Anterior Ethmoidal Nerve Overview

Name

Anterior Ethmoidal Nerve

Latin

Nervus Ethmoidalis anterior

Etymology
Nerve from Latin nervus meaning sinew, tendon, in Galen "nerve" from Greek neuro and rho; omicron; metathesis of pre-Latin neuros from Proto Indo European (s)neu

Anterior comp. from Latin anterus= coming before

Ethmoidal derived from Greek theta; mu; omicron; epsilon; iota; delta; sigma; thmoeids meaning sievelike composed from theta; mu; omicron; sigma; thmos meaning strainer in turn derived from theta; epsilon; iota; nu; thein meaning to sift + omicron; epsilon; iota; delta; sigma; -oeids, -oid.

The Ethmoidal Nerve (V1) arise from the Nasociliary Nerve (V1) to supply the Ethmoidal Cells. The Nasociliary Nerve (V1) pass across the Optic Nerve (CN II) and travels across to the wall of the Orbital Cavity. The Ethmoidal Nerve (V1) passes through the Anterior Ethmoidal Foramen as the Anterior Ethmoidal nerve and enters the Cranial Cavity above the Cribriform Plate of the Ethmoid Bone.

"The understanding of nasal innervation can be simplified by dividing it into the internal (mucosal) and external (skin) aspects of the nose. The external nose is innervated by the Ophthalmic Nerve (V1) and Maxillary Nerve (V2), which are the first two divisions of the Trigeminal nerve (cranial nerve V). The superior aspect of the nose, including the tip, is supplied by the Infratrochlear Nerve (V1), the Supratrochlear Nerve (V1), and the External Nasal Branch Of The Anterior Ethmoid Nerve (V1). The Infraorbital Nerve (V2) supplies the inferior and lateral aspects of the nose, extending to the lower eyelids.

The internal nasal cavity may be subdivided into the Nasal Septum, the Lateral Nasal Walls and the Cribriform Plate. The superior inner aspect of the Lateral Nasal Wall is supplied by the Anterior Ethmoidal nerve (V1) and Posterior Ethmoidal Nerves (V1). The Sphenopalatine Ganglion (V2) is located at the posterior end of the middle turbinate and innervates the Posterior Nasal Cavity. The Anterior Ethmoidal nerve (V1) and Posterior Ethmoidal Nerves (V1) and the Sphenopalatine Ganglion (through the Nasopalatine Nerve) provide sensation to most of the Septum. The Cribriform Plate holds the special sensory branches of the Olfactory Nerve (CN I)."  http://emedicine.medscape.com/article/82679-overview
Nasociliary Nerve

Course

The Nasociliary Nerve branch of the Ophthalmic Nerve passes through the Anterior Ethmoidal Foramen as the Anterior Ethmoidal Nerve to provide sensory innervation of the Nasal Cavity and Nasal Skin. The branches of anterior ethmoidal nerve are called the Internal Nasal Branch of the Anterior Ethmoidal nerve and External Nasal Branch of the Anterior Ethmoidal Nerve which ultimately innervate skin on the lateral sides of the nose.

Branches

Internal Nasal Branch of the Anterior Ethmoidal nerve  External Nasal Branch of the Anterior Ethmoidal nerve

Motor

No Named Motor Branches
Sensory

Sensory branches for the skin on the lateral sides of the nose

Sensory branches to the nasal cavity*

* "The nasal cavity is divided into left and right halves by the nasal septum. The septum is formed by the perpendicular plate of the ethmoid bone above, the vomer bone posteriorly and by an extensive cartilage anteriorly (Fig. 2). Each nasal cavity has a roof and a lateral wall. The roof is formed by the cribiform plate of the ethmoid bone, through which olfactory nerves enter the nasal cavity. The lateral walls are formed from several different bones, but their most striking features' their three conchae or turbinates, are formed primarily from the ethmoid bone and a separate bone known as the inferior nasal concha. The conchae are large, medially-directed bony elements which are covered with highly vascular mucous membranes. Air is thought to be heated and humidified as it is drawn past the conchae during breathing. Beneath each shelf-like concha is a meatus. The meatuses serve as the openings of communications between the nasal cavity and the paranasal sinuses" http://www.emory.edu/ANATOMY/AnatomyManual/nose.html

Muscles, organs or structures innervated

Skin on the lateral sides of the nose

Nasal cavity
Symptoms of impairment

Continuous pain around the eye and the root or lateral side of the nose

Episodic pain around the eye and the root or lateral side of the nose with attacks lasting hours to days

