

CLINICAL EVALUATION OF SAHACARADHI KASHAYA AND MAHARASNADHI KASHAYA ALONG WITH JATAMAYADHI UPANAHA SWEDA IN JANU SANDHIGATA VATA W.S.R TO OSTEOARTHRITISShereen Sreenivas^{1*}, Muralidhara² and Sindhura A. S.³¹Post Graduate Scholar, Department of Ph.D and PG Studies in Kayachikitsa, SKAMCH&RC, Bengaluru.²Professor, Department of Ph.D and PG Studies in Kayachikitsa, SKAMCH&RC, Bengaluru.³Assistant Professor, Department of Ph.D and PG Studies in Kayachikitsa, SKAMCH&RC, Bengaluru.***Corresponding Author: Shereen Sreenivas**

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ABSTRACT

Background: *Janu Sandhigata Vata* is a chronic, degenerative, inflammatory disease of the knee joint which has a great impact on the quality of the life of an individual. The clinical features of *Sandhigata Vata* resemble Osteoarthritis mentioned in contemporary science. In this clinical study, total 43 patients having the complaints of *Janu Sandhigata Vata* (Osteoarthritis) were randomly divided into 2 groups. In Group A, patients were treated with *Sahacaradhi Kashaya* and *Jatamayadhi Upanaha Sweda*. Group B were treated with *Maharasnadhi Kashaya* and *Jatamayadhi Upanaha Sweda*. These formulations were considered for the study due to its wide applicability and availability. **Objective:** To compare the efficacy of *Sahacaradhi Kashaya* and *Jatamayadhi Upanaha Sweda* to that of *Maha Rasnadi Kashaya* and *Jatamayadhi Upanaha Sweda* in the management of *Janu Sandhigata Vata* w.s.r to Osteoarthritis knee joint. **Materials and Methods:** In a total of 43 patients, 22 patients of *Janu Sandhigata Vata* were selected and administered with *Sahacaradhi Kashaya* (24 ml twice a day before food) and the other 21 patients were given *Maharasnadhi Kashaya* (24 ml twice a day before food) internally for 14 days with *Jatamayadhi Upanaha Sweda* (common for both the groups) externally for a span of 7 days. The patients were assessed through WOMAC index and *Lakshanas* of *Janu Sandhigata Vata* before, mid and after the treatment respectively. The results were analysed statistically using SPSS VER.20. **Observation & Results:** Clinical data was collected and analysed statistically using Wilcoxon Sign rank test to compare the Mean value within the groups and Mann Whitney 'U' test to compare the Mean difference values between the groups for the subjective parameters. 40 patients completed the study. Statistical significance was observed in the subjective parameters. **Interpretation & Conclusion:** It is concluded from the study that most of the symptoms subsided by seven days in both the groups. The data shows that the combined effect of *Maharasnadhi Kashaya* and *Jatamayadhi Upanaha Sweda* i.e. group B had an edge over Group A in the management of *Janu Sandhigata Vata*.

KEYWORDS: *Janu Sandhigata Vata*, *Sahacaradhi Kashaya*, *Maharasnadhi Kashaya*, *Jatamayadhi Upanaha Sweda*.

INTRODUCTION

Janu Sandhigata Vata is a *Shoola* and *Shotha Pradana Vata Vyadhi* which mainly occurs in *Vriddhavastha* due to *Dhatukshaya*. It is characterised by clinical features like *Shoola*(Pain), *Atopa*(crepitus), *Vata Poorna Druthi Sparsha* (palpable like air filled bag), *Shotha*(swelling) and *Prasarana Akunchana Vedana* (pain during movements).^[1] Osteoarthritis is the second most common rheumatologic problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India. Contemporary science manages the condition with interventions like NSAIDs, Opioid analgesics, anti-inflammatory drugs, corticosteroid injections, hyaluronan injections, chondroitin and glucosamine, disease modifying therapies and surgical interventions.

