

CASE REPORT

Reduction in Subcutaneous Abdominal Fat Thickness Following Dietary and Exercise Intervention: A Single Case Report with Ultrasonographic and Physiological Correlation

¹Bini Upendran, ²Akash Deep Meshram, ³Hemant Toshikhane

^{1,2}Department of Rachana Sharir, Parul Institute of Ayurveda, P.O. Limda, Ta. Waghodia – 391760, Dist. Vadodara, Gujarat (India).

³Faculty of Ayurveda, Parul Institute of Ayurveda, P.O. Limda, Ta. Waghodia – 391760, Dist. Vadodara, Gujarat (India).

Corresponding Author: biniupendran22@gmail.com

ABSTRACT

Obesity or Sthaulya is a result of Medovaha Sroto Dushti (Dysfunction of the fat-transporting channels and lipid metabolism pathways). The root of Medovaha Srotas is considered to be Vapavahana. Medohara Chikitsa is expected to exert a significant effect on Vapavahana by enhancing Medo Dhatvagni and correcting Dhatvagni Mandya. This case report presents a woman with Class I obesity of central type who was advised a structured diet and exercise plan for 60 days. Pre- and post-intervention assessment was carried out using SAFT, waist-hip ratio, BMI, and other anthropometric parameters, all of which showed significant reduction (SAFT reduced from 42.9 mm to 36.5 mm, BMI from 31 to 26.3, waist circumference from 98 cm to 83 cm, and waist-hip ratio from 0.91 to 0.83). There was an overall reduction in total and visceral fat along with improvement in subjective well-being. These findings support the concept that Vapavahana, the root of Medovaha Srotas, may be correlated with the omentum. Mobilisation of visceral fat appears to play a key role in the correction of obesity, analogous to the correction of Medo Dhatvagni at its Moola Sthana, leading to restoration of Medovaha Srotas function.

Keywords: Sthaulya, Obesity, Medovaha Srotas, Vapavahana, Medohara Chikitsa, Subcutaneous Abdominal Fat Thickness (SAFT), Central Obesity, Waist Circumference, Body Mass Index (BMI), Visceral Fat

Received 24.03.2026

Revised 01.05.2026

Accepted 30.06.2026

How to cite this article:

Bini U, Akash D M, Hemant T. Reduction in Subcutaneous Abdominal Fat Thickness Following Dietary and Exercise Intervention: A Single Case Report with Ultrasonographic and Physiological Correlation. Adv. Biores. Vol 17 [7] July 2026. 46-49

INTRODUCTION

Obesity is a metabolic disorder characterised by excess accumulation of adipose tissue in the body and its increased magnitude may create adverse health conditions [1]. A person is said to be obese when he/she has a body mass index [BMI (kg/m²)] greater than or equal to 30 and is said to be overweight if BMI is from 25.0–29.9. As of 2019 statistics of the World Health Organization, about 5 million noncommunicable disease (NCD) deaths were reported due to higher-than-optimal BMI [2]. Fat accumulation may be in the abdomen, leading to central obesity, or in the hips, buttocks, and thighs, called peripheral obesity (3). According to Acharya Charaka, an obese person is someone who develops looseness in the abdomen, thighs, and breasts (4).

Obesity in Ayurveda is a result of Medovaha Sroto Dusti, with derangement in the formation of Medo Dhatu due to Medovaha Sroto Dusti karanas Avyama (lack of exercise), Day sleeping (Divaswapna), Medovardhaka Anna Panna (food that is rich in oils, having Madhura (sweet), Amla (sour), and Lavana (salty) Rasa, and Sheeta Virya (cold potency)), Varuni Ati Sevana (excess intake of alcoholic preparation result in an increase of Meda Dhatu (fat tissue)). This slowly affects the Medovaha Srotas, and Medo Dhatu gets vitiated. Acharya Charaka [5] mentioned the Lakshanas of Medo Dushti as Prameha Poorvaroop (premonitory features of diabetes/metabolic disorder) and Ashta Nindita (eight undesirable features). The Ashta Dosha of Ati Sthulya Purusha include Ayusho Hraso (reduced lifespan), Javoparodha

(reduced physical activity/agility), Krichravayavayata (difficulty in sexual activity), Daurbalyam (weakness), Dargandhyam (foul body odour), Svedabadha (excess sweating), Kshudha Atimatram (excess hunger), and Pipasa Atiyoga (excess thirst), along with Paridaha (burning sensation) and Suptata (numbness) in the body. Certain treatment measures are proposed to correct this. They are mainly vyayama and guru (food difficult to get digested) atarpana (less calories) food.

