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## A Dissection Based Study on Medico Surgical Importance of Vitapa Marma in Impotency & Sterility

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### ABSTRACT

Marma vigyaan is like a river of knowledge that requires systemic description of Ayurveda as well as modern anatomy with skilled dissection manner, after that we will enjoy the wave of this river. Marma is a liveliest subject in Ayurveda because when we understand the hidden secret of marma and correlate with modern aspect many queries will be answered itself. Vitap is a snayu marma and it can be correlated with inguinal canal which is formed by external oblique aponeurosis. Inguinal canal contains spermatic cord in males and round ligament of uterus in females. Injury on spermatic cord damages vas deferens, testicular vessels, pampniform plexus & ilio inguinal nerve which will definitely cause oligospermia and impotency in male. If the trauma is unilateral on spermatic cord it will produce oligospermia; in bilateral and severe trauma on spermatic cord will cause impotency. Round ligament of uterus maintains the ante version anti flexed position of uterus; injury on the round ligament will cause retroversion of uterus which may cause sterility in female.

### KEYWORDS

*Vitap Marma, Inguinal Canal, Spermatic Cord, Round Ligament of Uterus, Impotency, Sterility*



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## INTRODUCTION

Ayurveda is a sacred, spiritual and scientific subject along with a holistic aspect, which deals with knowledge of marma point (vital point) in body as well. Marma vgyan was essential in warfare and surgical procedures like chedan (Excision), garbha nishkarshan (Expulsion of foetus), kshara karma and agani karma etc. Impotency and sterility may be caused by injury at vitap marma. There may be trauma on this vital point during warfare, surgical procedure, and sports; it may be unilateral or bilateral, mild, moderate or severe in nature. According to the nature of trauma it will cause oligospermia and impotency. Vitap is a snayu marma which lies between testis and groin; it can be correlated with inguinal canal. Inguinal canal is made up of from external oblique aponeurosis. Spermatic cord lies within inguinal canal which contains spermatic fascia as well. These structures suggest us to accept it as a snayu marma. Injury to spermatic cord can cause injury of testicular vessels, vas deferens, ilio inguinal nerve; it will cause ischemia and necrosis of testis resulting in impotency and oligospermia. In females the structure can be taken as round ligament of uterus injury to this vital point will cause injury of this ligament which will displace the normal position of uterus and resulting

it retroverted uterus. Retroverted uterus is a common cause of sterility in female.

## AYURVED LITERATURE

Knowledge of marma is an essential and specific part of Ayurveda Rachana sharir so it is recognized as half of the knowledge of the surgery<sup>1</sup>. Extraction of foreign particle from body through the surgery is not possible without the proper knowledge of these vital points<sup>2</sup>. Marma is classified according to result of injury; one of the above types is vaikalyakara marma<sup>3</sup> which will present as permanent or temporary physical disability. Vitapa marma is included in vaikalyakara marma and it is situated between pelvic joint and testis. Trauma on this site causes shandata (Sterility in males) or alpashukrata (oligospermia).

## MODERN LITERATURE

In lower limb, vitapa marma should be identified as inguinal canal, consisting of spermatic cord, damage to it leads into infertility. The specific and dominant anatomical structure which will cause result of injury; should be spermatic cord in male and round ligament of uterus in female<sup>4</sup>.

**THE INGUINAL CANAL:** The inguinal canal is a triangular slit horizontal in direction which lies just above the inner



half of the inguinal ligament. It commences at the deep inguinal ring and ends at the superficial inguinal ring. In infants, the superficial and deep inguinal rings are almost superimposed and the obliquity of this canal is slight. In adults, the inguinal canal is about 3.75cm (1½ inch) long and it's directed downwards and medially from the deep to the superficial inguinal ring<sup>5</sup>. This canal has been developed due to the descent of testis in the embryonic life.

