphenomaxillary fissure, seen by the side of the optic foramen at the apex of the orbit, leads directly into the sphenomaxillary fossa, and that by means of a fenestrated hook he could isolate a nerve from its associations and that he could reach the base of the cranium.

Referring to the author's operation for exposing the zygomatic fossa and its nerves, it is seen that the same exposure can be followed to the sphenomaxillary. It implies simply detachment of external head of pterygoid muscle. (See Fig. 541.)

A nerve-section is to possess the feature of a cut absolutely clean. Section made after any manner, or by means of a form of instrumentation, that gives a fringed or frayed expression is apt to be associated with bad results. An experiment, original with, and performed each session before the class of

FIG. 547.



Author's operation for excision of superior maxillary nerve at base of skull, using engine and bur.

the Oral Hospital by Dr. M. H. Cryer, seems worthy of close consideration. Two insulated wires, extending the length of one of the lecture-rooms, are related with a bell and a battery. Making a clean cut of one or both of these wires lengthwise, contact elicits no response by the bell. Scraping the wires, so as to interfere with the insulation, touch results in vigorous ringing, continued so long as contact and non-insulation exist. Relating the experiment with nerve fasciculi deprived by accident of the insulating neurilemma, inference is drawn that cause of pain exists, under all circumstances, in absence of insulation, and that it is to be recovered from only when nature or the physician cures such a defect. It is argued that in inflammation neurilemma is destroyed, allowing contact of immediately related fasciculi, hence continued worrying of the sensorium, as a principle, if not similar with, yet analogous to continued ringing of the bell. As corroborative of the experiment, a case lately offered in the clinic of the hospital service where a median nerve, much frayed, and imprisoned in a cicatrix, afflicting the patient with

persistent pain, cure of complete character resulted from dissecting out and sharply incising the cord some little distance from the frayed end. Accepting contact as an explanation of pain, interest in the subject invites to consideration in every individual case as to probabilities and possibilities in this direction.

For exposure of other nerves of the region under consideration, see succeeding chapter.