



## Research Article

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### ANATOMICAL CHANGES OCCUR IN KURPARA SANDHI WITH SPECIAL REFERENCE TO TENNIS ELBOW OF DIFFERENT ETIOLOGICAL FACTOR

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#### ABSTRACT

The present study is taken in due to interest there are very rare research and on anatomical changes in elbow joint due to Tennis Elbow. So, the careful observation and evaluation of these changes will be landmark in the medical field for the treatment and prevention of this disease. Musculoskeletal system is most important system of the body as it gives flexibility and mobility to our body. Asthi and Sandhi are the part and parcels of the musculoskeletal system. Tennis Elbow is the most common insertional tendinopathy. Previously the disease was found in athletes or tennis player only but now days it is common. Kurpara marma has main constitution Asthi and Sandhi so damage to structure at elbow joint result into temporary or permanent damage as well as disability. According to rachana it is sandhi marma, and according to effect it is vaikalyakara marama. Marmaghata on elbow joint and structure in Elbow joint can alter both organic function and structural condition of the body. Aim: To access the anatomical changes in Kurpara Sandhi in Tennis Elbow of different etiological factor. Objectives: To study the Kurpara Sandhi and to review the articles on Kurpara Sandhi and Tennis Elbow. Material: Well preserved Cadaver and Patients. Methods: Dissection method and Radiological Study (MRI Of Affected Elbow Joint). Results: results were concluded based on observation which were found during the radiological study in forms of Graphs and Charts.

**Keywords:** Kurpara marma, Marmaghata, Vaikalyakara Marma, Tennis Elbow.

#### INTRODUCTION

Ayurveda means the science of life, which aims to assure the person a disease-free life. Throughout knowledge of Ashtanga Ayurveda helps the physician for accurate diagnosis and treatment of disease. "Shaarir" shastra provides complete information about the constituents of the body so the study of 'Shareer' i.e. body is inevitable in any medical science. Prakrit shareer i.e. described in sharirsthana of Sushruta Samhita. Detailed description about Anatomy and physiology of the body and body parts are mentioned in the Sushruta Samhita<sup>1</sup>. It is stated that 'Sharire Sushruta Shrestha<sup>2</sup>. Our life has evolved on the "Art of locomotion". The Human body is mainly supported by the bone which does Dharan of the body. Musculoskeletal system is most important system of the body as it gives flexibility and mobility to our body. Asthi and Sandhi are the part and parcels of the musculoskeletal system. If the deformity to this system occurs it can be hampering the progress of life, that why Acharya explained the Dharana Karma of Asthi which has great importance. The term sandhi means Samyoga or union. In this context sandhi means Asthisamyog sthana. As per modern anatomy sandhi (Joints) i.e. joint is defined as meeting point of 2 or more bones or cartilage that allow the free and different type of movement. In the body many joints are present, but all the raw, fine, skill-full movements are carried only by upper extremity. In upper extremity many Bones, Joints, Muscles organized into anatomical compartments. It is useful in maintaining tone and providing stability and allowing precise fluid movement. So, each and every joint is important in upper extremity. Kurpara Sandhi is associated with upper extremity joints. Marma is the spot or point where Prana (life force) is said to be situated<sup>3</sup>. Marmaghata can alter both organic function and structural condition of the body. In upper extremity there are 3 major joint where the marma point

were situated, among that Kurpara Sandhi (Elbow Joint) one of them<sup>4</sup>. According to Rachana (Anatomy) it is sandhi marma (Vital Points) and according to effect it is vaikalyakara marama. Kurpara marma has main constitution Asthi (Bones) and Sandhi (Joints) so damage to structure at elbow joint result into temporary or permanent damage. When Kurpara marma gets injured, it causes loss of function of forearm. The diseases related to musculo-skeletal system are very painful and they hamper normal function and day to day activities. Tennis Elbow is one of them which affect the Elbow Joint and its Joint function.

