

Efficacy of Shreshta Knee Expert Treatment Strategy (SKETS) in a case of early-onset knee osteoarthritis with Grade 4 severity: A case report

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Abstract - We present a case of early onset knee osteoarthritis, in a female patient, with BMI of 29.4 (overweight), who came seeking treatment at Shreshta Knee Expert Clinic, Kalyan. X Ray revealed Grade 4 severity Osteoarthritis with complete obliteration of joint space in bilateral knee joints for which she had been advised Total Knee Replacement. Presenting complaints were - excruciating bilateral knee pain, joint stiffness and swelling. Her treatment module involved dietary and lifestyle changes along with Shreshta Knee Expert Treatment Strategy (SKETS), comprising of Oral medication, local therapy and Shodhana treatment with Basti. She showed significant change in Knee range of motion, Vas Pain score, joint stiffness and KOOS scale. She rated the effect of treatment as +7 on Global Rating of Change. Post treatment X RAY of bilateral knee joint in weight bearing (standing) position also revealed increase in joint space width depicting regeneration of meniscus and cartilage, reduction in osteophytes and overall reversal of Osteoarthritic changes.

Key Words: Knee Osteoarthritis, Early Onset Osteoarthritis, Cartilage, Meniscus, Ayurveda, Regeneration

1. INTRODUCTION

Early onset of knee arthritis has been linked to many causes including Obesity, lack of physical activity in childhood¹; with traumatic injury to the knee, varus alignment, hyaluronic acid and tumour necrosis factor playing a major role in the disease prognosis². Osteoarthritis, specifically knee and hip are seen to have higher prevalence in Asian countries³ and severity in the female gender^{4,5}, it has also been associated with oestrogen deficiency⁶. In the present scenario there was no evidence of any auto-immune influence, hereditary factor, traumatic injury, or history of any other major medical or surgical illness that might have contributed to the fast progression of the disease.

Osteoarthritis has been synonymous to Sandhigat Vata in Ayurveda and in the modern pursuit of DMOADs (Disease Modifying osteoarthritis Drugs) the natural remedies for treatment of Sandhigat Vata show great potential^{7,8,9}, without the involvement of unpleasant and invasive procedures. Natural regeneration of meniscus and cartilage is delayed due to the lack of vascularity but with the use of Vatahara, Bruhan and Agnideepan dravyas the process is hastened causing regeneration of cartilage in-situ possible.

SKETS is a holistic approach to deal with Osteoarthritis inculcating the use of local therapies with oral medication targeting the Knee joint as a complete organ¹⁰. Formulations have been crafted (proprietary medicines of TechClinic Connect) using the principles of Ayurveda dealing with Agnideepan, Pachan, Shodhan and Bruhan with focus on Asthi- Majja Dhatu Pachak and Bruhan and Rasayan Dravyas.

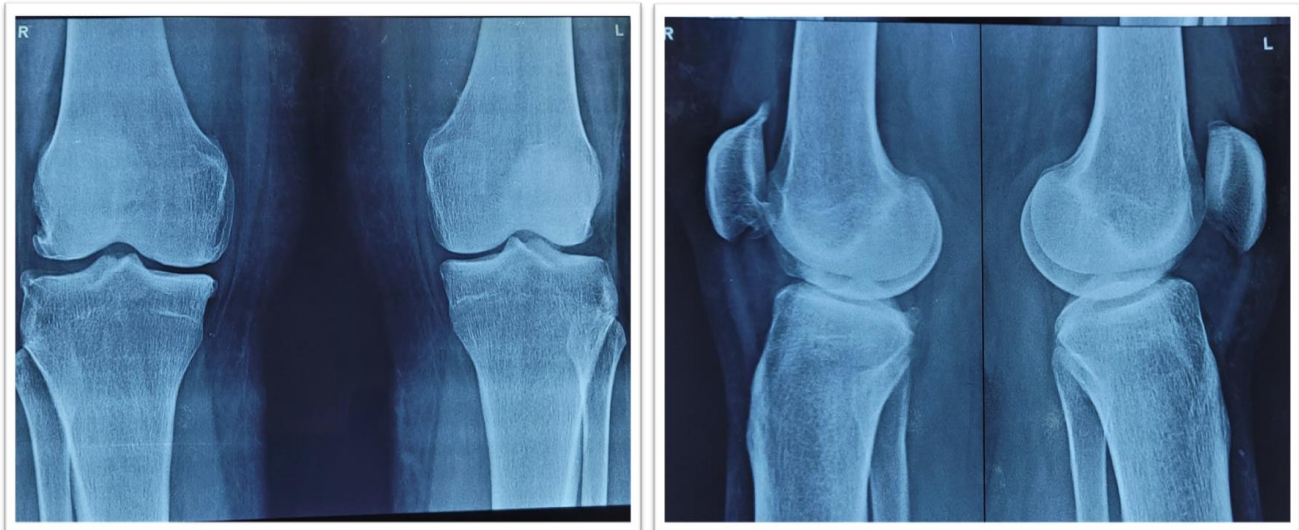
2. CASE PRESENTATION:

