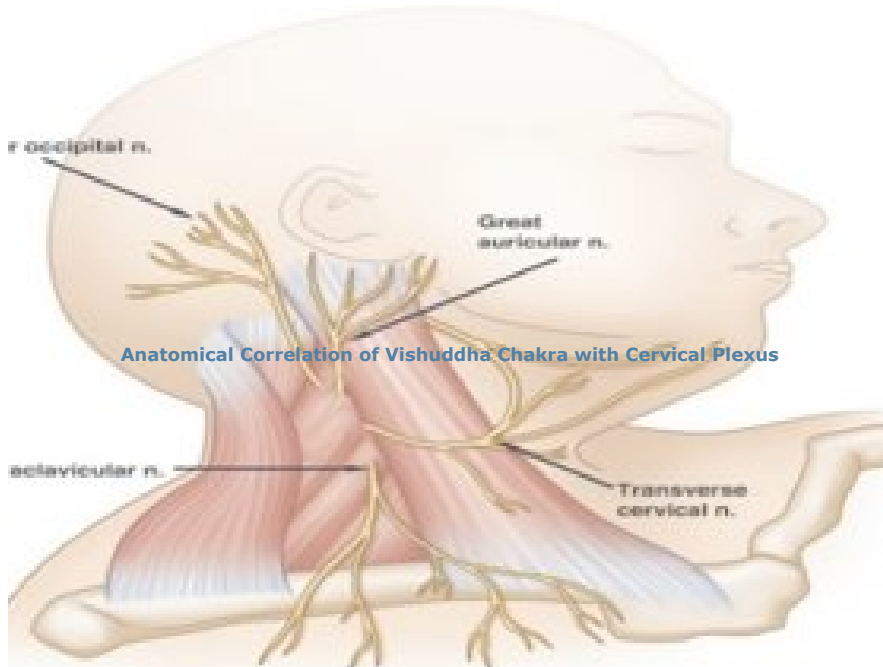


# Anatomical Correlation of Vishuddha Chakra with Cervical Plexus

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## Abstract

Ayurveda is a science of Medicine and Spirituality. In it there may be outline of many topics associated to spirituality together with Mana, Atma, Parmatma, Adhyatmika Guna, Adhyatmika Dravya, and so on. In Ayurveda, Yoga is considered as a route to reap the Moksha. Yoga Shastra considered Sukshmasharira as the part of our body. The human can't see or touch it, because it is the flow of energy of our body. There are such key points inside the Sukshmasharira that is called as "Energy Centre" or "Chakras". Chakras are energy centers inside the body that plays an essential function for maintaining our physical, mental, and spiritual fitness. We have seven major Chakras positioned along the spinal column those are: Mooladhara, Swadhisthana, Manipura, Anahata, Vishuddha, Ajna & Sahasrara, whose belief is acquired only at significantly advanced states of recognition. Those Chakras has a special characteristic & positioned longitudinally along the spinal column. Those are psychic center of the Sukshmasharira, related to awakening of the Chakras. Among Shad Chakra, Vishuddha Chakra is located in Kantha Pradesha. The object of proposed work is related to the Study of Vishuddha Chakra in particular, to identify exact anatomical location and structures involved in the region of neck as well as detail study of Vishuddha Chakra and its limitations and correlation of Vishuddha Chakra with Cervical plexus.

**Keywords:** Shad Chakra's, Vishuddha Chakra, Cervical Plexus

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## Evidence in Context

**What Know:** In it there may be outline of many topics associated to spirituality together with Mana, Atma, Parmatma, Adhyatmika Guna, Adhyatmika Dravya, and so on.

**What New:** The object of proposed work is related to the Study of Vishuddha Chakra in particular, to identify exact anatomical location and structures involved in the region of neck as well as detail study of Vishuddha Chakra and its limitations and correlation of Vishuddha Chakra with Cervical plexus.

## To view

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## Introduction

Ayurveda is a term which defines 'The science of life' and is being recognized these days for its notable nutritional, natural, lifestyle & yogic therapy that initiates us to live longer, happier, healthier and many more. Based on the guidelines given by our ancient scholars, it is our duty to analyze various principles & unexplained facts (*Apratyaksha*) with the help of *Pramanas* like - *Agama, Anumana, Yukti* etc. Knowledge of '*Shareera*' is mandatory for student of any system of medicine before he/she starts learning actual medicine. The Acharyas through the *Divyachakshu* realized the concepts like *Sookshma Shareera, Srotas, Agni*, etc. so, one cannot deny the validity of knowledge in the literature just because we fail to understand it. The yogic and tantric sciences hold unique concepts like *Chakra & Nadi's* which hold importance in governing physiological aspects of humans. The word *Chakra* defines 'wheel/'circle', however within the yogic context a higher translation is 'vortex'/'whirlpool'. The *Chakras* are "Vortices of *Pranic* energy at particular regions of the body which controls the flow of *Prana* (vital forces)".

