**Short Title:** The essence of Vitap Marma.

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**The Essence of Vitap Marma in the light of contemporary Science**

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**Abstract**

In Ayurveda, marma represents a vulnerable spot in our body. We come across the knowledge of marma since from Vedic period [1]. Depending upon the frequency and intensity of injury on this spot either by trauma or by any illness may leads to different signs, symptoms or even may lead to death [2]. Hence the concept of marma is effective, imperative and distinctive which is not seen in any other branch of medical science. Each marma has its own quintessence. The Vitap marma is Adhoshakhagata, Vaikalyakara marma of 1 Anguli Pramana [3][4]. Its location, structural component and viddha lakshana are mentioned in gross. According to the Acharya’s any injury on the Vitap marma leads to Shandatva and Alpashukrata [5]. From these lakshanas, we can interpret that this vital point has an indirect effect on the reproductive system. So, the knowledge and awareness of the structures encompassing the Vitap marma is need of an hour.

**Keywords:** Vitap marma, Superficial inguinal ring, Spermatic cord

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**INTRODUCTION:** Ayurveda has its own basic principles which stands in the modern era as well. The concept of marma is one such effective, imperative and unique principle of Ayurveda which is not seen in any other branch of medical Science. Marma is an extraordinary oldest hidden treasure and dynamic part mentioned in Ayurvedic texts that has tremendous value while performing surgical skills.

 The Knowledge of human body is first basic step in the world of human science. Sharir stands for human body and Rachana means structure. So, Sharir Rachana is the branch of Ayurveda which states detailed description of the structures in the human body [6]. Today, a keen dissection of human body with a vision to have a detail knowledge of structure helps in skillful surgical procedures particularly when it is related to vital points within the body. These Marma (Vital points) are the points where assortment of mamsa, sira, snayu, asthi and sandhi occurs and naturally at these points Prana dwells [7]. Marmas are also points of Tridoshas and Trigunas.

 References of Marma are found since Vedic literature. Marma Vignyana was initially developed as science of war and its traces can be seen in the epics. There are so many references regarding the attack on marma sthanas of enemies and protecting one’s marma by wearing metallic protectants [8]. The concept of Marma was first documented by Acharya Charka but elucidation of Marma Sharir along with its viddha lakshanas are available in Sushrut and Vagbhat Samhita. Sushrutacharya believes understanding marma sharir covers the half knowledge of Surgery [9].

 Acharya’s have identified and classified 107 Marmas in the human body [10]. So, on the basis of their location, dimension, effect of injury on them and on the basis of tissue predominant in that area such as muscle, vein, ligament, bone or joint. These marma are classified according to Rachana bhed, Shadanga bhed, Parimaan bhed and Parinaam bhed and each marma hold its own clinical importance.

**MATERIALS AND METHODS:** Review of marma literature from Bhrihatrayi including its related commentaries and from Modern texts. While collecting the information from the above said materials the location of the Vitap marma will be evaluated with the help of Viddha lakshanas (symptoms which occur due to injury) and its prognosis.

**LITERARY REVIEW: AYURVEDA:** The dictionary meaning of the word Vitap is branch of the tree [11].According to the Sushrutacharya, location of Vitap Marma is in between Vankshan and Vrushana [12].While according to the Vagbhatacharya, location is in between Mushka and Vankshan [13]. Both Acharya’s have included Vitap marma under the title of Vaikalyakar Marma and Shandhatva is a common deformity stated by both the Acharya’s after injury to the Vitap marma and additionally to it Sushrutacharya has stated Alpashukrata [14].

**MODERN:** **INGUINAL CANAL:** An oblique intramuscular passage approximately 3-5 cm long in an adult. It originates from deep inguinal ring and then terminates at the superficial inguinal ring [15].

**SUPERFICIAL INGUINAL RING:** The superficial ring is the triangular shape terminal part of the inguinal canal made by aponeurosis of the external oblique muscle. It is located just superolateral to the pubic tubercle.

**SPERMATIC CORD AND ITS CONTENTS:**

1. **Ductus deferens:** It is muscular thick wall tube transmits spermatozoa from epididymis to ejaculatory ducts. Sperms passing through Ductus Deferens are immobile so contraction of smooth muscles of Ductus Deferens during ejaculation reflexively propels sperms forward via peristalsis.
2. **Testicular vessels:** Testis mainly receives its blood supply from testicular artery and drains into the testicular vein. Vessels have an important role in testis thermoregulation.
3. **Cremasteric artery:** It is a small branch of inferior epigastric artery supplies the layers of the spermatic cords and also skin of scrotum.
4. **Pampiniform plexus:** It is a loose network of small veins within male spermatic cord. It helps to regulate testicular temperature, allowing sperm maturation.
5. **Genitofemoral Nerve:** The nerve innervates the cremaster muscle and testicular membrane.

