



## INCIDENCE OF VATKANTAKA IN PES PLANUS INDIVIDUALS-AN OBSERVATIONAL STUDY

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### ABSTRACT

This study is helpful for Ayurvedic as well as Modern physicians to understand concepts related with *Vishampada Rachana* and '*Vatkantaka*' and thus contribute in the treatment of '*Vatkantaka*'. The aim of study is to observe the structural changes in *Vatkantaka* in the Pes Planus patients. The objective of this study is to establish relation between *Vatkantaka* and Pes Planus. Study also helps to analyze common incidence of *Vatkantaka* in patients of Pes Planus. Observational study was conducted in 30 diagnosed patients of *Vatkantaka* with pes planus by using a well designed case record form, both feet prints, radiograph of both feet with ankle joint (lateral view), Goniometry. Data thus generated was neatly arranged and assessed statistically for results and represented. Discussions regarding structural changes observed in study were discussed with experts in Ayurveda & modern medicine. The findings of study are significantly useful for physicians in understanding the important structural causes in *Vatkantaka*.

The study shows six different diagnoses of 30 patients out of which 5 i.e. 16.66% of Plantar fasciitis, 5 i.e. 16.66% of Ankle sprain, 14 i.e. 46.66% of Calcaneal spur with plantar fasciitis, 1 i.e. 3.33% of Metatarsalgia, 4 i.e. 13.33% of Corn. 1 i.e. 3.33% of Claw toe with corn. (Table no.2). Hence above findings shows that *Vatkantaka* is more nearer to Calcaneal spur with plantar fasciitis.

Thus from above discussion, we can say that there is a inter-relation between *Vatkantaka* and Pes Planus in many things like diagnosis, causes, nature of pain, joint movements, joints and their axis, *marmasthana* and ultimately study shows common occurrence of *Vatkantaka* in Pes Planus.

**KEYWORDS:** *Vatkantaka*, Pes Planus, *Gulfasandhi* (ankle joint), Plantar region, Pain.

### INTRODUCTION

Though '*Vatkantaka*' is not a life threatening condition but it is a very painful condition and leading to inability for someone to walk properly and hence, it affects the day to day activities. While describing '*Vatkantaka*' *Shushruta* and *Vagbhata* have quoted (1). It is one of the *Vatavyadhi* in which, during walking and running, if foot is landed improperly i.e. *Vishama*, *Vata* located in the *Gulfa* (ankle) vitiates and it produces pain in *Gulfa* region. But in *Samhita* the Anatomy of *Gulfa* region is *Sandigdha*. *Gulfa* is explained as *Gulfa-Sandhi*, *Gulfa-Peshi*, *Gulfa-Jalam*, *Gulfa -Asthi*, *Gulfa-Snayu*. So it becomes difficult to understand

exactly which structure is causative factor for pain in *Gulfa* region associated with *Vatkantaka*. Sometime it is taken as ankle sprain or calcaneal spur. But it is not the only cause of pain. To elaborate this phenomenon, study of *Vatkantaka* is designed.

This disease is commonly found in old age, obese persons, pregnant women, and trauma to ankle region, those having flat foot especially in a condition like Pes Planus. If *Vayu* situated in *Gulfa* region produces pain in feet while placed unevenly it is known as '*Vatkantaka*'. So not only foot landed improperly but also conditions like Pes Planus

are responsible for '*Vatkantaka*'; but also all above etiological factors may cause weakness in ligaments and muscles of the sole.

As a result of this, longitudinal arch of the sole gets flattened due to alteration in ligaments and muscles which further leads to inflammation of plantar aponeurosis called as plantar fasciitis. It produces pain in sole. Due to repeatedly improper landing of foot, diseases like ankle sprain, calcaneal spur formation, Achilles tendonitis may occur. It may also cause ligament tear and changes in the normal curvature of foot by involving subtalar joint, ankle joint and hip joint. Hence normal pressure points of sole alter. This leads misalignment of weight distributing axis of both legs. In modern science following causes of pain in flat foot are Plantar fasciitis, Achilles tendonitis, Calcaneal spur, Ankle sprain, Calcaneal stress fracture, Fracture of metatarsal bone, Morton's metatarsalgia, Osteomyelitis, Tumors, Retrocalcaneal bursitis.

In *Ayurveda* '*Vatkantaka*' is explained under the heading of *Vatavyadhi*. As in '*Vatkantaka*', there is mainly *Dushti* of *Vata* in ankle region. So in the treatment part, *Vataghna Chikitsa* is very important (2). *Raktavasechanam*, *Erandatail*, *Agnikarma* are used for treatment of *Vatkantaka* found in *Ayurvedic* text *Chakrapanidatta*.(3)

Though, all the references quoted above and some treatment by *Vruddha Vaidya* can help in treatment of '*Vatkantaka*', it is also important to study the structural changes in '*Vatkantaka*' which are the actual causes of pain, as today we have the modern techniques like x-ray, foot prints, pain charts, subtalar angle, normal movements of joints we can understand exactly the structural alteration that leads to pain.