The drawbacks of contemporary science management include gastrointestinal toxicity in 50% of NSAIDs users, renal and hepatic metabolism impairment and economic instability in case of surgical intervention. Frequent usage leads to serious complications which requires hospitalisation. As the contemporary treatments often hinders the life of the individual, *Ayurvedic* modalities of treatment are encouraged. In *Ayurveda*, *Sandhigata Vata* is advised to be managed using *Snehana*, *Upanaha*, *Agnikarma*, *Bandhana* and *Mardhana* without much adverse effects. Hence the intervention was selected with *Sahacaradhi Kashaya*^[2] and *Maha Rasnadi Kashaya*^[3] as oral medications in each group with *Jatamayadhi Upanaha Sweda* in both. *Jatamayadhi Curna*^[4] mentioned for *Vatarakta* was used

for *Upanaha Sweda* as *Sushruta Samhitha* considers both *Vatarakta* and *Vatavyadhi* under the same chapter.

Objectives of the study

1. To Evaluate the efficacy of *Sahacaradhi Kashaya* and *Jatamayadhi Upanaha Sweda* in the management of *Janu Sandhigata Vata* w.s.r to Osteoarthritis knee joint.
2. To Evaluate the efficacy of *Maha Rasnadi Kashaya* and *Jatamayadhi Upanaha Sweda* in the management of *Janu Sandhigata Vata* w.s.r to Osteoarthritis knee joint.
3. To compare the clinical efficacy in both the groups.

MATERIALS AND METHODS

A minimum of 40 subjects of either gender diagnosed with *Janu Sandhigata Vata* coming under the inclusion criteria, approaching the OPD and IPD of SKAMCH & RC BENGALURU, were selected for the study. The sample collection was initiated with post approval from the Institutional ethics committee.

Inclusion Criteria

- Subjects presenting with the *Lakshanas* of *Janu Sandhigata Vata* were selected.
- Subjects presenting with the clinical features of Osteoarthritis Knee joint were selected.
- Subjects belonging to the age group of 30 – 70 years irrespective of gender were selected.
- Both fresh subjects and those who have undergone intervention for *Janu Sandhigata Vata* were selected for the study.
- Subjects fit for *Swedana Karma*

Exclusion Criteria

- Post-surgical and prosthetic knee joints were excluded.
- Subjects with history of recent trauma and fracture were excluded.
- Pregnant women and lactating mothers were excluded.
- Subjects suffering from any other systemic disorders which interfere with the course of intervention were excluded.

Diagnostic Criteria

- *Lakshanas* of *Janu Sandhigata Vata*:
- Janu Sandhi Shoola
- Janu Sandhi Atopa
- Janu Sandhi Shotha
- Janu Sandhi Sthabdhatta
- Janu Sandhi Prasarana Akunchana Pravritti Savedana

X-ray knee joint AP and lateral view was taken to diagnose Osteoarthritis knee joint.

Intervention

Group A

- *Upanaha Sweda* with *Jatamayadhi Churna* was done for the first 7 consecutive days. A paste of the

ingredients of *Jatamayadhi Upanaha* mixed with *Moorchita Taila*, *Amla Khanji* and *Saindhava Lavana* in sufficient quantity were made and applied over the Cora cloth and tied to the affected knee joint followed by *Bandhana* with *Eranda Patra* and Cora Cloth. The *Bandhana* was done at night and removed by the next day morning (After 12 hours).

- *Sahacaradhi Kashaya* in the dosage of 48 ml in two equal divided dosages of 24ml was administered internally in the morning and evening with warm water (Q.S) as *Anupana* for 14 days.

Group B

- *Upanaha Sweda* with *Jatamayadhi Churna* was done for the first 7 consecutive days. A paste of the ingredients of *Jatamayadhi Upanaha* mixed with *Moorchita Taila*, *Amla Khanji* and *Saindhava Lavana* in sufficient quantity were made and applied over the Cora cloth and tied to the affected knee joint followed by *Bandhana* with *Eranda Patra* and Cora Cloth. The *Bandhana* was done at night and removed by the next day morning (After 12 hours).

- *Maha Rasnadi Kashaya* in the dosage of 48 ml in two equal divided dosages of 24ml was administered internally in the morning and evening with warm water (Q.S) as *Anupana* for 14 days.