The roots of Medovaha Srotas are considered as Vrikka and Vapavahanam. No evidence is available to correlate Vapavahanam with anatomical structures like the omentum.

This case study aims to use Medovaha Sroto Chikitsa and evaluate changes in subcutaneous abdominal fat thickness, BMI, and waist circumference.

CASE REPORT

A 30-year-old female patient came to the OPD with complaints of increased body weight since childhood. The patient had no history of other chronic illness and was not under any medications. She had no history of hypothyroidism, hormonal abnormalities, diabetes mellitus, or hypertension. There was no family history of obesity/overweight.

Weight was measured on an electronic scale without shoes and in normal clothing, and height was measured without shoes using a wall stadiometer. BMI was calculated as weight (kilograms) divided by height (meters) squared. Weight was recorded as 79 kg and height as 160 cm. Waist circumference was 98 cm, and waist-hip ratio was calculated as 0.91.

Visceral fat: 12 (using OMRON body composition monitor)

Body fat percentage: 38% (using OMRON body composition monitor)

Waist circumference: measured using a measuring tape

Body weight: measured using a digital weighing machine with less clothing and without shoes

BMI: 31 kg/m²

Subcutaneous Abdominal Fat Tissue was measured from the inferior margin of the skin to the linea alba; the thickness was 42.9 mm.

Diagnosis: Obese Class I with BMI 31

Class: Central Obesity.

INTERVENTION

The patient was advised to follow a specific diet and exercise plan for 60 days.

Diet Plan [6]

The diet was prepared with two main intentions: the total daily calorie intake should be less than 1000 kilocalories, and post-meal satiety should be achieved. Calorie restriction was set as the primary driver of weight loss. The prepared diet plan was a low-carbohydrate, low-fat diet providing approximately 1000 kilocalories per day. Six meal timings per day were planned, as frequent small meals are known to help reduce overall calorie intake while keeping hunger under control and preventing overeating. To enhance post-meal satiety, fibre-rich fruits and vegetables were included, considering that both soluble and insoluble fibres contribute to increased satiety.

Exercise Plan [7].

The patient was advised to perform moderate-intensity exercise in the form of brisk walking at a speed of approximately 5–6 km/hour for 45 minutes per day, 5 days a week. The patient was intermittently assessed for pulse rate, blood pressure, body weight, hydration status, and fatigue levels. Fluid status was also monitored, and any red flag signs suggestive of excessive calorie restriction or overexertion were carefully observed throughout the study period.

RESULTS

Timeline of Intervention and Outcomes

TABLE 1 : ADHERENCE CHART

Day	Pulse (beats/min)	BP (mmHg)	Weight (kg)	Hydration	Fatigue
Day 0	82	130/84	79	Adequate	Mild
Day 7	80	128/82	77	Adequate	Mild
Day 14	78	126/80	74	Adequate	Minimal
Day 30	76	124/80	71	Adequate	Minimal
Day 60	74	122/78	67	Adequate	None

TABLE 2 : Fluid Status

Day	Tongue	Skin turgor	Urine	Thirst
Day 0	Moist	Normal	Normal	Normal
Day 7	Moist	Normal	Normal	Normal
Day 14	Moist	Normal	Normal	Normal
Day 30	Moist	Normal	Normal	Normal
Day 60	Moist	Normal	Normal	Normal

TABLE 3 Red Flag Monitoring

Day	Tachycardia	Hypotension	Dizziness	Severe fatigue	Reduced urine output
Day 0	Absent	Absent	Absent	Absent	Absent
Day 7	Absent	Absent	Absent	Absent	Absent
Day 14	Absent	Absent	Absent	Absent	Absent
Day 30	Absent	Absent	Absent	Absent	Absent
Day 60	Absent	Absent	Absent	Absent	Absent

