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# A critical understanding of *Medodhara Kala*

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## ABSTRACT

*Kala* is one of the special concepts explained in classics of Ayurveda. Among 7 *Kala*, *Medodhara kala* is the 3<sup>rd</sup> *Kala* which is situated in *Udara* (abdomen), *Anuasthi* (small bones) and *Maha Asthi* (long bones). It may be compared with membrane covering which protects adipose tissue depots. It has functions like protection of organs, shock absorber like activity etc... The knowledge of *Medodhara Kala* helps in understanding various concepts related to *Meda*. Hence in this paper an effort shall be made to understand critical aspects of *Medodhara Kala*.

**Key words:** *Anuasthi, Kala, Maha Asthi, Meda, Medodhara Kala, Udara.*

## INTRODUCTION

A layer or membrane that separates a *Dhatu* (fundamental elements) from its *Asaya* (storage site) is defined as *Kala*.<sup>[1]</sup> *Kala* appears like *Snaayu, Jarayu,* or *Kapha* based on their different locations.<sup>[2]</sup> *Kala* is formed by *Pachana of Kleda* (located between *Dhatu* and *Ashaya*) by *Swa Ushma (Dhatu Agni)*.<sup>[3]</sup>

*Kala* is arranged around a *Dhatu* just like annual rings of a tree.<sup>[4]</sup>

Totally 7 *Kala* are explained,<sup>[5]</sup> of them 3<sup>rd</sup> *Kala* is *Medodhara Kala*.<sup>[6]</sup>

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## OBJECTIVES OF STUDY

- To understand *Medodhara Kala* from *Dhatu, Srothas, Upadhatu, Ninditha Prusha,* and *Meda Pradoshaja Vyadi* concepts.
- To find out probable co-relations in modern anatomy.
- To understand diseases pertaining to *Medodhara Kala*.

## METHODOLOGY OF STUDY

Literature research through *Bruhatrayis, Laghu Trayees* as well as modern anatomy and physiology textbooks, along with websites and published articles.

## LITERATURE REVIEW

Among 7 *Kala*, 3<sup>rd</sup> *Kala* is *Medodhara Kala*. As per *Susruthacharya*, main sites are *Udara, Anu Asthi* and *Sthoola Asthi*. In *Sthoola Asthi* it is called as *Majja* and on other sites /other bones it is *Sa Raktha Meda*. On continuation of *Sloka* acharya clarifies that "pure essence of *Mamsa* is called as *Vasa*".<sup>[7]</sup>

As per *Vagbhatacharya - Udara, Anu Asthi, Sthoolasthi* and *Shiras (Kapala Pratichanna Mastishka Masthulungakhya)*<sup>[8]</sup> are the sites of *Medodhara Kala*.

**Medo Dhatu**

*Medo Dhatu* is formed from *Mamsa Dhatu*, and is *Guru*, *Snigdha*, *Dridha*, and *Poshaka* (nourishing element) of the body.

**Upadhatu**

According to *Achrya Charaka*, *Upadhatu* of *Medas* is *Snayu*.<sup>[9]</sup> And *Acharya Kashyapa* says *Masthulunga* gives origin of 900 *Snayus*.<sup>[10]</sup>

**Medovaha Srothas**<sup>[11-13]</sup>

The *Moola Sthana* of *Medo Vaha Srothas* are *Vrikka* (kidneys), *Vapa Vahana* (*Snigdha Varthika* of *Udara*) and *Kati*. *Vagbhatacharya* added *Mamsa* as *Srothomoola* of *Meda*.

**Meda Dhatu Vridhi**<sup>[14,15]</sup>

Under *Vridhi Lakshana* of *Medo Dhatu*, *Achrya* explained, *Maamsa Vridhi Vat* symptoms (*Gandamala*, *Arbuda*, *Granthi*, *Vridhi of Kanda*, *Uru* and *Udara*), *Snigdhangata* (*excessive oiliness*), *Lambana* of *Sphik- Stana- Udara*, *Udara Parswa Vridhu* (heavy breast, buttocks, abdomen and flanks) and *Alpe api Chestithe Sramam* and *Swasam* (breathing difficulty even by doing small work), *Kasa* are said.

**Dhatu Kshaya**<sup>[16,17]</sup>

Under severe depletion of *Dhatu*, *Swapana* of *Kati* (numbness of back), *Pleeha Vrudhi*, and *Krisangatha* (emaciation), *Sandhi Sphutana* (cracking of joints), *Aksho Gani*, *Ayaasa*, *Udara Tanutwa*, *Sandhi Soonyata*, *Roukshyam*, *Medura Praarthana* etc. are explained.

**Meda Pradoshaja Vyadi**<sup>[18,19]</sup>

*Granthi* (various cysts), *Vridhi* (herniations through various openings, scrotal enlargement), *Galaganda* (goiter, prominent neck swelling), *Arbuda* (malignant tumours), *Osta Prakopa* (disorders of lip), *Madhumeha* (diabetes), *Atisthoulya* (obesity), and *Atisweda* (excessive sweating) are the disorders related to *Meda* by *Susruths*. *Achrya Chakra* explained *Asta Ninditha Purushas* and *Poorva Roopa* of *Prameha* as *Meda Pradoshaja Vyadi*.

