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## A Review Study of *Mamsaraju* on the Basis of Contemporary Anatomical Science

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### ABSTRACT

Medicine is a persistently advancing and changing discipline. Literary research is a necessity in today's perspective to get the hidden & unexplored knowledge. The Ancient Vedas are the initially written records of the wisdom & insights of Indian seers & scholars. Many specific words have been explained in the classical treatise in a specific context, several of which are of anatomical utility which is yet to be verified in the contemporary terminology. One of such unexplored term is *MamsaRajju*(rope like arrangement of Muscles) which is mentioned by Acharya Sushruta. *MamsaRajju* is specially described in the context of *Prushta*; which means *Pashchchatbhaga* of *Shareera*(back of body), which helps in standing forth prominently. Its position and enumeration are described while explaining the *Paribhasha*(definition) of various structures like *Snayu*(ligament), *Kandara*(tendon) etc in identifying a particular structure. *Mamsanibandhani*(stabilizing muscle arrangement) is to be used in respect to *MamsaRajju* as per commentator Acharya Dalhana.

As per current knowledge of anatomy, there are complex structures present on the back in the form of muscles, ligaments, bones, joints, fascia and related neurovascular structures. Thus, by critically analyzing these structures, from *Rachanatamka*(anatomical) purview, we can determine specific anatomical structure which can be quoted as *MamsaRajju*.

### KEYWORDS

*MamsaRajju, Prusta, Mamsanibandhani, Erector Spinae muscles*



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## INTRODUCTION

The Veda is the earliest written records of the wisdom & insights of Indian seekers & scholars. Literary research is must in today's perspective to get the hidden & unexplored knowledge. Many specific words have been explained in the classical treatise in a specific context, several of which are of anatomical utility which is yet to be verified in the contemporary terminology. Acharya Sushruta has mentioned such a term *MamsaRajju*(Muscular Rope like). Its position and enumeration are described while explaining the *Paribhasha*(Definition) of various structures like *Snayu* (ligament), *Kandara*(tendon) etc in identifying a particular structure. *MamsaRajju* is specially described in the context of *Prushta*; which means *Pashcchatbhaga*(Back of body) of *Shareera*, which helps in standing forth prominently. According to anatomy textbooks of contemporary science, there is an elaborate explanation regarding structures present on the back in the form of muscles, ligaments, bones, joints, fascia and related neurovascular structures. By critically analyzing these structures, from Rachana point of view, there is a need to

identify and determine specific anatomical structure as *MamsaRajju*.

## AIM

As there is no standardization in the opinion of authors, there is a need to understand for which structural component related to *Prushta* has been termed as *MamsaRajju*.

## MATERIALS & METHODS

*SusruthaSamhita*& its commentaries and relevant contemporary literature were critically reviewed to dig out the nearest correlated structure to *MamsaRajju*.

## LITERARY REVIEW

*MamsaRajju* are four in the number, found on both sides of *Prushtavamsha*(lateral sides of vertebral column) and helps in binding the muscle which is arranged two internal and external<sup>1</sup>. The term *MamsaRajju* includes two words, *Mamsa* (Muscle) and *Rajju*(rope). The word *Mamsa* refers to third *Dhatu*(tissue level) among *SapthaDhatu* which helps in *Shareera* and *MedaPusthi*(Adipose anabolism)<sup>2</sup>. The word *Rajju* means rope, cord, a lock of braided hair or tendon proceeding from vertebral column and one which helps in binding<sup>3-4</sup>.

*VruddhaVaghata* and *Vagbhata* also mentioned these are four in number lie



either side of *Prustavamsha*<sup>5</sup>. According to the commentary of *Gayadasa*, *MamsaRajju* are eight in number, four each on both side of *Prusthavamsha*<sup>1</sup>. *Sushruta* while explaining chikitsa of *ParshukasthiBhagna*(Ribs Fracture), have used the word *Mamsa Nibandhani*(which hold so or Stabilizes)<sup>6</sup>.*Dalhana* has commented that the word *Mamsanibandhani* is used with respect to *MamsaRajju*.