*Shat chakras* which are mentioned in science of yoga are believed as hypothetical areas. They may be originated from spinal nerve plexus & the part of Autonomic Nervous System, which controls over emotions, mental wellbeing, energy levels, pain etc. & controls physiology by regulating all kinds of secretions (hormones).

However, we still have a lot of research to do in order to provide more scientific explanations. For the regulation of vital energy through *Chakra* is scientifically evaluated by GSR machine (Galvanic skin resistant instruments measure the potential difference between two points over the skin), electro dermal conductance measuring instruments for research purposes.

**Shad Chakra:** The six *chakras* are first referred in Yoga Kundalini Upanishad, it is a part of the Krishna Yajurveda and written between 1,400 BC and 1,000 BC. The word "*Chakra*" was mentioned first in Rig-Veda.

**Etymology:** According to Amarakosha, चक्र (पू) = चक्रव क. The word meaning of *chakra* is a "wheel" that which revolves continuously. चक्र -the wheel (of a carriage, of the Sun's chariot); a mystical circle; an astronomical circle. [1]

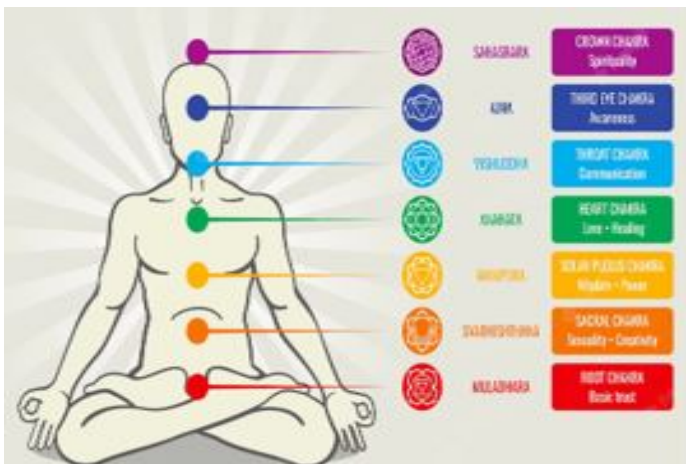


Figure 1: Location of Shad Chakra.

*Chakra* which means that- "Wheels of light." Wheel has been a vital part and witness of human evolution since a long time. The *Chakras* being defined as knots inside the *Nadi* that is as thin as the thousand<sup>th</sup> part of a hair. These are the center of energy which is placed at some point in the body and offers a passage for energy to enter and exit our body. It facilitates to regulate all type of energy or strength flows, such as, physical, intellectual, emotional and spiritual.

In the view of Anatomy, *Chakras* are wheels of neurovascular circulatory channels distributed to several organs & structures of the human body; those wheels of nerves are referred to as 'Nerve Plexuses' that are having different features in accordance with their area of supply.

Those plexuses are organized in the shape of spokes around wheel. Inside these *chakras* '*Prana*' i.e. The remaining natural healing strength is situated, that's all around us and within us, to maintain us healthy, happy and vibrant. All body-mind itself has internal energy centers for controlling the flow of *prana* and a system of energy channels. Those channels are known as *Nadis* and consequently the intersecting factors of *Nadis* is referred as '**Chakras**'. Inside the physical body, the channels are represented by means of the cardio-vascular system, lymphatic system and the centers are represented by the brain, the nerve plexuses. *Shad Chakras* in our body are the Reservoirs of the Bioenergy that is exactly similar to Standard Bioenergy.

The Six *Chakras* are: *Mooladhara, Swadhisthana, Manipura, Anahata, Vishuddha, Ajna Chakras*. Every *Chakra* have specific - Color, Petals of lotus flower, *Yantra* or geometrical shape, *Bija Mantra*, Animal symbol, Divine Symbol constitute better recognition.[2]

**Importance and Advantages of The Chakras-** balancing of *Chakra* enables in treating many illnesses associated with body as well as mind. Effective mixing of disease enhancing drugs and dietic and lifestyle modifications is necessary. *Chakra* recovery and balancing enables in developing energy in the body. *Chakra* balancing helps in lowering the negative energies and constructing up positive energies inside the body and mind. Also enables in maintaining us strong, centered, healthy and balancing the features of glands & hormone imbalances which can be the primary cause of many disorders of the body.

