

**ROLE OF KNEE TRACTION IN THE MANAGEMENT OF JANU SANDHIGATA VAT W.S.R. TO OSTEOARTHRITIS OF KNEE JOINT**

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**ABSTRACT**

Osteoarthritis is the major ailments of elderly people. This is a degenerative disorder of the major joints of body like knee, hip etc. Now day the most of the people having sedentary life style that increases the obesity and reduces the physical activity that complicate in the form of osteoarthritis of the major joint. In modern medical science the treatment of this entity is analgesics, that have their own side effects like gastric irritation, liver damage and bad effects on kidney too. The present study was undertaken with taking only physical medicine without any oral drugs. The aim of study to assess the role of knee traction in the management of *janu sandhigata vata*

w.s.r. osteoarthritis of knee joint. The study was carried out only on 10 patients. The patients were randomly selected and assessed for four weeks. After the statistical analysis it was concluded that knee joint traction is very much effective therapy for the *janu sandhigata vata*.

**KEYWORDS:** Janu Sandhigata Vata, Osteoarthritis, traction.

**INTRODUCTION**

OA represents a major cause of morbidity and disability, as well as a significant economic burden on patients and health care resources.<sup>[1]</sup> Osteoarthritis (OA) is widely known as the most frequent musculoskeletal disorder, mainly occurring in the elderly with a radiographic prevalence of nearly 70% in persons over age 65 Disease burden is related to pain occurrence, frequently leading to functional disability ranging from slight limitation of movements to severe impairment of normal daily living activities. Therefore, pain relief plays an important role in the treatment of OA.<sup>[2]</sup> Prevalence of OA in India is 22% to 39%. The efficacy & underlying mechanisms of joint distraction in treatment of OA Knee is

found.<sup>[3]</sup> Some people in India are unable to walk independently from bed and bath-room because of Osteoarthritis of the knee or hip joint. Osteoarthritis (OA) also known as degenerative arthritis or degenerative joint disease, is a group of mechanical abnormalities involving degradation of joints<sup>[4]</sup>, including articular cartilage and subchondral bone. Symptoms may include joint pain, tenderness, stiffness, locking, and sometimes an effusion. A variety of causes viz. hereditary, developmental, metabolic, and mechanical may initiate processes leading to loss of cartilage. When bone surfaces are not well protected by cartilage, bone may get exposed and damaged. As a result of decreased movement secondary to pain, atrophy of regional muscles, and ligaments may become more lax.<sup>[5]</sup> In *Ayurveda* the symptom of Osteoarthritis are approximately similar to *Janu Sandhigata Vata* as described in *Sushrut Samhita*.<sup>[6]</sup> *Acharya Charaka* also mentioned treatment of *Janu sandhigata vata* in detail in *chikitsa sthanam*.<sup>[7]</sup> The complete remedy of these diseases is still not available in modern medicine. The drugs used mainly are analgesic, anti-inflammatory and steroids, which can't spell out the disease but gives only symptomatic relief along with furious side effect like Gastritis, Ulceration of mucosal layer of stomach, heart burn and Vomiting. The physiotherapy is very much helpful in the musculoskeletal disorders. Knee traction may be helpful in maintaining the reduction of space in Osteoarthritis of Knee and in the clinical recovery of the sign.<sup>[8]</sup> So keeping the above view in mind a case study was planned on the ten patients and assessment was done on the pain and range of motion. This trial was finished with trial group having 10 patients and the results was very appreciable.

## AIM & OBJECTIVE

1 .To evaluate the efficacy of Knee Traction in the management of *Janu Sandhigata Vata* (Primary Osteoarthritis of Knee joint)

## MATERIAL AND METHOD

### 1. Selection of the patients

Clinically diagnosed 10 patients of *Janu Sandhigat Vata* (Primary OA of Knee joint) were selected from O.P.D. / I.P.D. of N.I.A. *Shalya Tantra* Department.

### 2. Inclusion criteria

- Patients of *Janu Sandhigat Vata* (Primary O.A.).
- Patients above the age of 40 years of any sex, religion.

### 3. Exclusion criteria

- Below 40 years age.
- Secondary Osteoarthritis of knee joint.
- Rheumatoid arthritis & Gouty arthritis.
- Diabetes mellitus.
- Any systemic disorders which interfere with the treatment.

### 4. Pathological investigation

A. Radiological investigations: X-Ray of Knee (B/L)

B. Hematological Investigations.

C. Total Leucocytes Counts, Differential Leucocytes Counts, Erythrocytes Sedimentation Rate, Hemoglobin %, Blood Sugar (Random), Blood Urea.