A 41 years old female patient, weighing 80 kilograms, height 165 centimetres, came seeking treatment for the following complaints - Bilateral knee pain, stiffness and swelling of the joint. She sought treatment after having seen testimonials of previous patients of Shreshta Knee Expert Clinic on Facebook.

She reported no history of any other major surgical or medical illness till date. She had not been diagnosed with any other comorbidities till date. In 2013 she gave birth to a female child, FTND (Full Term Normal Delivery) post which she started facing health issues related to weakness and joint aches. She joined her workplace 4 months later, for which she had to travel for 4 hours on a daily basis which included ascending three flight of stairs, riding on unpaved roads, and standing for more than 2 hours in crowded transport.

The patient had been suffering from the same for last 4 years, and was on regular medication for Pain. Her previous treatment included 1-time intra articular injection of Hyaluronic acid on left knee followed by Oral supplement of Glucosamine and NSAIDs. She was advised to take an X Ray (see Figure 1), the following changes were noted as 07/03/2019- Tibial spiking, Mild osteophytes, Joint space narrowing.

FIGURE 1: X Ray dated 07 March 2019- showing advanced Knee OA in Antero Posterior & Lateral views



From January 2019 till November 2019, this regimen was followed with mild variation in type of NSAIDs given. For two years the patient did not seek any medical help due to COVID-19 and the unfortunate passing of her consulting Doctor. In 2023 unable to gain relief with pain killers, she visited another Orthopaedician who diagnosed her with end stage Osteoarthritis, as per X Ray done on 10 January 2023 (see Figure 2).

FIGURE 2: X Ray dated 10 January 2023- showing end stage Knee OA in AP & Lat views



The degradation of cartilage causing Pain and restriction of activity even with continuation of NSAIDs and other supplements made her look for other treatment possibilities. She was advised Total knee arthroplasty as the surgical solution, for which she was reluctant.

She then came to Shreshta Knee Expert Clinic, Kalyan where she was diagnosed as per Ayurvedic criteria of assessment to be suffering from Sandhigat Vata, with Hetu of Vata Prakopa and Saamta.

Weekly therapies were given as per change in symptoms, within a span of 2 weeks her pain started reducing. Therapy sessions of Local Shreshta Pottali¹ application followed by Regen Oil Dhara² and Regen Lepa³ along with dietary restrictions were prescribed. All medication prescribed has been listed in Table 1.

Treatment given has been categorized into – 1. Systemic and local therapies and 2. Oral Medication:

Systemic and local therapies

1. BASTI TREATMENT:

- Yogabasti- With Dashmool Kwath + Til Oil alternating with Erand Oil followed by Yogabasti is a combination of 8 Basti (Enema) alternating with Kwath and Sneha Basti. Here Dashmool Kwath 400 ml has been used with 100 ml Til Oil along with Madhu Saindhav as Shodhan/ Kwath Basti and Erand Oil 80 ml has been used as Sneha Bati.
- Tikta Ksheer Basti ¹¹for 15 days followed by
- Gudpooran with 20 ml Mahatikta Ghrut for 1 week.

2. LOCAL THERAPY administered:

- Local Snehan + Sweden + Shreshta Pottali for 40 minutes - 7 days
- Followed by Regen Lepa for 1 week (Local application of Lepa) along with
- Regen Oil Dhara on both Knees for 15 minutes, which was continued for 70 sessions.

3. PHYSIOTHERAPY

Transcutaneous Electrical Nerve Stimulation (TENS)
4 sessions of 6 days each over the duration of two months.

All oral medications were administered as per SKETS starting with Deepan, Pachan medicines to alleviate the problems of Mandagni. Followed by Rasayan and Bruhan medicines.

All medicines given as per the changes in symptoms have been summarised in Table 1 as follows:

Table 1: Oral medication administered				
* - All are proprietary medicines of TechClinic Connect				
Prescribing Date	Presenting Complaints	Oral medication	Dosage	Duration of treatment
26/01/2023	Bilateral Knee joint Pain since 4 years, Knee Swelling ++, Joint stiffness ++ Knee flexion, extension- restricted Jivha- Saam Nadi- Vaat Mala, Mutra, Kshdha, Nidra - Prakrut	Aampachak Vati	2 TDS	7 days
		Medopachak Vati	2 BD	
		Gokshuradi Guggul	2 BD	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	

¹ Pottali refers to the practise of Swedana (fomentation) using poultice made from Vatahara Dravyas (For eg- Erand, Rasna etc), here we have used Shreshta Pottali – Vatahar Dravyas formulation by Shreshta Knee Expert Clinic.

