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## RESEARCH ARTICLE

## Anatomical Exploration of Vedhya Sira Sites in Urdhwa Shakhagata Vatarakta by the means of Sirayantrana Vidhi.

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### Abstract

Luxurious lifestyle and minimal exposure of physical work have increased the prevalence rate of many disorders. Vatarakta is one of them, in which the Vata dosha and Rakta dosha are simultaneously vitiated and created a very painful condition which's symptoms are merely similar to the clinical feature of gout. Vatarakta is very elaborately described in Samhitas with its etiological factors, pathogenesis, symptom and treatment. In the treatment modalities of Vatarakta Acharya Charaka has prescribed firstly the Raktamokshana therapy and also indicate the different methods of Raktamokshana in different clinical conditions, Siravedhana procedure is one of them. Siravedhana procedure is utmost beneficial in Sarvanga-gata Dushti and it is to be called the prime treatment in the surgery. Its clinical importance in the diseases of Rakta is appreciated widely, but this procedure is not in clinical practice due to its complicated anatomical structure and location in different diseases. So, here in this article, scholar has ascertain the anatomical structure and location of Siravedhana in Vatarakta disease through cadaveric study and Sirayantrana Vidhi.

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### Introduction:-

Vata Dosha is given utmost important among the Tridoshas in the Ayurvedic texts, due to its six-fold distinctive features as dissemination, quick action, vigor, capability to vitiate other Doshas, autonomy, and the power to create the maximum number of diseases<sup>[1]</sup>. At the same regards, in Ayurvedic texts Rakta is also given prime important as describing Ratka as the life of living being<sup>[2]</sup>. Vatarakta is a condition where both Vata and Rakta are afflicted by Margavarana<sup>[3]</sup>. When aggravated Vata is obstructed by aggravated Rakta, this obstructed Vata is again aggravates Rakta and the pathological state of Vatarakta is occurs<sup>[4]</sup>.

As in Vatarakta, Rakta Dosha is involved, Acharya Charaka has suggested Siravedhana Karma. Acharya Sushruta has also suggested the Siravedhana and indicate site for the procedure. Though this procedure is very effective and described as a half of the treatment in surgery<sup>[5]</sup>, it is not in practice due to the suspicious anatomical location of the procedure. So its anatomical locations can be explore by the cadaveric study.

### Objectives:-

To explore the anatomical site of superficial vein for Siravedhana in Urdhwa Sakhagata Vatarakta.

## Materials and Methods:-

- ❖ Review of literature regarding Siravedhana site in Vatarakta.
- ❖ To observe the superficial venous pattern of upper limb in cadaver through dissection.
- ❖ To confirm the most suitable Sira by Sirayantrana Vidhi.
- ❖ Vatarakta.

It is also known as Vatashonitam, Khuda, Vatabalas and Aadhyavata<sup>[6]</sup>. Generally people of tender health who indulges in sweet food, leisurely eating and sedentary habits get afflicted<sup>[7]</sup>.

## Rogadhitsthana (Parts of body affected by Vatarakta):-

The sites where Vatarakta is manifested are hands, feet, fingers including toes and all the joints. In the beginning, the hands and feet are afflicted. From this base, it spreads to all the other parts of the body because of the subtle pervasive nature of Vata and Rakta. Because of their fluidity and mobility, Vata and Rakta, while moving through the vessels, get obstructed in the joints which makes them further aggravated. Because of the tortuous nature of the course in the joints, the morbid matter gets lodge there<sup>[8]</sup>.

## Lakshana (Symptoms )<sup>[9]</sup>

- ❖ Inability to tolerate touch
- ❖ Pricking and cutting pain
- ❖ Wasting
- ❖ Loss of sensation
- ❖ Severe burning sensation
- ❖ Profound heat and redness and soft swelling.

The clinical condition of Vatarakta can correlated with the gout.

## Siravedhana site in Vatarakta:-

Acharya Charaka has suggested Raktamokshana Karma in Vatarakta diseases and also indicate different modalities for Raktamokshana in different condition. He stated that when the symptoms of disease is not steady at one site and changes its locations than Raktamokshana should be done through Siravedhana<sup>[10]</sup>.