Observations

In the present study, 43 subjects were registered of which 22 subjects were registered under Group A and 21 subjects were registered under Group B. There were 2 dropouts in Group A and 1 dropout in Group B. The study was completed with 40 subjects with 20 subjects in each group.

In the present clinical study, maximum subjects were female (72.5%) belonging to the middle socio-economic status (42.5%), married (100%) and presenting with the *Samanya Lakshanas* of > 5 years chronicity (22.5%) with bilateral involvement (77.5%). Majority of subjects were of *Vatakapha Prakruti* (60.0%) with *Madhyama Sara* (85.0%), *Samhanana* (85.0%), *Pramana* (97.5%), *Satmya* (52.5%), *Satwa* (82.5%), *Ahara Shakti* (65.0%), *Jarana Shakti* (62.5%), *Vyayama Shakti* (80.0%) and *Vaya* (65.0%).

RESULTS

The parameters considered for the clinical study were subjected to Wilcoxon Sign rank test to compare the Mean value within the groups and Mann Whitney 'U' test to compare the Mean difference values between the groups at different time intervals i.e., Before treatment (BT), Mid treatment (MT) i.e., after *Upanaha Sweda*, After treatment (AT) i.e., After Internal medication and After Follow-Up (AF) respectively. Generally, the difference in the mean values were considered Highly Significant are $p < 0.001$ and < 0.01 , Significant at $p < 0.05$ and Non-Significant at $p > 0.05$.

Effect of treatment on *Shoola* within Group A and Group B

Shoola	Group A		Group B		Mann Whitney U	Z value	p value	Remarks
	Mean rank	Sum of ranks	Mean rank	Sum of ranks				
MT	20.58	411.50	20.42	408.50	198.50	-0.04	0.963	NS
AT	21.45	429.00	19.55	391.00	181.00	-0.57	0.568	NS
AF	23.28	465.50	17.72	354.50	144.50	-1.66	0.097	NS

No significant difference in between the groups statistically at MT, AT and AF ($p > 0.05$), however the mean rank of Group B is smaller than that of Group A,

hence the reduction in *Shoola* was comparatively better in Group B.

Effect of Treatment on *Shotha* between Group A and Group B

Shotha	Group A		Group B		Mann Whitney U	Z value	p value	Remarks
	Mean rank	Sum of ranks	Mean rank	Sum of ranks				
MT	25.55	511.00	15.45	309.00	99.00	-3.12	0.002	HS
AT	24.60	492.00	16.40	328.00	118.00	-2.76	0.006	HS
AF	24.55	491.00	16.45	329.00	119.00	-2.74	0.006	HS

No significant difference in between the groups statistically at MT, AT and AF ($p < 0.01$), however the mean rank of Group B is smaller than that of Group A,

hence the reduction in *Shotha* was comparatively better in Group B.

Effect of Treatment on *Atopa* in between Group A and Group B

Atopa	Group A		Group B		Mann Whitney U	Z value	p value	Remarks
	Mean rank	Sum of ranks	Mean rank	Sum of ranks				
MT	22.18	443.50	18.82	376.50	166.50	-1.00	0.317	NS
AT	21.85	437.00	19.15	383.00	173.00	-0.82	0.411	NS
AF	21.85	437.00	19.15	383.00	173.00	-0.84	0.397	NS

No significant difference in between the groups statistically at MT, AT and AF ($p > 0.05$), however the mean rank of Group B is smaller than that of Group A,

hence the reduction in *Atopa* was comparatively better in Group B.

Effect of treatment on *Stabdhatta* within Group A and Group B.

Stabdhatta	Group A		Group B		Mann Whitney U	Z value	p value	Remarks
	Mean rank	Sum of ranks	Mean rank	Sum of ranks				
MT	22.32	446.50	18.68	373.50	163.50	-1.23	0.216	NS
AT	21.85	437.00	19.15	383.00	173.00	-0.93	0.351	NS
AF	21.35	427.00	19.65	393.00	183.00	-0.66	0.509	NS

No significant difference in between the groups statistically at MT, AT and AF ($p > 0.05$), however the mean rank of Group B is smaller than that of Group A,

hence the reduction in *Stabdhatta* was Comparatively better in Group B.

Effect of treatment on *Prasarana Akunchana Vedana* between Group A and Group B.