Tennis Elbow is the most common insertional tendinopathy<sup>5</sup>. No such disease has been mentioned in the Ayurvedic text but based on sign and symptoms Tennis elbow is the condition related to Snayugata Vata. It is developed due to nonspecific inflammation at origin of Extensor muscle of the forearm. It is clinically diagnosed by sensation of pain at lateral Epicondyle of Humorous<sup>6</sup>. There is a torn tendon of the Elbow joint due to excessive workload which leads to pain in elbow joint and loss of strength in holding the things. The incidence rate of Tennis Elbow is 4.5 per 1000 person in a year. Previously the disease was found in athletes or tennis player only but now a days it is common in individual who frequently perform forceful Pronation and Supination<sup>7</sup>. The cardinal symptom of Tennis Elbow is pain on outer aspect of elbow joint which radiates to forearm and hand<sup>8</sup>. As certain movement of elbow and wrist joint, patient find it difficult to do his daily routine work which can lead to complication of elbow joint.

**Aim:** To access the anatomical changes in Kurpara Sandhi in Tennis Elbow of different etiological factor.

**Objectives**

1. To study the Kurpara Sandhi.
2. To review the articles on Kurpara Sandhi and Tennis Elbow.

**MATERIALS AND METHODS**

**Conceptual study:** Literary study of Kurpara Sandhi references were collected from various Ayurvedic Samhitas including Bruhattarays and Laghutrayis and their concerned commentaries other ancient books journals are correlated and analyzed with the knowledge of modern science on the subject.

**Anatomical study:** Study of Kurpara Sandhi and related structure carried out on cadaver which was obtained from the (Tilak Ayurved Mahavidyalaya, 583/2 Raasta peth Pune, Maharashtra, India, and dissection were carried out in Rachana Sharir department of Government Ayurved College Dharashiv, Maharashtra, India. Observation was analyzed or correlated in the view of Ayurvedic description of Kurpara Sandhi Sharir special reference to modern science.

**Clinical Study**

**Study design: An observational cross-sectional type of study.** Clinical study plays important role in establishing a fact theoretically established and written in our texts. For this study

**Assessment Criteria**

**Subjective Criteria**

Sign and Symptoms	Score	Score Details
Pain	0	No Pain
	1	Mild Pain
	2	Moderate Pain
	3	Severe Pain
Pricking Sensation	0	No Pricking Sensation
	1	Occasional Positive
	2	Constant Mild
	3	Constant Moderate
Radiation of Pain	0	No Radiation
	1	Occasionally Up to Forearm
	2	Constant Up to Forearm
	3	Up to Arm
Tenderness	0	No Tenderness
	1	Pain on deep Palpation
	2	Pain at light Palpation
	3	Don't allow to touch
Joint Mobility	0	Complete ROM against gravity with full resistance
	1	Complete ROM against gravity with someresistance
	2	Complete ROM with gravity omitted
	3	No muscle contractility

**Total Score and Condition**

Score	Condition
0-6	Mild
7-13	Moderate
14-20	Severe

**Objective Criteria (with the help of MRI)**

Sign and Symptoms	Score	Score Details
Tendinosis	1	Mild- Initial stage of tendon degeneration
	2	Moderate- Progression of degenerative changes with more pronounced alteration
	3	Severe- Degenerative changes with extensive disruption
Abnormal Thickening at CEO (Common Extensor Origin)	1	Minimal or slight thickening of CEO at its origin.
	2	Noticeable thickening of CEO at attachment site
Tear of Extensor Carpi Radialis Brevis Tendon	1	No Tear of ECRB
	2	Partial tear of tendon fiber

30 patients were selected because of inclusive criteria from kayachikitsa and Panchakarma OPD unit of Government Ayurved hospital Dharashiv as well as District Civil hospital, near Solapur Road bypass Dharashiv, Maharashtra, India.