TABLE 4 :Anthropometric Parameters

Parameter	Baseline	After Intervention	% Change
SAFT (mm)	42.9	36.5	↓ 14.9%
Weight (kg)	79	67	↓ 15.2%
BMI (kg/m ²)	31.0	26.3	↓ 15.1%
Waist Circumference (cm)	98	83	↓ 15.3%
Hip Circumference (cm)	108	100	↓ 7.4%
Waist-Hip Ratio	0.91	0.83	↓ 8.8%

TABLE 5 :Sthaulya Lakshana

Lakshana	Baseline Score (0–3)	Follow-up	Change
Medomamsa ativriddhi	3	2	↓
Chala udara	3	1	↓↓
Udara vriddhi	3	2	↓
Utsaha hani	2	1	↓
Swasa	2	1	↓
Dourbalya	2	1	↓
Kshudha vriddhi	2	1	↓

Total Score: Baseline: 17;Follow-up: 9

Pattern of Change

The reduction in SAFT demonstrated a proportional association with reductions in BMI and waist circumference, suggesting a parallel decline in both subcutaneous and central adiposity.

Patient perspective

The patient reported a feeling of lightness, increased energy levels, and the next menstrual period occurred within 30 days. There was also an overall improvement in mental status, including increased confidence and happiness

Informed consent

Informed consent was obtained.

DISCUSSION

Patients showed observable and measurable differences in anthropometry as well as subjective well-being. There occurred a parallel reduction in subcutaneous and central adiposity. Central adiposity is said to be of higher risk compared to peripheral adiposity, as these are considered metabolically active adipose tissue. These persons have more FFA in the circulation, and it is directly linked to insulin resistance, as more insulin is needed to drive glucose into the tissues, leading to atherosclerosis and higher mortality rate. Even individuals with normal BMI tend to have visceral fat deposition, which is a problem.

The present study established that visceral fat can be effectively reduced using 2 months of regulated exercise and a healthy diet pattern. Significant reduction in weight and BMI occurred due to reduction in visceral fat, and waist-hip ratio also improved. This may be explained as, with Medohara diet and exercise, Medo Dhatvagni got corrected, resulting in elimination of accumulated Medo Dhatu and production of normal Medo Dhatu.

Coming to the reduction in SAFT, which is the main area where the result impacted, the visceral fat may be considered as Medovaha Sroto Moolam, since the effective change started with reduction in waist-hip ratio. The root of Medo Dhatvagni correction may have begun from the omentum as well.

REFERENCES

1. Hari Sharma and Chandola, H. M. (2011). Ayurvedic Concept of Obesity, Metabolic Syndrome, and Diabetes Mellitus. *The Journal of Alternative and Complementary Medicine*.17(6): 549–552.
2. World Health Organization.2026. Obesity [Internet]. Geneva: WHO
3. Bosomworth, N. J. (2019). Normal-weight central obesity: Unique hazard of the toxic waist. *Can Fam Physician*.65(6):399-408.
4. Acharya Yadavji Trikamji. (2006). Commentary Ayurveda dipika of Chakrapanidatta on Charaka samhita of Agnivesha, Chaukamba Krishnadas Academy.
5. Shastri K. and Chaturvedi G. (2008). Charak Samhita Vidyotinitika. Chaukhambha Bharati Academy Publ. Vol.i.
6. Upendran, B. and Meshram, A. (2025). A Case Report on the Management of Obese Class II (Sthoulya): Using Special Diet Plan. *IJBPAS*. 14(3): 10-18. <https://doi.org/10.31032/IJBPAS/2025/14.3.1002>
7. Igarashi Y, Akazawa N, Maeda S. (2025). An exercise program to reduce abdominal visceral and subcutaneous fat in adults with overweight and obesity: A systematic review and meta-analysis of randomized controlled trials. *Obes Res Clin Pract*. 19(5):388-393. doi: 10.1016/j.orcp.2025.10.004.

Copyright: © 2026 Author. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.