#### **SPERMATIC CORD<sup>6</sup>:**

During foetal growth the testis move from the abdominal wall into the scrotal sac, it carries vessels, nerve and vas deferens with it. These meet at the deep inguinal ring to form the spermatic cord which suspends testis in the scrotum and extends from the deep inguinal ring to the posterior aspect of the testis. The left cord is a little longer than the right, between the superficial ring and testis, the cord is anterior to rounded tendon of adductor longus. It is crossed anteriorly by the superficial and posteriorly by the deep external pudendal arteries respectively. The cord traverses the inguinal canal with its wall as the ilioinguinal nerve is inferior. In the canal cord acquires coverings from the layers of the abdominal wall which extends into the scrotal wall as the internal spermatic cremasteric and external spermatic fascia. The internal spermatic fascia is a thin, loose

layer around the spermatic cord and it is derived from the transversalis fascia. The cremasteric fascia contains fasciculus of skeletal muscle united by loose connective tissue to form the cremaster, which is continuous with internal oblique. The external spermatic fascia is a thin fibrous stratum continuous above with aponeurosis of external oblique, descends from the crura of the superficial ring. The spermatic cord contains the vas deferens, testicular artery and veins, cremasteric artery (a branch of the inferior epigastric artery) and artery to the vas deferens (from the superior vesicle artery), genitofemoral nerve, cremasteric nerve and sympathetic components of the testicular plexus, which are joined by filaments from the pelvic plexus accompanying the artery to the vas deferens, 4-8 lymph vessels draining to the testis. All of these structures are conjoined by loose connective tissue.

#### **STRUCTURES OF THE SPERMATIC CORD<sup>7</sup>:**

- (1) The main constituent is the vas deferens.
- (2) Arteries of the spermatic cord are- testicular artery, artery of the vas deferens and artery to the cremaster.
- (3) Pampniform plexus of testicular veins.
- (4) Lymph vessels of the testis.



(5) Nerves- Testicular plexus of the sympathetic nerves which accompany the testicular artery and artery of the ductus deferens and the genital branch of the genitofemoral nerve.

#### **ROUND LIGAMENTS OF UTERUS<sup>8</sup>:**

The round ligaments are narrow flattened bands 10 to 12 cm long which pass diagonally down and laterally within the mesometrium from the upper part of the uterus to the pelvic floor. They are attached superiorly to the uterine wall just below and anterior to the lateral cornua. Each ligament continues laterally downwards across the vesical, obturator and external iliac vessels, the obturator nerve and the obliterated umbilical artery. At the start of inferior epigastric artery, the ligament enters the deep inguinal ring. It traverses the inguinal canal and finally splits into strands that merge with surrounding connective tissue terminating in the mons pubis above the labium majora. Near the uterus the round ligament contains much smooth muscle but this gradually diminishes until the terminal part is purely fibrous. It contains blood vessels, nerve and lymphatics. The latter drain the uterine region around entry of tube to the superficial inguinal lymph nodes. Uterine neoplasm may spread by this route. In the fetus a projection of the peritoneum (Processus vaginalis) is carried with the

round ligament for a short distance into the inguinal canal. This is generally obliterated in adults, although it is some time patent even in old age. In the canal the ligament receives the same coverings as the spermatic cord, although they thinner and blend with the ligament itself which may not reach the mons pubis. The round ligament and ovarian ligament both develop from the gubernaculum and are continuous.

#### **DISSECTION OF ANTERIOR ABDOMINAL WALL AND INGUINAL CANAL<sup>9</sup>:**

(1) Start with a midline vertical incision from xiphoid process till the umbilicus then made a small circular incision around the umbilicus and extend it till the pubic symphysis, carry the incision laterally from the umbilicus till the lateral abdominal wall on both sides. Make a curved incision from anterior superior iliac spine to the pubic symphysis on either side. Finally made a horizontal incision across the xiphoid process till the lateral abdominal wall. Carefully reflect the skin in four flaps leaving both the layers of superficial fascia on the anterior abdominal wall. Make a transverse section through the entire thickness of the superficial fascia from the anterior superior iliac spine to the median plane. Raise the lower margin of the cut fascia and identify its fatty and membranous layers. Pass a finger deep to