D. Serological Investigations: Rheumatoid Arthritis Factor, A.S.L.O.Titre. CRP, Serum Uric acid.

E. Urine Examinations: Routine Examination, Microscopic Examination.

5. **Traction**-Traction of knee joint has been used as physical medicine.

Skin Traction of 2-4 kg for 8- 10 minutes (Intermittent) daily up to 28 days was given.

**Duration of treatment:** Duration of trial was 4 weeks.

**Follow up:** Patients were followed up every 7<sup>th</sup> day up to one month after completion of trial. To see the recurrence or any type of deterioration associated with *Janu Sandhigat Vata* (OA of Knee joint.)

### 6. Assessment Criteria

The symptoms of Osteoarthritis of knee joint and joint activity were taken for the assessment results of clinical trial. Following parameters were taken in account.

- A. Pain (Visual Analogue Scale)
- B. Walking distance
- C. Range of Motion (R.O.M.) of knee joint.

## GRADING OF ASSESSMENT CRITERIA

### A. Severity of pain<sup>[6]</sup>

VAS scale is the easiest way to measure the intensity of pain and can be analysed quickly.

The most common VAS consist of a 10 cm. horizontal or vertical line with two end points labeled –no pain and worst pain ever. Patients himself grade them for pain.

**Table no. I Visual analogue scale for assessment of pain**

| S.N. | Type of pain                    | Grade |
|------|---------------------------------|-------|
| 1    | No pain                         | 0     |
| 2    | Mild pain ( up to 0-3 mark)     | 1     |
| 3    | Moderate pain ( up to 4-6 mark) | 2     |
| 4    | Severe pain ( up to 7-8 mark)   | 3     |
| 5    | Intolerable ( up to 9-10 mark)  | 4     |

**Grading table no. II for assessment of walking distance by patient**

| S.N. | Walking distance by patient         | Grade |
|------|-------------------------------------|-------|
| 1    | Walks without pain up to 1km        | 0     |
| 2    | Walks without pain up to 500 meters | 1     |
| 3    | Walks without pain up to 250 meters | 2     |
| 4    | Feels pain on standing              | 3     |
| 5    | Patient Cannot stand                | 4     |

**Grading table no. III for assessment of Range of movement in knee joint**

| S.N | Range of movement in knee joint | Grade |
|-----|---------------------------------|-------|
| 1   | 0-130 degree                    | 0     |
| 2   | 129-90 degree                   | 1     |
| 3   | 89-60 degree                    | 2     |
| 4   | 59-30 degree                    | 3     |
| 5   | 30-0 degree                     | 4     |

**Statistical Analysis :** Statistically in term of mean score (X), Standard deviation (S.D.), Standard Error (S.E.), paired and unpaired 't' test was carried out and significance at the level of 0.1, 0.05, 0.02, 0.01 and 0.001 of p levels.

## OBSERVATIONS & RESULTS

Patients of trial group receive Knee Traction Therapy which was used as physical medicine. That was responsible for the improvement in the conditions of reduced joint space and marked limitation of movement has yet not given total relief but shows significant improvement . As relief in pain was 28.57% and improvement in, walking distance and range

of motion was observed 26.00% and 25.00% respectively. So physical therapy has some important role in reduced joint space and marked improvement in limitation of movement.

**TABLE NO-IV. EFFECT OF THERAPY ON INTENSITY / SEVERITY OF PAIN**

| S.N. | Mean Score |     | Relief % | S.D.   | S.E    | W     | p     | Result |
|------|------------|-----|----------|--------|--------|-------|-------|--------|
|      | B.T        | A.T |          |        |        |       |       |        |
| 1.   | 2.8        | 2.0 | 28.57    | 0.6325 | 0.2000 | 28.00 | <0.01 | S      |

**TABLE NO-V. EFFECT ON INTENSITY / WALKING DISTANCE**

| S.N. | Mean Score |     | Relief % | S.D.   | S.E    | W     | P     | Result |
|------|------------|-----|----------|--------|--------|-------|-------|--------|
|      | B.T        | A.T |          |        |        |       |       |        |
| 1.   | 2.3        | 1.7 | 26.09    | 0.5164 | 0.1633 | 21.00 | <0.05 | S      |

**TABLE NO- VI. EFFECT ON INTENSITY / RANGE OF MOTION**

| S. N. | Mean Score |     | Relief % | S.D.   | S.E    | W     | P     | Result |
|-------|------------|-----|----------|--------|--------|-------|-------|--------|
|       | B.T        | A.T |          |        |        |       |       |        |
| 1.    | 2.4        | 1.8 | 25.00    | 0.5164 | 0.1633 | 21.00 | <0.05 | S      |

**TABLE No.-VII Relief of Symptoms (%)**

| S. No. | Parameters       | Trial Group % |
|--------|------------------|---------------|
| 1.     | Pain             | 28.57         |
| 2.     | Walking distance | 26.00         |
| 3.     | Range of motion  | 25.00         |

By analyzing the observations and results it is clear that physical therapy of Knee Traction in the management of OA of the knee joint is very effective. Whereas other forms of therapy are also effective to treat the OA of the knee joint.

