

An anatomical study of muladhara chakra and its clinical significance

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Abstract

The concept of Chakras, represented as flowers or wheels, holds significant importance in various spiritual traditions, particularly in the Yoga Kundalini Upanishad, an ancient traditional Indian treatise. This text provides deep insights on seven distinct Chakras, each associated with specific regions of the body and unique attributes. This review provides an overview of these Chakras and their significance, offering valuable insights into the intricate spiritual philosophy of the human body. Tantra Yoga is an esoteric branch of Yoga that has been practiced and passed down for millenniums in India. There are several techniques for igniting the Chakras and the Kundalini among them. The practitioner is said to be able to transcend the limitations of a normal human being through this awakening and to evolve into a free and immortal being who is fully conscious of the world and of an existence in which there is no death. Numerous great saints who acquired this highest level of spiritual enlightenment using Tantric Yoga techniques or their equivalents have arisen throughout Indian history Shakyamuni Buddha for instance. According to the practitioners, Sushumna, Ida and Pingala Nadis are three major energy channels that pass through the base of the spinal column, the top of the skull and major branches of the human nervous system along the spine. A Chakra is seen as a center or nexus of the body's biophysical energy, also known as Prana. According to, "Prana is the fundamental element of the patient's subtle body, the patient energy field, and the entire Chakra system...the key to life and the source of energy in the cosmos."

Keywords: Muladhara Chakra, Apana Vata, Hypogastric Plexus, Yoga Asanas, Mudra, Bandh.

Introduction

Chakras are frequently represented as either flowers or wheels in ancient literature. In the first instance, a circle's encircling "petals" are visible. In the latter, spokes break up the circle into sections, giving the Chakra a wheel-like appearance (Chakra). There are a set number of segments or petals in each Chakra. The Yoga Kundalini Upanishad is one of the later

Upanishads that contains texts addressing the Chakras.

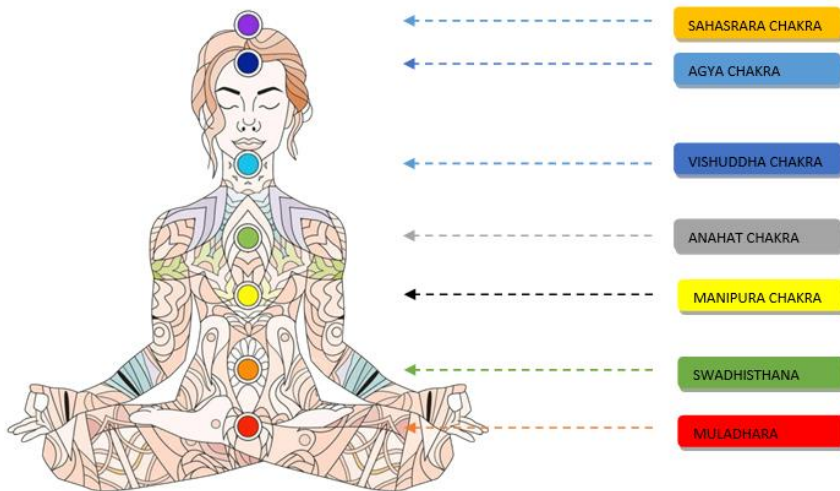


Fig.1.Seven chakras with Nadis (Nadi is a special anatomical structure closely identified with the nerves of modern anatomy.)

The present review aims to highlight the Muladhara chakra as mentioned in ancient literature and to establish the location of Muladhara Chakra in the body and anatomical correlation of Muladhara Chakra with contemporary modern science.

Chakra	Muladhara	Svadhithana	Manipura	Anahata	Vishudh a	Agya	Sahas hara
Mantra	लं	वं	रं	यं	हं	ॐ	ॐ
Symbols							
Associated Planet	Shani and Uranus with elements of Sun	Guru/Jupiter and Neptune, with elements of moon & Venus	Mangal/ Mars and Pluto, with elements of Jupiter	Venus with elements of sun and mercury	Mercury with elements of Jupiter	Moon mainly with elements of Sun	All Unite
Associated elements	Earth	Water	Fire	Air	Space	Space	Space
Pranas	Apana Vayu	Vyana Vayu	Samana Vayu	Prana Vayu	Udana Vayu	Prana Vayu	Prana Vayu

Fig.2.Seven Chakra Chart Review of Muladhara Chakra

The word Muladhara is derived from words meaning "root" (Mula) and "base" (Adhara); it is thus the root, the foundation of the seven Chakras.



