

## Involvement of Cranial Nerves in Primary Central Nervous System and their Functional Outcomes after Surgical Treatment

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### DESCRIPTION

The cranial nerves are a series of 12 paired nerves that run along the back of the human brain. Human brain, face, neck, and torso get electrical signals from these cranial nerves. Cranial nerves aid in the senses of taste, smell, hearing, and touch. They also help with tongue movement, eye blinking, and facial emotions. The vagus nerve is the longest cranial nerve and it controls both motor and sensory processes. It passes through various areas of the body, including heart, throat, digestive system, and tongue. A nerve may be hurt or severed during surgery or by trauma. A damaged nerve may heal over time. In some circumstances, rehabilitation might help to regain nerve function. Depending on whatever cranial nerve is injured or afflicted, the symptoms will change. Sometimes, the names of the cranial nerves match up with each one's specific purpose. While some cranial nerves are solely motor, others are solely sensory, and the others have both sensory and motor functions. It is possible for certain cranial nerve disorders to be classified as either cranial nerve disorders, neuro-ophthalmologic disorders, or both when they impact the eye, pupil, optic nerve, or extraocular muscles and their nerves. Additionally, impairment of taste, hearing, balance, swallowing, phonation, head twisting and shoulder elevation, or tongue movements might result from cranial nerve diseases. These conditions can have symptoms including vision loss, diplopia, ptosis, pupillary abnormalities, periocular pain, face pain, or headaches, and they can be brought on by tumors, inflammation, trauma, systemic illnesses, and degenerative conditions.

We detect smells with the help of Olfactory Nerve (CN I). It enables us to take in the diverse aromas that are all around us [1]. Think of the pleasant scent of the favorite flower or the delightful smell of morning coffee. All of these sensory delights would be lost without the olfactory nerve. This tiny nerve grants us the ability to savor the essence of our surroundings and to create powerful memories associated with smell. The Optic Nerve (CN II) is a crucial component of our visual experiences [2]. It transfers information from the retina to the brain, enabling us to view and comprehend our surroundings. The optic nerve enables us to experience the wonder of a sunset, the complex features of

a microscopic organism, and the satisfaction of reading a good book. There is no way to overestimate how important it is to our daily life [3-4].

Our eye movements are coordinated by the Oculomotor Nerve (CN III), Trochlear Nerve (CN IV), and Abducens Nerve (CN VI) [5]. It is impossible for us to perceive depth or perform smooth visual tracking without the coordination of our eye muscles, which is controlled by this cluster of cranial nerves. One of the most important cranial nerve is the Trigeminal Nerve (CN V) which controls our ability to feel touch [6]. The biting and chewing muscles are also controlled by this nerve. To suggest that the trigeminal nerve plays a crucial part in our daily lives is not an exaggeration. The Facial Nerve (CN VII) controls the facial muscles. It enables us to express a wide range of emotions through our facial expressions, such as smiling and frowning. The ability of this nerve to reveal our inner feelings to others as well as regulate our facial muscles gives it power [7]. We express happiness, sadness, surprise, and a wide range of other emotions with the facial nerve. A dual function is played by the Vestibulocochlear Nerve (CN VIII). It controls both our ability to hear and our sense of balance. While the latter enhances our life with the melodies of music, the wisdom of spoken words, and the laughter of loved ones, the former is essential for our direction in space. The vestibulocochlear nerve is proof of how crucial sensory experiences are to our daily lives [8].

The Glossopharyngeal Nerve (CN IX) which also controls swallowing muscles and airway reflexes and plays a significant role in taste perception. It protects our health and allows us to enjoy the flavors of our favorite foods while maintaining clear breathing. It is more than just a sensory nerve. Due to its enormous reach and diverse range of functions, the Vagus Nerve (CN X) is one of the most fascinating cranial nerves. It is linked to a number of internal organs in the thoracic and abdominal cavities, which affects our heart rate, digestion, and even our capacity to verbally convey our feelings [9]. The vagus nerve, frequently referred to as the "wanderer" due to its extensive connections, and connects our brain to our inner physiological environment. The muscles that allow us to move our head and shoulders are under the direction of the Accessory Nerve (CNXI).

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The accessory nerve is constantly at work whenever we turn our heads to follow a sound or shrug our shoulders [10-11]. Although this nerve is frequently disregarded, its importance in our capacity to interact with the environment around us cannot be understated. Finally, the tongue muscles are controlled by the Hypoglossal Nerve (CN XII). It is important for speaking and swallowing since it enables us to express ourselves clearly and enjoy the flavor of our favorite foods [12]. Our daily communication and survival are significantly influenced by the hypoglossal nerve.

## CONCLUSION

Some cranial nerve diseases may be brought on by an underlying illness, a tumor, and damage from trauma, infection, inflammation, or stroke, depending on the specific disorder. Some diseases could also be abnormality or birth defects. Testing of the cranial nerves is useful for keeping track of how neurologic disease processes, particularly neurotrauma, are developing or getting worse. Patients with strokes or other intracranial disorders, however, frequently need to be checked for deteriorating function or condition.

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