

Mini Review

A Rapid Review on the Cutaneous Nerves of the Face from a Surgical Anatomy Perspective

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Abstract

The skin of the face and scalp is innervated by the cutaneous branches of the trigeminal nerve and its divisions and by some of the cervical plexus nerves. The focus of this rapid review is to summarize these innervations from a surgical perspective.

BODY

Trigeminal nerve divisions and some nerves from the cervical plexus innervate the skin of the face and scalp. Cutaneous nerves of the face include the auriculotemporal, mental, buccal, zygomaticofacial, infraorbital, zygomaticotemporal, lacrimal, supratrochlear, infratrochlear, supraorbital, external nasal, supraclavicular, lesser occipital, anterior or transverse cutaneous nerve of the neck by its upper and lower divisions and the great auricular nerve by its anterior division [1].

All of these nerves originate from four main sources: the mandibular division of the trigeminal nerve, the maxillary division of the trigeminal nerve, the ophthalmic division of the trigeminal nerve and the cervical plexus.

The auriculotemporal, mental and buccal nerves are derived from the mandibular division of the trigeminal nerve. The zygomaticofacial, infraorbital and zygomaticotemporal nerves are derived from the maxillary division of the trigeminal nerve. The lacrimal, supratrochlear, infratrochlear, supraorbital and external nasal nerves are derived from the ophthalmic division of the trigeminal nerve. The supraclavicular, lesser occipital, upper and lower divisions of the anterior or transverse cutaneous nerve of the neck and the anterior division of the great auricular nerve are derived from the cervical plexus [2].

In studying the cutaneous nerves of the face, it is important to pay attention to their areas of distribution. The skin of the lower part of the cheek is innervated by the buccal nerve. The skin over the chin is innervated by the mental nerve. The auriculotemporal nerve innervates the upper two-thirds of the lateral side of

the auricle and the temporal region. The anterior part of the temporal region is innervated by the zygomaticotemporal nerve. The infraorbital nerve innervates the side of the nose, the upper lip and the lower eyelid. The upper part of the cheek is innervated by the zygomaticofacial nerve [3]. The lateral part of the upper eyelid is innervated by the lacrimal nerve. The supratrochlear nerve innervates the upper eyelid and the forehead. The supraorbital nerve innervates the scalp, the upper eyelid and the frontal air sinus. The lower part of the dorsum and tip of the nose is innervated by the external nasal nerve. The infratrochlear nerve innervates the medial parts of both eyelids. The back of the auricle is innervated by the lesser occipital nerve. The great auricular nerve, by its anterior division, innervates the skin overlying the parotid gland and the jaw angle. The supraclavicular nerve innervates the skin overlying the upper half of the deltoid muscle and the anterior part of the thorax to the level of the second costal cartilage. The anterior or transverse cutaneous nerve of the neck, by its upper and lower divisions, innervates the upper part of the neck and the lower margin of the lower jaw.

About the importance of having knowledge about the cutaneous nerves of the face in the surgical fields, the examples can be causing damage to the nerves in surgical approaches to various pathologies of the head and neck regions apart from dermatologic surgeries in the relevant regions. Surgical approaches to the skull base, orbital and preorbital, nose, ears, cervical spinal cord, temporal and infratemporal, oral cavity, pharynx and larynx and important anatomical structures of the neck etc. May be accompanied by causing injuries to some the nerves which innervate the skin of the relevant regions [4].

Since the trigeminal nerve is the main source of innervating the skin of the face, causing injuries to this nerve and its branches is more common in such surgical operations [5]. Because of this fact, care should be taken to avoid causing injuries to such nerves as much as it can be possible to do so although, in certain surgical approaches, the occurrence of such injuries is unavoidable. In any case, the surgeon should be aware of such nerves branches and have knowledge about the relevant anatomical trajectories and innervations.

CONCLUSION

It is important for surgeons and other relevant clinicians to have a deep knowledge of the cutaneous nerves of the face. Having such knowledge is important when performing operations of the head and neck to improve precision and reduce possible

surgical complications. This understanding is also important for anatomists and neuroscientists who study the cutaneous innervations of the face and relevant pathologies.

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