



## CASE REPORT

# Ayurvedic Management of Osteoarthritis Knee with Grade IV Severity and Obesity (*Avaranajanya Janu-Sandhigatavata* with *Sthoulya*)

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## ABSTRACT

This case illustrates the effective mode of Ayurvedic therapeutic intervention in a chronic osteoarthritis (OA) knee patient with Grade IV severity and obesity, where the regular use of analgesics was reported and surgery was advised. A 60-year old male presented with complaints of severe pain in both the knee joints for the past 11 years, associated with swelling, difficulty to walk, limited movement of knee joints with deformity, loss of sleep due to pain, being unable to perform major activities of daily living with an increased dependency for personal care, and loss of income. The present case was diagnosed as OA knee and the severity was graded as Grade IV. The patient was diagnosed as associated with obesity. On Ayurvedic parlance, the present case was diagnosed as *Avaranajanya Janu-Sandhigatavata* with *Sthoulya* based on the etiology and signs and symptoms. The patient was treated with a combination of Ayurvedic oral medications and treatment procedures. After the course of treatment, the patient felt much better with knee joint pain, swelling, and stiffness, and was able to walk without support and without pain for 500 m, able to climb stairs, and do minor household work. Improvement was noted on the Western Ontario and McMaster Universities (WOMAC) OA index score from 78 to 27 (right knee) and 73 to 29 (left knee); the active-pain visual analog scale (VAS) score from 10 to 5, body weight from 76 to 65 kg, waist circumference from 112 to 100 cm, and body mass index (BMI) from 28.6 to 24.5 kg/m<sup>2</sup>. Furthermore, the patient was able to withdraw the use of analgesics and avoid surgery.

**Keywords:** *Avarana*, Obesity, Osteoarthritis knee, *Sandhigatavata*, *Sthoulya*.

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## INTRODUCTION

Osteoarthritis (OA) is the most common form of arthritis and a major contributor to functional impairment and increased dependence in elderly individuals.<sup>1</sup> OA, which is also known as osteoarthrosis or degenerative joint disease (DJD), is a progressive disorder of the joints caused by gradual loss of cartilage and resulting in the development of bony spurs and cysts at the margins of the joints.<sup>2</sup>

Obesity, modern-day global epidemic, is associated with an elevated risk of an array of chronic ailments and a cardinal risk factor for both the incidence and progression of OA.<sup>3</sup>

According to *Susruta*, "*sneha*" (unctuousness), is considered as the essence of *purusha* (human being), and also *prana* (life force) is predominantly constituted by *sneha*.<sup>4</sup> Old age is a vulnerable period for depletion of this "*sneham*" specifically due to the vitiation of *Vata-dosha*, leading to the manifestation of *Vata-vyadhi*, the feature of which depends on the severity of *dosha* vitiation and the site of affliction. *Sandhigatavata* denotes aggravation of *Vata-dosha* affecting articular structures, leading to joint failure.

This case illustrates the effective mode of Ayurvedic therapeutic intervention in a chronic OA of knee joint patient with deformity and obesity, where surgery was advised.

## CASE PRESENTATION

A 60-year old Indian male presented in July 2017 at outpatient department (OPD) and subsequently got admitted with complaints of severe pain in both the knee joints, more in right knee joint, for the past 11 years. The patient also complained of difficulty to walk even with support for more than 10 steps and swelling and stiffness during rest and early morning in both knee joints. The patient further reported restriction/limited movement of knee joints with deformity (*Varus*), loss of sleep due to pain, being unable to perform major activities of daily living with an increased dependency for personal care, and loss of income. Associated comorbid conditions are hypothyroidism for the past 11 years, *arshas* (hemorrhoids) for the past 7 years, and hypertension for the past two and half years. Obesity, especially central obesity, was reported since more than 20 years.