Fig. 3: Muladhara Chakra

Muladhara is resembled with a lotus with four red petals, each containing a Sanskrit letter i.e. Vam, Sam, Sham and Shham. Each letter represents the individual vibrations of associated Nadis (micro energy channels, Nadi is special anatomical structures closely identified with the nerves of modern anatomy.) The Bija mantra (seed letter for chanting) of this Chakra is ya (Lam) whose vibration represents the earth element. According to the ancient literature, the first Chakra, called Adhara (Muladhara) is like a burnished gold. Meditating on it with the gaze fixed on the tip of the nose, helps in getting rid of the sins. The presiding female deity of this Chakra is the red-eyed fearsome Dakini; its male counterpart is Ganesha, embodied in the form of an elephant¹.

Inferior Hypogastric Plexus (Pelvic plexus)

A network of nerves that supplies the organs of the pelvic cavity is called the pelvic plexus, sometimes referred to as the inferior hypogastric plexus. The inferior hypogastric plexus gives rise to the prostatic plexus in men, whereas the utero-vaginal plexus does so in women. Since, it is a paired tissue structure, the inferior hypogastric plexus can be found on both the left and right sides of the body. These can be observed on both sides of the rectum in men and women, as well as along the sides of the vagina in women. As a result, pelvic surgeries may harm this structure which might cause urinary dysfunction and incontinence.²

Derivation of Inferior hypogastric plexus

The superior hypogastric plexus continues on each side of the sacral promontory in the inter-iliac triangle, which is where the inferior hypogastric plexus is created. Only 25% of people have the pre-sacral nerve here which is more usually found on the left. The plexus is additionally supplied with para-sympathetic efferent fibres via the pelvic splanchnic nerves, which arise from the second, third and fourth sacral nerves. These plexuses spread into different plexuses further to the pelvic viscera which follow the branches of the internal iliac artery. These branches are the vesical plexus, prostatic plexus, utero-vaginal plexus and middle rectal plexus. These plexuses further give branches to the pelvic viscera. Sacral

splanchnic nerves are splanchnic nerves that connect the inferior hypogastric plexus to the pelvic sympathetic trunk. The sacral sympathetic nerves arise anteriorly from the ganglia in the sacral region of the sympathetic trunk. They continue to the corresponding side's inferior hypogastric plexus where pre-ganglionic nerve fibres and post-ganglionic sympathetic neurons connect with each other. These branches also supply the pelvic organs and associated veins with innervation from the inferior hypogastric plexus. In the sacral sympathetic nerves, pre-ganglionic sympathetic fibres outnumber post-ganglionic sympathetic fibres. Generic visceral afferent fibres are found furthermore in continuation. They can be found near to the inferior hypogastric plexus para-sympathetic fibres which originate from the sacral spinal neurons and are known as pelvic splanchnic nerves. The pelvic splanchnic nerves come out and enter the sacral plexus at the anterior rami of the sacral spinal nerves S2, S3 and S4. They continue to the inferior hypogastric plexus on their side which is located bilaterally on the walls of the rectum. Both pre-ganglionic para-sympathetic fibres and visceral afferent fibres are present in them. Visceral afferent fibers leave the body of the spinal cord and the pelvic splanchnic nerve. The cranio-sacral outflow, sometimes referred to as the sacral part of the para-sympathetic nervous system, is made up of the pelvic splanchnic nerves. The sacral splanchnic nerves which provide sympathetic efferent fibres and arise from the sympathetic trunk, are also located close by. The pelvic splanchnic nerves partially innervate the genitalia and pelvic organs. The neurological system controls the rectus muscle's motility, the opening and closing of the internal urethral sphincter and the sexual functions like erection. The sigmoid colon and rectum as well as the cervix in females, receive pain signals from the pelvic splanchnic nerves which also provide para-sympathetic supply. The proximal 2/3 of the transverse colon and the rest of the proximal gastro-intestinal tract receive para-sympathetic fibres from the vagus nerve. The vesical nerve plexus comes from the anterior part of the pelvic plexus. It is composed of a variety of nerves, many of which contain spinal nerve fibres. They are dispersed to the vesicle arteries, sidewalls and fundus of the bladder. Numerous filaments also migrate to the seminal vesicles and vas deferens; those that do so, join with spermatic plexus branches there.

The prostatic plexus continues from the lower pelvic plexus. It is situated inside the fascial shell of the prostate. Large nerves make its structure. They are disseminated to the corpora cavernosa of the prostate, seminal vesicles, urethra and penis. Two sets of nerves that supply the corpora cavernosa are smaller and bigger cavernous nerves which arise from the prostatic plexus' forepart and intersect with branches of the pudendal nerve before passing beneath the pubic arch. After prostatic plexus damage, such as during prostatic resection, condition of erectile dysfunction may develop. The utero-vaginal plexus is a portion of the inferior hypogastric plexus. Both "uterine plexus" and "vaginal plexus" are terms used to describe it. Lower section of the pelvic plexus is where the vaginal plexus begins. It provides the clitoris' cavernous nerves, the vestibule's erectile tissue and the vaginal walls.

