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## A CRITICAL STUDY AND ANATOMICAL REVIEW ON MEDOVAHA SROTAS W.S.R TO ITS MOOLASTHANA

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### ABSTRACT

The human body is made up of seven distinctive sorts of tissue called dhatu. The word "srotas" (meaning movement, flow emission, etc.) determines from the root word "srugatau." Sushruta Acharya characterized srotas as those channels, with the special case The of sira and dhamani. That spread throughout the body and carried specific substances. Srotas is made up of the fantastically little pores and sections found in the lotus stem. The implies by which poshya Dhatu voyages all through the body and bolsters it.

Consequently, it can be said that Srotas is the total physiological major as well as minor channels of the Srototutpatti happen in intrauterine life, and Vayu mahabhuta with suitable Agni intercession is in charge of separation that contributes to the era of srotas. srotas are Anu (small scale) OR sthoola (large scale) in estimate, vritta (circular), deergha (stretched), or pratana (level) in shape. In current science meda can be compared to lipids since it is one of those dhatus and basic for keeping up snehatwa (lubricity). A few components within the human body, such as vasa and majja, have likenesses to lipids.

The significant of srotas is evident from the description of it in entire chapter by Charaka Acharya. Sroto vimana medavaha srotas, if vitiated, creates medo dushti, which may be stated as prameha, poorva roopa or Sthaulya lakshana or something similar.

The origins of Medovaha srotas are in the hips or pelvic area, the two kidneys (Vrikka) as their names suggest the fat transporting channels do not contain any fat.

**Keywords: Medovaha; moolasthana; srotas; medo dushti; sthaulya; prameha; adipose tissue**

## INTRODUCTION

The Ayurvedic concepts are one of a kind and base of our lives. They are just like the roots of the tree, one among them being the concept of Srotas. Concurring to our classics, the human body is an agglomeration of the Srotas.

Two primary assortments, Bahirmukha srotas and Antramukha srotas, have been recognized by Charaka Acharya and Vagbhata Acharya. Yogavali Srotas has 11 pairings, agreeing to Sushruta Acharya. Similar to the Antarmukha Srotas specified by Charaka Acharya, but barring Asthivala majjavaha and Svedavaha Srotas and counting Artavavaha Srotas.

When dosas are devoured routinely, a vitiated Sroto known as yatra sanga kha vaigunyat vyadhi tatra upajayate (Su.sa.24/10) gets to be potent. In the inverse heading the pathways through which supplements is conveyed to meda dhatus are alluded to as medavaha Srotas, and it has been found that any disturbance of these pathways has an effect on the other dhatus. The larger part of the lakshana said in medo vridhi or kshaya includes other dhatu vridhi or kshaya lakshana.

Nitty gritty and clear information of srotas becomes exceptionally much vital because it

is capable for carrying and changing tissue components, subsequently keeping up wellbeing.

The sickness related to meda dhatu is at expansive of late when seen all inclusive. Within the created society, the passing rate is more from santarpanaja vyadhi but for carcinoma. It may be due to diverse reasons such as stationary way of life, nourishment corruption, and contamination; meda is dushya in most of such maladies such as Prameha and Sthoulya. Corpulence (Sthoulya) is said to decrease the life span by 5.8 a long time in females and 7.1 a long time in males [1].

The consider of medovaha sroto moola is fundamental as the working of srotas is totally subordinate on the state of moolasthana. It is since "Moolamiti prabhavasthanam," [2] i.e., Moolasthana is considered as overseeing location of the srotas.

There's no coordinate depiction of the utility of the information of moolasthana of the srotas. As a tree is genuinely influenced by harm to its root, a similar channel of circulation within the human body is genuinely influenced when their moolasthana is affected [3].

**OBJECTIVES**

- (1) Critical study of *medovaha srotas*.
- (2) To review the anatomy of *medovaha srotas* and its *moolasthana*, also to fix its anatomical limitation based on modern parameters.

**REVIEW METHOD**

Literary method is adopted in the present study from the Ayurvedic literature and contemporary science.

**CONCEPT OF MOOLASTHANA**

Our Acharyas have clarified different srotas with their moolasthanas. Due significance has been given to these structures which appears a noteworthy connection in performing effective capacities with regard to their srotas. The *moolasthanas* are very important for the diagnosis, describing the *samprapti* and fixing the line of treatment. The concept of *moolasthanas* cannot be completely understood unless and until we study each srotas systematically ascertaining its *moolasthana*. Acharya Chakrapani commenting on the word srotomoola has

S. No.	ACHARYA	STHANA
1	Acharya Charaka	Vrika and Vapavahana
2	Acharya Sushrut	Vrika and Kati
3	Acharya Vagbhata	Vrika and Mamsa

As per Charaka, it is the Vrika and Vapavahana [6], Whereas Sushruta clarifies Vrika and Kati as their moolas [7]. Vagbhata says Vrika and Mamsa [8].

utilized the word “Prabhavasthana” of the srotas [2].

