

PANCHAKARMA THERAPY WITH SPECIAL REFERENCE TO MANJISTADHI KSHARA BASTI IN “1A-3N KALA-BASTI PATTERN” IN THE MANAGEMENT OF DEEP VEIN THROMBOSIS (DVT): A CASE STUDY

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ABSTRACT

Deep vein thrombosis (DVT) is the third most common vascular disease, after ischemic heart disease (IHD) and Stroke and it is a silent killer. It affects approximately 0.1% of total population per year. Various treatment modalities and drugs of Western medicine such as Surgical interventions, Urokinase, Streptokinase or Tissue plasminogen activators to dissolve the blood clots have their own limitations and side effects apart from being expensive. The present case study deals with a 39-year-old male, cab driver by profession, who is used to long distance travel in car on daily basis and is obese in built, habituated to smoking 4-5 cigarettes a day, since 10-12 yrs., gradually developed pain and swelling of Right lower limb since 2months. On evaluation, Doppler Ultrasonography of Right lower limb revealed Deep vein thrombosis of Right femoral vein (Upper and mid 1/3rd) & long Saphenous vein (proximal 1/3rd). In Ayurveda, based on the Clinical picture and signs and symptoms, the condition can be correlated to “*Kapha-Medavrutha Vataraktha*”. This case study is about management of DVT with multi-

modality treatment in the form of *Panchakarma* procedures such as *Jaloukavacharana*, *Kashaya dhara*, *Alepana*, *Udwartana*, *Manjistadhi Kshara vasti* along with oral medications. Treatment has shown remarkable result especially in reduction of symptoms such as swelling, pain and heaviness. Assessment was done on the basis of clinical examination, signs and symptoms before and after the treatment.

Key words: Deep vein thrombosis (DVT), Doppler Ultrasonography; *Ayurveda*, *Kaphamedavritha Vataraktha*; *Panchakarma*, *Jaloukavacharana*, *Manjistadhi kshara Basti*.

INTRODUCTION

Deep Vein Thrombosis also known as Phlebothrombosis is a semisolid clot in the veins deep in the body.¹ DVT, by itself is not potentially life threatening but, Pulmonary embolism (PE), a dreaded complication of DVT is the primary contributor to mortality. Much of the morbidity of DVT results from the development of post-thrombotic syndrome, which encompasses a number of symptoms including leg pain, swelling, and in severe cases, venous ulcers. The mechanism underlying DVT, known as Virchow's triad, are Venous stasis, Hypercoagulability, and Endothelial injury. The femoral and popliteal veins in the thighs and the posterior tibial and peroneal veins in the calves are most commonly affected. Risk factors of DVT include Inheriting a blood-clotting disorder, prolonged bed rest such as during a long hospital stay, or paralysis, injury to veins or Surgery, Pregnancy, Obesity, birth control pills (oral contraceptives) or Hormone replacement therapy, Smoking, Cancer, Heart failure, sitting for long periods of time, such as when driving or flying.

Conventional treatment for DVT has some reported limitations and often requires expensive hospitalization. In *Ayurveda*, DVT can be correlated with *Vataraktha*. Various *Panchakarma* procedures and internal medicines were adopted in the present case study which gives a promising result especially in reducing heaviness, swelling and pain.

Materials and methods:

Case Description:

A 39-year-old male Patient, cab driver by occupation, from Bangalore, Karnataka approached *Panchakarma* OPD of Sri Kalabhyraveswara *Ayurveda* Medical college & Hospital with the complaints of Severe pain and swelling of right lower limb (from

upper thigh till foot) for 1 week associated with Stiffness of right leg, Reddish-brown discoloration of skin in distal part of right leg and Cramping pain in leg while walking.

