



GLABELLA REFLEX AND ITS NEUROPHYSIOLOGICAL CONNECTION WITH *TILAK* APPLICATION: AN *AYURVEDIC* AND MODERN PERSPECTIVE

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ABSTRACT

The Glabella Reflex, a primitive neurologic phenomenon, has been studied in many neurophysiology studies. This article explores how Tilak is connected to placing it on the forehead as is done in traditional *Ayurveda*, at the point of *Sthapani Marma*. As per *Ayurveda*, this phase of stimulation influences emotional balance, autonomic nervous system regulation, and cognition. This comparison aims towards investigating the possible practical relevance of *Tilak* in stress alleviation, mindfulness and neurodegenerative disorders by combining *Ayurvedic* wisdom with modern neuroscientific studies. Taking a correlation approach, the study calls for more research in integrative medicine by demonstrating the potential scientific worth of this ancient practice.

Keywords Trigeminal Nerve, Ayurveda, Glabella Reflex, Tilak, Neuroscience, and Autonomic Regulation, Sthapani Marma, Ajna Chakra

INTRODUCTION

The Glabella Reflex (also known as the Glabellar tap sign) is a neurological reflex that induces blinking upon tap of the forehead. In healthy individuals, the response diminishes with repeated stimuli (i.e. habituation), but in conditions such as Parkinson's disease, it persists, reflecting neurological dysfunction. Interestingly, there's a similar concept in the ancient Indian medical system *Ayurveda* known as *Sthapani Marma*, an energy point that sits at the same anatomical point as the Tilak! [1]

For centuries, *tilak* has been applied in Hindu traditions as a symbol of mental focus and spiritually awareness. In *Ayurveda*, the application of herbal substances, such as saffron, *kumkum* and sandalwood (*chandan*) on the forehead is said to cool the mind and reduce stress while improving concentration. Neurophysiological studies found that forehead-stimulative regions influence the Autonomic nervous system and enhance tranquillity and cognition. This paper aims to study the potential correlation between Glabella Reflex, Tilak application, and its therapeutic effects through the amalgamation of modern findings of neurology and principles of *Ayurveda*. [2]

Clinical and Therapeutic Significance-

Glabellar Reflex or Extrapyraxidal Symptom in Parkinson's Disease: Transmissible Agent(s) and Neurodegeneration

Emotional Regulating: *Ayurvedic* practices using forehead stimulation may help increase emotional stability and autonomic balance. [3]

Many *Ayurvedic* texts describe *sthapani marma* as being linked to mental and neurological wellness. As per the *Charaka Samhita*, it is the “*Prana Sthala*,” responsible for brain activity control. The *Sushruta Samhita* states that applying *tilak* to the forehead also helps to balance and activate the *chakras* or that the energy centers of the human body. This connection can facilitate neurotransmitter secretion, strengthen stress control, and optimize cognitive function. The *Ajna Chakra* is considered the epicenter of intellect and sight (vision) in *yoga* and meditation. With this study, we aim to study whether there is any association between the application of *tilak* and glabellar reflex which could further explain the therapeutic effects of *tilak* on neurological disorders and mental health problems and could contribute to the field of *Ayurvedic* medicines. [4]

Mental Health and Mindfulness: Using *tilak* as a physiological and symbolic practice may help mindfulness-based stress-reduction methods.

Mechanisms of the Glabella Reflex in Neurophysiology:

There are intricate neurophysiological mechanisms involved in the glabella reflex. The trigeminal nerve (CN V), which supplies sensation to the face, receives sensory input when the glabella region is tapped. The brainstem receives and processes messages from the sensory fibers of the trigeminal nerve. The blink response is caused by the reflex arc in the brainstem activating the facial nerve (CN VII). [5]

The basal ganglia are deep brain areas that control voluntary motor movements and some involuntary behaviors. The glabella reflex is linked to their activity. After one or two taps, the response is usually subdued in healthy persons. Nonetheless, people who have basal ganglia dysfunctions, like Parkinson's disease, could exhibit a persistent or heightened reaction. [6]

Physiological Processes in the Forehead Region and *Sthapani Maram*:

The *Sthapani Maram* is associated with a spot on the forehead, namely close to the *Ajna Chakra* which is in charge of cognitive processes, emotional regulation, and mental clarity. [7]

Rich innervation from the trigeminal nerve (CN V), the facial nerve (CN VII), and sympathetic nervous system fibers make the forehead itself an extremely sensitive area. Through sensory feedback and possible activation of certain cerebral pathways, stimulation of this region, such as applying a *Tilak*, might influence mental moods and brain function. [8]

In many civilizations, especially Hinduism, as well as other faiths like Jainism and Buddhism, the use of *tilak* also spelled *tilak* or *bindi* has great religious and spiritual significance. In religious contexts, *tilak* is interpreted as follows:

Hinduism: The *Ajna Chakra*, or Third Eye, symbol: The *Ajna Chakra*, often known as the "third eye" *chakra*, is frequently linked to the *tilak* that is applied to the forehead in *Hinduism*, particularly in the space between the eyebrows. It is thought that spiritual understanding, knowledge, and intuition reside in this core. Practitioners represent the emergence of higher awareness and the inner sight that transcends the material world by positioning *tilak* in this area. [9]

Blessing and Protection: It is believed that the *tilak* bestows blessings and provides heavenly protection. Priests frequently use it to invoke positive energy and purify the devotee during religious rites.

Festivals and Rituals: Devotees use *tilak* to adorn their foreheads in observance of many festivals and rituals, such as *Ganesh Chaturthi*, *Diwali*, and *Navratri*, to thank the gods and ask for their blessings. The mark is associated with the achievement of spiritual objectives and is a sign of auspiciousness. [10]

Third eye (or *Ajna Chakra*) and the practice of covering or marking-Protection against Negative Energies: The *tilak* (or *bindi*) applied to the third eye area is said to serve as a spiritual shield because the forehead is seen as a weak point in many cultures. It is thought to shield the bearer from evil spirits or bad energies. The *tilak* is said to assist in shielding the third eye from external influences that could disrupt one's mental or spiritual focus. [11]

Symbolic of Awakening and Awareness: A person's spiritual awakening may also be represented by covering their third eye. It acts as a visual cue that the user is actively attempting to open their inner vision and intuition and is consciously aware of their spiritual path. [12]

Significance of Glabella Reflex in Clinical Practice-

Neurological illnesses, including Parkinson's disease and other conditions affecting the extrapyramidal system, are linked to a continuously activated glabella reflex. [13]

It is also utilized to evaluate frontal lobe function as part of neurological exams. [14]

This reflex is mediated by the efferent (motor) fibers of the facial nerve (CN VII) and the afferent (sensory) fibers of the trigeminal nerve (CN V). [15]

DISCUSSION

It opens new doors for integrative medicine as we explore, through *Ayurveda* and neuroscience collaboration, how the *Tilak* is affecting the Glabella Reflex. [16]

Research shows that by stimulating the forehead (especially the *Sthapani Marma*), the parasympathetic nervous system will be prompted, helping to reduce levels of stress and anxiety. Stimulation to the trigeminal nerve at the glabella reflex was shown to be important for autonomic functions and was associated with enhanced cognitive function as well as relaxation responses.[17]

Moreover, the role of *Ajna Chakra*, which coexists in *Sthapani Marma* area as mentioned in *Ayurvedic* Treatise, in promoting mental clarity and higher consciousness is recognised.

Neuroscientific studies also show that when the forehead is looked upwards, it enhances emotional control and focus. [18]

Moreover, there is evidence of sustained Glabella Reflex responses in Parkinson disease patients, indicating frontal lobe involvement [19]. If *Tilak* application does affect the neural pathways associated with this reflex, it may play a role as a supplementary treatment for neurodegenerative diseases. [20]

CONCLUSION

The neurophysiological indispensability of glabella relaxation and *tilak* application explains their remarkable impact on brain, emotional health and autonomic balance. In addition to their traditional significance, these practices offer scientifically based benefits through impacting the prefrontal cortex, pineal gland, vagus nerve, and neurotransmitter systems. Bringing these techniques into your daily life bridges the gap between ancient traditions and modern neuroscience, resulting in heightened focus, reduced stress, and more clarity.

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