the membranous layer which separates easily from the aponeurosis of the external oblique muscle deep to it until a point is reached just inferior to the inguinal ligament where the membranous layer fuses with the fascia lata of the thigh. Medial to the pubic tubercle, a finger may be passed with the spermatic cord (or round ligament of the uterus), anterior to the body of the pubis, into the perineum. In this position movement of the finger laterally is limited by the attachment of the membranous layer of fascia to the pubic bone and arch.

(2) Superficial inguinal ring immediately superolateral to the pubic tubercle. The ring is a triangular aperture in the aponeurosis of the external oblique muscle with the spermatic cord (or round ligament of uterus) emerging through it. Anterior cutaneous branch of the ilio-hypogastric nerve piercing the aponeurosis of the external oblique muscle a short distance superior to the ring. Divide the superficial fascia vertically in the median plane and in the line of the posterior axillaries fold as the iliac crest. Reflect the fascia by blunt dissection from these two cuts and find the anterior and lateral cutaneous branch of nerves emerging from the anterior and lateral parts of the abdominal wall.

(3) As fascia of adjoining part of the membranous layer of anterior abdominal wall is continuous through the similar

fascia (colles fascia) of the perineum. It is attached to pubic arch and posterior margin of perineal membrane. Locate the superficial inguinal ring immediately superolateral to the pubic tubercle. The spermatic cord/round ligament of uterus along with ilioinguinal nerve leaves the abdomen through the superficial inguinal ring. Remove fascia from the surface of the external oblique muscle and its aponeurosis. Take a special care superiorly where the aponeurosis is thin and easily removed, and also antero-inferiorly where the superficial inguinal ring forms a triangular deficiency in the aponeurosis immediately superolateral to the pubic tubercle. In the male identify the spermatic cord emerging from this ring and we find that it is attached to the margins of the ring by the layer of external spermatic fascia. In the female, the fatty fibrous tissue emerging from the ring is the round ligament of the uterus.

(4) Identify the origin of the external oblique from the lower eight ribs, and its interdigitates with serratus anterior in the upper part and with latissimus dorsi in the lower part of its origin. Separate upper six digitations from the ribs and cut vertically through the muscles to the iliac crest posterior to the sixth digitations. Separate the external oblique from the iliac crest in front of this. Try to avoid injury to the



lateral cutaneous branch of the subcostal and iliohypogastric nerves which pierce it close to the iliac crest.

(5) Reflect the upper part of the external oblique forwards and expose the deeper internal oblique and its aponeurosis to the line of its fusion with the aponeurosis of the external oblique, anterior to the rectus abdominis. Divide the external oblique aponeurosis vertically lateral to this line of fusion and, turn the muscle and aponeurosis inferiorly. The cut should pass medial to the superficial inguinal ring as far as the pubis. This exposes the remainder part of the internal oblique and the enrolled portion of the aponeurosis of external oblique, between its attachment to the anterior superior iliac spine and the pubic tubercle. This is the inguinal ligament. This ligament gives origin to the internal oblique muscle from its lateral part and has the spermatic cord or the round ligament lying on its superior surface medially. Lift the cord or round ligament and identify the deep fibres of the inguinal ligament passing posterior to the pectin pubis. This is the lacunar ligament on which these structures also lie. Follow the lateral margin of the superficial inguinal ring to the pubic tubercle and find the relationship of the crus and tubercle of the spermatic cord. The medial crus may be followed anterior to the pubis.

