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CONCEPTUAL UNDERSTANDING OF REGIONAL ANATOMY AND IMPORTANCE OF PARSHVA SANDHI MARMA WITH SPECIAL REFERENCE TO AVEDHYA SIRA

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ABSTRACT

Ayurveda, known as the mother of all medical sciences, encompasses a wealth of knowledge through its principles of health and healing. Acharya Sushruta made a remarkable contribution to the field of surgery by introducing the concept of Marma*, or vital points in the body, which can be regarded as an ancient form of traumatology. These vital areas are extremely sensitive and susceptible to injury, potentially leading to severe pain, loss of function, or even fatal outcomes. Parshvasandhi Marma is one of the 107 vital points, with a pair located near the lower ends of the flanks, between the flanks and buttocks. Each measures about half an Angula and is categorized as a* Sira Marma*. Damage to this area can lead to internal bleeding and eventual death, classifying it as a* Kalantara Pranahara Marma*. This article provides details about the location, structural components, and measurements of the Parshvasandhi Marma Further more, the article delves into the serious consequences of trauma or injury to the* Parshvasandhi Marma*, emphasizing its critical role in sustaining life. It explains how damage to this highly sensitive and vital point can disrupt essential physiological functions, ultimately leading to fatal outcomes.*

KEY WORDS: *Jaghana, Marma, Parshva, Sandhi, Sira*

INTRODUCTION

There are numerous scientific concepts in *Ayurveda* which need detailed scrutiny to assess their utility in the field of science. The concept of *Marma* is one such factor, which is one of the unique principle that stand equally important in modern era also and a study on it is attempted here. The knowledge of *Marma* was practically made use in ancient warfare and in hunting after wild animals, by hitting the enemy or the animal respectively, aiming at the *Marma Sthana* (vulnerable areas) with the arrows. This science is also practiced in Martial arts in some parts of India and in controlling the animals like elephants, horses.[1]

Marma is considered as vital spot as per *Ayurveda,* where *Prana* resides. The term *Marma* means *Prana*, *Jeeva* or life.[2] The *Marmasthana* is a vulnerable point and is the seat of *Prana*. *Marma* are site of conglomeration of *Mamsa*, *Sira*, *Snayu*, *Asthi*, and *Sandhi*.[3] *Parshvasandhi Marma* is one among the 107 *Marma* and they are two in number[4-5] and measures *Ardhangula* in *Pramana*[6] present on the two sides, situated nearer to the lower ends of the flanks, in between the buttocks and flanks.[7,8] Structurally it is considered as *Sira Marma*[9] any injury to these leads to death from accumulation of blood in the abdomen[10] and prognostically considered under *Kalantara Pranahara Marma.*[11,12]

Acharya Sushruta explains that particular *Sira* are not to be punctured. Among seven hundred *Sira,* 98 *Sira* are *Avedhya* and in rest *Sira Vyadhana* can be done. If *Avedhya Sira* are punctured, it may cause *Kalantara* or *Marana.* In *Kosta* total 32 *Avedhya Sira* are explained[13].

In each *Parshva* there are 8 *Sira* are situated, among this which is going upwards and situated in *Parshvasandhi* is *Avedhya Sira*. So on both the sides 2 *Sira* in *Parshvasandhi* are considered as *Avedhya Sira.*

REVIEW OF LITERATURE

Etymological description of word *Parshva*

According to Monnier- Williams, Apte, *Shabdasaagara.*

Parshva - 1. The part of the body below the arm-pit, the region of the ribs.

2. शयने संनिषण्णैकपार्श्व

3. The side, Flank

According to *Amarakosh* and *Vachashpatya* पार्श्व-कक्षयोरधोभगः

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Etymological description of word *Jaghana*
According to Monnier- Williams, Apte, *Shabdasaagara.*
जघन-The hinder part, buttock, hip, loins**.**
According to *Amarakosh* जघन- स्तिकट्याः अग्रभागः

Etymological description of word *Sandhi*
According to *Shabdasagara* – Union, junction, connection.

