



A CLINICAL STUDY TO EVALUATE THE EFFICACY OF AGNIKARMA USING TI-LATAILA (SESAMUM INDICUM L.) IN THE MANAGEMENT OF DE QUERVAIN'S TENOSYNOVITIS.

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ABSTRACT

Introduction: De Quervain's tenosynovitis (DQTS) is a painful condition in which the common sheath of the tendons of abductor pollicis longus and extensor pollicis brevis become chronically inflamed, thickened, and later on stenosed as a result of degenerative changes or unaccustomed overuse. It is also called De Quervain's disease or De Quervain's tendinopathy. The prevalence of DQTS in the general population is 3.7% with a peak value (of 9.8%) among those in the '40s. The condition is 4 times more common in females than males. Nowadays, among smartphone users, the incidence is as high as 33% owing to the overuse of the thumb. In *Āyurvēda* DQTS may be correlated with *snāyugatavāta* in *maṇibandha sandhi* (wrist), which has symptoms of pain, stiffness, and restriction of movements. Here *vāta* gets aggravated by overuse (*vyāyāma*) of the thumb and wrist and gets localised in *snāyu* of *maṇibandha sandhi* (wrist). *Āchārya Suśruta* advises *snehana*, *upanāha*, *agnikarma*, *bandhana*, and *unmardana* in the management of *snāyugata vata*. *Snigdha dravyās* like *taila* (oil), *ghrta* (ghee), *madhu* (honey), and *guda* (jaggery) are the articles advised for *agnikarma* in these conditions due to their deep penetration capacity. Though there are many procedures in current practice, each procedure has its own limitation. However, *agnikarma* is a popular technique used in musculoskeletal pathologies. **Methodology:** A total number of 17 participants with the symptoms of De Quervain's tenosynovitis were selected and evaluated, by taking a detailed history and clinical examination. Subjects satisfying inclusion and exclusion criteria were selected randomly using

the random number table method. They were treated with *agnikarma* using *Tilataila* on the 1st and 8th days. The duration of the treatment was 15 days and follow-up was done for 2 weeks after the intervention. Clinical assessments were done on the 1st and 29th days. The results were analyzed statistically. **Conclusion:** *Agnikarma* using *Tilataila* was found to possess an effect in reducing the pain, tenderness, and grades of Eichhoff's test, Finkelstein's test, and the WHAT test. **Result:** On statistical analysis, it was found that the *agnikarma* using *Tilataila* shows a 61.5% of effect in the management of De Quervain's tenosynovitis.

Keywords: De Quervain's tenosynovitis, *snāyugatavāta*, *agnikarma*, *Tilataila*, *bandhana*.

INTRODUCTION

De Quervain's tenosynovitis (DQTS) is a painful condition in which the common sheath of the tendons of abductor pollicis longus and extensor pollicis brevis become chronically inflamed, thickened, and later on stenosed as a result of degenerative changes or unaccustomed overuse. The patient presents with radial-sided wrist pain, tenderness, swelling, and difficulty to grip objects. The prevalence of DQTS in the general population is 3.7% with a peak value (of 9.8%) among those in the '40s. The condition is 4 times more common in females than males. Now a days, among smartphone users the incidence is as high as 33% owing to the overuse of thumb. The modern management of DQTS includes splintage, NSAID'S, corticosteroid injections, and surgical decompression. In *Āyurvēda* DQTS may be correlated with *snāyugatavāta* in *maṇibandha sandhi* (wrist), which has symptoms of pain, stiffness, and restriction of movements.⁸ Here *vāta* gets aggravated by overuse (*vyāyāma*)⁹ of the thumb and wrist and gets localised in *snāyu* of *maṇibandha sandhi* (wrist). *Āchārya Sūsruta* advises *snehana*, *upanāha*, *agnikarma*, *bandhana*, and *unmardana* in the management of *snāyugata vāta*.¹⁰ Among these, *agnikarma* is indicated in the condition of severe pain of bones, veins, tendons, and joints.¹¹ *Agnikarma* is indicated in all *vātaja* diseases as the *uṣṇa guṇa* of *agni* is opposite to that of *śīta guṇa* of *vāta doṣa*. *Snigdha dravyās* like *taila* (oil), *ghrta* (ghee), *madhu* (honey), and *guda* (jaggery) are the articles advised for *agnikarma* in these conditions¹² due to their deep penetration capacity.¹³ Among these *dravyā's*, *taila* has the properties of *vātaśamana* and *sūlaghna*.¹⁴ Since *Tilataila* is the best among *tailā*,¹⁵ was taken for the study.

