



### Anatomical study of *Janu Marma* with respect to knee joint.

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#### Abstract

Marma means vital parts of the human body. There are 107 marma in human body. Marma has been classified into 5 categories, i.e. Mansamarma, Siramarma, Snayumarma, Asthimarma & Sandhimarma. Vaikalyakara Marma are the points where injury causes structural functional deformity. These are 44 in number and there are 12 present in ADHOSHAKHAGA (lower body) i.e. 6 in each lower limb. They are Kurch, Janu, Aani, Urvi, Lohitaksh & Vitapa. PS; Janu marma is considered as sandhi and vaikalyakar marma in Ayurveda and injury to Janu Marma causes *Khanjatva*. Thus, this topic is selected to. **Aim** To study as to evaluate the comparison between Ayurveda and modern anatomical structural changes between Knee joint and Janu Sandhi Marma. **Observation:** The knee joint shows all similar changes which are explained by Acharya Sushruta. All the bones, ligaments, fluids, cartilages are earlier explained in Ayurveda with its comparison showing deformities such as limping of joint which means *KHANJATVA*, which is very much seen nowadays in people with knee injuries or 3<sup>rd</sup> stage of Osteoarthritis. **Result:** All the

bones, ligaments, tendons, cartilages and disease of Knee joint are explained in Ayurveda even before the modern science started to explain. But Ayurveda had a different term for that. **Discussion:** All the modern anatomical structures with reference to knee joint were correlated with Janu Sandhi Marma. Why marma was situated at that situ, what was the exact science which concludes that all what was said about Asthi, Sandhi, Peshi, Sira, Snayu and Snehn of Knee joint; had so much of importance. The exact comparison between each and every ligament to snayu and peeshi, bone to asthi, Sira to Vessels and snehan to synovial fluid and Meniscus is exactly done via both terminologies i.e. Ayurveda concepts and Anatomical concepts. **Conclusion:** Vaikalyakara Marma that is the point injury to which causes Structural or Functional Deformity. As Khanjatva is explained in Sushruta Shareer Sthana, which means Limping of limb, which is caused by external trauma at Janu Sandhi, whereas Osteoarthritis is also explained in B.D. Chaurasia's human anatomy with external trauma or fracture. **Keyword** – Janu Sandhi, Knee Joint, Janu Marma, Khanjatva, Rachna

## INTRODUCTION

Ayurveda is also known as ancient science of healing. It is the only branch of science which not only deals with the ill health of the patient, but also helps in preserving the healthy wellbeing of any individual. Ayurveda has many reference books with various authors & in various timelines. Some authors such as Charak, Sushruta belong to Vedas, whereas authors like Vagbhata are recent.

All of these authors have significant aspect over treatment, viz, medicinal and surgical aspect. For Medicinal aspect, the detail description and their treatment is in the book known as CHARAK SAMBHITA & for surgical aspect SUSHRUTA SAMBHITA.

Sushruta sambhita has various partitions and chapters, the most basic and the most important to understand is HUMAN BODY which is explained in SHARIR STHANA. Back in ancient times there was a time where cremation was in very different manner, as we know the people would not have that understanding of human body before, various Acharyas did dissection in such vedic times to understand what exactly the human body is made of. Studying the human body, they understood various parts and a unique identification came across are MARMAS. Understanding the marmas was important because these are the locations where any type of injury can cause minor to severe to life threatening situations. And studying the Marma will give us the knowledge that how a person can be even saved if by any chances a person had a trauma on such specific MARMA.