Prasarana Akunchana Vedana	Group A		Group B		Mann Whitney U	Z value	p value	Remarks
	Mean rank	Sum of ranks	Mean rank	Sum of ranks				
MT	20.50	410.00	20.50	410.00	200.00	0.00	1.000	NS
AT	19.72	394.50	21.28	425.50	184.50	-0.45	0.650	NS
AF	20.08	401.50	20.92	418.50	191.50	-0.25	0.802	NS

No significant difference in between the groups statistically at MT, AT and AF ($p > 0.05$), however the mean rank of Group A is smaller than that of Group B,

hence the reduction in *Prasarana Akunchana Vedana* was comparatively better in Group A.

Effect of treatment on WOMAC Index b/w Group A & Group B

WOMAC	Group A		Group B		Mann Whitney U	Z value	p value	Remarks
	Mean rank	Sum of ranks	Mean rank	Sum of ranks				
MT	20.50	410.00	20.50	410.00	200.00	0.00	1.000	NS
AT	21.00	420.00	20.00	400.00	190.00	-0.33	0.739	NS
AF	22.00	440.00	19.00	380.00	170.00	-1.23	0.218	NS

No significant difference in between the groups statistically at MT, AT and AF ($p > 0.05$), however the mean rank of Group B is smaller than that of Group A, hence the reduction in WOMAC Index is comparatively better in Group B.

DISCUSSION

Sandhigata Vata is a disease which is not directly mentioned under the *Nanatmaja Vatavikaras*. Commentator *Chakrapani* on *Charaka Samhitta* describes “*Vata Khudata*” mentioned under *Nanatmaja Vyadhi* as *Gulpha Vata* or *Sandhigata Vata*,^[5] hence an indirect indication of *Sandhigata Vata* being a *Nanatmaja Vatavikaras* can be found.

All *Brihatrayees* have mentioned *Vatavyadhi* as a *Mahagada*. *Janu* being the juncture between *Uru* (thigh) and *Jangha* (calves); and *Sandhi* being the union of structures, the term *Janu Sandhigata Vata* can be understood as the disease of articulation of the knee joint. Since the *Asthi*, *Sandhi* and its related structures are involved in *Janu Sandhigata Vata*, it can be considered under *Madhyama Roga Marga* and hence is *Krichrasadya*. It is the *Moolasthan* of *Majjavaha Srotas* and is a *Pakwashaya Samuttha Vyadhi*.^[6]

The *Janu Sandhigata Vata* occurring during its normal course of *Parihani Avastha* of *Madhyama Vaya* can be considered as *Kalaja Vyadhi* under the banner of *Swabhava Bala Pravrutta Vyadhis* whereas the other common occurrences found in the study like obesity, hysterectomy and *Khavaigunya* leading to the formation of *Janu Sandhigata Vata* can be considered as *Akalaja Vyadhi*.

Janusandhi Shoola

When the *Vyana Vata* at the *Janusandhi* increases, it leads to consecutive decrease in the *Sleshaka Kapha*. The *Ruksha* and *Khara Guna* of *Vata* is increased which leads to the hampering in the activity of *Vyana Vata*. When the *Sira* and *Asthi* are affected in the *Janu Sandhi Pradesha*, it leads to the impaired *Asthi Poshana* and *Asthi Kshaya* consecutively. As *Asthi* has *Asraya Asrayi Sambhandha* with that of *Vata*, the *Asthi Kshaya* leads to *Vata Prakopa*. As *Vata* is responsible for all *Karma Pravrutti*, on further vitiation, it leads to *Karma Kshaya*. *Susruta Samhitta* mentions *Vatadrute Nasti Ruja* indicating that *Shoola* is the characteristic feature of *Vata*.