History of Present illness:

According to the patient he was apparently healthy 2 months back and then suddenly developed catching type of pain in right leg in calf region on and off which used to aggravate on walking or standing and relieves on rest for 1week. Then the pain became continuous for which patient approached local clinic and took medications (Oral and IM NSAIDs & Muscle relaxants) got relieved from symptoms for 1week. Then again after 1week patient developed similar type of pain along with swelling, for which he once again approached local clinic and took treatment (Oral and IM NSAIDs, Muscle relaxants and crepe bandage application) got relieved from symptoms for 10days. Later, the patient started experiencing dragging pain & swelling from upper thigh till foot associated with reddish brown discoloration of distal part of leg, tightness of skin of Right lower limb from upper thigh till foot and difficulty in walking, for which he approached Victoria hospital got evaluated diagnosed as deep vein thrombosis and due to non-availability of specialist doctor, went to local clinic from which he got referred to SKAMCH & RC for further evaluation and management.

History of Past illness:

Patient had H/o Covid positive – April,2021 (Managed on Home medication for 5days)

Patient had H/o Left distal ankle fracture 12yrs back – managed by traditional bandaging methods and bed rest for 3months.

Patient had no history of Diabetes Mellitus, Hypertension, Ischemic Heart Disease, Cerebrovascular accident or Deep vein thrombosis.

Treatment history

For the aforementioned complains, when he approached local clinics, he was prescribed Aceclofenac and Tizanidine twice daily and injection Diclofenac 75mg IM once daily for 1 week.

Personal history

- Appetite - Normal
- Sleep - 7 to 8 hours at night, disturbed due to pain: Day-time sleep ~1-2hour, disturbed due to pain.
- Micturition - 3-4 times during day, 1-2 times during night.
- Bowel - Soft, Regular, once/ twice in a day.
- Habits - Chronic Smoker around 4 to 5 cigarettes a day for 10-12 years; Chronic Ethanolic; Once-Twice in a month for 10-12 years.

Examination of patient

General examination

- Built - Obese
- Nourishment - Over nourished
- Pallor - Absent
- Icterus - Absent
- Cyanosis - Absent
- Clubbing - Absent
- Lymphadenopathy - Absent
- Edema - Present (Right leg) Pitting oedema (+)
- Tongue - Non coated
- Temperature - 98.6 F (afebrile)
- Pulse - 74 bpm
- B.P - 130/80 mm of Hg
- RR - 18 cycles / min
- Height - 165 cm
- Weight - 92kg
- BMI - 33.8 kg/m²

Systemic examination

- Respiratory system: Bilateral equal air entry, Normal vesicular breath sounds present.
- Abdomen: Soft, non-tender, no organomegaly.
- Cardiovascular system: S1-S2 sound heard, No murmurs.
- Central nervous system: Oriented to time, place and person.

Local examination

Inspection:

- Gross swelling of right lower limb.
- Hyperpigmentation of skin from below knee joint till foot (reddish brown discoloration).
- Superficial blisters seen above knee joint.

Palpation:

- Tenderness: Present
- Skin tightness, with pitting type edema noted.
- Local raise of temperature {+}

Physical tests

- Homan's sign - Positive.
- Moses's sign - Positive.

Investigations

- USG Doppler of right lower limb suggestive of Deep vein thrombosis of Right femoral vein (Upper and mid 1/3rd) & Long Saphenous Vein (proximal 1/3rd).
- Complete blood count, Liver function test, Renal function test and Random blood sugars were within normal limits.

Diagnosis

Diagnosis of DVT is made, based on positive finding for dvt in Right lower limb venous USG. Assessment was done on the basis of signs and symptoms and Doppler sonography. Total three assessments were taken, pre-treatment, post treatment and after 30-days follow-up.