When first diagnosed with knee OA in 2006, the patient was put on analgesics and calcium supplements. In 2008, the patient was diagnosed with hypothyroidism and was started with thyronorm 125 µg (levothyroxine, manufactured form of thyroid hormone, thyroxine T4), which was gradually reduced to 75 µg and maintained at this dosage till date. In 2012, the severity of pain got increased with the advent of knee joint deformity. In 2015, the patient got diagnosed with hypertension and was put on antihypertensives. At the time of consultation in July 2017, the patient was on thyronorm 75 µg once daily, Telma H 40 mg once daily, and Ibuprofen 400 mg once or twice daily.

The case was diagnosed as OA knee using the clinical criteria defined by the American College of Rheumatology for OA<sup>5</sup> and the severity of OA knee was graded as Grade IV based on the Kellgren and Lawrence classification<sup>6</sup> (Fig. 1). The patient was further diagnosed as being associated with obesity based on guidelines for obesity and overweight for Asian Indians developed through consensus by the Prevention and Management of Obesity and Metabolic Syndrome group.<sup>7</sup> On Ayurvedic lines, the patient was diagnosed to have *Avaranajanya Janu-Sandhigatavata* with *Sthoulya* based on etiology and signs and symptoms as per classical texts (Table 1).<sup>8,9</sup>



Fig. 1: X-ray of knee joint

The patient was admitted on 20th July 2017 and had undergone treatment course for 30 days. Internal medications which were given to the patient are *Arogyavardhini vati*,<sup>11</sup> *Gokshuradi guggulu*,<sup>12</sup> *Maharasnadi kwath*,<sup>13</sup> *Yogaraj guggulu*,<sup>14</sup> and *Eranda taila*.<sup>15</sup> Therapies administered to the patient were *Udwarthanam*,<sup>16</sup> *Upanaha*,<sup>17</sup> *Jambeerapindaswedan*,<sup>18</sup> *Matrabasti*,<sup>19</sup> and *Janubasti*.<sup>20</sup> The patient was advised to take more of green vegetables, roti, buttermilk, and water (lukewarm), and to avoid curd, rice, fried food, excess salt, pickles, etc. Also, the patient was advised to do light knee joint strengthening exercises like Seated Hamstring stretch and standing calf muscle stretch. The patient got discharged on 19th August 2017. At the time of discharge, the patient was advised to continue the internal medication and external application of oil and to follow the dietary advice regularly for 1 month.

The patient resided at far off place and hence was unable to come for review after one month. But, the condition of his health was conveyed over telephone on 21st September 2017. The patient reported that he was using the medication and following the dietary advice regularly and that now he was feeling better with knee joint pain and also noted improvement in the ability to walk and stand without support and without pain. He was advised to further continue the medication and follow the dietary advice.

The patient again contacted over telephone after 1 more month and reported that he was continuing the medication and dietary advice regularly and he was feeling much better with knee joint pain, stiffness, ability to walk, and also was able to do minor household work. The patient was willing to get admitted again and repeat the Ayurveda treatment due to the positive improvement he had experienced. Accordingly, the patient was admitted on 17th November 2017 for 30 more days, and the earlier course of treatment was repeated. The patient is under follow-up continuing the internal medications and external application of oil. There was a regular follow-up with the patient over telephone, approximately once in 2–3 months, wherein the patient reported that he sustained the improvement attained through Ayurvedic treatment and was feeling much better (Table 2).

The assessment of the present case was done by assessing the Western Ontario and McMaster Universities (WOMAC) Index of OA,<sup>10</sup> active-pain visual analog scale (VAS), waist circumference, body weight measurement, and body mass index (BMI) measurement (Table 3).