Janusandhi Shotha

In *Janu Sandhigata Vata*, the *Prakupita Vata* lodges in the *Rikta Srotas* and manifest as its *Lakshanas*. *Shotha* is that which manifests in between the *Twak* and the *Mamsa*. *Shotha* in *Janu Pradesha* can be attempted to understand with the help of *Kala*. *Kala* are defined as ‘*Dhatu Ashaya Antara Maryadhaha*’. The *Prakruta Kapha* are the *Dhatu* and the *Sandhi* are the *Ashaya* with reference to the knee joint. *Sleshmadhara kala*^[7] are present in all the joints. When there is a *Sthana Samsraya* occurring at the *Sandhi*, it adversely affects the *Kala* also thereby leading to the *Shotha*. The *Shopha* mentioned as per *Charaka Samhitta* are “*Vata Purna Druti Sparsha*” i.e., like that of an air filled bag. The *Kashyapa Samhitta* also confers *Vata* to be the cause for *Shotha*.^[8]

Janusandhi Atopa

Atopa is defined as *Vatadinam Apravrutti*^[9] and also as *Ati Ugra Rujam*^[10] When the *Kledamsa* in the *Janu Pradesha* decreases due to *Dhatukshaya* or *Avarana*, it leads to the *Vata Prakopa*. By *Asraya Asrayi Sambhandha*, it affects the *Asthi Dhatu*. *Shabda* is the *Indriyarth* which indicates the predominance of qualities of *Vata*. This indicates that the *Akasha Mahabhuta* is increased at the *Janu Sandhi*. *Mamsa Kshaya* also causes *Sandhi Vedana*, this can also be a contributing factor for the *Atopa* along with the *Sleshaka Kapha Kshaya* at the *Janu Sandhi*. In *Vata Prakruti* individuals, the *Chala Guna* leads to *Sandhisputana Shabda*.^[11]

Janu Sandhi Stabdhatta

Stabdhatta can be understood as *Stambhita* also as per *Vachaspathyam*. *Stambhana karma* is predominant in *Sheeta Guna*.^[12] *Sheeta* consists of *Vayu* and *Ap Mahabhutas*. Hence, it could be due to the involvement of *Sheeta Guna* of either *Vata* or *Kapha*. *Hanti Sandhi* occurs due to *Kapha Kshaya* and *Vata Prakopa*. *Hanti Sandhi* is commented in *Madhokosha Teeka* as *Sandhi Stambha*. In *Janu Sandhigata Vata*, the *Chala Guna* of *Vata* is also hampered, hence drugs containing *Prithvi Mahabhuta* which contributes to the *Sthira Guna* and *Ushna Guna* to counteract the *Sheetata* are beneficial.

Janu Prasarana Akunchana Vedana

The main *Karma* of *Sandhi* is *Chesta Pravartana*. *Vyana Vayu* is responsible for five types of movement like *Prasarana*, *Akunchana*, *Unnamana*, *Vinamana*, *Tiryaggamana*. The *prakruta karma* of *Kapha* is *Sthiratwa*, *Snighdatwa*, *Sandhibandhana* and *Kshamadhibi*.^[13] When there is a derangement in the equilibrium of both these *Doshas*, their relevant

Karmahani is expected and hence the manifestation. Also, *Snayu* performs the function of binding the *Shareera* to that of *Sandhi* which can be understood as fastening of joints to that of ligaments.^[14] *Kandara* are defined as the *Mahasnayu* – one among the 4 types of *snayu* along with *Pratanavanti Snayu*, which is located at the joints. When there is affliction to the *Snayu*, it results in restriction of movements. The *Janu* and *Ani* being the *Sandhi Marmas* are also the *Vikalyakara Marmas*. Hence any deformity due to *Abhigata* can also be inferred here.

Probable mode of action of Medications

Sahacaradhi Kashaya

Sahacaradhi Kashaya is explained in *Ashtanga Hridaya* under *Vatavyadhi Chikitsa*. It consists of *Sahacara*, *Devadaru* and *Shunti*. It is mainly indicated for *Pavana Piditha* (afflicted by *Vata*) *Deha* and *Gati*. The drugs are mainly *Katu Rasa Pradhana*, *Snighda Guna*, *Ushna Virya*, *Katu Vipaka* and *Vatakaphahara* in nature.