Before treatment

Treatment

Intervention with Oral Medications		
Date	Medicine	Dose
25/06/2022 to 19/07/2022	Manjistadi Kashayam	90ml tds B/F
	T.Kaishora Guggulu	2-2-2 A/F
20/07/2022 to 02/08/2022	Manjistadi Kashayam	90ml tds B/F
	T.Kaishora Guggulu	2-2-2 A/F
	T. Arogyavardini rasa	1-1-1 A/F
	T. Mrutyunjaya rasa	1-1-1 A/F
02/08/2022 to 19/07/2022	Manjistadhi Kashayam	90ml tds B/F
	T. Kaishora guggulu	2-2-2 A/F
20/07/2022 to 04/08/2022	Manjistadi Qwatha	3tsf-3tsf-3tsf B/F
	T.Mrutyunjaya rasa	1-1-1 A/F
	T. Arogyavardini rasa	1-1-1 A/F
	T.Kaishora Guggulu	2-0-2 A/F
04/08/2022 to 18/08/2022	Manjistadhi kwatha churna.	30ml – 0 – 30ml B/F
	T. Kaishora guggulu	2 – 0 – 2 A/F

Intervention with Panchakarma procedures				
Phase	Date	Day	Procedure	Medicine used
1	25/06/2022 to 29/06/2022	1 to 5	Sarvanga Kashaya Dhara	Dashamoola Qwatha & Manjistadi Qwatha.
			Jalaukavacharana (Right lower limb)	Nirvisha Jalauka (1 per day)
2	30/06/2022 to 03/07/2022	6 to 9	Valmika mrithika lepa (Right lower limb)	Valmika mrithika (Anthil soil) sarshapa churna 4 -5 pinches
3	04/07/2022 to 19/07/2022	10 to 25	Sarvanga Udwarthana	Triphala churna + Kolakulat-thadi churna.
			Sarvanga Kashaya Dhara	Dashamoola Qwatha.
			Kala basti	Manjistadhi kshara basti. (As shown below)

04/3	05/3	06/3	07/3	08/3	09/3	10/3	11/3	12/3	13/3	14/3	15/3	16/3	17/3	18/3	19/3
A	N	N	N	A	N	N	N	A	N	N	N	A	N	N	A



Jalaukavacharana



Valmika Mrita lepa

1A-3N KALA-BASTI PATTERN:

Manjistadhi kshara basti			
Anuvasana	Niruha		
Manjistadhi taila 80ml	Honey		80ml;
	Saindhava lavana		5gms
	Manjishtadi taila		80ml.
	Manjishta churna kalka		20g.
	Manjishta Qwatha		150ml.
	Dashamoola Qwatha		150ml
	Gomutra		30ml;



After Treatment



After Follow up

Observations				
SYMPTOMS	GRADING	BEFORE TREATMENT	AFTER TREATMENT	AFTER FOLLOW-UP (30-days)
Pain (Intensity)	0-4	4	1	0
Swelling	MID-THIGH CIRCUMFERENCE	65cms	61cms	58cms
	MID-CALF CIRCUMFERENCE	48cms	42.5cms	40cms
	MID-FOOT CIRCUMFERENCE	28.5cms	27cms	26cms
Redness	+/-	+	-	-
Local raise of temperature	+/-	+	-	-

DISCUSSION

✚ *Vatarakta* also known as *Vatasonita* is caused by the vitiated *Vata Dosha* and *Rakta* which impedes the *Gati* (movement) of each other. This condition mainly affects people who are not physically active and indulge in *Divaswapna*-regular habit of sleeping during daytime; *Prajaagaraihi* - regular habit of awakening during nighttime; *Mithya ahara*-wrong choices of foods; *Mithya vihara*-erratic lifestyle practices; *Sukamara*-people of delicate nature; *Sthula*-fat and people who live in luxury.

✚ When a person takes foods before the digestion of previous foods and exposes to lifestyle activities which aggravate *Vata* and also is used to long distance rides, *vata* gets severely aggravated by its own causes. On the other hand, *rakta* or blood gets vitiated by the consumption of *lavana*, *Amla*, *katu*, *kshara* etc. The vitiated *rakta* obstructs the passages of *vayu* and interferes with its *Gati* (smooth movements). The aggravated *Vata*, whose passages are blocked by vitiated *Rakta*, further gets vitiated greatly and cause this condition called *Vataraktha*.