Table 01: Specifications of each Chakra

	Mooladhara	Swadhisthana	Manipura	Anahata	Vishuddha	Ajya
Site	Yoni	Lingamoola	Nabhi	Hridaya	Kantha	BhruMadhya
Dala	4	6	10	12	16	2
Colour	Rakta	Sindura	Neela	Aruna	Dhumra	Sweta
Element	Prithvi	Jala	Agni	Vayu	Akasha	Mahat
Mantra	Lam	Vam	Ram	Yam	Ham	Aum
Guna	Gandha	Rasa	Rupa	Sparsha	Shabda	Shabda
Devata	Brahma	Vishnu	Rudra	Rudra	Panchavaktra	Panchavaktra
Yantra	Chatuskona	Chandrakara	Trikona	Shatkona	Shunya/round	Jyotirlinga
Gynaendriya	Nasa	Rasana	Chakshu	Twak	Karna	Karna
Karmendriya	Gudam	Gudam	Paada	Hasta	Vak	Vak
Corelated with	Pelvic plexus	Hypo-gastric plexus	Solar plexus	Cardiac plexus	Pharyngeal plexus	Cavernous plexus

**Vishuddha Chakra:** *Vishuddha* consists of two phrases- 'Shuddha' means 'purified' and the prefix 'Vi' compliments its quality. It's far symbolized by a violet lotus having sixteen petals. This *Chakra* is located at the back of the neck just behind the throat pit. It is taken into consideration as the center of purification. Proper knowledge and discrimination occur at this *Chakra*. The throat center is a place where the divine nectar known as *Amrita*, the paranormal elixir of immortality is tasted. For awareness in this *Chakra*, one have to visualize- large white drop of nectar.

Physically controls neck, ears, mouth, teeth, esophagus, throat and different organs and glands in neck region. Psychologically helps in verbal exchange and expression; problems of faith, decision making, sharing of one's own truth. Spiritually in gaining information about past, present and future. [3]

1. Place – Throat region.
2. Shape of *yantra* – Rounded as moon.
3. *Bija varna* – *Suvanim*.
4. *Bija mantra* – ह्रीं (*Ham*).
5. *Dala* – 16
6. *Dala Akshara/Beja Akshara* – अ, आ, इ, ई, उ, ऊ, ऋ, ॠ, लं, ल्रं, एं, ऐं, ओं, औं, अं, अः
7. *Vahana* – *Hasti* (Elephant)
8. *Prana (Vayu)* – *Prana and UdanaVayu*.
9. *Devata* – *PanchVaktra Rudra, Parvati*
10. *Shakti* – *Shakini*
11. Acquisitions by concentrating on this *chakra* – attain highest success, get full knowledge of four Vedas, becomes *Trikala Gyani* (knowing past, present, future).
12. Important nervous structure lying at this *chakra* – Cervical Plexus.
13. Endocrine Gland: Thyroid. [4]
14. *Dhyana phalam* – on activation of this *chakra* one gets control over *Vakshakti, Gyana, Chitta Shanti, Arogyam, Trikala Drishti, Tejasvi, Chiranjeevi*. [5]

Four verses of *Shad Chakra Nirupana* i.e., from 28 to 31 describe *Visuddha Chakra*.

**Yoga and Chakra:** *Yoga* combines soul & mind with the body. *Astha Angas* (8 parts) of *Yoga's* are mentioned in *Ayurveda*. Specific *Yoga & Asana* activates specific *Chakras*. For activation of *Vishuddha Chakra* we need particular type of *Bandhas, Pranayama, Asana* etc. such as *Jalandhara Bandha* (chin-lock). *Pranayama* such as *Ujjayi Pranayama* (hissing type). Some of the important *Asanas* for activation of *Vishuddha Chakra* are *Matsyasana, Suptavajrasana, Ushtrasana, Paschimottanasana, Dhanurasana, Bhujangasana, Shalabhasana, and Ardha chakrasana*. These all *Asanas* helps in maintaining the normal functions of the body & also in treating various disorders like cervical spine diseases- cervical spondylosis, also spine becomes elastic, toned & flexible. [6]

**Neuro-anatomical & physiological factor:** The *Vishuddha Chakra* is associated to sexuality that is visible at the start of the puberty, where in the gonads promote the improvement of Adam's apple & the gentle voice of child disappears and makes way for a stronger & harsher voice.