According to Modern science, they have not specified any such locations, but if we try to locate these specific locations of marmas on surface marking, we come

across that modern science have kept them specific and untouched. They have not named them but they have isolated them. Here we come across Janu Marma which has Mans, Asthi, Sandhi, SIra, Snyau. This same location in modern aspect of science i.e. Anatomy it is known as Knee Joint Considering *Ayurvedic Aspect* related to **Janu Sandhi Marma**

- Marma means vital parts of the human body. There are 107 marma in human body. According to Sushruta, Marma have been classified into 5 categories, i.e. Mansamarma, Siramarma, Snayumarma, Asthimarma, Sandhimarma.
- Here Vagbhata Acharya have classified the marma in 6 categories Mansamarma, Siramarma, Snayumarma, Asthimarma, Sandhimarma, Dhamnimarma. Here the number of marma remains the same i.e. 107 but have been classified additionally in Dhamnimarma.
- This leads us to understand that these marmas are one and the same but the additional classification is only according to the spectacular bifurcation of Dhamnimarma. Depending upon after effect to injury to marmas there are 5 types & those are as follows Sadhyapranhar, kalantarapranahara, Vishalyaghna, Vaikalyakar, Rujakar.
- Out of these Vaikalyakar marma are the situ where any trauma or injury causes structural or functional deformities. Out of these 6 are present in Adhoshakha (lower limb) i.e. 12 vaikalyakar marma

adhoshakha, these are Kurcha, Janu, Aani, Urvi, Lohitaksh & Vitapa.

- Specifically, injury to Janu marma causes **KHANJATA** i.e. limping of lower limb. Janu marma is explained by both Sushruta & Vagbhata. It is considered to be the combination of Sira, Snayu, Asthi & Sandhi.
- Considering **MODERN ANATOMICAL ASPECT OF KNEE JOINT.**
- According to modern aspect of knee joint, it involves bones, cartilages, ligaments, tendons & synovial membrane. Knee joint is saddle joint, complex joint and condylar synovial joint.
- Its articular surfaces are – condyles of the femur, the condyles of the tibia and the patella. It has ligaments, namely, ligamentum patellae, medial ligament, lateral ligament, oblique popliteal ligament, arcuate popliteal ligament, anterior cruciate ligament, posterior cruciate ligament and transverse ligament.
- Cartilage of knee joint is meniscus. There are 2 namely, medial and lateral meniscus. All the major joints have fibrous capsule, even knee joint which is one of the complex joint has fibrous capsule which is thin & deficit anteriorly.
- If there is a fracture or any trauma on knee joint in early age, it later leads to mild pain on medial aspect of knee and if not taken care of leads to premature OA in early stage of life.

**Aim** - To study as to evaluate the comparison between Ayurveda and modern anatomical structural changes between Knee joint and Janu Sandhi Marma.

#### **Materials & Methods –**

1. Literary study from Ayurvedic texts and Modern texts
2. Previous work done
3. Research journals
4. Research papers presented on the related topics
5. Precious Dissertations
6. Authentic Internet Sources.

#### **For cadaveric Dissection Study-**

- a. Cadaver: MALE
- b. Dissection kit

#### **Methodology**

- Literature Study: All the information regarding Vaikalyakara Marma of lower limbs along with the anatomy of lower limb was collected from ayurvedic texts, Modern texts, Previous work done, Research journals, Research Papers presented on related topic, previous dissertations & authentic internet sources. All the literature material mentioned above was thoroughly as well as critically reviewed, concentrating on the references regarding the Vaikalyakara Marma of Adhoshakha. The collected information was compared and analyzed scientifically.
- Cadaveric Dissection study –  
Cadaveric dissection was done in the dissection hall of Department of SHAREERA RACHNA OF YAC P.G.T & R.C, KODOLI. While studying the dissected cadavers, images were captured with Camera.
- Criteria of selection of cadaver-

### Inclusion Criteria-

- Cadavers with completely Developed body parts
- Cadavers of both the Sex
- Having natural cause of death
- Preserved with proper methods of preservation

### Exclusion Criteria-

Death due to poisoning, accidental condition & any chronic disease condition.

### Protocol-

Dissection of lower limbs were done on cadavers by using dissection kit, Cunnungham's manual of practical anatomy & B.D. Chaurasia's Human

Anatomy for understanding the modern aspects of Vaikalyakara Marmas.

- On the basis of Ayurvedic literature related to the Janu Marma, Identification of that Marma was done on Cadaver
- On the basis of Pramana (DIMENSIONS) of the marma given in texts, circular area of given Pramana was drawn taking Marma point as center.
- Neat & detailed dissection was done off the marked site with the help of dissection kit & dissection guides.
- With the help of superficial & deep dissection, the structures present at the situ were identified.