✚ *Vataraktha* as such cannot be correlated to any one specific disease in Modern contemporary science. It is rather a concept dealing with a wide range of disorders of Orthopaedical, Rheumatological & Vascular origins. *Vatarakta* concept encompasses a group of inflammatory disorders which include Gouty arthritis, Rheumatoid ar-

thritis, Connective tissue disorders, Inflammatory Polyarthritis, Vasculitis, etc.

✚ Deep vein thrombosis is one such vascular disease, which occurs when a thrombus (blood clot) develops in veins deep in the body. It is a major preventable cause of morbidity and mortality worldwide. The most serious complication of DVT happens when a part of the clot breaks off and travels through the bloodstream to the lungs, causing a blockage called pulmonary embolism (PE). If the clot is small, and with appropriate treatment, people can recover from PE. However, there could be some damage to the lungs. If the clot is large, it can stop blood from reaching the lungs and is fatal.

✚ In addition, one-third to one-half of people who have a DVT will have long-term complications caused by the damage the clot does to the valves in the vein called post-thrombotic syndrome (PTS). People with PTS have symptoms such as swelling, pain, discoloration, and in severe cases, scaling or ulcers in the affected part of the body. In some cases, the symptoms can be so severe that a person becomes disabled.² Prompt diagnosis and management is utmost required to prevent the same.

✚ The treatments mainly aim to prevent Pulmonary Embolism. Other goals of treatment include preventing the clot from becoming larger, preventing new blood clots formation, preventing long term complications and reducing its recurrence. Modern treatment of DVT includes bed rest, elevation of legs, elastic stockings and use of drugs

like heparin, coumarin, derivatives (warfarin), fibrinolytic drugs (streptokinase) and aspirin etc which not only account for expensive hospitalisation but also have fair share of added complications. The ability of streptokinase and urokinase to lyse intravascular fibrin-based clots is firmly established. However, there is a lack of enthusiasm for these agents because of serious haemorrhagic complications and a lack of controlled randomized studies indicating their efficacy. Thrombolytic therapy is suitable in only 15 per cent of patients with acute deep venous thrombosis. It restores the venous circulation to normal in up to 95 per cent of these patients if therapy is instituted within 5 days of the onset of symptoms³.

✚ In Ayurveda there is no direct correlation of this disease, but causes, signs and symptoms of DVT resemble various conditions mentioned in Ayurveda. Going through the *Lakshanas* of the patient with those mentioned in *Samhitas*, we can correlate this to *Kapha-Medavrutha Vatarakta* and *Gambhira Vatarakta*. This is caused due to the imbalance in *Vata & Kapha doshas* and *Rakta & Meda dhatus*. Considering the *Nidana* of *Vatarakta*, *Atiyaana* (travelling/riding in excess), *Achankramanasheelanam* (sedentary period) etc. are mentioned by *Acharya Charaka*⁴ and *Acharya Vagbhata*⁵. In this case, patient had a history of sitting and travelling in car for longer duration, him being a known case of chronic smoker and obese with very little physical work which might have predisposed the condition.

✚ Various *Panchakarma* procedures and internal medicines were adopted in the present case study which gave a promising result especially in reducing heaviness, swelling and pain. Considering it as *Vatarakta*, *raktha* is main *dushya* in the condition. Hence, based on the first line of management for *Vatarakta* mentioned in *samhitas*⁶, *Jalaukavacharana* is indicated in *Vatarakta*⁷. *Jalaukavacharana* was done for initial 5 days. Leeches possess biologically active compounds in their secretions, especially in their saliva. An

enzyme in their saliva called *Hirudin* is a powerful anticoagulant. Recent research on leech saliva unveiled the presence of a variety of bioactive peptides and proteins involving antithrombin, antiplatelet, factor Xa inhibitors, antibacterial and others. Thus, *Jaloukavacharana* helps in lysis of thrombus. Clinical studies revealed that it can reduce blood coagulability with an anti-inflammatory effect in patients.⁸

✚ *Dhara swedana* especially *Kashaya dhara* is highly effective in reducing the *vyadis* where *Vata-kapha dosas* are involved. *Kashaya dhara* is indicated in *Vatarakta*⁹. *Kashaya dhara* was adopted with *Dashamoola kwatha* and *Manjistadi kwatha*. It also promotes fat metabolism and eases the muscle. *Kashaya dhara* is considered as best *Vatakapha samaka*, *Sothahara*, *Shoolahara*, and *Balya*. The height from which the medicine is poured, pharmacological action of the medicine itself and the temperature which is maintained during the treatment act as a counter irritant which is the thermal and pressure stimuli that helps in vasodilatation, which in-turn may help in reducing pain sensation.