(6) Identify internal oblique muscle deep to external oblique muscle. Remove the fascia from the surface of the internal oblique and its aponeurosis; identify the part of the internal oblique which passes on the spermatic cord. This cremaster muscle forms loops which extend down the cord and turn upwards towards the pubis. It is poorly developed in the aged but can usually be demonstrated. When it contracts, testis is elevated in the scrotum towards the superficial inguinal ring. This movement can be produced in the living by the stroking the medial side of upper thigh (the cremasteric reflex). It tests the integrity of the first and second lumbar spinal nerves which supply the cremaster muscle (genitofemoral nerve) and the skin on the medial side of the proximal thigh (ilio-inguinal nerve).

(7) Lift the internal oblique and cut carefully through its attachments to the inguinal ligament, iliac crest and costal margin carefully preserve the nerve of the anterior abdominal wall which lies between internal oblique and transverse abdominis. Cut vertically through the internal oblique from the 12<sup>th</sup> costal cartilage to the iliac crest and strip the muscle forward from the transversus and the nerves. This is difficult superiorly because of the dense fascia between the muscles, and is impossible



inferiorly where the aponeurosis of the two muscles fuses in the conjoint tendon.

(8) Identify the rectus abdominis muscle at the lateral edge of the rectus abdominis, the aponeurosis of the internal oblique splits to pass partly posterior and partly anterior to the rectus abdominis, the anterior layer fusing with the aponeurosis of the external oblique, the posterior layer with that of the transversus abdominis. This is the rectus sheath. Identify the arcuate line. This will be seen when the rectus sheath is opened.

(9) Identify the origin of the transversus abdominis and follow, its aponeurosis to fuse with that with the internal oblique, posterior to the rectus abdominis above the arcuate line and anterior to the rectus below the line. Below the arcuate line, the aponeurosis of the external oblique is less firmly fused with that of the internal oblique than it is further superiorly. Open the rectus sheath by the vertical incision along the middle of the muscle. Reflect the anterior layer of the sheath medially and laterally, cutting its attachments to the tendinous intersection in the anterior part of the rectus muscle. Lift the rectus muscle and identify intercostal and subcostal nerves entering the sheath through its posterior lamina, piercing the muscle and leaving through its anterior wall.

(10) Divide the rectus abdominis transversely at its middle. Identify its

attachments and expose the posterior wall of the rectus sheath by reflecting its parts superiorly and inferiorly. Identify and trace the superior and inferior epigastric arteries. Examine the posterior surface of the reflected anterior abdominal wall. Identify five well defined peritoneal fold which upward towards the umbilicus. These are the two laterals, two medial and one median umbilical fold. Strip the peritoneum from the posterior surface of the infra umbilical abdominal wall. Before removing the transversalis fascia from the deep surface of the inguinal ligament pull on the spermatic cord or round ligament of uterus from the anterior surface to confirm the continuity of spermatic cord. Transversalis fascia continues as the internal spermatic fascia over the spermatic cord/round ligament of the uterus.

**FINDINGS OF DISSECTION:** In this region, identified the following:

1. External oblique muscle
2. Rectus abdominis muscle
3. Internal oblique muscle
4. Superficial inguinal ring
5. Spermatic cord
6. Lacunar ligament
7. Inguinal ligament

## **DISCUSSION**

Vitap marma is described as a Snayu marma, having two in number, dimension



of one angula, position is between Vankshan(Inguinal region) and Vrishana(Testis)<sup>10</sup>. According to the structure inguinal canal is made up of from the aponeurosis of external oblique muscle, which can be correlated as Snayu. Inguinal canal is present on both side between anterior superior iliac spine and pubic tubercle, which confirms its number that is two. Injury on this vital point will cause sterility and infertility. After dissection we can correlate the Vitap marma with inguinal canal. Spermatic cord runs within the inguinal canal which contains vas deferens, testicular vessels, pampniform plexus<sup>11</sup>. Mild or moderate injury on cord will obstruct the pathway of spermatocytes from testis to urethra; it will cause oligospermia while severe injury on spermatic cord may rupture the cord which will cause sterility. After dissection in female cadaver, content of vitap marma should be consider as round ligament of uterus. Injury on this site will change the normal position of uterus which may cause miscarriage and abortion. Injury on this vital point may cause prolapsed uterus as well, and ultimately it may lead to infertility in female.