### Observation –

- In case of Janu marma, the structures that are seen Anatomically are:

Sr. No.	Modern Structure	Ayurveda Structure
1.	Patella	Asthi
2.	Condyles of femur	Asthi
3.	Condyles of tibia	Asthi
4.	Ligaments	Peshi & Sira
<b>The ligaments where identified as:</b>		
5.	Anterior Cruciate ligament.	
6.	Posterior Cruciate ligament.	
7.	Medial ligament	
8.	Lateral ligament	
9.	Ligamentum Patellae.	
10.	Oblique popliteal lig.	
11.	Arcuate lig.	
12.	Cartilages	Snayu
<b>Those are Medial meniscus and Lateral Meniscus:</b>		
13.	Popliteal vessels	Sira & Dhamani
14.	Tibial nerve	
15.	Common peroneal nerve	

So on these grounds we can conclude that the co relation of ayurvedic aspects of janu Sandhi and Modern Anatomical aspect of knee joint is completely relatable as each

and every thing seen at situ was previously identified and explained in Ayurveda. The detail structural and clinical changes in human person and also spectated in

human Cadaver are explained here as follows-

the vaikalayakara marmas are those in the human body, injury to which can result in structural or functional deformity. Such 06 vaikalayakara marma that are present in each lower limb are Kurch, Janu, Ani, Urvi, Lohitaksh & Vitapa. Each of this has unique significance if injury occur to them. As per the dominant anatomical structure involve, in the prognosis of the injury varies from disfigurement of leg to paralysis to sometimes even death.

1. Further on while spectating it on surgical or medicinal aspect, it has been stated that Marmabhighat at Janu Marma can cause Khanjatva, in Sushruta Shareer sthana & in B.D.Chaurasia's Human Anatomy, it is stated that Osteoarthritis is an age related cartilage degeneration of the articular surface, it is characterized by growth of osteophytes at the articular ends, which make movements limited and painful, thus causing difficulty in walking. However, osteoarthritis may set in at an early stage also due to underlying congenital deformities or fractures around the knee joint.
2. Injuries to the knee - Injuries to the menisci strains in a slightly flexed knee, as in kicking a football, the meniscus may get separated from the capsule, or may be torn longitudinally (bucket handle tear) or Transversely. Medial meniscus is more prone to the injury than the lateral meniscus because its fixity to the tibial collateral ligament and because of greater excursion during rotatory movements. The lateral meniscus is protected by the popliteus which pulls it backwards so that it is not crushed between the articular surfaces.

3. Injuries to the Cruciate Ligaments are also common. The ACL is more commonly damaged than the posterior cruciate lig. It may be injured in violent hyper extension of the knee or the ant dislocation of tibia. The PCL is injured in posterior dislocation of tibia, the injury may vary from simple sprain to complete tear. Tear of the ligaments leads to anteroposterior mobility
- Here by all such correlations it is clearly understood that all this is the same, only the names are different in different language.
  - Each and every structure present in the knee joint is stated before in Ayurveda which resembles the exact same structure and function.

#### **Result –**

- Janu Marma is 3 Angula in dimension.
- With all this Rachnatmak review of literature with aspect of Ayurveda and modern Anatomy, it can be concluded that all this co relations were done with dissection of Human body that is known as Shav Vichedana in Ayurveda.
- As Khanjatva is explained in Sushruta Shareer Sthana, which means Limping of limb, which is caused by external trauma at Janu Sandhi, whereas Osteoarthritis is also explained in B.D. Chaurasia's human anatomy with external trauma or fracture.

#### **Conclusion -**

- With all this relation in between, it is clearly understood that Janu Marma which was explained by Sushruta in Shareer Sthana has complete correlation with Modern Anatomical Aspect of Knee joint of Human body.

- Here by all such correlations it is clearly understood that all this is the same, only the names are different in different language.
- Each and every structure present in the knee joint is stated before in Ayurveda which resembles the exact same structure and function. Thus, we can understand the knowledge and information which was explained by Modern science now, it was explained back by Ayurveda in the beginning of Ancient Science.

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