✚ *Kaishora guggulu* mentioned in *Vatarakta ad-hikara* by *Acharya Chakradutta*¹⁰, consists of *Guduchi*, *Manjista*, *Haridra*, *Shatapushpa* etc drugs with *Guggulu* which acts *Shonita shanghata bhedana* and *Shotha hara* which helps in reducing pain and swelling while facilitation the effect of thrombolysis there by improving circulation which was compromised earlier due to DVT.

✚ *Valmika mrithika lepa* consisting of *Valmika mrithika* with *Sarshapa churna* was adopted after *Jalaukavacharana*. *Valmika mrithika* was mentioned in *Charaka samhitha* in *Urusthambha chikitsa*¹¹. Due to the involvement of *Kapha* and *Medo avarana* in this case, *Valmika mrithika lepa* due to its *ushna veerya* and *Vata-Kapha hara* property along with *Sarshapa churna* which also has *ushna veerya* and *Kapha hara* property proved effective in relieving the *stambha* and

gaurava due to the involvement of *Kapha Medavarana*.

✚ Rookshana therapy, namely Udwartana with Kola kuluthadi choorna and Triphala churna was prescribed after lepana chikitsa for counteracting any of the remnants of Kapha and Medo avarana¹² along with Siramukha viviktatwam¹³ effect.

✚ *Kshara Basti* is explained by Acharya Chakradutta¹⁴ and *Manjisthadi Kashaya* and other ingredients of *Manjisthadi Kashaya* is explained by Acharya Sarangadhara¹⁵. *Kshara basti* of *Manjistha* and other ingredients of *Manjisthadi kshara Basti* is an *Anubhuta Yoga* and is effective in management of *Srotavarodha*. *Manjistha* is a renowned *Rakta Prasadaka*, *Tridosahara* and *Srotosodhaka*. So, use of *Manjisthadi Kashaya* and *Manjisthadi Taila* purifies the *Rakta*, pacifies the *Vata* and makes the proper flow inside the channels (*Srotosodhaka*) when administered both orally as well as in the form of *Basti*. *Kshara Basti* has the fast-spreading activity along with *Kapha Medo hara* property which helps to clean the peripheral vascular channels. Also, *Ksharabasti* removes the *Avarana* of *Vata* & with the help of *Madhu* and *Saindhava* it removes the *Sroto avarodha*. *Madhu* added in *Vasati* scrapes out the *Doshas* which are producing *Upalepa* in the *Srothas* by *Lekhana karma*. *Saindhava lavana* destroys *Avarodha* and carries the drug to minute parts with its *Sukshma guna*¹⁶. *Madhu* and *taila* have been taken in equal quantity in the *niruha basti* which is a *Madhutailika basti* which is very effective in combating *kapha* and *vata doshas*. Acharya Charaka¹⁷ has explained the indication of 1 *niruha basti*, 2 *niruha batis* and 3 *niruha bastis* on consequent days for *Vata*, *Pitha* and *Kapha dosha* involvement respectively. As this patient had *Kapha Medas avarana laxanas*, the pattern of one *Anuvasana basti* followed by three *Niruha bastis* was adopted in this patient for *Kalabasti* pattern. This pattern has proven to be very effective as it has given very good relief in subsiding *Kapha* and

Medas avarana thereby relieving *stambha* (stiffness), *gaurava* (heaviness), *sopha* (swelling).