Historical background for the word *Parshva*
According to *Natyashastra, Jyotishashastra, Shaivism, Vastushastra*, the word *Parshva* refers to "one's side"[14]

Panchavidha* Classification of *Parshvasandhi Marma

Rachana	Location	*Parinama*	*Pramana*	*Sankhya*
Sira	*Prishtha*	*Kalantara*	*½ Angula*	2 in number

REVIEW OF LITERATURE RELATED TO *PARSHVASANDHI MARMA*
According to *Sushruta Sahmita*
Below the flanks, between the hip and flanks and obliquely above the hip the *Parshvasandhi Marma* is located, an injury to this *Marma* leads to *Lohith poorna kostatha* (blood filled viscera) and which further leads to death.[7,8]

According to *Ashtanga Hrudaya*
At the lower end of the flanks and attached at the center of the sides of the front part of the pelvis, located sidewards and upwards are the *Parshvasandhi Marma*.
Injury to these leads to death from accumulation of blood in the abdomen.

Location of *Parshvasandhi Marma-*
According to *Acharya Sushruta Parshvasandhi Marma* is situated nearer to the lower ends of the flanks, in between the buttocks and flanks, to the side and above the buttocks. It is half *Angula* in *Pramana*.

As per the recent authors
Recent authors has mentioned that *Parshvasandhi Marma* is situated in between *Jaghana, Parshva* and oblique from *Jaghana* and superiorly.[15] It is located inside and in the center of the flanks that are connected to it.[16] few authors opines that they are obliquely placed of *Parshuka* conjoined together in order and attached to the lateral bone hidden by it.[17] Others have mentioned the area related to this *Marma* as the area of iliac artery and its branches,[18] renal arteries and veins.[19]
***Viddha Lakshana* :** Injury to *Parshvasandhi Marma* leads to death from accumulation of blood in the abdomen.[10]

REVIEW AS PER CONTEMPORARY SCIENCE
From outside to inside the structures which covers the lower lumbar region at the level of L5 vertebrae are:

- **Skin** in this area is thin, elastic and firm.
- **Superficial fascia** is formed by loose connective tissue.

According to *Sushruta Shareera*

- *Acharya Sushruta* mentioned 6 *Peshi* in the *Parshva* region.
- The bones which are present in *Parshva* region are *Valaya* type
- There are 24 *Sandhi* are present in *Parshva* region
- *Acharya Sushruta* consider *Parshva* as one of the *Pratyanga*.

- **Deep fascia** here is also called as thoracolumbar fascia, it covers the erector Spinae muscles.
- **Muscles** which cover this area are Latissimus dorsi, Longissimus thoracis, Iliocostalis Lumborum, Multifidus muscle.
- **Ligaments** which comes under this area are Iliolumbar, Posterior Sacroiliac ligament, Anterior sacroiliac ligament, Intertransverse ligament.
- **Joints** which comes under the vicinity of the marked area are Lumbosacral and Sacroiliac joints.
- **Bones** which cover this area are Sacrum, Ilium and lower lumbar vertebrae.
- **Nerves** which falls under this area are the nerves of lumbar plexus.
- The great vessels of the abdomen are abdominal aorta and inferior vena cava.

I. Abdominal aorta[20]
The abdominal aorta begins as the continuation of descending thoracic aorta at the aortic orifice of the diaphragm opposite to the lower border of the T12 vertebrae or intervertebral disc between vertebrae T12 and L1. It descends vertically downward and slightly to the left, in front of the vertebral column, and terminates in front of the lower part of the body of L4 vertebra (about 1.25 cm) to the left of the median plane by dividing into right and left common iliac arteries.

Measurements
Length: 10–11 cm.
Width: 2 cm.

Branches
The abdominal aorta gives three sets of branches:
1. Three unpaired ventral branches to the gut.
2. Three paired lateral branches to three paired glands (suprarenal glands, kidneys, and gonads).
3. Paired posterolateral branches to the abdominal wall.

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In addition to the above, the aorta also gives rise to paired inferior phrenic artery, unpaired median sacral artery, and two terminal branches.