The *Snighda Guna* has the pharmacological action of *Vata Harana*, *Kapha Vardhana* and *Kledana*.^[15] Among the *Sad Upakramas*, *Snehana Karma* is attributed as स्नेहनं स्नेहविष्यन्दमार्दिक्लेर्कारकम् [?] |. In *Kapha Avarana*, *Ushna Virya* of all drugs help in *Vatakaphara* and *Pittavardhaka* action and in *Pittaja Avarana*, the *Tikta*, *Madhura Guna* of *Sahacara* helps to curb the *Pittavarana*. *Ushna Virya* is *Vatahara*, *Dipana*, *Pachana* in nature.^[16] It helps in the *Avaranahara* and *Dhatukshaya* conditions. *Katu Rasa* is *Vayu* and *Agni Pradhana*, does *Marga Vivarana*/ clearing of channels, alleviate *Kapha*. Hence can be used in *Kapha Avarana* conditions. *Shunti* helps in relieving the *Avarana* at *Janu Sandhi* by the property of its *Ushna Virya* and *Dipana Karma*. It also helps in *Vatanulomana*, *Amadoshahara* and is *Hridya*.

In general, considering all the *Rasa Pancakas* and *Karma* of the *Sahacaradhi Kashaya*, *Snighda Guna* is the only attribute which helps in *Dhatukshaya Avastha*, all the other attributes seem to apply more to the *Avarana* condition.

Maharasnadhi Kashaya

Maharasnadhi Kashaya is mentioned in *Sarangadhara Samhita* with the drugs involved as *Rasna*, *Dhanvayasa*, *Bala*, *Eranda*, *Devadaru*, *Shati*, *Vacha*, *Vasa*, *Nagara*, *Haritaki*, *Chavya*, *Musta*, *Punarnava*, *Guduchi*, *Vridhdharu*, *Shatapushpa*, *Gokshura*, *Aswagandha*, *Prativisha*, *Krithamala*, *Shatavari*, *Krishna Pippali*, *Sahacara*, *Dhanyaka*, *Brihati* and *Kantakari*. This composition is mainly *Vatakaphahara*, *Shoolahara*, *Amapachana*, *Dipana*, *Amadoshahara* and *Shothahara*. The drugs are *Tikta*, *Katu Rasa Pradhana*, *Laghu Snighda Guna*, *Ushna Virya* and *Madhura Vipaka* in toto.

Tikta rasa is the best among the *Vatahara Rasa*. The *Katu Rasa* consists of *Laghu*, *Ruksha*, *Tikshna* and *Ushna Gunas*. This helps in *Vatahara*. *Laghu Guna* is predominant in *Vata* and *Pitta*, this is utilized in the

Avarana conditions. *Snighda Guna* and *Madhura Vipaka* aid in the *Brumhana Karma* in *Dhatukshayajanya* conditions. *Ushna Virya* helps in the *Shamana* of *Vataja* and *Kaphaja Lakshanas* like *Shoola*, *Shotha*, *Atopa*, *Stabdhata* and *Prasarana Akunchana Vedana* at *Janu Sandhi*. Hence it is comparatively more useful in *Dhatukshaya* conditions with respect to that of *Sahacaradhi Kashaya*.

CONCLUSION

Janu Sandhigata Vata is a *Vatavyadhi* presenting with *Janu Sandhi Shoola*, *Janu Sandhi Shotha*, *Janu Sandhi Atopa*, *Janu Sandhi Stabdhata* and *Janu Sandhi Prasarana Akunchana Vedana*. It is a *Madhyama Roga Marga* and hence is *Yapya*.

Osteoarthritis also called osteoarthrosis or degenerative joint disease is the most common form of chronic disorder of synovial joints. It is characterized by progressive degenerative changes in the articular cartilages over the years particularly in weight bearing joints.

Upanaha is one of the *Chikitsa* mentioned for *Sandhigata Vata* in *Susruta Samhita*. It is particularly useful as the disease has *Dhatukshaya* pathology predominantly. *Snighda Upanaha* is ideal as it does *Vatashamana*. *Jatamayadhi Churna* is specifically mentioned for *Shoola*, *Daha* and *Shopha* and hence was useful in this condition.

results were found to be highly significant ($p < 0.001$) from before intervention to after intervention in both the groups and Group B was found to be comparatively better than Group A in all parameters except in *Janu Sandhi Prasarana* and *Akunchana Vedana*.

