CRITICAL ANALYSIS OF MAJJAVAHA SROTAS & MAJJADHATU
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ABSTRACT
Srotas are broadly classified into two; Bahya and Abhyantara even though they are innumerable in number as suggested by Charaka. The concept of Srotas will further help in the critical understanding of physiological aspects of human body. It is said that the entire functioning of the our body is dependent on Srotas as they carry Sukshma and Sthula Bhava and fulfill the wear and tear of the body. Charaka and Susrutha varies in the understanding of Abhyantara Srotas especially in the consideration of Majjavaha Srotas. Susrutha has not explained a special entity or a channel to carry Majja Dhatu in the body rather he believes it is present inside the Sthula Asthi, but Charaka clearly explains the Srotas for Majja Dhatu Vahana. This article will help in the brief understanding about the concept of Majjavaha Srotas, its Mula and Majja Dhatu.

Key words: Srotas, Majjavaha Srotas, Majja Dhatu

INTRODUCTION
Srotas are the structural and functional entities responsible for health and disease. These are channels of circulation which carry Dhatu undergoing transformation to their destination. The origin of Srotas is from Akasha Mahabhoota as they are Avakashayukta as it is rightly said all the channels and vacant places of the body are born from Akasha. Precisely Srotas is defined as the hollow channel, except Sira and Dhamani originating from root space and spreads in the body and carries specific entities. Charaka in specific told there is innumerable number of Srotas as there are innumerable structural entities are present in the body. But for our easy understanding they are broadly classified into two; Bahya and Abhyantara. Majjavaha Srotas is one among the Abhyantara Srotas and has been explained by Charaka, while Susrutha has excluded it. The term Majja can be looked in different angles as it prevades all over the body.

SROTAS
The term Srotas carries wide range of meaning. Srotas are the structural and functional entities identified for the catering of metabolites in the body. In their colour and form they are stated to take after the Dhatu they transport; they may be cylindrical, either Sthula or Anu, Dirgha or Prathana.1. Concept of Srotomaya Purusha is stressed by Charaka as none of the elements in the body can flourish or decay independently. The Srotas...
are modifications of the *Pancamahabhu* in which different elements undergo transformation, transmutation, circulation and transportation. The number of *Srotas* is innumerable because as many structural / physiological factors are present in human body so many are the number of *Srotas*. They carry the *Dosha* throughout, and they even carry *Atindriya* like *Satva* and *Atma*. There are 9 *Bahya Srotas* like *Sravana*, *Nayana*, *Vadana*, *Ghrana*, *Guda*, *Medra* and *Sharagadara* identified the 10th one as *Masthaka* as one *Bahya Randhra*. *Abhyantara Srotas* are 13 pairs according to *Charaka* and *Vaghbhatta* whereas *Susrutha* mentions 11 pairs.

**Pra-\*\textit{\textit{na}}, Udaka, Anna, Rasa, Rakta, Mamsa, Meda, Athi, Majja, Sukra, Mutra, Purisha & Sweda are the *Sukshma Srotas* where *Susrutha* excluded *Athi*, Majja & Sweda and included *Arthava*.

**Majjavaha Srotas**

*Majjavaha Srotas* is one among the *Abhyantara Srotas* enumerated by *Charaka*. *Majjavaha Srotas* is not mentioned by *Susrutha* because he has explained *Srotas* on the basis of *Viddha Lakshna*. In the context of *Athi Bhagna* he says that when injury occurs to *Athi*, Majja will come out and cause complications. *Mula sthana* of *Majjavaha Srotas* are *Athi* and *Sandhi*.\textsuperscript{2} *Ashtanga Samgrahakara* says *Parva* and *Athi* are the *Mula Sthana* of *Majjavaha Srotas*. *Mula Sthana* are the principle organs as far as *Majja Dhatu* is concerned and they have to be included in locations of Majja Dhatu. *Athi Dhatu* as *mula* can be justified as it is the previous *Dhatu*. But *Sandhi* as the main location or *Mula* is not very clear. This can be hypothetically explained. *Athi* is hard, it may become brittle. For *Athi* to be durable *Sneha* quality is needed as *Vata* make it porous and takes protection in this place. *Dhatu* previous to *Athi* is *Meda* and next to *Athi* is *Majja*. There should be some exchange between this *Medodhatu* outside the bone and *Majjadhatu* inside the bone. In routine such mechanism is always active for homeostasis of body. There can be waning and increment in qualities of body entities depending upon the everyday diet. For this reason *Athi* can be important, as Majja can never exist if these do not exist.\textsuperscript{3} *Sandhi* are lined by *Shlesmadhara kala*, which is unctuous.\textsuperscript{4} Hypothetically this must be helping in transmitting outer *Medodhatu* to inner cavity of bone, as *Majja* is generated here.\textsuperscript{5} Fourth *kala* is *Shlesmadhara* and it exists in all joints. As oiling of axis of wheel keeps movements of wheel in proper condition, this adhering *Shlesma* keeps human joints in appropriate condition.\textsuperscript{6} Any disturbance to this lining could alter coolness in joints. Due to friction and movements there is always extra generation of *Teja*. *Majjadhatu* should be supported properly by balance between *Usna* and *Sita* and there is reference correlating Majjadharaka kala as *Pitadhara kala* according to *Dalhana*.\textsuperscript{7} This can be the hypothetical explanation for *Sandhi* being the *Mula* for *Majjavaha Srotas*. It is clear that after formation of Majja inside the bone is been protected by *Athi* itself. It is interesting to note that *Athi* is considered to be *Vata Sthana* and Majja resides in it which has the qualities just opposite to Vata, so that it can control Vata which resides in *Athi*.\textsuperscript{8} Third *Kala* according to *Susrutha* is *Medodhara kala* and *Meda* is situated in the *Udara* (abdomen) and *Anuasthi* (small and flat bones), where in inside the *Sthula asthi* long bones Majja is present and in rest it is *Sarakta Meda*.\textsuperscript{9}
MAJJA DHATU

Nirukti of Majja

Majja is considered to be the Sara of Asthi just like the Sara found inside the tree according to Vachaspatyam and Shabda kalpadruma says Majja is the unctuous part found inside Asthi.