1. Coeliac Trunk

It is a short, wide vessel (1.25 cm long), which arises from the front of the abdominal aorta immediately below the aortic opening of the diaphragm at the level of the intervertebral disc between T12 and L1 vertebrae. It runs forward and somewhat to the right and immediately divides into following three branches: (a) left gastric artery, (b) common hepatic artery, and (c) Splenic artery.

2. Superior Mesenteric Artery [21]

It arises from the front of the abdominal aorta about 1 cm below the coeliac trunk at the level of lower border of L1 vertebra. At the origin, it is sandwiched between the splenic vein above and the left renal vein below

3. Inferior Mesenteric Artery[22]

It arises from the front of abdominal aorta about 4 cm above the bifurcation of aorta at the level of L3 vertebra.

4. Median Sacral Artery

It arises from the back of the abdominal aorta just above its bifurcation. It runs downward in the median plane into the pelvis and ends at the coccygeal body in front of the coccyx. Sometimes it gives origin to the fifth lumbar arteries.

Inferior Phrenic Arteries

These are the first branches of the abdominal aorta and arise from it just above the coeliac trunk. They pass superolaterally over the crura of diaphragm near the superior margins of suprarenal glands and ramify on the inferior surface of the diaphragm. They also give off superior suprarenal arteries to the corresponding suprarenal glands.

Renal Arteries

These are large wide-bored, straight vessels, which arise at right angles from the sides of the abdominal aorta, just below the origin of the superior mesenteric artery, at the level of the upper part of the L2 vertebra. The left artery is slightly higher than the right artery whereas the right artery is longer than the left artery. The right artery passes to the right posterior to the inferior vena cava and right renal vein to reach the hilum of right kidney. The left renal artery passes to the left posterior to the left renal vein to reach the hilum of left kidney. It is crossed in front by the inferior mesenteric vein. Each renal artery gives rise to the inferior suprarenal artery to the corresponding suprarenal glands.

Gonadal Arteries (testicular and ovarian arteries)

The gonadal arteries are long slender vessels. They arise from the front of the aorta a little below the origin of the renal arteries. (Each testicular artery runs downward and laterally between the ureter posteriorly and intestines and mesenteric vessels anteriorly to reach the corresponding deep inguinal ring. The right testicular artery lies anterior to the inferior vena cava, psoas major, ureter, and external iliac artery, and posterior to the third part of duodenum, right colic, ileocolic and superior mesenteric vessels, and caecum. The left testicular artery lies anterior to the same structures as that of the right testicular artery except the inferior vena cava, but it lies posterior to the third part of duodenum, inferior mesenteric vein, left colic and sigmoidal vessels, and inferior part of the descending colon.

Lumbar Arteries

The upper four pairs of these arteries arise from the posterior surface of the abdominal aorta. They pass laterally on the surfaces of the bodies of lumbar vertebrae and then backward deep to the psoas major. The fifth pair of lumbar arteries is usually represented by the lumbar branches of the iliolumbar arteries. But rarely they may arise from the median sacral artery.

Common Iliac Arteries

These are the terminal branches of the abdominal aorta. Each artery begins in front of the body of L4 vertebrae about ½ inch (1.25 cm) to the left of the median plane. The left common iliac artery is shorter (4 cm) than the right common iliac artery (5 cm). Each artery courses downward and laterally and terminates in front of the sacroiliac joint by dividing into external and internal iliac arteries.

1. The right common iliac artery passes in front of the commencement of the inferior vena cava. The right common iliac vein is posterior and medial to it.
2. The left common iliac artery is lateral to the left common iliac vein. It is crossed in its middle by the inferior mesenteric vessels.

II. INFERIOR VENA CAVA[23]

The IVC is the largest and widest vein of the body. It drains most of the blood from the body below the diaphragm into the right atrium of the heart.

Formation, Course, and Termination

The IVC is formed by the union of right and left common iliac veins in front of the body of L5 vertebra, below the aortic bifurcation, and behind the right common iliac artery. It ascends in front of the vertebral column on the right side of the aorta. It then arches forward on the right crus of the diaphragm to reach the groove on the posterior surface of the liver. just above the groove it pierces the central tendon of the diaphragm at the level of T8 vertebra and terminates by entering the right atrium of the heart.