**Ethical clearance:** Study was carried out as per ethical committee protocol. Report of ethical committee submitted with reference number (outward no. G.A.C.D/S.S./1230.)

**Selection criteria:** Selection of patients was done with the help of inclusion and exclusion criteria.

**Inclusion Criteria**

1. Age: Patient having age group between 30-55 years.
2. Sex: Both Male and Female
3. Patient having sign and symptoms of Tennis Elbow
4. Pre diagnosed patient of Tennis Elbow.

**Exclusion Criteria**

1. Age below 30 and above 50 years.
2. Patient having known case of fracture and dislocation of elbow joint.
3. Patient having major illness-like Thyroid, cardiac disorder, malignancies, HIV patients.
4. Patient having disease like Rheumatoid arthritis, Osteoarthritis.

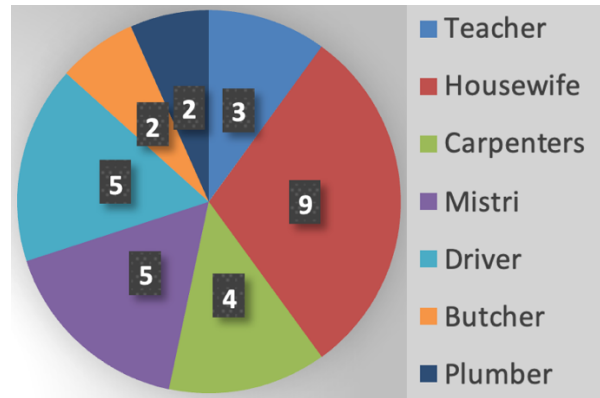
	3	Complete tear involving rupture of tendon
Granulation Tissue	1	Absent or Minimal granulation tissue.
	2	Exuberant granulation tissue
Tendon Degeneration	1	Mild- Early signs of tendon degeneration
	2	Moderate- Disorganization of collagen fibers
	3	Severe- Extensive disruption of tendon structure
Peri tendon Oedema	1	Mild Peritendon Oedema
	2	Significant Swelling and Inflammation.
Radial Nerve Entrapment	A	Absent
	P	Present

**Total Score and Condition**

Total Score	Condition
1-5	Mild
6-10	Moderate
11-15	Severe
A	Absent
P	Present

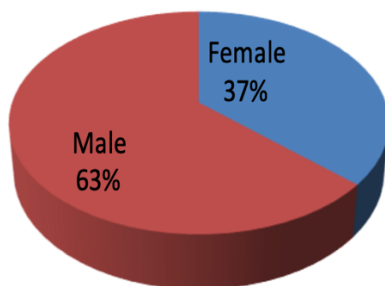
**OBSERVATION AND RESULTS**

As this is cross-sectional observational study all the parameters were studied in the forms of graphs.



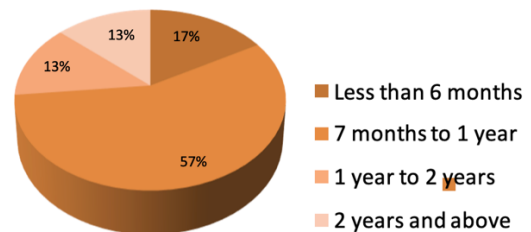
**Figure 3: Occupation wise distribution**

Out of 30 patients enrolled in the study, 3(10%) patients were teacher, 9(30%) patients were housewives, 4 (13.33%) patients were carpenters, 5(16.67%) patients were mistri and drivers respectively. 2(6.66%) patients were butchers and plumbers respectively.



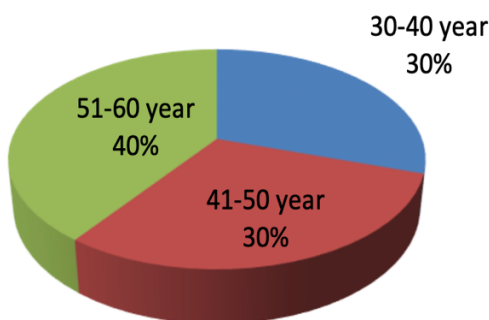
**Figure 1: Gender wise distribution**

Out of 30 patients, enrolled in the study, 11(36.67%) patients were female, and 19(63.33) patients were male.