✚ *Arogyavardini rasa* containing *Shoditha Parada*, *Shilajatu*, *Chitraka moola*, *Katuki* etc drugs which has the property of *srothoshodhaka* acts on the channels and clears the obstruction in the channels simultaneously providing *rasayana* effect over the walls of the channels.

✚ *Mrutyunjaya rasa* containing *Shoditha Parada*, *Shositha Hingula*, *Shodita Vatsanabha*, *Maricha*, *Pippali*, etc., which helps in correcting the *Mamsa shaitilyatha* and acts as *shonitha sanghata bhedaka* thereby helps in maintaining optimum patency of the *srothas*.

✚ Hence, the Phase-wise administration of multi-modality Panchakarma treatments viz. *Jalouka-vacharana*, *Kashaya dhara*, *Sthanika Alepana*, *Rooksha sweda*, *Kshara Basti*, along with oral medications is found to be very effective on the present case of DVT.

CONCLUSION

In the present case multi-modality treatments in the form of *Panchakarma* procedures such as, *Jalouka-vacharana*, *Kashaya dhara*, *Sthanika Alepana*, *Rooksha sweda*, *Kshara Basti*, along with oral medications is found to be effective. Treatment showed remarkable results especially in reducing swelling, pain, redness and heaviness. Assessment was done on the basis of signs and symptoms.

Present study findings can't be generalized and further long-term follow up studies with large samples are required for better results.

The three major goals of conventional medicines are:

- i) thrombus to resolve,
- ii) minimize the chance of PE and
- iii) to prevent recurrence and post thrombotic syndrome.

Modern medicinal therapy has some reported limitations, namely,

- i) the anticoagulant does not act on existing clot, rather it prevents further coagulation,
- ii) use of heparin in medical patients does not change risk of death or pulmonary embolism, though its use

decreases risk of DVTs; it also increases risk of major bleeding,¹⁸

iii) Regular blood tests are essential; iv). risk of bleeding doubles with VKA treatment and is contraindicated in pregnant woman^{14 19}. Hence systematic Ayurvedic Panchakarma therapy with oral administration of suitable medicines has the potentiality of providing promising result in DVT.

