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A REVIEW OF *SANDHIGATA VAIKALYAKARA MARMA* WITH REFERENCE TO IMPORTANCE OF SYNOVIAL JOINTS

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ABSTRACT

Modern medical science has different branches to deal with different human body components, among them arthrology is a branch of modern anatomy and orthopedics which deals with joints and its applied clinical aspect. *Acharyas* always tried to make Ayurveda more practical and applied. In this regards Ayurveda *Acharyas* developed the science of *Marma* as a science of trauma and their management. *Acharya Sushruta* gave detail description of *Marma*. He has elaborated 107 *Marma* and categorized them in various types according to injury results and structural predominance. Among them *Sandhigata Marma* are related to joint traumatology. There are total 20 *Sandhigata Marma* described in *Samhita* in which 10 *Marma* have injury result as *Vaikalata* (disability). So, to understand *Ayurvedic* traumatology regarding joints, we have to understand these *Sandhigata Marma* particularly *Sandhigata Vaikalyakara Marma*.

KEYWORDS: Joints, *Marma*, *Sandhigata Vaikalyakara Marma*, *Vikalata*.

INTRODUCTION

Modern medical science has different branches to deal with different human body components, among them arthrology is a branch of modern anatomy and orthopedics which deals with joints and its applied clinical aspect. *Acharya Sushruta* has described structural, functional and applied aspect of various anatomical entities in separate chapters in *Sushruta Samhita* e.g. clinical importance of *Sira* described in chapter *Siravyadha vidhi Shareera* or clinical importance of *Asthi* described in *Bhagna Chikitsa* chapter and clinical importance of different vital parts of body described in *Pratyek Marma Nirdesh Shareera* chapter.[1] The injury to *Marma* points causes complications as depicted in **Figure 1**.

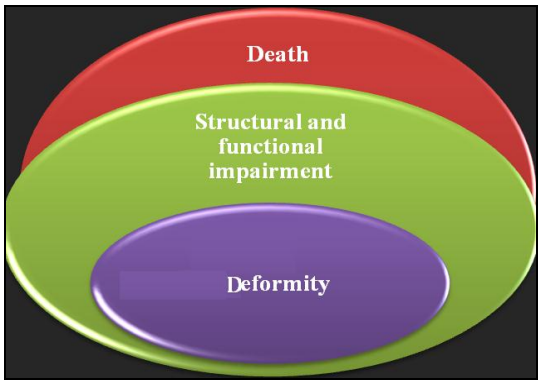

Figure 1: Complications related to the *Marma* points.

Marma by definition are points of human body which consist of *Mamsa* (muscles), *Sira* (blood vessels), *Snayu* (tendons or ligaments or nerves), *Asthi* (bones), *Sandhi* (articulations) and where *Prana* is specially located.[2] Acharya *Sushruta* has categorized all 107 *Marma*,[3] in five types on the basis of predominantly involved structures. These five types of *Marma* are *Mamsa Marma*, *Sira Marma*, *Snayu Marma*, *Asthi Marma* and *Sandhi Marma*.[4] *Acharya* further categorized them as per injury result. These are *Sadhyapranahara*, *Kalantara Pranahara*, *Vishalyaghna*, *Vaiklyakara* and *Rujakara*.[5] Total 20 *Sandhigata Marma* are described, they are – *Janu* (two), *Kurpara* (two), *Seemanta* (five), *Gulpha* (two), *Manibandha* (two), *Kukundara* (two), *Aavarta* (two), *Krukatika* (two), *Adhipati* (one). Among them ten *Marma* are *Vaiklyakara*, five *Kalantara Pranahara*, four *Rujakara* and one *Sadhyapranahara*. The traumatology of joints works around *Sandhigata Marma*, considering this fact present article explores Ayurveda view on *Sandhigata Vaikalyakara Marma* with reference to importance of synovial joints.