The uterine plexus communicates with the ovarian plexus and is situated on the side of the uterus in the space between the broad ligament's layers. Similar to the vesical, this plexus' nerves include a large proportion of spinal nerve fibres.

The ovarian plexus, which arises from the renal plexus, supplies the ovary and the fundus of the uterus. Through the suspensory ligament, it is continued in the ovary³.

Muladhara Chakra vis-à-vis Apana Vayu

The position of Apana Vayu is located to be in the pelvic area, the rectum, testis, penis, navel, thigh and in the inguinal region, according to Ayurvedic texts. It is the same region where Muladhara Chakra is specified in ancient literature. When the situation calls for it, the body's excretory and ejaculatory mechanisms are conveyed with strong impulses. In order to the organ's contents to be ejected, the genito-urinary system has to relax and the muscles have to contract. The autonomic nervous system's lumbar and sacral regions which are made up of nerve fibers, control these functions. According to Acharya Sushruta (the ancient ayurvedic surgeon), vitiated Apana Vayu may lead to scorching urination, diabetes and piles difficulties, as well as stones, fistulas, rectal prolapse & other health issues⁴.

Muladhara Chakra vis-a-vis Nerve Supply of Pelvic Region

The Ida branch of the spinal cord on the left side exits via the left nostril, whereas the Pingala branch on the right side exits through the right nostril. Before arriving at their various terminals, known as nerve plexuses, these Nadis intersect each other. These Ida and Pingala are supposed to be the sympathetic gangliated cords which are located on either side of the spinal column, through which numerous sympathetic plexuses of the autonomic system are formed. These feed and regulate all the vital organs⁵

Anatomical correlation of inferior hypogastric plexus with Dalas of Muladhar chakra

Anatomically, these Chakras are wheels of neuro-vascular circulation channels that are connected to the connective tissue of the human body and are of various shapes and sizes. Numerous branches that connect with or are distributed throughout various organs and body tissues originate from these wheels. The wheels of these nerves are called as plexuses which are the intricate inner connections between the funiculi of nearby nerves. A plexus is a branching system of arteries or nerves (from the Latin word for "braid"). Axons that are not part of the central nervous system often act as nerves. The four primary nerve plexuses are the cervical plexus, brachial plexus, lumbar plexus and sacral plexus.⁶

Petals (Dalas)	Correlated plexuses according to Dr. Mahendra ⁷	Correlated plexuses according to Joshi BC8	Correlated plexuses according to Dr. Athwale ⁹
Vam	Inferior hemorrhoidal plexus	Middle hemorrhoidal plexus	Inferior hemorrhoidal plexus
Sam	Vesical Plexus	Vesical Plexus	Vesical Plexus
Sham	Spermatic plexus/uterine plexus	Cavernous nerves	Spermatic plexus/uterine plexus
Shham	Prostatic plexus/vaginal plexus	Prostatic plexus/vaginal plexus	Prostatic plexus/vaginal plexus

Muladhara chakra balancing Yoga asanas, Bandhas, Mudras

Practicing specific Yoga asanas (poses) can help activate and harmonize this energy center. Yoga postures can help in awakening of the Muladhara chakra. The term Yoga literally means "union," and by union we imply union with the cosmos, mind, and body. Although Yoga is understood to be quite helpful in the treatment of many chronic and incurable diseases, the healing effect is only a by-product of Yoga. Such treatments focus on both mental and physical aspects for the treatment of diseases, and it is believed that if one Chakra functions properly, then other Chakras also function in

alignment, and if one Chakra is creating chaos, the whole body faces problems and dysfunctioning. The Chakras are stimulated, influenced and balanced by Hatha Yoga in a substantial way. Additionally, consistent practice aids in clearing obstructions and extra energy. Each Chakra has an impact on a person's behavior and physical posture, therefore it's crucial to maintain a healthy balance. Tantra practitioners use Asanas, Pranayama Bandhas and Mudras to clean their bodies and minds. This approach requires the Chakras to be ignited. In order to complete an Asana, one must stand still for a few minutes or more and breathe gently. This gives a soothing environmental effect on the mind, relieve stiffness, strengthen muscles and improve skin, improve lung functions, increase the activity of the digestive and excretory organs and provide a mild massage for the internal organs, muscles, endocrine glands and nervous systems. This is an effective pre-meditation practice because of these factors. Yoga also has a similar goal to that of Ayurveda i.e. to increase Prana levels to improve lifestyle betterment and treat illnesses. According to scientific studies, the effectiveness of the majority of Ayurvedic treatments may be improved by including some Yogic practices.¹⁰