## FOLLOW UP

Approximately 80 % patients have no recurrence during month of follow up period, but 20% patients develops symptoms again. So evidence of recurrence in follow up period of 1 month after completion of trial.

## DISCUSSION

**Age:** Maximum patients 43.33% were found in age groups of 51 to 60 years followed by 23.33 % patients from 40 to 50 years of age group and 13.33% patient were come more than 70 yrs. This study shows that this disease is more prevalent in age group 51 to 60 years. At this age group *Vata* is more predominant; this takes pivot role for *Dhatu kshaya* and manifest as a *Sandhigata Vata*. This support the literature about risk factor OA. (Harrison;s internal medicine 17<sup>th</sup> edition 2008)

**Sex:** In study 33.33 % patients were male and followed by females 67.67%. The disease Osteoarthritis is most common in women .The probable cause of this finding may be.

- Females are more obese in comparison to males and obesity is a precipitating factor for the development of OA of the knee joint.
- Radiographic evidence of knee joint OA especially symptomatic OA of knee joint appear to be more common in women then man, this support the literature. (after Hochberg M. J. Rheumato, 18:1438,1991)

The present study also showed that females were more affected than male, may be due to the occupation.

**Occupation:** Maximum patients 60 % were house wife followed by 13.33 % Govt. job, 10% in farmer, 06.67% business men, 06.67% retired and 03.33% laborer group. The data shows that those are more exposure to occupational stress, faulty sitting posture and prolonged squatting or kneeling responsible for OA of knee joints. This support the literature about risk factor of OA (Harrison;s internal medicine 17<sup>th</sup> edition 2008).

**Socio Economic Status:** *Janu Sandhigata Vata* is more in Middle Socio-Economic Status (60%), followed by lower (30%) and Higher (10%) probably due to more physical work and faulty dietary habit.

**The probable cause of this finding may be-**

- The area has mostly the middle classes.
- In this group people are more depressed, feelings of helplessness, trouble participating in every day personal and family joys and responsibilities is more which affect the articular cartilage which leads to development of *Janu Sandhigata Vata* (OA).

So the data indicate that habits and nutrition may play supportive role in manifestation of *Janu Sandhigata Vata*.

**Habits**

Study shows that 56.67% patient vegetarian and remaining 43.33 % were taking non vegetarian diet. Both vegetarian and non vegetarian. People are taking *Vatika ahara* like dried food, freeze material, pulses. This diet responsible for *Janu Sandhigata Vata*. (*Charaka Shamhita Chikitsa Sthan* 28/15-18).

### Addiction

In the present study 23.33% patients were found addicted to tobacco. Some toxic chemical are found in tobacco which may destruct collagen and other proteins and leads to development of *Janu Sandhigata Vata* (OA). These chemicals decreases proteoglycans protein found in collagen. Proteoglycans interweave with collagen and form a mesh like tissues which allows cartilage to flex and absorb physical shock. (NIMAS, USA, 1989).

### These chemicals may cause

- ⇒ Retardation of cellular growth.
- ⇒ Decrease in vascularity.
- ⇒ Disturbances of Neurotransmission.

### KNEE TRACTION

In present clinical trial the traction therapy had been used to know the effectiveness of this therapy the probable mode of action of traction as follow.

- ❖ Increase joint space temporarily.
- ❖ Increase flexibility in the joint.
- ❖ Muscle, ligament and tendon strengthening.

In case of improvement of symptoms trial group (Knee Traction) showed 24-33.33% relief whereas. It indicates that the physical therapy is very much effective in the improvement of all symptoms. Probably these results obtain as traction act by improving the anatomy of knee joint as well as pathology of *Janu Sandhigata Vata*. Due to intermittent traction provided by the weight, the ligaments of knee joint get relaxed and little lengthening/strengthening also occurs. So due relaxation of structure reduces the friction between structures that reduces pain and increases the walking distance as well as range of movement of knee joint.

### CONCLUSION

The present study on the basis of statistical analysis concluded that Knee traction as Physical therapy is safe and reliable in the management of *Janu Sandhigata Vata* (Primary O.A. of knee Joint). However further study should be carried out in large sample size. There are some *Ayurvedic* drugs are also available in classical text which may be used with combined therapy and produces significant results in preventing the recurrence occurred after this physical therapy.

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