In modern textbooks treatment differs as per complications. But the major part of treatment is to maintain the normal longitudinal arch which includes use of painkillers like NSAIDS, orthopedic shoes with heels, medial heel wedges, navicular pads, custom prosthesis; moulded orthosis helps in maintaining the arch also there are some cosmetic surgeries which help in permanent correction like Miller's procedures.

So that, this study is also helpful for *Ayurvedic* as well as Modern physicians to understand concepts related with *Vishampada Rachana* and '*Vatkantaka*' and thus contribute in the treatment of '*Vatkantaka*'.

## AIM & OBJECTIVE

The aim of study is to observe the structural changes in order to establish relation between *Vatkantaka* and Pes Planus & it also helps to analyze common incidence of *Vatkantaka* in patients of Pes Planus.

## MATERIAL & METHODS

Observational study was conducted in 30 diagnosed patients of *Vatkantaka* with pes planus (photo1).

### ❖ Inclusion criteria

1. Both Sexes
2. Age from 21-80 years.
3. All congenital, idiopathic, obese/post partum weight gain and traumatic pes planus patients with pain at *Gulfa* region that is *Vatkantaka* will be included.

### ❖ Exclusion criteria

1. Age group below 21 years and above 80 years.
2. Other complications related to the foot were excluded. (Arthritis, paralysis, Tuberculosis, Pes cavus, Hallux valgus etc.)

## METHODOLOGY

- Number of cases 30.
- A case record form was designed to assess the patients of *Vatkantaka* and pes planus after taking formal informed consent of patient.
- Diagnosed cases by '*Shalya*' department and '*Sharira Rachana*' department of *Sane Guruji Arogya Kendra, Pune-28* were taken in the study.
- The data thus generated was neatly arranged and assessed statistically for results and represented.
- Both feet prints were taken from each patient for anatomical measurement.
- Radiograph of both feet with ankle joint (lateral view) had been taken. (photo2)

- Movements of the joints are measured by Goniometry which is explained in literary review and annexure. (photo 3)

## RESULT

Data thus generated was assessed and arranged into tabular form and represented statistically.

**1. Subtalar angle:** Axis of the subtalar joint inclined up from the transverse plane approximately 42 degrees.

**Table 1: Pes planus distribution**

Pes planus	Frequency	Percentage
Unilateral	3	10%
Bilateral	27	90%

**Observation:** In table no.1 Out of 30 patients of Pes planus condition we found, 3 i.e. 10% unilateral and 27 i.e. 90% bilateral.

## 2. Diagnostic distribution of Patients:

**Observation:** The pie diagram no.1 shown represents 6 different diagnoses of 30 patients out of which 5 i.e. 16.66% of Plantar fasciitis, 5 i.e.16.66% of Ankle sprain, 14 i.e. 46.66% of Calcaneal spur with plantar fasciitis, 1 i.e. 3.33% of Metatarsalgia, 4 i.e. 13.33% of Corn. 1 i.e. 3.33% of Claw toe with corn. (Table no.2)

**Table 2: Diagnosis distributions of patients**

Diagnosis	Frequency	Percentage
Plantar fasciitis	5	16.66
Ankle sprain	5	16.66
Calcaneal spur with plantar fasciitis	14	46.66
Metatarsalgia	1	3.33
Corn	4	13.33
Claw toe with corn	1	3.33

Hence above findings shows that *Vatkantaka* is more nearer to Calcaneal spur with plantar fasciitis.

## 3. Methods of assessment of Pain

**Table 4: The cause and diagnosis**

Cause	Plantar Fasciitis	Ankle Sprain	Calcaneal spur with fasciitis	Meta tarsalgia	Corn	Claw toe with corn	Total
Weight gain	2	0	5	0	0	0	7
Congenital	0	3	1	0	3	1	8
Idiopathic	2	1	7	1	1	0	12
Traumatic	1	1	1	0	0	0	3
Total	5	5	14	1	4	1	30

Pain is feeling of the patient, so one cannot assess the pain and is subjective in nature. To convert these subjective criteria into objective parameter following method were applied.

**Oxford Pain Chart:** According to this chart, patients are categorized in the following groups. They are as per the severity of pain measurement.