Tributaries

The IVC receives the following tributaries:

1. Three formative veins—two common iliac veins and the median sacral vein. The latter may join the left common iliac vein. Each common iliac vein receives an iliolumbar vein.
2. Three abdominal wall tributaries—inferior phrenic vein and third and fourth lumbar veins. The first and second lumbar veins end in the ascending lumbar vein.

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3. Three lateral visceral tributaries—right suprarenal vein, renal veins, and right testicular/ovarian vein. The left suprarenal vein and left gonadal veins drain into the left renal vein.
4. Three anterior visceral tributaries—right, middle, and left hepatic veins.

DISCUSSION

The term *Parshva* means one's side and *Sandhi* means junction of two structures and *Jaghan* here is pelvic girdle. The area above the pelvic girdle and lower part of the joining of two *Parshva* has to be taken and based on the structural entity described as *Sira*, the vital vessels that are present in the lumbo-sacral region should be considered.

As per *Sushruta* the location of *Parshvasandhi Marma* is at the junction of both the *Parshva* above the *Jaghana* that is, lateral to the area between the L5-S1 vertebrae.

As per classics *Parshvasandhi Marma* is *Sira Marma*. According to *Acharya Charaka, Sira* is the structure that carries substances from one place to another place. According to *Gangadhara***,** That which carries the *Rasa* etc is called as *Sira.* According to *Atharva Veda*, *Sira* is that which carries *Ashuddha Rakta* (deoxygenated blood).Though *Sira* is the term mainly used to denote the vein, *Sushruta* has used the term in different contexts in *Sushruta Sutra, Nidana, Chikitsa sthana* and in *Uttara tantra. Sira* is mostly interpreted with blood vessel instead of using the terms *Dhamani* and *Srotas.* In *Charaka Vimana Sthana*, there is a reference of *Dhamani* and *Srotas* as synonyms of *Sira*.

As per classics *Pramana* of *Parshvasandhi Marma* is ½ *Angula*. The *Parshvasandhi Marma* is a vascular entity and includes both major veins and arteries in the lumbar region (posterior abdominal wall) it is considered that the vessels present in the vicinity of ½ *Angula Pramana* and supplying prominent areas of the body may cause fatality. As *Parshvasandhi Marma* is injured that will lead to *Shonithapoorna Kostatha* and *Marana*, the vessels that run in the posterior abdominal wall on either side of the L5 vertebrae, if injured also have the quality of *Shonithapoorna Kostatha*. This shows that the major arteries and veins which carry/drain blood from vital areas like left and right lower limb and pelvic region need to be considered.

Impact of posterior abdominal wall injuries to the major vessels causing *Shonithapoorna Kostatha:*

Considering the following vessels;

- Right and left common Iliac Vein.
- Right and left common Iliac artery

Injuries to these vessels caused by blunt trauma, penetration of sharp objects from posterior aspect can cause significant bleeding in abdomen. Further it may leads to hemoperitoneum and insufficient blood volume, which can overwhelm the hearts ability to pump blood throught the body, resulting in shock. This shock can then lead to organ failure and if untreated it leads to death.

CONCLUSION

Parshvasandhi Marma, described in *Ayurveda* as a *Sira Marma*, is located bilaterally near the L5 vertebra. Hypothetically, this location corresponds with the region where the common iliac arteries and veins are situated-vessels vital for the circulation of blood to and from the pelvic organs and lower limbs. From a modern anatomical perspective, injury to this area can lead to severe vascular damage, emphasizing its critical nature. This aligns with the classical *Ayurvedic* view of *Parshvasandhi Marma* as a life-threatening point, where trauma could disrupt essential bodily functions. Thus, the traditional concept of this *Marma* point reflects a deep anatomical and physiological understanding, showing how ancient knowledge anticipated key vascular landmarks recognized by contemporary science. This reinforces the clinical significance of protecting this region during surgical or traumatic events.

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