Tadasana

Virabhadrasana I (Warrior Pose I)

Virabhadrasana II (Warrior Pose II)

Malasana (Garland Pose)

Supta Baddh Konasana (Reclining Bound Angle Pose)

Balasana (Child's pose)

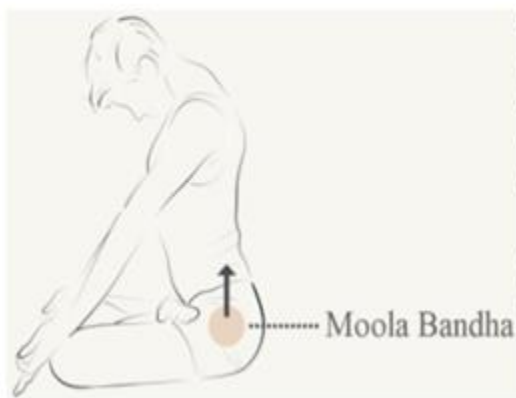
Vrikshasana (Tree pose)

Mudras

Muladhar Mudra, Ashvini Mudra, Prithivi Mudra

Moola Bandh¹¹

MOOLA BANDH



Strengthens the pelvic floor.
Relieves haemorrhoids and congestion in the pelvic area.
Calms the autonomic nervous system.
Calms and relaxes the mind.
Moola Bandha activates and purifies the Muladhara Chakra. It awakens dormant consciousness and the Kundalini Shakti.

Fig. 4:

Muladhara Chakra Vis-à-vis Marma points

Vitapa Marma and Kukundara Marma are said to be located in the inguinal area and the pelvic cavity respectively, which is the place of the Muladhara Chakra. Oligospermia and infertility may develop after Vitapa Marma damage.

In the light of the fact that blockage of the Muladhara Chakra results in similar disorders, this supports the comparison of clinical significance of Vitapa Marma to this Muladhara Chakra.¹²

Clinical significance of Muladhara Chakra

The exploration of the Muladhara Chakra and its potential anatomical correlation with contemporary modern science holds significant clinical relevance and insights. Understanding the traditional chakra system and its relation to the human body can shed light on various aspects of health and well-being.

Urinary and Reproductive Health: The Muladhara Chakra, often associated with the pelvic region, is intricately connected to the inferior hypogastric plexus. This network of nerves supplies the pelvic organs and its damage during pelvic surgeries can result in urinary dysfunction and incontinence, making it crucial for surgeons to exercise about caution during such procedures.

Psychosomatic Health: The practice of balancing the Muladhara Chakra is often linked to feelings of security, stability and grounding. An understanding of these energy centers can provide insights into the psychosomatic connection between mental and physical health, potentially aiding in holistic therapeutic approaches.

Ayurvedic Insights: The alignment of Apana Vayu, an Ayurvedic concept associated with the pelvic region and excretory functions, with the Muladhara Chakra suggests potential correlations between Ayurveda and modern medical understanding. This knowledge can be valuable for addressing health issues related to the genito-urinary system.

Yoga and Holistic Health: The identification of specific yoga asanas that can activate and harmonize the Muladhara Chakra, offers practical tools for individuals seeking to improve their overall well-being. Incorporating these asanas into a regular yoga practice can potentially promote physical and mental balance.

Chakra and Nerve Plexus Correlations: The correlation between the Muladhara Chakra's petals (Dalas) and various plexuses in the body provides insights into the holistic inter-connectedness of these energy centers and the nervous system. This knowledge can have implications for alternative therapies and treatments.

Conclusion

The study of Muladhara Chakra and its potential anatomical correlations with modern science highlights the interplay between traditional eastern concepts and contemporary medical understanding. While the chakra system is deeply rooted in ancient texts and spiritual practices, its relevance in the context of physical and mental health cannot be dismissed. The associations between the Muladhara Chakra, the inferior hypogastric plexus and various anatomical structures offer a unique perspective on the holistic nature of the human body and the potential for integrated health and well-being practices.

By recognizing these connections, individuals and healthcare practitioners explore complementary approaches to health and healing, combining the wisdom of ancient traditions with modern medical science. This holistic approach has the potential to contribute to a more comprehensive understanding of human health and wellness, ultimately benefiting individuals seeking to balance their physical, mental and spiritual aspects for a harmonious and healthy life. Further research and exploration in this field may reveal additional insights and applications for the integration of ancient wisdom with contemporary medical knowledge.

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