Based on the observations and results, the following hypothesis is accepted

- There is significant difference between *Sahacaradhi Kashaya* with *Jatamayadhi Upanaha Sweda* and *Maharasnadhi Kashaya* with *Jatamayadhi Upanaha Sweda* in the management of *Janu Sandhigata Vata* w.s.r to Osteoarthritis knee joint.
- There is significant effect of *Sahacaradhi Kashaya* with *Jatamayadhi Upanaha Sweda* in *Janu Sandhigata Vata* w.s.r to Osteoarthritis knee joint
- There is significant effect of *Maharasnadhi Kashaya* with *Jatamayadhi Upanaha Sweda* in *Janu Sandhigata Vata* w.s.r to Osteoarthritis knee joint.

REFERENCES

1. Agnivesha, Charaka samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikrampi Acharya, Choukambha Surabharati Prakashan, Varanasi, year of reprint-, Chikitsa Sthana, 2011; 28(37): 738-618.
2. Vaghbata. Astanga hrudaya with Sarvanga Sundara of Arunadatta and Ayurveda Rasayana of Hemadri,

- edited by Pt. Hari Sadashiva Paradakara Bhisagacharya, Chaukhamba Surabharathi Prakashan, Varanasi, Cikitsa Sthana, 2017; 21(56): 726.
3. Sharangadhara, Sharangadhara Samhita, translated in English by Prof.K.R. Srikantha Murthy, Chaukambha Orientalia, Varanasi, Madhyama Khanda, 2009; 335: 66.
 4. Anonymous, Sahasrayogam, Sujanapriya Vyakhyana, edited by K.V. Krishnan Vaidyan and Gopala Pillai, Vidyarambam Publications, Taila yogangal, 2012; 545: 295.
 5. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, reprint-, Chikitsa Sthana, 2011; 738.
 6. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, reprint-, Vimana Sthana, 2011; 738: 219.
 7. Sushruta, Sushruta Samhita, Nibandha Samgraha Commentary of Sri Dalhanacharya and NyayaChandrika Panjika by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-, shareera sthana, 2008; 824: 356.
 8. Maricha Kashyapa, Kashyapa Samhita, edited by Prof. P.V. Tiwari, Translated by P.V. Tiwari, Chaukamba Vishwabharathi, reprint, Khila sthana, 2013; 792: 640.
 9. Sushruta, Sushruta Samhita, Nibandha Samgraha Commentary of Sri Dalhanacharya and NyayaChandrika Panjika by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-, Kalpa sthana, 2008; 824: 561.
 10. Sushruta, Sushruta Samhita, Nibandha Samgraha Commentary of Sri Dalhanacharya and NyayaChandrika Panjika by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-, Nidana sthana, 2008; 824: 270.
 11. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, reprint-, vimana, 2011; 738: 277.
 12. Agnivesha, Charaka Samhita, Ayurveda Deepika Commentary of Chakrapani, edited by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, reprint-, sutra sthana, 2011; 738:120.
 13. Vagbhata, Astanga Hrudaya, Sarvanga Sundara Commentary of Arunadatta and Ayurveda Rasayana Commentary of Hemadri, edited by; Pandit Hari Sadasiva Sastri Paradiakara Bhisagacharya, Choukambha Surabharati Prakashan, Varanasi, reprint-, sutra sthana, 2010; 956: 182.
 14. Sushruta, Sushruta Samhita, Nibandha Samgraha Commentary of Sri Dalhanacharya and NyayaChandrika Panjika by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-, shareera sthana, 2008; 824: 367.
 15. Bhavamishra, Bhavaprakasha, Vidyotini Hindi Commentary by Brahmasankara Misra and Rupalayaji Vaisya, Purva khanda, First part, Varanasi, Chaukambha Samskritha Samsthana, reprint edition, mishra prakarana, sloka, 2015; 239: 197.
 16. Sushruta, Sushruta Samhita, Nibandha Samgraha Commentary of Sri Dalhanacharya and NyayaChandrika Panjika by; Vaidya Yadavji Trikrumji Acharya, Choukambha Surabharati Prakashan, Varanasi, reprint-, sutra sthana, 2008; 824, 183.