² Dhara refers to pouring of warm medicated liquid usually in the form of oil from a specific height over the affected region, which helps in improving nutrition in the area, Regen Oil is formulation of medicated Oil by Shreshta Knee Expert Clinic.

³ Lepa is transdermal application of medication usually by mixing powdered medicine in warm water and applying a thick layer of it on the affected area. Regen Lepa Oil is formulation of Shothhara Dravyas by Shreshta Knee Expert Clinic.

04/02/23	Same as above	Aampachak Vati	2 BD	7 days
		Kaishor Guggul	2 BD	
		Gokshuradi Guggul	2 BD	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
13/02/23	Pain ↓ No swelling Jihva- Niram Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Aampachak Vari	2 BD	7 Days
		Sinhnaad Guggul	2 BD	
		Guduchi Ghan Vati	2 BD	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
21/02/23	Pain ↓ No swelling Right Knee- Restricted movements- Painful Left- Restricted movements, not painful	Atulya Shuddhi*	2 TDS Before Meal	7 Days
		Kaishor Guggul	2 BD	
		Lakshadi Guggul	2 BD	
		Asthijivanam*	2 BD	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
12/03/23	Pain ↓↓ No swelling Right- ROM improvement Jihva- Niram, Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Atulya Shuddhi*	2 TDS Before Meal	7 Days
		Lakshadi Guggul	2 BD	
		Asthijivanam*	2 BD	
		Aabha Choorna	1 tablespoon-TDS	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
		Mahatikta Ghrut	2 tablespoons with Milk, Early morning Empty stomach	

26/03/23	Pain ↓↓↓ No swelling, Improvement seen on X Ray Jihva- Niram, Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Atulya Shuddhi*	2 TDS Before Meal	7 Days
		Ashwagandha Vati	2 BD	
		Aabha Choorna	1 tablespoon-TDS	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
		Mahatikta Ghрут	2 tablespoons with Milk, Early morning Empty stomach	
02/04/23	Pain – Mild Weakness No swelling Jihva- Niram, Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Atulya Shuddhi*	2 TDS Before Meal	7 Days
		Lakshadi Guggul	2 BD	
		Sinhnaad Guggul	2 BD	
		Asthi oorjitam*	2 BD	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
12/04/23	Pain ↓↓↓ No swelling Jihva- Niram, Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Atulya Shuddhi*	2 TDS Before Meal	30 Days
		Lakshadi Guggul	2 BD	
		Asthi oorjitam*	2 BD	
		Prawal Panchamrut	2 BD	
		Erand Oil	2 Tablespoons HS	
		Mahatikta Ghрут	2 and Half tablespoons with Milk, Early morning Empty stomach	
06/05/23	Pain ↓↓↓ No swelling Jihva- Alpa Saam, Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Atulya Shuddhi*	2 BD Before Meal	30 Days
		Asthi oorjitam*	2 BD	
		Shallaki Tablet	2 BD	
		Prawal Panchamrut	2 BD	

		Erand Oil	2 Tablespoons HS	
		Mahatikta Ghrut	2 and Half tablespoons with Milk, Early morning Empty stomach	
08/06/23	Same as above	Atulya Shuddhi*	2 TDS Before Meal	30 days
		Asthi oorjitam*	2 TDS	
		Asthi jivanam*	2 BD	
		Guduchi Ghan	2 BD	
		Mahatikta Ghrut	3 tablespoons with Milk, Early morning Empty stomach	
13/07/23	Pain ↓↓↓ No swelling	Atulya Shuddhi*	2 TDS Before Meal	30 Days
		Tarush Meh*	2 BD	
	Jihva- Niram, Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Prawal Panchamrut	2 BD	
		Asthi jivanam*	4 TDS	
		Asthi oorjitam*	4 TDS	
		Erand Oil	2 Tablespoons HS	
		Mahatikta Ghrut	3 tablespoons with Milk, Early morning Empty stomach	
27/08/23	Same as above	Atulya Shuddhi*	2 TDS Before Meal	30 Days
		Asthi oorjitam*	3 TDS	
		Ashwagandha	4 TDS	
		Guduchi Ghan	4 TDS	
		Pranayu Tablet*	1 TDs	
		Erand Oil	½ Tablespoon HS	
		Mahatikta Ghrut	3 tablespoons with Milk, Early morning Empty stomach	
10/12/23	Pain- NO Swelling -NO	Atulya Shuddhi*	2 TDS Before Meal	30 days