Snigdha and *guru guṇa* of *Tilataila* along with the *ushna guṇa* of *agni* lead to a considerable reduction in the provoked *vāta*, which is *rūksha*, *laghu*, and *śīta*. Though there are many procedures in current practice, each procedure has its own limitation. However, *agnikarma* is a popular technique used in musculoskeletal pathologies. Hence it was decided to conduct a study to evaluate the efficacy of *agnikarma* using *Tilataila* in the management of De Quervain's tenosynovitis so that the given procedure can be more patient compliant and less invasive with minimal time period consumption. *Agnikarma* using *tilataila* was found effective in reducing the pain, tenderness, and grades of Eichhoff's test, Finkelstein's test, and the WHAT test.

METHODS

AIM: To explore the scope of *agnikarma* using *Tilataila* in De Quervain's tenosynovitis.

OBJECTIVE

Primary objective

- To find out the effect of *agnikarma* using *Tilataila* in the management of De Quervain's tenosynovitis.

Study design: Clinical trial

Study setting: VPSV Ayurveda College Hospital, Kottakkal

Study population: Participants satisfying the inclusion criteria.

SAMPLING METHOD: Random Number table method

SAMPLE SIZE: 17

INCLUSION CRITERIA

- Participants who fulfill the diagnostic criteria of DQTS.

- Participants of age 21-60 years irrespective of gender.

EXCLUSION CRITERIA

- Participants in whom Agnikarma is contraindicated.
- Participants with a history of trauma.
- Participants with rheumatoid arthritis and gout.
- Participants with uncontrolled DM and HTN.

DIAGNOSTIC CRITERIA

Participants satisfied all the criteria mentioned below.

- Eichhoff's test
- Finkelstein's test
- WHAT test
- Pain and tenderness around radial styloid.

INTERVENTION

- Agnikarma uses Tilataila on the 1st day and 8th days.

ASSESSMENT TOOLS

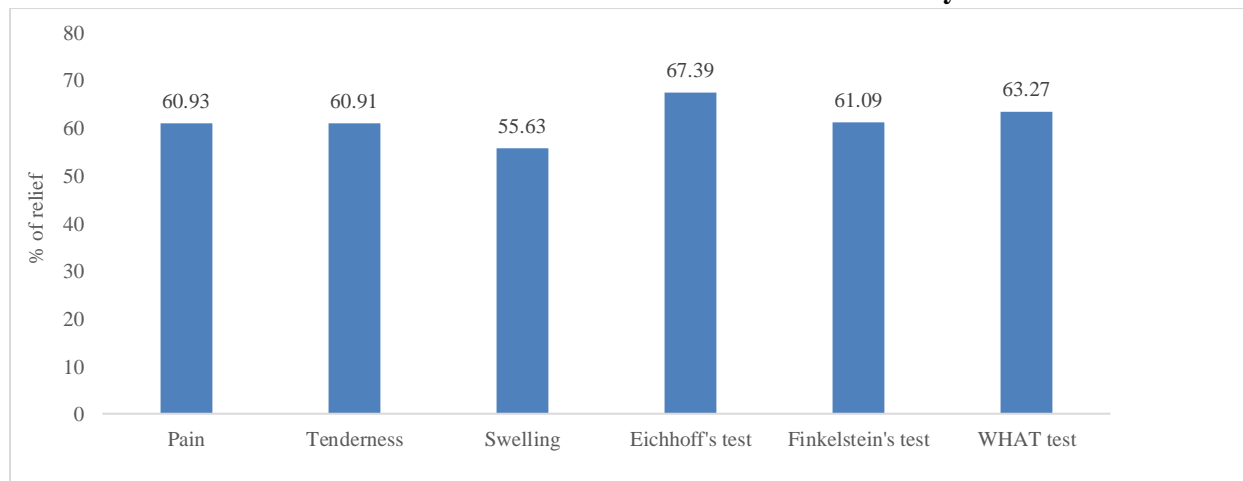
- The pain was measured using a visual analog scale.
- Tenderness was measured using the tenderness assessment scale.
- The swelling was measured using a grading system.
- Eichhoff's test was measured using a grading system.
- Finkelstein's test was measured using a grading system.
- WHAT test