Nasal pain

Unilateral pain around the eye and the root or lateral side of the nose a\w autonomic, motor or sensory signs ipsilaterally

Unilateral pain starting around the eye and the root or lateral side of the nose, radiating to the maxillary region

Unilateral pain starting around the eye and the root or lateral side of the nose, radiating to the teeth

Unilateral pain starting around the eye and the root or lateral side of the nose, radiating to the zygoma

Unilateral pain starting around the eye and the root or lateral side of the nose, radiating to the mastoid area

Unilateral pain starting around the eye and the root or lateral side of the nose, radiating to the occiput

Unilateral, moderately severe, burning, boring or nagging headache
Pain disorders and Syndromes involving

Anterior ethmoidal nerve Syndrome

"Anterior ethmoidal Nerve Syndrome is a name suggested for a series of symptoms resulting from irritation of the terminal branches of the Anterior Ethmoidal Nerve. The referred pain arising from this nerve are chiefly of the sinus type but may also take the form of headache, sometimes of a migrainous character. Ephedrine applied to the anterior ethmoid fissure and/or the middle turbinate body has met with considerable success in the cure of the pain and headache of this origin". Howard H. Burnham, M.D.

- 1. Sluder Syndrome or Anterior Ethmoidal Nerve Neuralgia
- 2.
- 3. Atypical facial neuralgia

Post-Traumatic External Nasal Pain Syndrome

"Little has been written about persistent external nasal pain after injury to the nose in the neurologic or headache literature. In clinical practice, this can be a disabling and treatment refractory condition. The external portion of the nose is highly innervated by branches of the ophthalmic and maxillary divisions of the trigeminal nerve including the nasociliary nerve, external nasal nerve, infratrochlear nerve, anterior ethmoidal nerve, and infraorbital nerve. As these nerves are located on the external portion of the nose just deep enough to the skin they can be easily traumatized with any impact to the nose". Todd Rozen, MD Michigan Head Pain & Neurological Institute - Neurology, Ann Arbor, MI, USA.
Atrophic Rhinitis

Cocaine Abuse

Ethmoidal Bone Fracture

Eustachian Tube Dysfunction

Juvenile Nasal Angiofibroma

Migraine

Nasal Bone Fracture

Nasal Furuncle

Rhinophyma

Sinusitis

Trigeminal Neuralgia
Nerve Block

"The nasociliary nerve leaves by the ethmoidal foramen, in the upper and medial wall of the orbit. The intraorbital approach of the nasal block thus joining the constraints of the eyes blocks is thus perished (very dangerous). After its orbital exit, the nerve gives the infratrochlear nerve, and the anterior ethmoidal nerve that one will improperly call "nasal" with his internal nasal branches very close with the root of the nose, and the external nasal branch. The material for performing this block is an intradermal needle (26 G 5/8, 16 mm) connected to a syringe luer lock by an extension cable; or a needle with court bevel of 25 mm (24 G), standard neurostimulation needle. A cutaneous pen marker. Two puncture procedures are possible:

intraorbital technique, very difficult in training and extraorbital technique which is the good technique; it is essential by its obvious simplicity [18], its harmlessness, and its effectiveness [19], with a maximal ratio benefit risks. The operator is vis-a-vis the patient.

Two injections will be necessary: first, with the root of the nose, the level of the interior angle of the eye, an infiltration, with more close to the nasal bone, while pricking close to the edge of the nose with a direction towards the nasal base. Second, in the axis of nasal alar; of the back of the nose, towards its base and alar joint.

The injection must be particularly slow because very sensitive: 1 ml on the first site and 1,5 ml of anaesthetic solution, on the second site. After the shrinking of the needle a discrete massage supports the diffusion of the product. The territory supplies by the nasal nerve, is the nasal bone, edge of the nose; supply also the anterior part of the lateral wall and upper parts of the septum; the skin of the external nose to the nasal tip. The root of the nose requires in more the supratrochlear nerve. The nasal block remains simple, and very easy success, compared to the intraorbital technique. The indications of the nasal block are in surgery: all acts of tegumental surgery of the nose (in association with the infraorbital and supratrochlear nerves); the rhinoplasty (in association with a general anesthesia). In emergency: nose fracture, nasal skin traumatism.

Another indication is postoperative analgesia of the nasal surgery under general anesthesia.

No particular complication with the nasal block, however the cutaneous puncture and the bone contact are very sensitive: sedation is necessary". http://www.esra-learning.com/site/techniques/face/b_ophtalmic.htm