1) Severe 2) Moderate 3) Mild 4) No pain

**Severe pain:** Patients unable to do any work or movement.

**Moderate pain:** Movements are possible but continuous pain during movement.

**Mild pain:** pain precipitating time and heavy movements.

**Pes Planus and % of Pain episodes (Vatkantaka):-**

Table no. 3 shows pain episodes distribution of patients & it is represented in diagram no.2

**Table 3: Pain Episodes distribution of patients**

No. of pain episodes	Frequencies	Percentage
1	7	23.33%
2	5	16.66%
3	3	10%
>3	15	50%

**Observation:** The above data shows that there are 50% patients having more than 3 episodes of pain. Hence, it proves the common occurrence of *Vatkantaka* in pes planus condition.

## 4. Cause and Diagnosis:

H0: Type of cause and diagnosis are independent.

H1: Type of cause and diagnosis are not independent.

The cause and diagnosis relation is shown in table no.4.

**Observation:** The above data shows that the plantar flexion of ankle joint is affected in all 30 patients out of which 63.33 are Non reversible and 36.66% are reversible.

## DISCUSSION

*Vagbhata* quoted on *Vatkantaka* that during walking or running on uneven road or excessive work, if the foot landed improperly, the *Vata* in *Gulfa* region ceases and produces pain it called as *Vatkantaka* as reference1.

The *Gulfa Marma* situated in *Gulfa* region is injured (*Viddha*) due to trauma and ceasing *Vata* produces pain (*Vatkantaka*), stiffness and *Vikriti* of *Pada* (*Khanjata*). (4) Hence, it should be specially protected by external trauma. (5)

*Khanjata* means not able to walk properly and in *Pes Planus* condition due to abnormal anatomy of foot. It also produces difficulty to walk properly on plane/uneven road and due to trauma to foot, many a time it leads to pain at sole or structural abnormalities.

*Vatkantaka* means pain at *Gulfa* region whatever may be the pathology i.e. pain can be due to,

- Anatomical
- Symptomatic
- Causative

**a) ANATOMICAL:** Also the *Asthivrudhi* of calcaneum is known as spur and it is like a thorn or tip of needle.

But the word "*Kantaka*" means Tip of needle or minor enemy. (6)

### As per Sanskrit English dictionary

1. A thorn -the point of anything
2. A prickle
3. A finger nail
4. A skipping pain, symptom of a disease

So we can take the anatomical variation like spur formation which many a time leads to pain due to trauma as *Vatkantaka*.

### b) SYMPTOMATIC

From above reference of *Sanskrit* dictionary, the word "*Kantaka*" also has other meaning i.e. a skipping pain, symptom of a disease. Thus, symptom of pain at *Gulfa* region is also indicative of *Vatkantaka*.

### c) CAUSATIVE

In causes of *Vatkantaka*, improper landing and excessive work are the two main causes of *Vatprakopa*. So that *Vata* is always moving. (7) It causes movements, it conducts different actions and *Asthi* is one of the *Sthana* of *Vayu* given in *Samhita*. (8)

Also in *Vata dosha karma*, *Vagbhata* had given the reference of pain production. *Charaka in chikitsasthana* has given causes of *Vatprakopa*. (9) In *Vatkantaka* few of them as directly responsible and others are supportive causes for it. (10)

Hence, *Vayu* and *Asthi* having *Ashrayaashrayee Sambhanda* shows that ceasing of *Vata* in a *Gulfa Pradesha* produces pain and sometime *Asthivridhi*.

We have been also reviewed the condition *Pes Planus* and we found that plantarflexion are reflected in a lowering of the medial longitudinal arch and a bulging or convexity in the plantar medial midfoot. (11) Although subtalar joint pronation is a normal foot motion, a foot that appears fixed in this position often is called "pronated, pes planus, or flat foot". (12)

A foot typically remains in a position of excessive pronation of both the subtalar and transverse tarsal joint seen in normal bilateral stance are exaggerated. Rather than seeing the transverse tarsal joint reverse to absorb the excessive pronation of the hind foot, the navicular bone is pushed down by the pressure of the plantar flexed and adducted talar head, bulge perhaps because the foot is too flexible, some evidence suggests that excessive pronation is associated with weakness in the plantar flexor muscles and decreased ability to push off people with severe or chronic pes planus often have inadequate push off and a flat -footed gait pattern. We have already noted that the pronated position of the subtalar joint may be related to medially rotated knees. Although there is not a strong relationship between excessive pronation and tibial rotation during walking, reducing excessive pronation at the foot and ankle by using orthotic devices has been shown to reduce tibial rotation during early stance phase and helps to decrease pain in the patellofemoral region. (13)



The most common form of flat foot is termed as a flexible flat foot and is marked by an arch that reappears when the foot is non-weight-bearing. If excessive pronation can be reduced by using footwear or orthotic devices (14); the excessive stresses that may be related to knee pain may be reduced /eliminated.