According to Acharya Sushruta in Padadaha, Padaharsha, Chippra, Visarpa, Vatashonita, Vatakantaka, Vicharchika and Padadari Roga Siravedhana should be done two Angula (approx 4cm) above the Kshipra Marma<sup>[11]</sup>.

## Cadaveric Study:-

The knowledge observed by direct perception and that obtained by the study of the science, both are for enhancement of one's knowledge<sup>[12]</sup>. These references indicate the importance of the cadaveric study in the field of medical science.

The Siravedhana therapy is a highly effective measure but it is very difficult to master it due to Sira's slippery nature, hence it is to be punctured with great efforts<sup>[13]</sup>. So the perfect knowledge about the Sira is necessary before performing the procedure and it can be done by the cadaveric study.

The cadaveric study was done in dissection hall of Sharir Rachana Department, NIA Jaipur, regarding the superficial venous pattern of dorsum of hand in both the male and female cadavers. Variations has been noted during dissection.

## Instruments:-

1.Simple forceps 2. tooth-head forceps 3. Fine forceps 4. Scalpel No4 5. BP blades No 24 6.BP blades No11 straight 7.Scissors 8.Probe

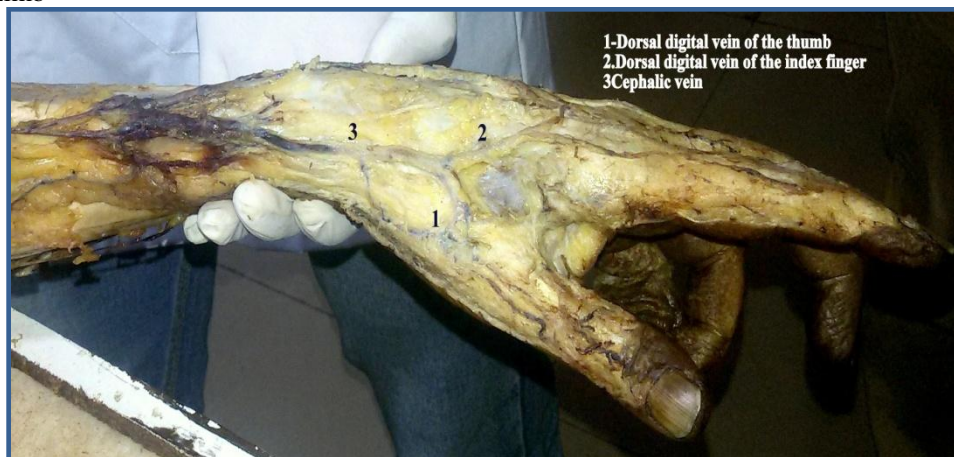
Skin incision used for Dissection:-



- ❖ First incision was made from F to point G and H which are located at the pre and post axial lines at the same level of F.
- ❖ From G point one incision was made on the thumb on its dorsal surface and the same incision was made from point H on the little finger.
- ❖ Second incision was made passing along the knuckles.
- ❖ One incision was made on dorsal surface of each finger starting from second incision.

#### Observations:-

Cadaver- Male, Approx age-55 to 60, Approx height-5.9 to 6feet,  
Left Upper Limb---



- ❖ Cadaver was placed in supine position
- ❖ Skin incisions were made according to above description.
- ❖ Superficial venous pattern was observed.

#### Metacarpal veins:-

- ❖ Medial digital vein of the second finger and lateral digital vein of the third finger unites to form the first metacarpal vein.
- ❖ Medial digital vein of the third finger and lateral digital vein of the fourth finger unites to form the second metacarpal vein.
- ❖ Medial digital vein of the fourth finger and the digital vein of the little finger unite to form the third metacarpal vein.

**Dorsal venous arch:-**

- ❖ The digital vein of the thumb and the lateral digital vein of the second finger joins at the lateral end of the dorsal venous arch just inferior to the anatomical snuff-box and continue further as cephalic vein. Some branches from the dorsal venous arch were draining in the cephalic vein at the little higher level of the wrist joint.
- ❖ Three metacarpal veins were draining in the dorsal venous arch. The second, third metacarpal veins and dorsal venous arch unites and continued as basilic vein at post-axial line on the wrist joint and the forearm.