**MEDOVAHA SROTAS**

The srotas that supply nourishment to the medodhatu or the vessels that carry the nutritive fabric to the location of Medodhatu can be respected as Medovaha Srotas.

Agreeing to Dr. C. Dwarkanath, the channels which transport the nourishment to the fat tissues are to be named as the Medovaha Srotas [4].

Dr. Ghaneker B.G. clarifies the medovaha srotas as the capillaries of the omentum and perinephric tissue [5].

The fat cells are held together basically by the organize of capillary blood vessels which are conveyed to them and indeed these capillaries constitute Medovaha srotas as they are included in smaller scale circulation.

**MOOLASTHANA OF MEDOVAHA SROTAS**

The Acharyas have clarified moola of Medovaha srotas totally different ways and these can be listed as takes after.

The three acharya have considered consistently vrikka as one of the common moola of Medavaha Srotas but Vapavahana, Kati, and Mamsa are said as the moment moola independently.

More Anatomical inclination is been given than the Physiological point of see by Sushruta and Vagbhata in considering Kati and Mamsa as “Moola” of the Medovaha Srotas whereas Charaka's thought was a physiological one.

The definition given by Dr. Ghanekar [5] for Medovaha srotas appears to be satisfactory to a certain degree. In his see, each srotas ought to have its claim channel and “Moola.” The definition in this way raises the address, whether the predominance of Medas and Medovaha srotas ought to be limited to the perinephric tissue and the omentum as it were or something distinctive because it moreover speaks to the boundaries of the channel.

There are different other places than the over specified where the statement of fat can be watched. For occurrence, the skin has some fat underneath it. Subsequently, the presence of medo dhatu ought to be acknowledged as spread up all through the body whereas, the said parts or organs are as it were the places of importance.

In the event that we go through embryology, life structures, and physiology of vrikka at a look, it makes it very troublesome to consider Vrikka as kidneys. Be that as it may, Sushruta says meda related with rakta plays a prime part within the origin of Vrikka [9]. This will be defended with cutting edge concepts to a few degrees where both the kidney and fat tissue are

determined from mesoderm. Charaka includes them as considering the “Moola.” On the off chance that so, at that point these structures must be directly related to fat digestion system. This complex concept is talked about within the discourse portion for way better understanding. In any case, to the degree of advanced science as well as Ayurvedic science, no such work is being seen performed by them. If we take into thought, two structures arranged over the two kidneys, i.e., supra-renal organs as Vrikka at that point to a few degree the concepts can be legitimized.

### 1) VRIKKA:

Dalhana, the commentator of Sushruta notices the Vrikka as Mamsa-Pindam [10]. Vrikka is circular in shape, composed of mamsa, and arranged in the abdomen [11], Vrikka are two in number and they are arranged underneath the flanks [12]. Agreeing to Amarakosha, the Vrikka are Agramamsa [13]. Agreeing to Acharya sharangadhara, the two kidneys feed the medas of the abdomen [14].

### 2) VAPAVA KAVYA RAVAL HAN:

The 2<sup>nd</sup> moola of the Medovaha srotas agreeing to Charaka has been expressed to be Vapavahana. Two vrikka are agramamsa and Vapavahana is carriers of vasa (fat) [12]. Chakrapani has interpreted it as Tailvartika; [15] Dr. Ghananath Sen has considered it as

omentum [16]. Concurring to amarakosha, Meda vapa and Vasa are Mamsajanya sneha [17].

### 3) KATI:

Sushruta has given to begin with inclination to Kati as moolasthan of Medovaha srotas at that point expressing Besides, he has pointed out the exact site of the Kati where the copious fat amasses.

In all the Samhitas, Shroni or Kati has been said as a locale instead of an organ. Whereas numbering the sira, Acharya Vagbhata says, 136 sira show within the Antharadhi, 32 of them present within the Kati which appears that Kati could be a portion of Antharadhi [18]. In spite of the fact that clear restrictions are not said for the division of the locale Kati, with the assistance of the surrounding structures, the confinements may be inferred. The upper restriction may well be taken as the Nabhi.,[19] and the lower constrain may well be taken as the Medra and Mushka [20].

### 3) MAMSA:

Separated from Vrikka, Vagbhata has considered Mamsa as the moola of Medovaha [21].

## DISCUSSION

### Discussion on medovaha srotas and its moolastana:

Medas is a matruja bhava and one of the saptadhatu the fourth dhatu officially from the essence of ahara rasa.