**Endocrine gland:** The thyroid gland is present here; it produces thyroxin & tri-iodothyronine. It acts throughout body to maintain metabolic activity. When thyroid gland functions as usual, it offers us pleasure & we enjoy life. The thyroid has a strong impact on gonads, & also regulates sex, urge to food, menstruation, being pregnancy, intellectual health etc. [7]

**Functions of Vishuddha Chakra:** The yogi who concentrate on this *Chakra* attains highest success, *Vak - Shakti*, get full knowledge of four Vedas and also becomes *Trikala Gyani* i.e., knowing Past, Present and Future. Importance of this *Chakra* is control of hearing due to *Akasha mahabhuta pradhana* and also control over ego. Neck, ears, mouth, teeth, esophagus, throat and different organs and glands in neck region are also controlled by *Vishuddha Chakra*. "So main function of *Vishuddha Chakra* is production of speech & its purification i.e., *Shuddhi of Shabdha*(sound)". **Phonation:** Vocal cords are the main organ of speech production due to its vibration only one is able to produce sound. As *Beejamatra* of *Vishuddha Chakra* is ह्रीं (*HAM*) by pronunciation of this causes vibration of vocal cord & also thyroid gland stimulation.

**Marma's of Greeva Pradesha** (vital points of neck region): The part of the body, which on injury causes death of an individual, is called as *Marma*. *Urdhvajatrujatamarma*- which are located above clavicle. These are 4 *dhamani's* (arteries), 2 on either side of *Kantha Nadi* (trachea). Two of them are known as *Nilā* & other two are *Manya*, 8 *Sira Matrika Marma, Krikatika* (atlas vertebrae) [8]

## Modern Review

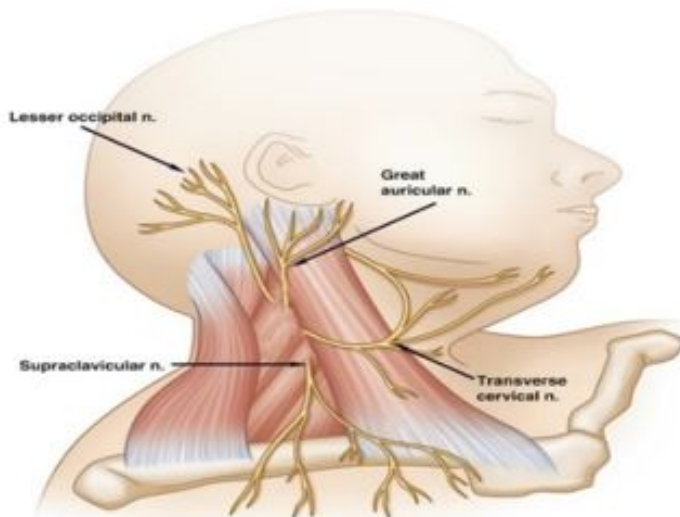
A *Chakra* is intellectual or speculative, i.e., more than materialistic it is diffused energy center. Diffused energy travels in the form of vibrations and its perception are beyond that of the materialistic world. It means we can't - see, contact, listen, or understand diffused energy through our physical senses. Auric strength fields are one amongst many units of energy fields, which results in through the diffused body. *Chakra* appear to be bands of energy that start near to the body and pass away from the body. They may be close to the electromagnetic fields created by the physical body, but they are of high level in vibration. To recognize the nature of the *chakra* completely in addition to *Kundalini*, in the form of a double coil of helixes. In this way the *Chakra* functions like a gyroscope and in reality, it creates a torus-like energy flow through and across the whole body. [9]

**Chakras and the Nervous System:** The specific plexuses consist from base to pinnacle the coccygeal, sacral, lumbar, solar, brachial and cervical plexuses. Each nerve plexus is similar to its nearby postal center that makes certain its related body region communicates with the periphery nervous system the nerves and ganglia outside of the spinal cord. The brain stem cords the brain to the spinal cord and helps in managing fundamental existing activities which includes smell, vision, expression, listening, breathing, pulse rate, and so on. The leading unit of nervous system is the neuron, which passes data through electrical charges known as impulses to various cells within the body. These messages frequently travel large distances inside the body.

**Structures of Neck Region:** The structures coming under this region includes some glands i.e., Thyroid gland, Parathyroid gland, along with organs like Larynx, Vocal cords, Trachea, Esophagus.