Aim and Objectives

1. To collect the available *Ayurvedic* literature with respect to *Sandhigata Vaikalyakara Marma*.
2. To evaluate the importance of *Sandhi* (joints) as a *Marma* point in producing *Vikalyakara* effect (disability).

MATERIAL AND METHODS

All relevant *Ayurvedic* references were collected from *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, *Ashtanga Samgraha* and *Bhavaprakasha* with their available Sanskrit and Hindi commentary. References for modern correlation were collected from textbooks of modern anatomy and orthopedics. The *Sandhigata Vikalyakara Marma* with *Vikalata* as prognostic effect were critically reviewed and correlated with modern science.

Observation

In *Brhattrayee*, all *Samhitas* give same number of *Sandhigata Vaiklyakara Marma* and their traumatology is also same. In *Ashtanga Hridaya*, the common symptom of all six types (*Mamsa*, *Sira*, *Dhamani*, *Sanyu*, *Asthi*, *Sandhi*) of *Marma* are described.[6] Common symptoms of *Sandhi Marmabhighata* includes feeling of full of thorns at site of injury, even after healing of the wound there is shortening of the arm, lameness, loss of strength and movement of joint, emaciation of body and swelling of joints occurs. All these symptoms are produced by damaging different structural component of a joint. Thorn full feeling of site of injuries may due to nerve and blood vessel injuries, shorting of limb is due to nerve or muscle or ligament injuries and emaciation of limb and swelling also occurs by damage of muscular and vascular structure.

It is observed in all texts that total 20 *Sandhigata Marma* are described, among them *Adhipati* (one) is *Sadhyapranahara*, *Seemanta* (five) are *Kalantara Pranahara*, *Manibandh* (two) and *Gulpha* (two) are *Rujakara* and remaining ten are *Vaiklyakara Marma*.[7]

RESULTS

- Most of *Sandhi Marmas* (50%) are *Vaikalyakara* in nature which means injury on joints are more likely to produce disability.
- In *Sandhi Marma viddha Samanya Lakshana*, all symptoms are related to structural and functional abnormality of the joint. Here also it is found that damage of blood vessels, nerves, ligament and tendon plays important role in producing symptoms.
- In *Sandhigata Vaiklyakara Marna - Janu*, *Kurpara* and *Krukatika* are anatomically complex synovial joints. *Aavarta* is fibrous joint and *Kukundara* is a plane synovial joint. So, injuries of synovial joints are more important because these joints are more movable and major injuries and diseases can create lifelong disability.
- Even after development of advance modern surgery, some disability still remains after joint injuries.

DISCUSSION

Detail description of each *Sandhigata Vaikalyakara Marma* is as follow

Janu Marma – As per *Bruhattrayee*, *Janu* is located at the union of *Jangha* (leg) and *Uru* (thigh)[8] means knee joint. This *Marma* is two in number and *Pramana* of *Marma* is three *Angula* as per Acharya *Sushruta* and two *Angula* as per Acharya *Bhavmishra*,[9] and the injury result is *Khanjata* (limping). Knee joint is largest and most complicated joint in the body. The important structure of the joints are articulating surfaces, articular capsule, ligaments, medial and lateral menisci, common peroneal and tibial nerve, popliteal artery and vein. The stability of the knee depends primarily upon its ligaments.[10] The knee joint is subjected to a variety of forces during day-to-day activities and sports. Fractures, Ligament injuries, Menisci injuries are the most common knee injuries. Various deformity, diseases, and injuries can occur at knee joint which leads to disability that is why *Acharyas* have mentioned *Janu Marma* as "*Vaikalyakara Marma*".