## DISCUSSION

The present case relates to the *Avarana* mode of pathogenesis, wherein due to the *avarana* of *Vata-dosha* by *Kapha-dosha* and *Medo-dushya*, over due course of time,

**Table 1:** Ayurvedic parameters

Ayurvedic parameters	Findings in the patient
<i>Nidana</i> (etiology/causative factors)	Resorting to <i>Atisantarpana ahara</i> (over nourishing food) and <i>Kapha-doshavriddhivihara</i> (sedentary habits) resulting in <i>Sthoulyam</i> (obesity), which through the complex process of pathogenesis termed as <i>Avarana</i> has led to <i>Vata-vyadhi</i>
<i>Lakshana</i> (cardinal signs and symptoms)	<i>Janu Sandhishula</i> (knee joint pain) <i>Janu Sandhishopha</i> (knee joint swelling) <i>Vatapurnadrutisparsha</i> (on palpation feels like a bag filled with air) <i>Vedana</i> (pain) of joints on <i>Prasarana</i> and <i>Akunchana</i> (movements of joints) <i>Atimedavridhi</i> (excess deposition of fat/adipose tissue) <i>Chalaspshik</i> (augmented fat deposition at the hip region) <i>Chala Udara</i> (augmented fat deposition at the abdomen) <i>Kapha</i> and <i>Vata</i> (vitiated due to <i>Avarana</i> and <i>Dhatukshaya</i> )
<i>Dosha</i> (regulatory functional factors of the body)	
<i>Dushya</i> (deranged major structural components of the body)	<i>Rasa, Mamsa, Medo, Asthi, Majja</i>
<i>Sthana</i> (site of localization)	<i>Vapavaham</i> , (~omentum) <i>Asthisandhi</i> (joint/articulation)
<i>Agni</i> (digestive/metabolic factors)	<i>Jataragni: Vishamagni</i> (irregular appetite) <i>Bhutagni: Mandagni</i> (decreased appetite) <i>Dhatwagni: Mandagni (Rasa, Medo, Asthi, Majja)</i>
<i>Srotas</i> (structural or functional channels)	<i>Rasavahasrotas</i> (channels carrying plasma) <i>Medovahasrotas</i> (channels carrying adipose tissue) <i>Asthivahasrotas</i> (channels carrying bone tissue) <i>Majjavahasrotas</i> (channels carrying bone marrow tissue)
<i>Vyadhi Avastha</i> (stage of disease)	<i>Kapha-medo avarana vata</i> coexisting with <i>Dhatukshaya</i> at the level of <i>Janu Sandhi</i>
<i>Rogamarga</i> (the pathway of disease manifestation)	<i>Bahya</i> (external pathway): <i>Sthoulya</i> (obesity) <i>Madhyama</i> (middle pathway): <i>Avaranajanya Janusandhigatavata</i>
<i>Sadhya-Asadhyatva</i> (prognosis)	<i>Krchrasadya</i> (difficulty to cure): <i>Avaranajanya Janusandhigatavata</i> and <i>Sthoulya</i>

**Table 2:** Timeline of events

Duration	Particulars and intervention
2006	Diagnosed with OA knee
2008	Diagnosed with hypothyroidism
2012	Severity of knee joint pain increased with the advent of varus deformity
2015	Diagnosed with hypertension
June 2017	Advised for knee replacement surgery, but opted for Ayurvedic treatment
20th July 2017–19th August 2017	1st admission <i>Arogyavardhini vati</i> and <i>Gokshuradi guggulu</i> , two tablets (each) twice a day with warm water after food <i>Erandataila</i> , 5 mL once daily at bedtime with warm water
21st July 2017–26th July 2017	<i>Jambeerapinda sweda</i> <i>Udwarthanam</i> with <i>Triphala</i> + <i>Yava</i> (barley) powder
1st August 2017–19th August 2017	<i>Maharasnadi kwath</i> , 15 mL twice daily before food with warm water
1st August 2017–14th August 2017	<i>Upanaha</i> with <i>Jadamayadi churnam</i> + <i>Kanji</i> (gruel water) <i>Matrabasti</i> with <i>Ksheerabala taila</i>
16th August 2017–18th August 2017	<i>Janubasti</i> with <i>Ksheerabala taila</i>
20th August 2017–16th November 2017	Follow-up <i>Yogaraj guggulu</i> , two tablets twice daily after food <i>Maharasnadi kwath</i> , 15 mL with 45 mL warm water before food twice a day <i>Erandataila</i> , 5 mL with warm water at bedtime <i>Brihatsaindavadi taila</i> for external application
17th November 2017–18th December 2017	2nd admission <i>Yogaraj guggulu</i> , two tablets twice daily after food <i>Maharasnadi kwath</i> , 15 mL with 45 mL warm water before food twice a day <i>Erandataila</i> , 5 mL with warm water at bed time
18th November 2017–22nd November 2017	<i>Jambeerapinda sweda</i> <i>Udwarthanam</i> with <i>Triphala</i> + <i>Yava</i> (barley) powder
28th November 2017–12th December 2017	<i>Upanaha</i> with <i>Jadamayadi churnam</i> + <i>Kanji</i> (gruel water) <i>Matrabasti</i> with <i>Ksheerabala taila</i>
15th December 2017–17th December 2017	<i>Janubasti</i> with <i>Ksheerabala taila</i>