Assessments were done on 1st day before intervention and the 29th day.

There were no dropouts among participants.

OBSERVATIONS

The total effect after the intervention on the 29th day



DISCUSSION

In De Quervain's tenosynovitis, the repetitive passage of the tendon through a narrow canal causes swelling or formation of a fibrotic tendon nodule, which leads to poor tendon glide. Inflammatory changes cause edema within the surrounding area and incarceration of the tendon blocks its gliding in both directions. With disease progression, the retinaculum thickens prominently and there will be fibro cartilag-

inous metaplasia. Further advancement of the disease shows signs of tendinous erosion and an overall increase in the thickness of the sheaths. In De Quervain's tenosynovitis, the *vāta* undergoes *duṣṭi* due to the exertion and repeated movements of the thumb and wrist and this *vāta* takes *sthāna samśraya* in *snāyu* near *mañibandha sandhi*. During the procedure of *agnikarma*, heat is conducted through the skin and subcutaneous tissues to the *snāyu* beneath them. So,

by the process of *taila agnikarma* there occurs a transfer of *uṣṇa guṇa* of agni and *snigdha guṇa* of *Tilataila* to the *snāyu* (tendon) which helps the tendon to overcome the *śīta guṇa* along with the *rūksha guṇa* of *vāta*. According to an article by Okabe et al., the forearm has a thinner epidermis and so the skin conductivity is more. From the above, it may be inferred that during the procedure of *agnikarma* around the radial styloid, the tendon may get heated up with minimal heat loss. The heat generated during *agnikarma* may stimulate the lateral spino-thalamic tract which further may lead to the stimulation of descending pain inhibitory fibres which release endogenous opioid peptides. These peptides bind with opioid receptors at substantia gelatinosa rolandi which inhibits the release of substance P (presynaptic inhibition) and blockage of transmission of pain sensation. Thus, it may be inferred that, during the process of *agnikarma*, along with *uṣṇa guṇa* of agni, the *tikṣṇa guṇa* also help for the deeper penetration of heat so that it reaches *snāyu* and together reduces the tenderness and pain through the process of *vāta śamana*. From this, we could infer that *agnikarma* may be useful for the immediate management of pain. Heat shock response is defined by the rapid expression of a class of proteins known as heat shock protein, when a cell, tissue, or intact organism is exposed to elevated temperatures. Heat shock proteins (HSP) arrest inflammatory damage by promoting the production of anti-inflammatory cytokines in chronic inflammation. These proteins promote tissue healing in tendinopathies. And also serve a very broad cytoprotective role, by promoting the reconstruction of damaged tissues. All these together help in the easy gliding of tendons inside the sheath and thus improve the range of movements.

According to Warren C. G. et al., at a higher temperature, there may be a relaxation of collagen in the connective tissue and thus it increases the flexibility of the tendon and enables it to sustain more force. The heat also relaxes the muscles, relieving stiffness and increasing the range of movements. The *uṣṇa guṇa* does *vāta śamana* and thus reduces the *kharatwa* and *rūkshatwa* occur in the *snāyu*. This will