**Development of the Inguinal Canal:** The inguinal canal is created in the intrauterine life during the descent of the gonads. In the male, the testes are pulled down from the abdominal cavity into the scrotum via the passage in the lower abdominal wall. By the end of the fourth month of foetal life, a fibrous strand called gubernaculum testis extends from the lower pole of the gonad, which develops in the lumbar region of the posterior abdominal wall of the embryo, to the labioscrotal swelling (future site of scrotum). A peritoneal pouch called the processus vaginalis evaginates through the abdominal wall, following the course of the gubernaculum. Therefore, the inguinal canal is formed by the passage of the gubernaculum and the processus vaginalis, which drag the layers of the abdominal wall after their passage through the canal. After the testis reaches the scrotum, the gubernaculum is reduced in size (represented by scrotal ligament) and the inguinal canal is occupied by the spermatic cord. The caudal part of the processus vaginalis forms the tunica vaginalis (a serous covering of the testis) and the part between the tunica vaginalis and the general peritoneal cavity is reduced to almost vertical long axis. Its size varies between individuals, and it is always much longer in the male. It is related above to the arched lower margin of transversus abdominis and medially to inferior epigastric vessels and the interfoveolar ligament where that is present. Traction on the fascial ring exerted by the internal oblique may constitute a valve like safety mechanism when intra-abdominal pressure is increased.

**DISCUSSION:**

1) **Location:** The location vitap marma is a vague notion. But marma is specific vital point in the body. So, on the basis of available materials the exact location of vitap marma may be considered superolateral and immediately adjacent to pubic tubercle near the superficial inguinal ring.

2) **Pramana:** The pramana of Vitap marma is 1 anguli. One anguli is approximately 2cm. The dimension of superficial inguinal ring is 2.5 cm from base to apex and transversely about 1.25 cm. Hence, the anguli pramana of Vitap marma and the dimension of superficial inguinal ring is approximately close to each other. So, the structures encompassing or emerging out of superficial inguinal ring may be considered as Vitap Marma.

3) **Composition:** The Sushrutacharya has mentioned Vitap marma as Snayu marma while the Vagbhatacharya has mentioned it as Sira marma. The entities interrelated with Vitap Marma is spermatic cord and its contents. The formation of spermatic cord from external to internal are external spermatic fascia, cremasteric fascia and internal spermatic fascia along with the presence of ilioinguinal nerve. The presence of means transporting male gamete - Ductus Deferens, means transporting lymph – lymphatic and means transporting blood- testicular vessels, cremasteric artery and pampiniform plexus of vein. Hence taking into the consideration of these structures the opinion of both Lexicons are convincing.

4) **Viddha Lakshana:** The Sushrutacharya has mentioned viddha lakshana of Vitap marma leads to Shandhatva and Alpashukrata, while the Vagbhatacharya has mentioned only Shandhatva.The ductus deferens within the spermatic cord transport sperm cells from epididymis to the ejaculatory duct. If the duct is obstructed or injured, the sperm movement is hampered resulting in decrease sperm count in semen during ejaculation. The testicular artery along with other arteries and vein within spermatic cord helps in tissue perfusion. Any injury over these vessels may results in ischemic condition of testis, ductus deferens, spermatic cord and such vascular damage may cause indirect impact over reproductive system.

**Mechanism of Inguinal Canal:** The presence of the inguinal canal is a cause of weakness in lower part of the anterior abdominal wall. This weakness is compensated by the following factors [16].

1. Obliquity of the inguinal canal: The two inguinal rings do not lie opposite each other. Therefore, when intra-abdominal pressure rises the anterior and posterior walls of the canal are approximated, thus obliterating the passage. This is known as the flap valve mechanism.
2. The superficial inguinal ring is guarded from behind by the conjoint tendon and by the reflected part of the inguinal ligament.
3. The deep inguinal ring is guarded from the front by the fleshy fibers of the internal oblique.
4. Shutter mechanism of the internal oblique: This muscle has a triple relation to the inguinal canal. It forms the anterior wall, the roof, and posterior wall of the canal. When it contracts, the roof is approximated to the floor, like a shutter. The arching fibres of the transversus also take part in the in the shutter mechanism.

**Vitap marma:** Delicate and vital point of body located in the lower extremity and homologous to Kakshadhar marma located in upper limb near axilla [17].

वंक्षण वृषणयो अन्तरे विटपंनाम । तत्र षाण्ढयम् अल्प शुक्रता वा भवति ।।

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As per the shloka, it is one anguli in dimension lateral to pubic symphysis within the inguinal canal and injury to this marma leads to Shandhatva (impotence) and Alpashukrata (azoospermia).

**CONCLUSION:** As per the above shloka, the location of Vitap marma is obscure. But marma is specific vital point in the body. So, on the basis of conceptual study, location of the Vitap marma which is one anguli in dimension lies superolaterally just adjacent to the pubic tubercle at the site of superficial inguinal ring. Shandhatva and Alpashukrata occurs due to injury on that specific point leading to destruction of the structural entities encompassing the Vitap Marma. So, any direct injury or swelling around the inguinal region should not be neglected as it may cause an indirect effect on the reproductive system.

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