Table 3: Assessment of various parameters

Parameters	20th July 2017		19th August 2017		17th November 2017		18th December 2017		
	R Score (%)	L Score (%)	R Score (%)	L Score (%)	R Score (%)	L Score (%)	R Score (%)	L Score (%)	
Osteoarthritis	78 (81.3)	73 (76)	75 (78.2)	71 (73.4)	44 (45.8)	46 (47.9)	27 (28.1)	29 (30.2)	
WOMAC index score	Pain	17 (85)	15 (75)	16 (80)	15 (75)	10 (50)	11 (55)	5 (25)	6 (30)
	Stiffness	7 (87.5)	6 (75)	6 (75)	5 (62.5)	3 (37.5)	2 (25)	1 (12.5)	1 (12.5)
	Physical function	54 (79.4)	52 (76.5)	53 (77.9)	51 (75)	31 (45.6)	33 (48.5)	21 (30.9)	22 (32.3)
Active-pain VAS score	10	9	9	9	7	7	4	5	
Weight (in kg)	76		69		68		65		
Height (in cm)	163		163		163		163		
Waist circumference (in cm)	112		105		105		100		
BMI (in kg/m <sup>2</sup> )	28.6		26		25.6		24.5		

R—right, L—left

coupled with *Vata-dosha*, aggravating factors and old age had caused progressive loss of articular structures of knee joint and eventually resulted in the development of *Janusandhigatavata*. This case is a typical example of *Nidanarthakararoga* (*Sthoulya* leading to *Vatavyadhi* with the *avarana* mode of pathogenesis) and *Vyadhi sankara*<sup>21</sup> (coexistence of diseases—*Sthoulya* and *Vata-vyadhi*).

The important principles of *samprapti* (pathogenesis) *vighatana* (removing) used in this case are as follows:

- Need to remove the *avarana* of *Kapha-dosha* and *Medo-dushya* by following the principles of *Sthoulya* treatment<sup>22</sup> and *Avarana* treatment.<sup>23</sup>
- Remove the *ama* (undigested material) and improve the *Agni* (digestive/metabolic factors)—*Jatharagni*, *Bhutagni*, and *Dhatwagni* (*Rasa*, *Medo*, *Asthi*, and *Majja*).
- *Sandhigata vata*<sup>24</sup> treatment to be adopted.
- *Vyadhisankara* treatment principles<sup>25</sup> should be adopted.

So the above treatment principles were applied before selecting the medications and treatment procedures.

*Rukshana* (dryness) was adopted as the first line of treatment and accordingly *Udwarthanam* (dry herbal powder massage against hair follicles) was done to the whole body.