Utpatti of Majja Dhatu

Sharagadhara says, Majja Dhatu gets originated from its previous Dhatu; Medas. Majja Dhatu is formed from Meda by Uttorottara Dhatu Poshana. Charaka gives a different says Vata creates pores in Asthi and Meda gets filled inside and Majja gets formed. Parasara opines that food becomes Rasa on next day, Rakta on the third day, Mamsa on the fourth, Meda on the fifth day, Asthi on sixth day, Majja on seventh and Sukra on eighth day. There are several other opinions on the time taken for the formation of Dhatu from Ahara rasa extending from Ahoratra to one month.

Panchabhoutic predominance of Majja Dhatu

According to Dalhana, Majja is predominant of Ap Mahabhuta.

Location of Majja Dhatu

Majja being a Dhatu it should be present throughout the body. It may be present in certain places in large quantity and functioning specifically to certain places. Such places can be concluded as the locations of Majja Dhatu. Majja dhatu is present Majjavaha Srotas and gets circulated throughout the body in its Srotas.

Guna and Karma of Majja

Susrutha says the chief quality of Majja is providing Bala and Snehana to the Shareera. Vishesha Karma of Majja is Purana. It does the Purana of Asthi and Sukra Pushhti.

Parimana of Majja Dhatu is one Anjali.

Upadhatu and Mala of Majja Dhatu

Except Sharangadhara none of them gives any opinion about Upadhatu of Majja. According to him Upadhatu of Majja is Kesha. Charaka and Susruta says the Mala of Majja Dhatu is unctuous secretion of Netra and Twacha. Vagbhatta says Sneha or unctuous secretion of Purisha is also considered to be the Mala of Majja.

DISCUSSION AND CONCLUSION

Charaka gives a different dimension for the formation of Majjadhatu, he says Vata creates pores in Asthi and Meda gets filled inside and we can say Majja gets formed by the collective effort of Asthi, Vata, Meda and Panchamahabhuta. It should be understood further that Meda is the chief entity which results in the formation of both Asthi and Majja. It will be always right to say Meda is essential for the existence of both Asthi and Majja. Meda being the previous Dhatu contributes for the formation of Asthi by Uttorothara Dhatu Poshana and it gets filled inside the Asthi to form Majja. Asthi and Majja does the Dharana and Purana of the entire body indirectly with the help of Medas.

Just like any other Dhatu it is generated in the intra uterine life. Growth and nutrition is by Ahara Rasa. Formation of Majja Dhatu is like when Asthi Dhatu is formed in Asthivaha Srotas, it contributes for the formation of Majja Dhatu from the Prasada Bhaga of Asthi Dhatu which is a well-known principle or to be more exact nutrients coming from Ahararasa and from Asthivaha Srotas are acted upon by Majjadhatwagni and give rise to Majja Dhatu. Being formed from the Medas inside Asthi, it is more like to have the predominance of Jala Mahabhutha.
Majja is present all over the body but specifically it is getting circulated throughout the body in its Srotas. Mula of Majjavaha Srotas is told to be Asthi and Sandhi, so functional activity of Majja will be more in Asthi and Sandhi. Concept of Majjavaha Srotas has been laid down by Charaka, where in Susrutha doesn’t have the opinion of the existence of Majjavaha Srotas. He says Majja is present in Sthula Asthi and Sarakta Meda is present in Anuvasthi and Udara.

According to modern it is said that there are two types of marrow; Yellow bone marrow and Red bone marrow which can be correlated to Majja and Sarakta Meda. The evidences say that Yellow marrow is found in the hollow interior of the diaphyseal portion or the shaft of long bones. Red marrow is found mainly in the flat bones, such as the hip bone, sternum (breast) bone, skull, ribs, vertebrae, and shoulder blades, as well as in the metaphyseal and epiphyseal ends of the long bones, such as the femur, tibia, and humerus, where the bone is cancellous or spongy. By the time a person reaches old age, nearly all of the red marrow is replaced by yellow marrow. However, the yellow marrow can revert to red if there is increased demand for red blood cells, such as in instances of blood loss. This shows that the findings that has been done by our Acharyas were way great to the modern times.

While assessing the Majja Guna and Karma, its evident that it helps in the maintenance of the shape of Asthi along with Vata. Vata and Majja, two different entities having the opposite quality are present inside the Asthi (Vata takes Ashraya in Asthi and Majja is formed inside the Asthi). They both complement each other inside the Asthi. Khara guna of Vata and Snigdha guna of Majja helps in retaining the hard texture of Asthi as well as easy movement of entire body. The entire locomotory system simultaneously does the two opposite function. They are hard and stiff by structure but does the movement of entire body in day to day life. This owe to the existence of Vata and Majja inside Asthi.

REFERENCES


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