**Cephalic vein:-**

- ❖ Cephalic vein was continuing as a lateral end of the dorsal venous arch on the pre-axial line on the wrist joint and forearm. Some branches from the dorsal venous arch and from the dorsum of the forearm were draining in the cephalic vein.

Cadaver- Female, Approx age-50 to 55, Approx height-5 to 5.2 feet,  
Right Upper Limb---



- ❖ Cadaver was placed in supine position.
- ❖ Skin incisions were made according to the new pattern of the incision described previously and the superficial venous pattern was observed.

**Metacarpal veins:-**

- ❖ Medial digital vein of the second finger and lateral digital vein of the third finger united to form the first metacarpal vein.
- ❖ Medial digital vein of the third finger and lateral digital vein of the fourth finger united to form the second metacarpal vein.



- ❖ Medial digital vein of the fourth finger and the digital vein of the little finger united to form the third metacarpal vein.

#### **Dorsal venous arch:-**

- ❖ Two digital veins of the thumb and the lateral digital vein of the second finger joined at the lateral end of the dorsal venous arch just inferior to the anatomical snuff-box and continued further as cephalic vein. Some branches from the dorsal venous arch also draining in the cephalic vein at the little higher level of the wrist joint. Medial end of the dorsal venous arch was continuing as basilic vein on the post-axial line.

#### **Cephalic vein:-**

Cephalic vein was a continuation of the lateral end of dorsal venous arch. Some branches from dorsum of hand at forearm also drained in the cephalic veins.

Cadaver- Female, Approx age-50 to 55, Approx height-5 to 5.2 feet.

Left Upper Limb:-



- ❖ Cadaver was placed in the supine position.
- ❖ Skin incisions were made.
- ❖ Superficial venous pattern was observed.
- ❖ Veins of the left hand were very small and fragile so it was very difficult to dissect them properly.

#### **Dorsal Metacarpal veins:-**

- ❖ The digital veins of the second, third and fourth fingers were not forming the metacarpal veins but were directly draining in the dorsal venous arch. Medial dorsal digital vein of fourth finger and digital vein of the little finger united and formed metacarpal vein which was draining in the dorsal venous arch. Two digital veins of the thumb and one lateral digital vein of second finger united just inferior of the anatomical snuff-box and continued with the lateral end of the dorsal venous arch as cephalic vein.

#### **Cephalic vein:-**

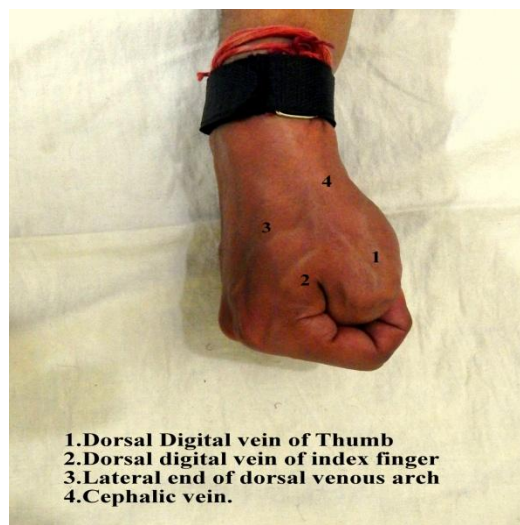
It was continued as lateral end of the dorsal venous arch and run along the pre-axial border in the forearm and arm.

#### **Sira Yantrana Vidhi:-**

Sira Yantrana Vidhi is mentioned by Acharya Sushruta for individual Vedhana site<sup>[14]</sup>. He also explained the importance of the Yantrana Vidhi and contraindicate that veins for Vedhana which are not fixed by Yantrana Vidhi<sup>[15]</sup>.

Sira Yantrana Vidhi is nothing but the tourniquet application method. As today also in nursing processors for venepuncture tourniquet is applied so the venous circulation is obstructed and the veins should be more prominent. So the venepuncture process is being easier.

To locate the vein for Siravedhana in Vatarakta tourniquet was applied just above the wrist joint in 30 volunteers and the superficial venous pattern was observed.