## Cervical plexus

The cervical plexus is form through the roots of the 1<sup>st</sup> 4 cervical nerves (C1-C4), rarely along with C5. One on both side of neck across the 1<sup>st</sup> 4 cervical vertebrae. The cervical plexus resources to the skin, muscular tissue, neck, & higher section of the shoulder & chest.<sup>[10]</sup>



**Figure 2: Cervical plexus with its branches**

**Table 02: Origin and Distribution of Cervical Nerves.<sup>[11]</sup>**

Nerve	Superficial (Sensory) Branches	Origin	Supply
Lesser Occipital Branch		C2	Skin of the scalp, post and upper part of ear.
Great Auricular Branch		C2 & C3	Skin ant., inf., over ear, over parotid glands.
Transverse Cervical		C2 & C3	Skin of anterior aspect of neck.
Supraclavicular		C3 & C4	Skin of sup. Portion of chest and shoulder.
<b>Deep (Motor) Branches</b>			
Ansa Cervicalis		Has superior and inferior roots	
i. Sup. Root		C1	Infrahyoid and geniohyoid muscles of the neck
ii. Inf. Root		C2 & C3	Infrahyoid muscles of neck
Phrenic Branch		C3 & C5	Diaphragm
Segmental Branches		C1 & C5	Prevertebral muscles of neck, levator scapulae and scalene muscles

## Discussion

In Ayurveda, *Chakra's* has its own importance. After going through the literature, conceptual & analytical study in detail, the present study entitled with "ANATOMICAL Correlation OF VISHUDDHA CHAKRA WITH CERVICAL PLEXUS" reveals some interesting points which are discussed here to draw conclusion.

Anatomically, the *Vishuddha Chakra* is associated with the neck region & structures of neck. Important nervous structure lying at this chakra - Cervical plexus. Endocrine Gland -Thyroid Gland. On activation of this *Chakra*, one gets control over *Vakshakti, Gyana, Chitta Shanti, Arogyam, Trikala Drishti, Tejasvi, Chiranjeevi.*

*Vishuddha Chakra* and *Udana Vayu* are located in the *Kantha Pradesha* (throat) and regulate speech and growth. The function of *Udana Vata* is auditory work and for these purpose *Kantha Pradesha* is used. *Vishuddha Chakra* controls the function of Thyroid and parathyroid glands though *Udana vata*. When its energy gets blocked, person prone to sore throat, speech impediments, eating disorders, deafness, thyroid imbalance. So that it is establishing interrelationship between *Vishuddha Chakra* and *Udana Vayu*.

As *Vishuddha Chakra* is situated at *Kantha pradesha* i.e., neck region. Muscles, Glands, respiratory organs are situated anteriorly in neck region. Vocal cords can also be considered to some extent as they help for pronunciation of different words. Cervical vertebrae form the skeleton of neck posteriorly. The nerves emerging from the Cervical plexus supply Thyroid & Parathyroid glands so any disproportion in supply result in diseases of this glands.

So main function of *Vishuddha Chakra* is production of speech & its purification i.e., *Shuddhi of Shabdha* (sound). As all the *Chakras* are situated on *Merudhanda* which is anatomically known as Spinal cord. All nerve plexus is located on Spinal cord itself. *Vishuddha Chakra* coming under neck region is supplied by the nerves emerging from the Cervical plexus and also other structures situated in neck region such as organs, triangles, muscles from posterior to anterior region of neck.

If we see extension of *Vishuddha Chakra*; starts from cervical part of Spinal Cord on posterior side to the anterior region of neck, as the nerves from Cervical Plexus supply the structures of anterior region also. The exact location of *Vishuddha Chakra* is on *Merudhanda*. So, Cervical Plexus is better correlated with *Vishuddha Chakra*. Hence considering these criteria as base for this study makes a sense that *Vishuddha Chakra* can be merely correlated with Cervical Plexus rather than comparing it with other structures of neck.

## Conclusion

The term *Chakra* actually means 'wheel'/'circle', however within the yogic context a better paraphrase is 'Vortex'/'Whirlpool' otherwise as Astronomical circle. Specific energy & *Pranic* energy flows from *Mooladhara Chakra* (bottom) to *Agya Chakra* (top). The Yogi who concentrates over *Shad Chakra's* gains victory over existence, satisfaction, sexuality, strength, love, imagination, intuition and spirituality. After complete Review and anatomical relations, we come to know that *Vishuddha Chakra* is situated in *Kantha Pradesha* on *Merudhanda* (spinal cord), all the structures of neck such as Thyroid Gland, Parathyroid Gland, Larynx, Vocal Cord, Trachea & Esophagus (*Cervical Part*), along with Triangles of neck is supplied by the nerves emerging out from Cervical plexus only.

As Cervical Plexus is present posteriorly but supply the anterior structures of neck also. So, extension of *Vishuddha Chakra* is from posterior to anterior region of neck. If we take other organs into consideration, they are either situated anteriorly or laterally, but as the exact location of *Vishuddha Chakra* is on *Merudhanda*, So Cervical Plexus is only better correlated with *Vishuddha Chakra*.



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