**DISCUSSION**

In the context of *Angapratyanga*, *Acharya* first said *Anga* (various body parts) after that *Sapta Twak* (skin), then *Kala* (different layers of body). After *Maamsadhara Twak* (7<sup>th</sup> layer of *Twak*) *Mamsadhara Kala* is present. After that *Raktha Dara Kala* (vessels), then *Medodhara Kala* (coverings with adipose tissue content) and after that *Sleshmadara Kala* (synovial membrane). When we observe closely, *Medodhara Kala* is having a close relation with that of *Meda* (fat/adipose tissue). While going through literary review of *Meda* and *Medodhara Kala*, we may compare with certain structures explained in modern anatomy in relation to *Medodhara Kala*.

**Sites of Medodhara Kala**

- *Udara* - can be peritoneum, omentum, mesentery and other fatty tissues.
- *Anu Asthi* - small bones inner matter is *Saraktha Meda*, nothing but redbone marrow.
- *Maha Asthi* - same *Meda* is called as *Majja* -bone marrow.
- *Kapala Pratichanna* - *Mastishka* - *Masthulungakhya* - meningeal layers of brain.

**Upadhatu** - various ligaments are said to be the sub tissues of *Meda Dhatu*. So, where ever these ligaments are present they should have protective layer of *Kala*. Which is nothing but collagen layer of fibrous tissues which collects adipose tissue in compressed form e.g. Sole of the foot. Also, embryologically they are derived from mesenchyme.

**Dhatu Vridhi**

*Ambana* of *Sphik- Sthana- Udara* (fascia which covers breast). Due to the over deposition of *Meda Dhatu* oversized breast appears, as a result, ligaments loses their strength to support. Same with *Udara* (abdomen). In abdomen we are having more layers of fascia, along with increased visceral fat and sub cutaneous fat, typical obesity feature of belly happens. *Sphik* is said to be the gluteal region. Same principle applies here.

- *Udara Parswa Vridhi* - pendulous abdomen due to fat deposition.
- *Alpe Api Chestithe Swasam- Kasam- Sramam* - research studies show that thickened pleural covering in increased BMI in obesity, results in breathlessness even with slight exertion. Also, there can be deposition of fat around lungs, heart and other parts of thorax, which reduces the space for expansion of lungs - alveoli during breathing.

#### **Dhathu Kshaya (severe emaciation)**

- *Sapanam Katyah* - here the subcutaneous fatty layers get its importance. In severe emaciated condition, loss of fat tissues occurs in this area.
- *Pleeha Vridhi* - it is a palpable spleen due to loss of abdominal fat, as well as visceral fat.
- *Krushangatha* - highly emaciated appearance; even the fat layers also lose its nature.
- *Sandhi Soonyatha* - prominent joint.
- *Sandhi Sphutanam* - Along with depletion of *Meda Dhathu* next *Dhatu (Asthi)* also gets affected. Being *Kapha* related to *Meda* by *Ashraya Ashrayi Bhava*, the *Sleshaka Kapha* is also depleted. As a result, crepitus may happen.
- *Udara Tanuthwa* - Loss of subcutaneous and visceral fat.
- *Akshnorayasam* - Here fascia bulbi and orbital pad of fat is to be taken. On severe emaciation eye balls appear like drooped and bulged out.

#### **Meda Pradoshaja Vikaras**

- *Ninditha Purusha* - Among *Astaninditha Purusha*, in this context *Atisthoulya* (obesity) and *Atikarshya* (over emaciation) is may be considered.
- Prodromal symptoms of *Prameha* - all are pre-clinical symptoms related with irregular glucose metabolism.
- *Granthi* - said as various cysts like sebaceous, Bartholin's, goiter, acne, ovarian cysts etc. For enclosing the pus or any fluids a capsule is

needed. For the cysts, cystic wall is formed by *medodhara Kala*.

- *Vrudhi* - various hernias like inguinal, hydrocele, umbilical etc. may be considered. On these disorders parietal and visceral peritoneum plays its role.
- *Gala Ganda* - though it is a metabolic disorder with structural anomaly, pre tracheal fascia (outer false capsule of thyroid gland) when loses its strength leads to a prominent thyroid swelling on neck without blood value variations.
- *Arbuda* - benign and malignant tumors - according to various articles of research, addressing the contribution of adipose tissue to the initiation and progression of cancer- Obesity dramatically modifies the adipose tissue microenvironment in numerous ways, including induction of fibrosis and angiogenesis, increased stem cell abundance, and expansion of proinflammatory immune cells. As many of these changes also resemble shifts observed within the tumor microenvironment, proximity to adipose tissue may present a hospitable environment to developing tumors, providing a critical link between adiposity and tumorigenesis<sup>[20]</sup>
- *Osta Prakopa* - As a result of lipolysis structural aging of lip occurs. Due to decrease in the number and size of the adipocytes/fat cells, decrease in lip volume and wrinkles that have become evident.

#### **CONCLUSION**

From the detailed discussion of *Medodhara Kala*, we can conclude that among 7 *Kala*, *Medodhara Kala* is the fascia covering or any fibrous tissue or serous membrane which covers the adipose tissue depots. Even the meninges also to be considered. In a nutshell, wherever *Meda Dhathu* is present, for covering that *Medodhara Kala* needs to be present. But this *Medo Dhathu* is *Sarva Deha Gata* (present all around the body) and the main fat depots are *Stana*, *Udara*, *Sroni*, and *Nithamba*.

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