Jihva- Niram Nadi- Vat Pradhan, Mala, Mutra, Kshdha, Nidra - Prakrut	Prawal Panchamrut	2 BD
	Kaishor Guggul	2 BD
	Ashwagandha	4 OD
	Asthi oorjitam*	4 OD
	Laksha Ghana	2 BD
Panchamrut Loh Guggul	Panchamrut Loh Guggul	2 BD
	Erand Oil	1 Tablespoon HS
	Mahatikta Ghrut	3 Tablespoons with Milk, Early morning Empty stomach

Overall improvement was seen in her pain, stiffness, swelling, gait and range of movements. Visible radiographic improvement in Joint space width was achieved within 40 days of treatment – X Ray in weight bearing position (Standing) Antero-Posterior view dated 14 March 2023 Figure 3.

Figure 3: Xray Dated 14 March 2023, showing visible improvement in Joint space width



After 6 months of treatment further X Ray was taken determine the structural change. X Ray in weight bearing (standing) position with Antero-posterior view Dated 29 July 2023 showed reversal of the disease progression and abatement of arthritic changes in the joint displaying a comprehensive improvement in the bone and joint health. There was reduction in the size of osteophytes and gross visible improvement in Joint space width as seen in Figure 4.

Figure 4: X Ray Dated 29 July 2023 showing further improvement and reduction in osteophytes



3. OUTCOMES

Major findings in the case were the structural radiographic changes observed in relation to the Joint space. In the earlier X Rays the Joint space had been completely obliterated, which after treatment was restored. The relief in Pain and symptoms was evident along with the radiographic change. All outcomes are summarised as follows:

1. XRAY CHANGES:

PRE TREATMENT: GRADE 4 on Kellgren Lawrence Scale¹²

POST TREATMENT: GRADE 2 on Kellgren Lawrence Scale.

2. KNEE SYMPTOMATIC CHANGES:

Changes in the Knee joint as per clinical examination are summarised in Table 2 below.

Table 2

	Pre Treatment		Post Treatment	
	Knee Flexion	Right	70°	Right
	Left	70°	Left	135°
Pain / Tenderness	Right	+++	Right	--
	Left	++	Left	--
Swelling	Right	+++	Right	--
	Left	++	Left	--

3. Changes in **Patient reported Outcomes** (PROs) are summarised in Table 3.

Table 3

Parameter	Pre-treatment		Post-treatment	
VAS Pain rating ¹³	8		3	
KOOS ¹⁴ (Knee Injury and Osteoarthritis Outcome Score)	PAIN	42	PAIN	80
	SYMPTOMS	47	SYMPTOMS	86
	ADL	62	ADL	97
	SPORTS/ RECREATION	30	SPORTS/ RECREATION	80
	QUALITY OF LIFE	25	QUALITY OF LIFE	50
Global Rating Of Change ¹⁵	—		+7	

4. DISCUSSION:

In the present case the major cause can be pinpointed to excessive strain and stress post childbirth. The intense physical activity during the stage of recuperation is hypothesised to have caused the degradation of articular cartilage in majority. No specific genetic predisposition for the disease was found in the present case and absence of all other factors generally seen in early onset of knee osteoarthritis makes it a novel case. This leaves us with only probable cause of early onset knee osteoarthritis to be low nutritional status combined with excessive physical activity.

5. CONCLUSION

The female patient in the present case was advised Total Knee Replacement as the only option for regaining proper function of the knee joint. The apprehension for such a procedure at the age of 40 led her to Shreshta Knee Expert Clinic. The case was unique in its presentation and considering the *Hetu* as *Vata Prakopa*, she was given Basti for a longer duration. The inclusion of proprietary medications of Shreshta Knee Expert for oral consumption and local application all together were successful in reversing the Joint Space - Regeneration of the cartilage & Meniscus, a rare feat.

6. CONSENT AND APPROVAL:

Informed Consent Form containing all the information regarding the reporting of the case was given to the patient and she willingly agreed. The consent form was written and explained in the language Marathi, which was the language she best understood.

No Ethics Committee approval is required for the reporting of the case as per Center guidelines.

7. CONFLICT OF INTEREST:

AG, AM are employees of TechClinic Connect Pvt Ltd, the owner of Shreshta Knee Expert Clinic and DP is the Founder and MD of TechClinic Connect Pvt Ltd

8. BIOGRAPHIES



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