## CONCLUSION

Ayurveda texts present the detailed description about Vitap marma, its position

and traumatized symptoms<sup>12</sup>. It is described completely for male but there is no exact and detailed description for this marma in female. Shushruta considers the Vitap marma as Snayu marma (Aponeurosis) while Vaagbhata considered it as Sira marma (Vessels). After the dissection vitap marma should be consider as inguinal canal in both male and female. In inguinal canal main content is spermatic cord in male and round ligament of uterus in female. The position would be between pelvic joint and testis in male and pelvic joint and external genital organ in female. In Ayurveda the pramaan (Dimension/Measurement) is mentioned as one angula. The value of one angula is about to 1.87 cm<sup>13</sup>. Acharya Shusrutra mentioned this value according individual person<sup>14</sup> so the value will be different but when the measurement is considered as peripheral dimension, the value of one angula will be about 2 cm. The width and depth of inguinal canal is about 2 cm while the length is 3-4 cm. There are different anatomical structures present in inguinal canal in male and female. In male there is spermatic cord and in female it contains round ligament of uterus<sup>15</sup>. Mild to moderate injury on this site will obstruct the pathway of gametes while the severe injury will diminish the pathway, so mild to moderate injury will cause oligospermia and severe injury will



cause infertility. Knowledge of this vital point is important because trauma on this site during sports, surgery, and war may cause oligospermia and infertility.



## REFERENCES

1. Shusruta Samhita, Ambika dutt Shastri, Chaukhamba Sanskrit Sansthan, Varansi, 5<sup>th</sup> edition, page no.276.
2. Shusruta Samhita, Ambika dutt Shastri, Chaukhamba Sanskrit Sansthan, Varansi, 5<sup>th</sup> edition, page no 290.
3. Shusruta Samhita, Bhaskar govind ghadekar, Meharchand laxmandas publication, New Delhi, 5<sup>th</sup> edition 1972, page no 310.
4. Human anatomy, B.D. Chaurasia, CSB Publishers & Distributers, New Delhi 6<sup>th</sup> edition 2017, page no. 321.
5. Gray's anatomy, Henry Gray, Lippicot Williams, 8<sup>th</sup> edition 2006, page no. 423
6. Principles of Anatomy and Physiology, Gerard J. Tortora/ Bryan H. Dernekson, John Wiley & Sons 12<sup>th</sup> edition, 2009, page no. 432.
7. Anatomy and physiology in health illness, Ross & Wilson, 11<sup>th</sup> edition, Churcgill Livingstone, 2016, page no. 367.
8. Clinical Anatomy, Richard S. Snell, Lippicot Williams & Wilkins, 9<sup>th</sup> edition, 2012, page no. 390.
9. Gray's Clinical Photographic Dissector of the Human Body, Marios Loukas, Brion Benninger, R. Shane Tubbs, Saunders Elsevier, 2013, page no. 254.
10. Shusruta Samhita, Dalhan Tika, Chaukhamba Sanskrit Sansthan, Varansi, 6<sup>th</sup> edition 1997, page no.312.
11. Human neuroanatomy, Inderbir Singh, G.P.Pal, Macmillan Publishers India Limited, 9<sup>th</sup> edition, 2016, page no 182.
12. Marma Vigyaan, Ram Raksh Paathak, Chaukhamba Amar Bharati Prakashan, Varansi, 1938, page no 34.
13. Marma Vigyaan, Ram Raksh Paathak, Chaukhamba Amar Bharati Prakashan, Varansi, 1938, page no. 45.
14. Shusruta Samhita, Bhaskar govind ghadekar, Meharchand laxmandas publication, New Delhi, 5<sup>th</sup> edition 1972, page no. 321.
15. Cunninghams manual Of Practical Anatomy, G.J. Romanese, Oxford University Press, 2005, page no. 467.