REFERENCES

1. Sriram Bhat. (2016). SRBs Manual of Surgery, (5th edition). Jaypee the health science publishers. pp.222.
2. [https://www.cdc.gov/ncbddd/dvt/facts.html#:~:text=The%20good%20news%20is%20that,and%20treatable%20if%20discovered%20early.&text=Venous%20thromboembolism%20\(VTE\)%2C%20a,can%20cause%20disability%20and%20death](https://www.cdc.gov/ncbddd/dvt/facts.html#:~:text=The%20good%20news%20is%20that,and%20treatable%20if%20discovered%20early.&text=Venous%20thromboembolism%20(VTE)%2C%20a,can%20cause%20disability%20and%20death) accessed on 06/09/2022.
3. Moran KT, Jewell ER, Persson AV. The role of thrombolytic therapy in surgical practice. Br J Surg. 1989 Mar;76(3):298-304. doi: 10.1002/bjs.1800760325. PMID: 2655813.
4. Agnivesha, Charaka, Chakrapanidatta, *Chikitsa sthana*, Chapter *Vatashonitha chikitsa adhyaya*, Verse 8, In YT (Edi.), Charaka samhita with Ayurveda deepika commentary, Reprint Edition 2015, Varanasi Chaukambha Orientalia.p.628.
5. Vagbhata, Arunadatta, Hemadri. *Nidana Sthana* Chapter *Vatashonitha nidanam* adhyaya Verse 2. In: Pt. Hari Sadashiva Shastri Paradakara Bhisagacharya (Edi.). Astanga Hridaya with Sarvanga Sundari and Ayurveda Rasayana Commentary. Edition 2017. Varanasi: Chaukhambha Subharti Prakashana; p. 535.
6. Sushruta, Dalhana, Gayadasa. *Chikitsa Sthana* Chapter *Mahavatavyadi Chikitsa adhyaaya* Verse 07. In: Acharya YT, Narayana Ram (Edi.). Sushruta Samhita with Nibandhasangraha, Nyayachandrika Commentary. Reprint Edition 2017. Varanasi: Chaukhambha Sanskrit Sansthan; p.425.
7. Agnivesha, Charaka, Chakrapanidatta, *Chikitsa sthana*, Chapter *Vatashonitha chikitsa adhyaya*, Verse 36, In YT (Edi.), Charaka samhita with Ayurveda deepika commentary, Reprint Edition 2015, Varanasi Chaukambha Orientalia.p.629
8. Baskova IP, Korostelev AN, Chirkova LD, Zavalova LL, Basanova AV, Doutremepuich C. (1997) Piyavit from the medicinal leech is a new orally active anticoagulating and antithrombotic drug, Clin Appl Thromb Hemost; Vol 3: pp 40-45.
9. Agnivesha, Charaka, Chakrapanidatta, *Chikitsa sthana*, Chapter *Vatashonitha chikitsa adhyaya*, Verse 41, In YT (Edi.), Charaka samhita with Ayurveda deepika commentary, Reprint Edition 2015, Varanasi Chaukambha Orientalia.p.629.
10. Vaidya Yadavji Trikamji Acharya, editor, Charaka Samhita by Agnivesha with the Ayurveda Deepika Commentary of Chakrapanidutta (2009). (5th edition) Varanasi: Choukamba Orientalia. Sutra sthana 25(40). pp. 131.
11. Agnivesha, Charaka, Chakrapanidatta, *Chikitsa sthana*, Chapter *Urusthamba chikitsa adhyaya*, Verse 49, In YT (Edi.), Charaka samhita with Ayurveda deepika commentary, Reprint Edition 2015, Varanasi Chaukambha Orientalia.p.615.
12. Vagbhata, Arunadatta, Hemadri. *Sutra Sthana* Chapter *Dinacharya* adhyaya Verse 15. In: Pt. Hari Sadashiva Shastri Paradakara Bhisagacharya (Edi.). Astanga Hridaya with Sarvanga Sundari and Ayurveda Rasayana Commentary. Edition 2017. Varanasi: Chaukhambha Subharti Prakashana; p.28.
13. Sushruta, Dalhana, Gayadasa. *Chikitsa Sthana* Chapter *Anagathabhadhapratishedham Chikitsa adhyaaya* Verse 52. In: Acharya YT, Narayana Ram (Edi.). Sushruta Samhita with Nibandhasangraha, Nyayachandrika Commentary. Reprint Edition 2017. Varanasi: Chaukhambha Sanskrit Sansthan; p.489.
14. Chakradatta, Indradev Tripathi, Chaukhambha Sanskrit Sansthan, Varanasi, 2005, PP 542, Page Number 455.
15. Sharangdhar Samhita, Bramhanand Tripathi, Chaukhambha Surbharti Prakashan, Varanasi, 2007, PP 488, Page number 153.
16. Bhandari, Madan & Rao, Prasanna & Kumar Shetty, Suhas & BJ, Gopikrishna. (2018). Ayurvedic Enema Therapy in the Management of Thromboangitis Obliterans (TAO) - A Case Study. Medical Case Reports. 04. 10.21767/2471-8041.100111.
17. Agnivesha, Charaka, Chakrapanidatta, *Siddhi sthana*, Chapter *Bastisutriyam adhyaya*, Verse 69, In YT (Edi.), Charaka samhita with Ayurveda deepika commentary, Reprint Edition 2015, Varanasi Chaukambha Orientalia.p.698.
18. Alikhan R., Bedenis R., Cohen A.T. Heparin for the prevention of venous thromboembolism in acutely ill medical patients (excluding stroke and myocardial infarction) (2014), Cochrane Database Syst Rev. pp.5.
19. Hyers T.M., Agnelli G., Hull R.D., Morris T.A., Samama M., Tapson V. Anti- thrombotic therapy for venous thromboembolic disease, (2001). Chest. 119 (1 Suppl): pp176-193.

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