Medas and Medo dhatu as adipose tissue respectively are inferred the unique role of medas is to give the body tissue and bones the nutrition they need to remain solid and healthy.

of fat connective tissue. Behind the renal sash, there's a significant amount of the fat, pararenal (perinephric) body. The same renal belt separated from the kidney encases adrenal organs as well. These two glands are encompassed by areolar tissue containing a significant sum of perinephric fat. Indeed, in spite of the fact that these two substances (kidneys and suprarenal organs) are encased by the same renal sash, they are isolated from each other by a small fibro areolar tissue [22].

Histologically, this gland has three major unmistakable zones or layers, namely, Zona Fasciculata Zona Reticularis, and Zona Glomerulosa. Among these three, Zona fasciculate comprises of tremendous polyhedral cells with basophilic cytoplasm which are orchestrated in straight columns two cells thick, with fenestrated venous sinusoids coursing parallel with and between columns. The cells contain various lipid droplets and huge sums of phospholipids, cholesterol, fats, and greasy acids inserted in a complex arrangement of the agranular endoplasmic reticulum.

Physiologically, The Zona glomerulosa could be a shallow and lean layer of cells and lies fair underneath the capsule. It constitutes almost 15% of the adrenal cortex. They contain a altogether expansive sum of chemical aldosterone synthase which is essential for the blend of aldosterone. Thus, these are the only cells in the adrenal organ which is able of emitting a great sum of aldosterone.

The Zona fasciculate within the center and the largest layer. It constitutes almost 75% of the adrenal cortex. These discharge the glucocorticoids and corticosterone cortisol and little sums of adrenal estrogens and androgens.

The profound layer of the cortex is the Zona reticularis. It secretes the adrenal androgens dehydroepiandrosterone and androstenedione. These too emit little sums of estrogens and some glucocorticoids. Among these secretions, cortisol shows a few pertinent shreds of prove about the metabolism of fat. Cortisol advances the mobilization of greasy acids from fat tissue within the same way how it advances amino corrosive mobilization from muscle. Hence, there's an increment within the concentration of free fatty acids in plasma in turn increments their utilization for vitality. Cortisol too upgrades the oxidation of greasy acids within the cells [23].

In spite of the fact that cortisol advances fatty acid digestion system, the instrument

of mobilization isn't clearly caught on. Be that as it may, a portion of the digestion system may have brought about from decreased transport of glucose into the fat cells. Statement and maintenance of triglycerides in these fat cells require Glycerophosphate-derived from glucose.

Subsequently, in the nonappearance of this, the fat cells begin to discharge greasy acids. These two variables, i.e., the expanded mobilization of fats by cortisol and the expanded oxidation of greasy acids within the cells helps to move the metabolic frameworks of the cells at the time of starvation or other stresses from utilizing the greasy acids [23].

In spite of the fact that the cortisol can cause a few degrees of fat tissue mobilization into greasy corrosive, overabundance secretion of cortisol creates a special type of obesity in numerous individuals. It may be due to overabundance deposition of fat in the head and chest districts of the body. It gives a adjusted "moon face" and buffalo-like middle. The cause is obscure, but this corpulence may have resulted from the excess incitement of nourishment admissions. The fat may be produced more rapidly in some tissues of the body than it is oxidized and mobilized. Henceforth, Vrikka is not cruel simply the kidneys but ought to be considered as their whole encompassing counting perinephric fat and suprarenal organs.

**VAPAVAHAN AS MOOLASTHANA**

Horribly, Vapavahanam can be considered to a more noteworthy degree with more noteworthy omentum. Omentum is the biggest peritoneal fold of double sheet collapsed on it so that it is made up of four layers as higher sum of fat accumulated here and it shows up like Tailavarthika [15]. The More noteworthy omentum is rich in greasy tissue and the major work of it being the storage facility of fat and associated function incorporates constraining the spread of disease within the peritoneal depression.

These highlights might have rendered Acharya Charaka to give need to it as one of the moola sthana of Medovaha srotas.

And assist, it will make more sense on the off chance that we consider indeed those structures which are shielded by greater omentum as moola of Medovaha srotas. To a few degree, those structures beneath this omentum have got regulatory effects on the lipid framework. One such important structure is the pancreas. Although the pancreas anatomically appears no such critical connection with fat tissue, functionally it is an important organ that has got a colossal impact on this framework.

So distant, we have considered suprarenal organs as appearing more unwavering quality as moola of Medovaha srotas. One astonishing informing thing made by later inquire about appears that hormones of

adrenal beginning have got some regulatory effect even on the islet of the pancreas [24]. Separated from this, the pancreas has got a few remarkable relation with lipid action. Pancreatic has three assortments of cells mainly in its tissue counting alpha, beta, and delta cells each having their claim particular vital metabolic discharges. One among which is affront emitted from beta cells. This hormone appears a few exceptional connection with fat digestion system particularly within the Change of glucose into greasy corrosive, which advances union and storage of fat within the fat tissue.