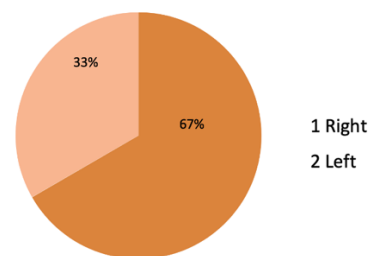
**Figure 4: Chronicity wise distribution**

Out of 30 patients enrolled in the study, 4(13.33%) patients were having chronicity of 1-2 years. 4(13.33%) patients were having chronicity 2-year and above. 5 (16.67%) patients were having chronicity less than 6 month. 17(56.67%) patients were having chronicity 7 month to 1 year.



**Figure 2: Age wise distribution**

Out of the 30 patients enrolled in the study, 9(30%) patients were from 30-40 age groups, 9(30%) patients were from 41-50 age groups, 12 patients were from 51-60 age groups.

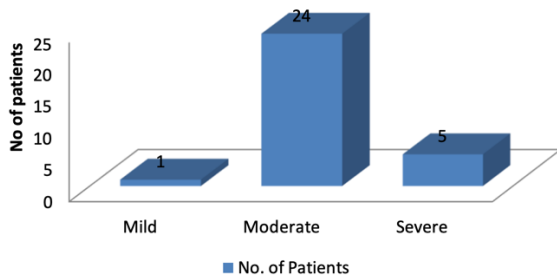


**Figure 5: Affected Elbow joint**

Out of 30 patients enrolled in the study, 20(66.66%) patients had affected right Elbow Joint. 10(33.33%) patients had affected left Elbow joint.

**Total Score Subjective Criteria**

Total Score	Number of Patients	Percentage of Patients
Mild (0-5)	1	3.33
Moderate (6-10)	24	80
Severe (11 and above)	5	16.67
Total	30	100

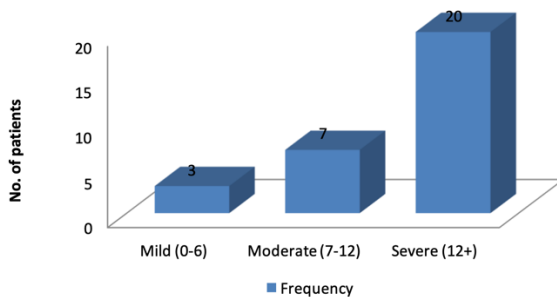


**Figure 6: Grades wise distribution of subjective parameters**

When total subjective score of affected Elbow joint compared it was observed that out of 30 patients, 1 patient found under mild condition, 24 patients found under moderate condition and 5 patients found under severe condition. It means that Tennis Elbow affects the dominant Kurpara Sandhi (Elbow Joint).

**Total Score Objective Criteria**

Total Score	Number of Patients	Percentage of Patients
Mild (0-6)	3	10
Moderate (7-12)	7	23.33
Severe (12+)	20	66.67
Total	30	100



**Figure 7: Total objective score**

When total objectives score of affected Elbow joint was compared it was found that, out of 30 patients, 3 patients were found under mild category, 7 patients were found under moderate category and 20 patients found under severe category. It means Tennis Elbow affects the dominant Kurpara Sandhi (Elbow joint).

**DISCUSSION**

Elbow joint is the compound synovial joint as there are two articulations in the joint. Its complexity is increased by continuity with the superior radio-ulnar joint. It is also hinging type of joint as it allows movement only in one plane which is flexion and extension.