*Udwarthanam*:<sup>16</sup> it was planned to correct the *avarana* of *Kapha-dosha* and *Medo-dushya*. *Yava choorna*<sup>26</sup> and *triphal choorna*<sup>27</sup> were used based on the properties of *ruksha* and *laghu* (light). It liquefies the *meda* and removes it through *sweda* (sweat), and also pacifies the *ama* and relieves the stiffness.<sup>28</sup>

*Rukshana* therapy will eventually cause aggravation of *Vata-dosha*. Hence, based on the principles of *Avarana* and *Vyadhisankara*, *Eradataila* was administered internally to pacify *Vata-dosha* by causing *anulomana* (regularizing physiological movement).

The *Rukshana* treatment along with regular *Vatanuloma* has resulted in decreased weight, waist circumference, and BMI of the patient. The *avarana* of *Vata-dosha* by *Kapha-dosha* and *Medo-dushya* was effectively managed by following the abovementioned treatment principle, which resulted in gradual reduction of pain and improvement of knee joint mobility.

After *Udwarthana* therapy, *Upanaham* (poultice sudation) for both the knee joints and *Jambeerapinda sweda* (lemon bolus sudation) was done.

*Upanaha*<sup>17</sup> is a type of *Svedana* (sudation) indicated in classics as one of the components in the treatment of *Sandhigatavata*.<sup>24</sup> This procedure was done with *jadamayadi lepa choorna*<sup>29</sup> for local *shothahara* (reduce swelling) and to pacify *Vata-dosha*. The effect of this procedure showed reduction in joint swelling and tenderness over affected area.

*Jambeerapinda sweda*:<sup>18</sup> it is a *ruksha-snigdha* type of *swedana*, which pacifies both *Kapha* and *Vata doshas*. It resulted in improved knee joint movement and reduced the stiffness of knee joints.

Internally, *Gokshuradi guggulu* was given to reduce swelling and also to control *Vata-dosha*. *Arogyavardhini vati* was given to improve the *Agni* (*Jatharagni*, *Bhutagni*, and *Dhatwagni*) and rectify the *medodusti* (vitiating). *Yogaraj guggulu* contains *Tridosha Shamaka* (pacifier of three *Doshas*) and *Rasayana* (rejuvenative) actions and is recommended for the management of *Sandhigatavata*, and *Maharasnadi kwath* was given to reduce pain and improve the mobility of knee joints. These medicines were given based on *Doshapratyanika* (antagonistic to *Dosha*) and *Vyadhipratyanika* (antagonistic to disease) *chikitsa* (treatment) principles.

Finally, when *Kapha-dosha*, *Medo-dushyaavarana* was relieved, *Amaavastha* was over, and *nirupstambhita* or

*kevalvata* (independent *Vata*) *avastha* of patient attained, typical treatments to control *Vata-dosha*, i.e., *Matrabasti* and *Janubasti*, were administered.

*Matrabasti* is a form of *Sneha Basti*. It nourishes the body, promotes the strength, and cures *Vata*-related diseases.<sup>19</sup> It was administered with *ksheerabala taila*,<sup>30</sup> it reduced the pain by pacifying *Vata-dosha*. It is the best entity for pacifying *Vata-dosha* and acts through *Vata-doshasthana* (site), i.e., *pakwashaya* (intestine), by nourishing the roots of the human body.<sup>31</sup>

*Janubasti*:<sup>20</sup> this treatment was given to pacify the *Vata-dosha*, provide nourishment to bilateral knee joints, and strengthen the muscles, ligaments, and tendons pertaining to knee joint stability. It was administered with *Ksheerabala taila*.

*Yogabasti* with *Lekhanabasti* would have been a better line of management, but due to the history of *arshas*, it was not preferred.

## CONCLUSION

*Sandhigatavata* is a *Madhyama Roga Marga Vatika* disorder in which vitiated *Vata-dosha* gets lodged in *Sandhi*. With simple and effective Ayurvedic treatment procedures, such as *Udwartana*, *Upanaha*, *Jambeerapinda sweda*, *Janubasti*, and *Matrabasti*, the present case was successfully managed even though the severity was Grade IV wherein surgery was advised.