According to modern science, the structures on the back of the body, especially on lateral sides of the vertebral column are in the form of muscles, ligaments, fascia, tendons and neurovascular structures.

**MUSCLES OF THE BACK-** muscles present on the back can be grouped under two; extrinsic & intrinsic muscles. The extrinsic group consists of superficial and intermediate muscles that manage extremity and respiratory movements, respectively. The superficial group consists of trapezius, latissimus dorsi, levator scapulae, and rhomboids; whereas intermediate consist of serratus posterior which is proprioceptive. The intrinsic (deep) muscles include muscles that particularly act on the vertebral column<sup>7</sup>.

**ERECTOR SPINAE-** A musculotendinous structure, which consists of fascicles, that presume attachments to the skull, the cervical, thoracic and lumbar

vertebrae, the sacrum, and the ilium. There is triplet of muscles in each three regional parts: Spinaliscapitis, Spinaliscervicis, Spinalisthoracis, Longissimuscapitis, Longissimuscervicis, Longissimusthoracis, Iliocostaliscervicis, Iliocostalisthoracis & Iliocostalislumborum.

**ERECTOR SPINAE APONEUROSIS-** This is the dorsal aponeuroses of the thoracic fibers of longissimus and the thoracic fibers of iliocostalislumborum forms a wide sheet of parallel tendons. Significantly, the erector spinae aponeurosis is formed exclusively by the tendons of the thoracic fibres of longissimusthoracis, iliocostalislumborum and fibres of multifidus may insert into the deep surface of the erector aponeurosis.

## DISCUSSION

Classical texts mentions *MamsaRajju*, *Snayu* and *Kandara*; involved in binding the *Mamsa*. Hence there is a need to differentiate *MamsaRajju* from *Snayu* and *Kandara*. *Peshi* is a type of structural component which is produced by the division of *Mamsa* by the influence of *Vayu*<sup>8</sup>. In the body *Sira*, *Snayu*, *Parvasandhi* are said to be covered by *Peshi* which is responsible for strength and stability<sup>9</sup>.*Snayu* helps in binding the *Mamsa*, *Asthi*, and *Meda* and makes the



body as *Sudrudha*<sup>10</sup>. *Kandara* is such a structure which is said to involve in *Akunchana* and *Prasarana*, has been called as *Mahasnayu*<sup>11</sup>. Now let us discuss back muscles specially erector spinae and its aponeurosis. Although muscles will move the spinal column, the majority of muscular activity is implicated in providing stability to stance and to provide a firm platform for limb function. It is important to recognize the way in which the muscles work in conjunction with those of the abdominal wall. The erector spinae group and internal oblique and transverses abdominis are anatomically and functionally connected by the thoracolumbar fascia. This fascia, together with collagenous tissue within the back muscles, resists forward bending of the trunk, and during manual handling. Thus holding the other structures during movements as said to be *Mamsanibandhani*.

## CONCLUSION

For most back problems in clinical practice, especially chronic low back pain, enhancing muscle strength, stamina, and coordination with the muscles contribute to stability, e.g. pelvic girdle muscles, is the most appropriate and effective therapeutic avenue.

The vertebral column is amazing structure with mobility, strength and weight-bearing ability and protecting its content like neural structures, irrespective of its position. Much of its constancy depends on dynamic muscular control. The contribution to strength bestowed by the musculature has been grossly underrated. The whole vertebral column is stabilized by the ‘guy-rope’ or staying effect of the long muscles which attach it to the girdles, the head and the appendicular skeleton. This effect is particularly marked for erector spinae, which controls global posture and movement. The small and deep muscles are best able to resist shear movements between vertebrae because only they have sufficient angulations to the long axis, to do this effectively. So, on above discussion, it can be safely concluded that the Erector Spinae muscles are fulfilling all the criteria to be considered as *Mamsarajju* both structurally and functionally.



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