increase the elasticity of the tendon and its sheath. In an article by A.G. Ravisankar et al., a temperature range of 40°C to 45°C may increase the extensibility of collagen tissue and thus reduce joint stiffness. The low melting temperature allows collagen molecules to melt and refold locally, which will provide elasticity and strength to the fibres.¹²⁸ *Tilataila* at 110°C temperature when applied topically, the tendon beneath the skin may get heat in between 40-45°C. In the present study, it was found that there is a reduction of pain, tenderness, and reduction in the grades of Finkelstein's test, Eichhoff's test, and WHAT test after *agnikarma*. This may be attributed to the fact that the *uṣṇa guṇa* of agni results in an increase in the elasticity of the tendon and its sheath as evidenced by the above study. An increase in the elasticity of the tendon sheath prevents the entrapment of tendons and thus reduces pain and tenderness and facilitates gliding. This might have been the reason for the reduction of the grades of Eichhoff's test, Finkelstein's test, and the WHAT test. According to the theory of proinflammation, the induction of an acute inflammation will gather a larger number of lymphocytes, neutrophils, histamines, and prostaglandins to the site and rectifies the chronic inflammation present at the site. The theory of thermodynamics applied to a biological system suggests that when thermal energy is transferred from an instrument to a tissue its internal energy increase and the heat energy gets transferred to the cells. The thermostatic center of the body immediately gets activated to distribute this localized rise in temperature throughout the body. As a result, vasodilatation occurs, and blood flow increases at the site. According to the article by A.G. Ravisankar et al., the thermal behaviour of *snigdha dravya* and *pancadhātu śalāka* were studied and it showed that the *pancadhātu śalāka* required a temperature of 235°C to 240°C to become red hot, whereas *snigdha dravya* required only 140°C - 160°C to get a boil. Also, *snigdha dravya* has higher latent heat (heat retention capacity) with an average heat dissipation of 2°C/min. whereas in *pancadhātu śalāka* the heat dissipation is about 4°C to 6°C/minute. According to him, the Heat retaining capacity of *snigdha dravya* is 2.5

times higher than *pancadhātu śalāka*. So, this higher retention capacity along with the *tīkṣṇa guṇa* of *agni* may help in the deeper penetration of heated *snigdha dravyās*. This article concluded that in *snāyu gata vikāra*, *snigdha agnikarma* may provide a better result than *rūkṣa agnikarma*. In an article by Petrofsky J. et al., it is proved that the immediate application of moist heat had faster pain relief than that of dry heat. Ācārya *Suśruta* in *Suśruta Samhita* described this much earlier. *Madhura rasa, madhura vipāka, balya*, and *rasāyana* properties of *tilataila* nourish and strengthen the tendon and tendon sheaths. *Snigdha* and *guru guṇa* of *tilataila* decreases *rūkṣata* of *vāta* and thereby improve flexibility. This together may improve the strength and flexibility of the tendon. *Uṣṇa guṇa* of *tilataila* helps to relieve the *stambana* and thus improves the range of movements

An article by Bigdeli et al. states that topical application of *tilataila* is effective in reducing pain. *Snigdha* and *guru guṇa* of *Tilataila* along with the *uṣhna guṇa* of *agni* lead to a considerable reduction in the provoked *vāta*, which is *rūkṣa*, *laghu*, and *śīta*. This may result in the reduction of pain and may increase the strength and flexibility of the tendons and their sheath. *Agnikarma* using *Tilataila* is patient friendly. Mild Scalds were observed in 5 cases after *taila agnikarma*. But it was relieved within 4 days. Unlike *agnikarma* using *śalāka*, no wounds were generated in *taila agnikarma*. Moreover, *taila* is *vāta śamana* and *sūlagna*, so along with the action of *agni*, *taila* might have helped to relieve the pain and tenderness.

CONCLUSION

Based on the structure affected, De Quervain's tenosynovitis may be correlated to *snāyu gata vāta*. After the intervention and during the follow-up, *Agnikarma* using *tilataila* was found to possess an effect in reducing the pain, tenderness, and grades of Eichhoff's test, Finkelstein's test, and the WHAT test. *Agnikarma* using *Tilataila* can be considered as initial management in DQTS. During the follow-up, the recurrence of signs and symptoms was not noticed in any of the participants of the trial group. *Agnikarma* using *Tila-*

taila had shown 61.5% of efficacy in the management of De Quervain's tenosynovitis. The intervention is found to be effective in the management of De Quervain's tenosynovitis.

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