By applying tourniquet on above mentioned site following veins were being prominent.

- ❖ Third metacarpal vein,
- ❖ Medial end of dorsal venous arch
- ❖ Arch of dorsal veins
- ❖ First and second metacarpal veins
- ❖ Digital veins of Thumb and index finger.
- ❖ Lateral end of dorsal venous arch.
- ❖ Cephalic vein running on the lateral border of the wrist.

### Discussion:-

Raktamokshana is a procedure through which vitiated blood is withdrawn from the body, Siravedhana is one of the methods of Raktamokshana. This indicates that the structure which is to be punctured in this procedure must convey deoxygenated blood and bleeding should be stopped by minimal efforts after the procedure. Acharya has also described the Sira-Yantrana Vidhi before procedure which indicate the process of applying proper tourniquet.

As in the body only arteries and veins can bleed after puncturing so the structure of Sira should be either a vein or an artery. But if artery is to be punctured the blood flow will not stop even with great efforts or physical measures and there is no such logic in tying tourniquet while puncturing arteries as they are deeply seated.

The structure must be the superficial veins as their blood flow can stop automatically after puncturing and for their assessment tourniquet application is logical. As they get engorged and are easy to assess for puncturing perfectly without complications. So here in this study Siras are considered as superficial veins.

So in this study the superficial veins of upper limb are studied under the context of Siravedhana.

For selecting a suitable superficial vein for puncturing Acharya Vagbhatta has given some criteria. He has stated that veins having following characteristics should be avoided for Siravedhana as<sup>[16]</sup>:

1. क्षुद्रिका:- Small, minute, short
2. कुटिला:- Dodgy.
3. सङ्कीर्णा:- Tortuous,
4. ग्रन्थिता:- Thrombosed.
5. सन्धिषु:- Over the joint
6. वक्रा:- Crooked, curved, bent, tortuous, twisted, wry, oblique.
7. अव्यध्या:- Contraindicated
8. अदृष्टा:- imperceptible

9. अयन्त्रिता:- Not controlled

10. अनुत्थिता:- Not raised

Sushruta has recommended a Siravedhana site for Vatarakta is two Angula above the Kshipra Marma. The location of Kshipra Marma as described by Acharya Sushruta is at the region between the thumb and the index finger. The venous pattern of this site was observed by dissection.

At this region the digital veins of thumb and index finger, and the cephalic vein was observed. The digital veins are very small, short and fragile. Whereas the Cephalic vein is sufficiently large and long.

As the digital veins are very small, short and fragile they are not following the criteria suggested by Acharya Vagbhata so they should not use for Siravedhana.

The lateral end of the arch continues as a cephalic vein above which is a sufficiently large vein. Both digital veins are draining in the cephalic vein and also the lateral end of dorsal venous arch is draining in it so by doing Siravedhana in cephalic vein we can drain the most of the area of the dorsum of the hand. And cephalic vein is also following all the criteria as described by Acharya Vagbhata. So the cephalic vein should be the best site for Vedhana at the location just superior to the anatomical snuffbox.

Acharya Sushruta has also given three criteria for selecting a vein. He has indicated that the veins which are Avedhya Sira (veins which should not be punctured), Vedhya Sira but not fixed, fixed but not raised should avoid for Siravedhana Karma.

So to locate the Sira in Vatarakta tourniquet was applied little above the wrist joint. According to previous discussion the most suitable vein is cephalic vein. The cephalic vein is being raised here above the anatomical snuff box so this vein is also following the criteria decided by Acharya Sushruta. So the Cephalic vein should be used for Siravedhana at the site above the anatomical snuff-box in Vatarakta diseases.

### Conclusion:-

Vatarakta is a condition where both Vata and Rakta are afflicted by Margavarana. As Rakta Dosha is involved in Vatarakta, Siravedhana Karma is definitely useful. For Siravedhana Karma the superficial veins should be inferred. At the indicated site for Siravedhana in Vatarakta the most suitable vein is the cephalic vein. This vein is following all the criteria mentioned by Acharya Sushruta and Acharya Vagbhata so Cephalic vein should be used for Siravedhana therapy in Vatarakta.

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