When we discussed Kurpara marma it is important to highlight that while considering the marma Pradesh we must consider

surrounding structure related to Kurpara Sandhi also. As Kurpara marma is sandhi marma so Elbow joint as well as Superior ulnar joint both should be consider as important structure. Kurpara marma on getting injured causes vaikalya or deformity of the structure so it comes under type of vaikalyakara Marma. Kuni feature can be co-related with symptoms such as difficulty in flexion, extension, hand drop, palm drop, dangling of hand which arose due to loss of structural and function integrity of the anatomical structures present in the elbow joint. Tennis Elbow is disease not related to actual sandhi but is related to marma Pradesh. So, any pathology to this area leads to disability.

Tennis Elbow i.e. lateral epicondylitis is a degenerative disorder that comprises the extensor tendons originating from the lateral epicondyle extending in frequently to the joint. Repetitive contraction, overuse, flexion and extension have been implicated by causing Micro trauma to the common extensor origin with cumulative degeneration<sup>7</sup>. Tennis elbow also occurs in non-athletes' peoples, butchers, painters, plumbers, carpenters, drivers, homemakers, cooks. Factor that are responsible for the etiology of Tennis Elbow involve: Repetitive activity, Flexion/ Extension, Pronation and Supination of Forearm, Overuse of extensor musculature of the Arm, Improper techniques<sup>8</sup>.

**MRI Findings in affected joint due to Tennis Elbow**

**Tendinosis or Tendinopathy:** This is characterized by degenerative changes within the tendon of the extensor carpi radialis brevis (ECRB) muscle which attaches to the lateral epicondyle. Tendinosis appears as thickening, irregularity or focal areas of signal abnormality within the tendon.

**Peritendinitis/Peritendon Edema:** Inflammation and edema in the tissue surrounding the tendon may be observed. It indicates acute inflammatory response. This may include edema or fluid accumulation in the peritendinous tissue.

**Bony Changes**

**Micro fractures-** Prolonged repetitive stress can cause micro fracture or stress reaction within the bone at the lateral epicondyle. These changes manifest as bone marrow edema or signal abnormalities.

**Cortical Irregularities-** Chronic stress on the lateral epicondyle may result in the cortical irregularities or remodeling of the bone surface.

**Subchondral cysts-** In some cases, subchondral cysts, may be developed beneath the articular surface of the lateral epicondyle due to chronic degenerative changes and micro trauma.

**Radial Nerve Entrapment-** Radial Nerve entrapment is not typical features of lateral epicondylitis.

However, the radial nerve run closes to the lateral epicondyle. In chronic inflammation and swelling. Associated with lateral Epicondylitis may irritate or compress the radial nerve, leading to symptoms of radial nerve entrapment.

**CONCLUSION**

Degeneration or tears in the tendon is more common feature of the Tennis Elbow along with the thickening of the tendon especially common extensor tendon (ECRB) of the forearm which is attaches to the lateral epicondyle of the Humorous. These thickening indicate the chronic overuse and repetitive stress over the tendons of the forearm. Soft tissue changes like swelling or inflammation in the adjacent soft tissue such as muscle and fascia. The Extensor Carpi Radialis Brevis commonly implicated in Tennis Elbow as muscle plays significant role in extending and stabilizing the wrist during activities such as gripping, lifting and manipulating objects.

Overuse or repetitive strain on this tendon particularly during activities involving wrist extension and pronation can lead to micro trauma and degenerative changes. Tendon degeneration, i.e. extensive disruption of tendon structure with significant areas with collagen degeneration, fibrosis and loss of tendon integrity. This leads to chronic pain, functional limitation and increased risk of tendon rupture. In some cases, particularly in chronic wounds or wounds with excessive inflammation, granulation tissue may overgrow and become excessive. This is referred to as exuberant granulation tissue or hyper granulation. It can impede wound healing by preventing wound closer. Treatment may involve intervention to reduce inflammation and promote proper wound healing.

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