TECHNIC OF PERINEURAL ANESTHESIA FOR RADICAL SURGERY OF THE MAXILLARY SINUS.

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Anatomical Considerations.—The infra-orbital and posterior superior dental nerves, branches of the maxillary, are the nerves supplying this region. A study of their location and distribution will convince the reader that it is quite possible to completely anesthetize this region by injecting a local anesthetic into the vicinity of the trunks of these nerves.

The maxillary nerve passes through the infra-orbital sulcus and canal to the infra-orbital region of the facial surface of the maxilla, giving off numerous branches in its course. In passing through the infra-orbital canal it gives off the superior dental branches at various intervals through the minute canals in the body of the maxilla. The middle and anterior superior dental branches are given off near this point and supply the alveolar process, sending off small twigs to the teeth.

Before entering the canal the maxillary nerve gives off the posterior superior dental nerves to the maxillary tuberosity which partly follow the arteries, partly pass through their own foramina into the tuberosity and the body of the maxilla. Following the arteries they pass forward above the molar teeth, branching out within the facial wall of the maxilla and finally communicate with the middle and anterior superior dental nerves. They supply the oral mucosa, the molar teeth, the mucus membrane which lines the maxillary sinus and the periosteum.

The infra-orbital nerve frequently divides into from two to four branches, which arise closely together from the infra-orbital foramen. They run from behind and above to forward and inward. Their numerous subdivisions form a thick nerve plexus, which in turn sends off finer branches to the oral mucosa, the floor and the lower lateral aspect of the nasal cavity and the incisor and canine teeth.

From the above description of the nerve distribution it is clearly seen that anesthesia of this region may be easily brought about by the injection of a local anesthetic into the vicinity of the infra-orbital and posterior superior dental nerve trunks. This solution, penetrating by way of the perineurium into the central nerve substance, inhibits its function and anesthetizes the peripheral area supplied by these nerves. Owing to the elimination of the conductivity of these nerve trunks, sensory irritations of their terminal filaments are no longer perceived in the central organ and the anesthesia is complete.

The technic for blocking these nerves is as follows: To inject the infra-orbital nerve, the infra-orbital canal is palpated with the index finger, this being located two-fifths of an inch below the middle of the infra-orbital ridge; the finger is kept on this point. With the thumb of the same hand the lip and cheek is drawn up to expose the field of operation. The needle is inserted into the buccal fold slightly distal to the apex of the canine teeth, care being exercised to avoid penetrating the alveolar process. The needle is now passed upward and slightly inward for three-fifths of an inch, infiltrating the tissues slowly as the needle is advanced. Having inserted the needle to the distance above stated, we are now in the region of the infra-orbital canal of the facial surface of the maxilla. Here the remainder of the anesthetic solution is deposited, this being felt by the index finger. Gentle massage of this area will hasten the absorption of the anesthetic, producing proper anesthesia of this nerve and its branches.

Technic for injecting the posterior superior dental nerve: This injection is guided by the condyle of the palate process of the maxilla. The point of insertion of the needle is in the buccal fold corresponding to the middle of the disto-buccal root of the second last tooth from the condyle, this being the first or second molar respectively, depending upon the presence or absence of the wisdom tooth. The needle is now passed upward, backward and slightly inward, passing over the apices of the buccal roots of the second or third molar, as the case may be, using an angle of about forty-five degrees to the occlusal plane of the teeth. The tissues are infiltrated slowly as the needle is pushed forward and the remainder of the anesthetic solution is deposited after the needle has disappeared for about four-fifths of an inch.

The advantages of conductive anesthesia over the infiltration method are:

- (1) Less anesthetic is required.
- (2) Anesthesia is produced with less pain.
- (3) The duration of the anesthesia is greater.
- (4) Less trauma is produced and the danger of infection is not so great.

Novocain is the anesthetic of choice in this field of work, two (2) c. c. of a 2% solution of novocain being used in each of the above injections. The average reader will consider this solution to be of unusually high strength, but when we take into account the very small quantity of this solution necessary to produce anesthesia after the above described method, he will be convinced that a toxic effect is much less likely to occur than when a weaker solution is administered by the infiltration method.

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Operative Treatment of the Accessory Sinuses of the Nose.

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In the majority of cases of ethmoiditis there is some involvement of the sphenoid sinus and the enlargement of its ostium adds but little to the dangers of the case and usually affords much relief to the patient and the avoidance of a secondary operation at a later date. It is usually not necessary to remove the entire anterior wall of the sphenoid as the enlargement of the opening permits sufficient drainage and avoids the dangers of hemorrhage and infection which occasionally occur when the entire sinus wall has been removed. In acute infections of the antrum, where drainage fails to take place through the ostium, a needle puncture directed backward and upward about the center of the lower surface of the turbinate, with lavage and negative pressure usually suffice to effect a cure. Should it fail or the case be chronic the radical intranasal operation or the combined canine operation should be selected. The Canfield intranasal operation has proven very satisfactory in the author's experience and is of much less magnitude than the Denker, is more easily performed and preserves the normal function of the nose, permits free inspection of all parts of the cavity and easy access for the removal of polyps and necrosed areas. ED.