Kurpara Marma – *Kurpara* is between *Prapani* (forearm) and *Prabahu* (arm)[11] means elbow joint. This *Marma* is also two in number and *Pramana* is three *Angula* according to Acharya *Sushruta* and two *Angula* as per Acharya *Bhavmishra*. Injury result is *Kuni* and different meanings of *Kuni* described as *Samkuchita Bahumadhya* (as per *Dalhana*), *Vikrutakara* (as per *Indu*) and *Prabahupani Anguli Kubjata* (as per *Arunadatta*). All indicate that injury on elbow leads to deformity and disability of forearm and hand. The elbow joint consists of three joints - the humero-ulnar, the humero-radial and upper radio-ulnar joint, which lie within one joint capsule. Fracture and dislocation are most common injuries of this joint. The anatomical component of elbow includes articular capsule, ligaments and nerves. The elbow joint is innervated by filaments arising from all of the main nerves of the upper limb, except for the axillary nerve. The ulnar nerve courses under the medial head of the triceps muscle towards the posterior aspect of the medial epicondyle, where it lies superficially in a shallow groove behind the bone and is, therefore, very vulnerable to direct contusion. The injury to the nerves, blood vessels, muscles and ligaments may leads to decrease in length, loss of strength, lack of movements and also there will emaciation of the limb.

Kukundara Marma is the *Marma* of *Prishtha* region, as per *Shabdakalpadruma*, *Kukundara* is two *Koopaka* (depressed area) situated at *Nitamba* (buttocks). As per *Amarakosha*, *Kukundara* is two *Garta* (depresson) below the *Prishthavansha* (vertebral column). As per *SushrutaSamhita* and *Ashtanga Samgraha*, *Kukundara* is situated at *Parshva*, outer side of *Jaghana* and bilateral to vertebral column.[13] *Acharya Charaka* described *Kukundara* as *Pratyanga*, and *Chakrapani* located it at prominent part above *Sphicha* (buttocks).[14] This *Marma* is two in number and *Pramana* is half *Angula*. The injury results are *Sparshajyana* (loss of sensation) and

Adhahakaye Cheshtopaghata (dysfunction of lower part of body). As per above different location, surface marking of *Kukundar*a are two depressed area above buttocks (dimple of back or dimple of Venus). Anatomically, the structure at that area is sacroiliac joints. Traumatology also indicates the nerve damage which is closely related to the joint. Injuries on sacroiliac joints are very common and it is called sacroiliac joint dysfunction. The lumbosacral plexus is at risk in fracture dislocations of the sacroiliac joints.[15] The sign and symptoms of this condition are similar to sciatica.

Aavarta *Marma* is located at inferior to the eyebrow, and the injury result is *Aandhya* or *Drashti Upaghata* (complete or partially blindness). This *Marma* is two in number and *Pramana* is half *Angula*. It is considered as fronto-zgomatico-sphinoidal suture,[16] and also as mid-point of eyebrow or supraorbital notch of frontal bone.[17] This notch/foramen transmits the supraorbital nerve and vessels, and pressure exerted here with the fingernail can be painful.[18] Traumas on both locations are always related to head injuries and other facial bone fracture. Injuries on both the sites ultimately lead to complete or partial impairment in nerve supply and blood supply of eyeball and orbital muscle. So, the complication ultimately leads to complete or partial blindness (including limitation of eye movement and diplopia like symptoms).

Krukatika Marma is *Marma* situated at the junction of *Shira* (head) and *Greeva* (neck)[19] and injury on this *Marma* leads to *Chalamurdhata* (instability of head). This *Marma* is two in number and *Pramana* is half *Angula*. As per anatomical correlation, it is found that skull on the first cervical vertebra forms two atlanto-occipital joint on each side from the mid line in the back of neck.[20] Rotation of head is conducted on atlanto-axial joint, so atlanto-occipital and atlanto-axial both joints are important in creating injury resulting in instability of head. So, articulation between occiput, atlas and axis can be correlated with *Krukatika Marma*.

CONCLUSION

Ayurveda *Acharyas* are very much aware of the joint injuries and their consequences, description of *Sandhigata Vaikalyakara Marma* are showing the clinical importance of major synovial joints in our body. Diseases or injuries on knee, elbow, sacro-iliac joint and atlanto-occipital joint can cause lifelong disabilities and pain. One has to prevent these joints from being injured particularly during sports or any other vigorous activities to avoid serious traumatic complications.

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