

STUDY OF *MEDODHARA KALA* WITH SPECIAL REFERENCE TO OBESITY (*MEDOROG*)

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Article Received on
20 Feb. 2019,

Revised on 10 March 2019,
Accepted on 31 March 2019

DOI: 10.20959/wjpr20195-14721

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ABSTRACT

Anatomy is branch of science which is concerned with the body structure of human. *Sushruta* has mentioned details of human body structure in *sharirasthan*. It gives knowledge of structure of body. *Kala* is important structure mentioned by *sushruta* first. But clinically not much importance of *Kala* described in ancient text. *Sushruta* mentioned seven type of *Kala* named as *Mansdhara kala*, *Raktadhara kala*, *Medodhara kala*, *Shleshmadhara kala*, *Purishdhara kala*, *Pittadhara kala*, & *Shukradhara kala* are present in the body these are limiting membranes in between *Dhatu(rasa, raktadi)* & *Ashaya* or the layers which separates the muscle tissue from cavity of organ are

called *Kala*. *Medodhara Kala* is third prime *kala* present chiefly in Udar- (abdomen) in *Vapavahan*(Greater omentum), *Antrabandhini*(Mesenteries), perimepric region(Renal fascia), in small bones as *Sarakta meda*(red bone marrow), in large bones as *majja* (yellow bone marrow). The untainted essence of *mans* is termed as '*Vasa*' (Muscle fat). *Sushruta* described site for *medodhara kala* where large quantity of (*meda*) fat have deposited. So, fat deposition may be tendency of *medodhara kala* taking these into consideration functionally the adipose tissue & fatty layers of the abdomen should be correlates with *Medodhara Kala*. Adipose tissue forms thick layer under the skin, around the kidneys & in the buttocks. Food that is excess to requirement is converted into fat & stored within adipose tissue in the body. These are normal function of adipose tissue or *meda* this function disturb in obesity (*sthoulya vyadhi*) by consuming more oily, sweet heavy diet & also sedentary lifestyle & no anxiety causes energy imbalance & disturbs the digestion & metabolism in adipose tissue & ultimately starts accumulating fat cells in adipose tissue. So, Physician should consider *Medodhara kala* to to treat the obesity.

KEYWORDS: *Kala, Medodhara kala, sthoulya or Medoroga, Adipose tissue.*

INTRODUCTION

Ayurveda has very widely described anatomy and physiology of human body. *Ayurveda* also gives the description about basic element of body in terms of *Dosha, Dhatu, Mala, Srotas, Kala* in ancient time. The layers or membrane which separates the *dhatu* from *Ashay* (cavity) of organ are called *Kala*^[1], also the membrane separating each muscle fibre from the other are also consider as *kala*. *Sushruta* explained *kala sharir* in *sharirsthan* in *Garbhavyakaran* chapter, there are seven *kala* present in the body & *Medodhara kala* is third *kala* present chiefly in abdomen where excess fat have deposited, small bones & in large bones as *majja*(bone marrow). Functionally *Medodhara kala* can be consider as adipose tissue & fatty layers of abdomen. & adipose tissue act as insulating layer helping to reduce heat loss through the skin it also has protecting function providing mechanical protection, it is composed of adipocytes its main role is to store energy in the form of fat(triglycerides). Malfunctioning of this will leads to *sthoulya vyadhi* in which excessive fat deposition takes place over the site of *medodhara kala* i.e *Vapavahan*(Omentum), *Antrabandhini* (mesentery). so, understanding of *medodhara kala* as adipose tissue coupled with *medo dhatu* may form a scientific basis for management of obesity.

AIM: Study of *Medodhara kala* with special reference to *Medoroga*(Obesity).

OBJECTIVES

1. Exploration of *Medodhara kala*.
2. To study correlarion of *Medodhara kala* with modern science.
3. To study importance of *Medodhara kala* in *sthoulya vyadhi*.

REVIEW OF LITERATURE

- *Sushruta* explained *Kala* as –when we cut piece of wood or stem some liquid part oozes out of it this can be considered as essence of wood or tree^[2], so the root principle *Dhatu* of a body may seen by removing successive layers or tissue of its flesh.
- *Sushruta* mentioned seven type of *Kala* named as *Mansdhara kala, Raktadhara kala, Medodhara kala, Shleshmadhara kala, Purishdhara kala, Pittadhara kala, & Shukradhara kala*^[3] are present in the body these are limiting membranes in between *Dhatu*(*rasa, raktadi*) & *Ashaya* or the layers which separates the muscle tissue from cavity of organ are called *Kala*.

- *Medodhara kala* is third prime *kala*.
- Sites of *Medodhara kala*.^[4]

1) In udar

Vapavahan(greater omentum) i.e part of peritonium

Antrabandhini(mesenteries)

Perimepric region(Renal fascia)

2) In large bones-as yellow bone marrow

3) In small bones-as *sarkta meda*(red bone marrow)

Concept of vapa & vapavahan

“*Gosarpinibha peeta twachoatha sansthita cha ya |*

Sheetapasaha snigdha saa vapa parikirtita”^[5](*sha.5/32*)

Yellowish butter like structure through body called *Vapa*. It reduce heat loss through the skin.