**KATI AS MOOLASTHANA**

Kati can be correlated with the waist as this parcel is inclined greatly to get itself amassed with the fat tissue. Other than, the shallow belt of the abdomen also consists heavily laden with this fat. When the abdomen is cut open in dismemberment, especially when we attempt following the kidneys, bounty of fat can be seen over there in and around the kidneys. This fat can be considered as the remnants of that which had contributed to the arrangement of vrikka amid embryological origin [9]. Hence, due to this reason maybe, Sushruta acharya has essentially given significance to the lumbar and sacral region due to importance to the waist and then concentrated toward vrikka.

**EXPANSIONS OF MEDOVAHA SROTAS**

To investigate its expansions and impediments, a efficient physiological see is required. Right from its blend and up to its conclusion items, the channels/media through which they engender can be considered as the channels of Medovaha srotas.

Amid assimilation, triglycerides are synthesized from sleek nourishments. Most of these triglyceride's part into greasy acids and monoglycerides. When these pass through the intestinal epithelial cells, the greasy acids and monoglycerides are resynthesized into unused atoms of triglycerides.

These triglycerides enter the lymph as miniature and scattered beads. These beads having distances across between 0.08 and 0.6 microns are called chylomicrons.

A little sum of apoprotein B (a protein) is adsorbed into the external surfaces of the chylomicrons within the lymph. This anticipates chylomicrons from their adherence to the lymphatic vessel dividers.

Encourage, these chylomicrons are transported upward through the thoracic channel and are purged at the crossroads of the jugular and subclavian veins to the circulating venous blood.

Amid this circulation, most of the chylomicrons are expelled as they are carried through the capillaries of fat tissue and the liver. Both the liver and fat tissue

contain bounty of chemicals called lipoprotein lipase.

Lipoprotein lipase chemical is particularly dynamic within the endothelium of capillary. These proteins within the capillary divider hydrolyse the triglycerides of chylomicrons when they come in contact with the endothelial divider and in this way discharge glycerol and greasy acids. These greasy acids are profoundly miscible with the cell films. Subsequently, they promptly diffuse into the liver cells and the fat cells of the fat tissue. Once more the greasy acids are resynthesized inside these cells into triglycerides and unused glycerol is provided by the metabolic process of the capacity cells.

Within the early stages of starvation, expansive amounts of triglycerides show up within the liver. The conditions where the fat is utilized for vitality rather than carbohydrates such as in diabetes mellitus, in such conditions huge amounts of triglycerides are mobilized from adipose tissue and are transported as free greasy acids within the blood. These free greasy acids are at that point redeposited within the liver as triglycerides. Here, within the liver, the starting stages of much of the fat corruption start. Hence, in typical physiological conditions, the rate at which the lipids are utilized for vitality decides the overall sum of triglycerides within the liver. In expansion to triglycerides, the liver cells

contain large quantities of cholesterol and phospholipids as well. These are ceaselessly synthesized by the liver.

The liver cells are too increasingly able of desaturating greasy acids than other tissues. Subsequently, the triglycerides of the liver are for the most part more unsaturated than the fat tissue triglycerides.

At long last, with these, it can be concluded that, to total the arrange of Medovaha srotas, it is critical to require into thought of distinctive structures that act as media for this meda to carry at a given specific time interim, these includes:

The digestive tract where retention of fats takes place.

Lymph channels where these triglycerides are drained from the digestive tract and other than a few protein are bound to them.

Blood vessels counting their capillaries which carry the lipids from lymph channels, up to the liver and fat tissue.

Liver, where capacity, blend., etc., process that takes place.

Fat tissue, where capacity and freedom when required takes place.

## CONCLUSION

These conclusions were drawn which are based on the scholarly reviews and discussions.

Medo dhatu exists all through the body and moolas are as it were the places of centrality Digestive system, lymph vessels, blood vessels, liver, and fat tissue act as Medovaha

srotas/channels at diverse stages in a specific given time.

Charaka's see of explaining vrikka and vapahanam as moolas of Medovaha srotas was from the utilitarian point of see, whereas Sushruta's see supplanting vapahanam with Kati was anatomical.

Vrikka which is one of the moola of Medovaha srotas, ought to not be only connected with the kidney, in any case, ought to be recognized with its encompassing zone, mainly the perinephric fat and suprarenal organs.

Practically suprarenal organs have got an insinuate relationship with fat digestion system

Vapavahanam can be correlated with more noteworthy omentum anatomically, whereas with pancreas practically.

The midsection is laden with plenteous fat, thus kati can be connected with that parcel that lies in between the ribcage and hips.

Vasa i.e., mamsagata sneha (muscle fat) ought to be taken as moola of this srotas in regard to Vagbhata's thought of mamsa.

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