Pronated foot may be placing excessive stress on plantar fascia during walking, especially at the end of stance phase when the metatarsal break pulls the plantar fascia tight. Walking program adds an additional level of stress to an already susceptible structure, with the stress on the tissue crossing injury. (15)

#### DJ FINDINGS OF STUDY ARE

In this study we had seen 30 diagnosed patients of *Vatkantaka* with pes planus condition. As in objectives of my study we analyzed these patients with *Vatkantaka* and pes planus condition for structural changes. In those we found that 60% of patients have plantar fasciitis i.e. *Snayu Vikruti* due to any associated condition like trauma, calcaneal spur. While in 30 patients, Calcaneal spur i.e. *Asthivikruti* was found in 40%, Ankle sprain i.e. *Sandhivikruti* & is found in 16.66%, Corn in 13.33%, Achille's tendonitis in 3.33%, Metatarsalgia in 3.33%, Claw toe in one patient of Plantar fasciitis. We came to conclusion that pain in *Vatkantaka* is mainly due to plantar fasciitis and it is more nearer to *Vatkantaka*.

Plantar fasciitis at the site of Gulfa region is the main applied anatomy. Also we found that 50% of patients in my study have >3 episodes of pain at *Gulfa* region. Shotha related measurement not shown any significance as individual foot size varies in those individuals having normal foot. In this study we found that 3 i.e.10% patients of pes planus are unilateral and 27 i.e. 90% bilateral. Causes like weight gain, congenital, idiopathic, trauma and Diagnosis shows dependency. We also found that type of cause and nature of pain like mild, moderate and severe are dependent. The above data shows that the Pronation of Subtalar joint, plantar flexion of ankle joint and Medial Rotation of knee joint is affected in 29 i.e. 96.66 %, 30 i.e. 100% and 15 i.e. 50% respectively out of 30 patients. The

above data shows that the plantar flexion of ankle joint is affected in all 30 patients out of which 63.33 are Non reversible and 36.66% are reversible.

Thus from above discussion, we can say that there is a inter-relation between *Vatkantaka* and Pes Planus in many things like diagnosis, causes, nature of pain, joint movements, joints and their axis, *Marmasthana* and ultimately study shows common occurrence of *Vatkantaka* in Pes Planus.

#### CONCLUSION

On basis of observations, results, discussion of observed facts leads to following conclusion:

- 1) Out of 30 patients of Pes planus condition we found, 3 i.e. 10% unilateral and 27 i.e. 90% bilateral.
- 2) The diagnosis of 30 patients we seen, shows that *Vatkantaka* is more nearer to Calcaneal spur with plantar fasciitis.
- 3) The data of episodes of pain shows that there are 50% patients having more than 3 episodes of pain. Hence, it proves the common incidence of *Vatkantaka* in pes planus condition.
- 4) The cause and Diagnosis are dependent of each other.
- 5) The type of cause and nature of pain are dependent of each other.
- 6) The Pronation of Subtalar joint, plantar flexion of ankle joint and Medial Rotation of knee joint is affected in 29 i.e. 96.66 %, 30 i.e. 100% and 15 i.e. 50% respectively out of 30 patients.
- 7) The plantar flexion of ankle joint is affected in all 30 patients out of which 90%are non-reversible and 10% are reversible.

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### Diagnostic distribution of patient

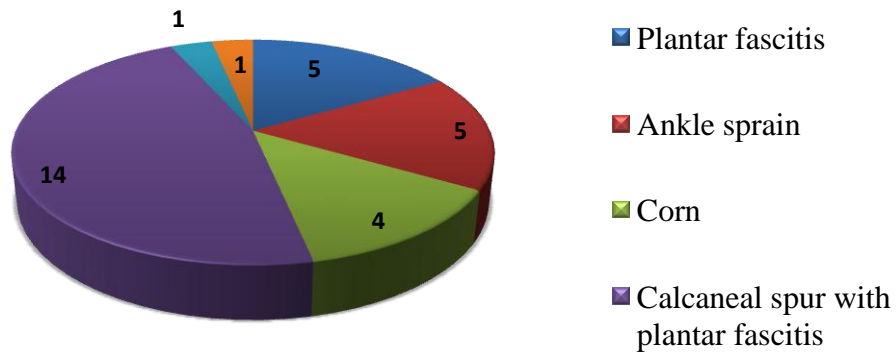


Diagram no.2 :Pes Planus and % of Pain episodes (Vatkantaka):-

### % of pain episodes