## LIMITATIONS

Always, a critical limitation in a case report is that it is a single-subject study. However, based on the outcome of the case, a technically well-designed Ayurvedic protocol for managing *Sandhigatavata* can be developed for larger sample studies.

## PATIENT PERSPECTIVE

"I feel much better with my knee joint pain. I could able to stop completely taking pain killers. I am able to walk without support and without pain for longer than before. Further I am happy that I could look after my daily activities and other household work."

## INFORMED CONSENT

An informed written consent was obtained from the patient for reporting this case.

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## हिंदी सारांश

**तर्कसंगत:** यह केस जानु संधि के ग्रेड 4 गंभीरता वाले जीर्ण ऑस्टियोआर्थराइटिस (ओए) और स्थौल्य वाले रोगी में आयुर्वेद चिकित्सा के प्रभाव को दर्शाता है, जहां नियमित रूप से एनाल्जेसिक का उपयोग और सर्जरी की सलाह दी गई थी।

**पृष्ठभूमि:** एक 60 वर्षीय पुरुष दोनों जानु संधि में पिछले 11 वर्षों से गंभीर शूल की शिकायतों के साथ प्रस्तुत

हुआ, साथ में सूजन, चलने में कठिनाई, जानु संधि में विकृति एवं गति में रूकावट, शूल के कारण नींद की कमी, दैनिक जीवन की प्रमुख गतिविधियों को करने में असमर्थ होने के कारण व्यक्तिगत देखभाल की आवश्यकता और आय में नुकसान। वर्तमान मामले को ओए के रूप में निदान किया गया था। अमेरिकन कॉलेज ऑफ रूमेटोलॉजी द्वारा ओए और ओए की गंभीरता के लिए परिभाषित नैदानिक मानदंड का उपयोग करके केलग्रेन और लॉरेंस वर्गीकरण के आधार पर ग्रेड 4 के रूप में वर्गीकृत किया गया था। स्थौल्य के लिए दिशानिर्देशों और एशियाई भारतीयों में अधिक वजन के मापदंडों के आधार पर स्थौल्य के रूप में संयुक्त निदान किया गया था। आयुर्वेदिक सामंजस्य करने पर शास्त्रीय ग्रंथों में वर्णित निदान और लक्षणों के आधार पर वर्तमान मामले का निदान स्थौल्य युक्त आवरणजन्यजानु-संधिगतवात किया गया था।

**चिकित्सा एवं परिणाम:** रोगी का आयुर्वेदिक आंतरिक औषधियों एवं उपचार प्रक्रियाओं के संयोजन के द्वारा उपचार किया गया था। उपचार के पश्चात् रोगी ने जानु संधि शूल में, सूजन और कठोरता में बहुत बेहतर महसूस किया, रोगी 500 मीटर तक बिना समर्थन और बिना दर्द के चलने में सक्षम था, सीढ़ियों पर चढ़ने, मामूली घर का काम करने में समर्थ था। WOMAC ऑस्टियोआर्थराइटिस इंडेक्स स्कोर में 78 से 27 (दाएं घुटने) और 73 से 29 (बाएं घुटने) तक, Active-Pain VAS Score 10 से 5, शरीर का वजन 76 किग्रा से 65 किग्रा तक, कमर परिधि 112 सेमी से 100 सेमी और बीएमआई में 28.6 किलो/मीटर<sup>2</sup> से 24.5 किलो/मीटर<sup>2</sup> तक का सुधार देखा गया। इसके अलावा रोगी एनाल्जेसिक के उपयोग बंद करने और सर्जरी से बचने में सक्षम हो सकता है।

**मुख्य शब्द:** ऑस्टियोआर्थराइटिस जानु, संधिगतवात, आवरण, स्थौल्य, ओबेसिटी, केस रिपोर्ट