Vapavahan

“*Vapavahan medsthan tailavartiketi khyatam*”--(*chakrapani*)^[6]

It is also *kosthang* & second root of *medovaha srotas*. *Chakrapani* has interpreted as *tailvartika* while Dr. Ghanekar has consider it as omentum where maximum fat accumulates.

Relation between medovaha srotas & medodhara kala^[7]

Moolsthan of *medovaha srotas* is *kati* & *vrikka*, *vapavahan* added by *charak*. *Srotas* can be considered having channels or pores which carry nutrients & give supply to respected *dhatu* of body as well as carries *dosha*, *malas*.

Concept of Medo dhatu

Sneha dominant *drava dhatu* which is having *guru*, *snigdha*, properties.

Site of medo dhatu

“*Medo hi sarvabhutana udar anuastheshu sthitam |*

At aav vridhhi prayo medswino bhavet || (Bha. Pu. 3/15)

Medodhatu located on *udar*(abdomen), *anu asthi* (small bones) so, excess fat deposited over abdomen of fatty person.

Medo dhatu formation^[8]: The components of *Medo dhatu* are two types *Poshya* (stable) & *Poshak*(unstable). *Medo dhatu* or fat is formed is further subjected to metabolism by *medo dhatu agni* & fat tissue this leads to the formation of *poshya meda dhatu* or fat tissue which circulate in whole body along with *rasa raktadi dhatu* for nutrition to *poshya medodhatu*. according to modern science it can be correlated with cholesterol, lipids which is present in circulating blood. The other part becomes *poshak medo dhatu* i.e the part of *medo dhatu* immobile in nature it stored in *medodhara kala* & its site i.e in *udar, sphika, stana,&vasa* which further form *asthi dhatu* or bone tissue. Functionally *medodhara kala* can be correlate with **Adipose tissue & fatty layers of abdomen** as modern science.

Adipose tissue in adults is not seen to be uniformly distributed in the body but they show tendency to be accumulate more in some parts like subcutaneous tissue particularly in abdomen, the greater omentum, the mesenteries & renal fascia the adipose tissue is found selectively deposited in abundance & these place where accumulation is mostly marked are called the fat depots of the body.

Function of Adipose tissue-as natural thermal insulator, fat is one of the body main source of energy. Food is eaten & not burned for fuel immediately is stored as fat in the adipocytes, it can be converted into fuel when the body runs out of immediate energy source from carbohydrate materials.

If the *medo dhatwagni* is balanced the fat is form in normal quantity & in best quality, this type of *meda* or fat tissue helps in protecting the body & participates in the *lepan karma*. Malfunctioning of this will leads to *sthoulya vyadhi* or **Medorog** in which excessive fat deposition takes place over the site of *medodhara kala* i.e *Vapavahan*(Omentum), *Antrabandhini* (mesentery).

Charaka describe the pathology of *medorog* is very accurate & completely scientific.

Excessive fatty & heavy diet, eat excessive calories in the form of fat, carbohydrate & sedentary lifestyle no exercise, no anxiety

This causes the energy imbalance & disturb metabolism of adipose tissue or *medodhara kala*



Medodhatwaagnimandya



Fat tissue starts accumulating in adipose tissue



It causes *srotorodh* (channel blockage) due to increase in cholesterol level.



Vayu enters in *kostha*



Increase in *Jatharagni*



Food digestion & absorption more fast



Excess & abnormal appetite



It disturb *medo dhatu* & further *dhatu* nourishment



Accumulation of fat in adipose tissue leads to (*sthoulya*) Obesity.

DISCUSSION

Limiting membranes in between *Dhatu(rasa, raktadi)* & *Ashaya* or the layers which separates the muscle tissue from cavity of organ are called *Kala*. It is found that fat deposition is tendency of fat tissue. *Ayurveda* mentioned sites for *meda* (fat) deposition i.e *Udar*(abdomen), yellow bone marrow in large bone, *sarakta meda* in *Anu asthi*(small bones), *vapavahan*(omentum) all these site are equal to adipose tissue. So, fat deposited in adipose tissue called fat depots. Fat depots located in subcutaneous layer deep to skin particularly in the abdomen, greater omentum, mesentery, renal fascia. Sites of *medo dhatu* in female are subcutaneous fat, *sphika*(buttocks) region, anterior aspect of thigh, in male fat tissues located more over tricep, deltoid muscle, buttocks region. So, *medovridhi* occurs at this places. *Medodhara kala* having property of *meda sanchaya*(fat deposition), according to modern science fat deposition is property of adipose tissue. So, sites & properties of *medodhara kala* & adipose tissue are same. Therefore *medodhara kala* mentioned by *Ayurveda* may be adipose tissue according to modern science.

CONCLUSION

After studying Ayurveda & modern literature for *Medodhara kala*, it can be conclude that *medodhara kala* is adipose tissue. If the excess accumulation of *medo dhatu* (fat) in site of *medodhara kala* leads to *sthoulya vyadhi* & other major metabolic diseases from this we can say that fat deposition is tendency *medodhara kala*. So, understanding of *medodhara kala* as an adipose tissue coupled with *sthoulya vyadhi* will successful outcome for treatment.

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