

EFFECTIVENESS OF KINESIO-TAPING ON PAIN AND IMPROVING FUNCTIONAL DISABILITY AND HAND GRIP STRENGTH IN POST-PARTUM DEQUERVAIN'S TENOSYNOVITIS

Physiotherapy

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ABSTRACT

Background: Dequervain's Tenosynovitis (DQT) is a stenosing condition of the first extensor compartment of the wrist. It affects around 1.3% of women and 0.5% of men, with higher prevalence in women during late pregnancy and post-partum, likely due to repetitive handling of newborns. This study aimed to evaluate the effectiveness of Kinesio-taping on pain and grip strength in post-partum women with DQT. **Materials and Methods:** A randomized controlled trial was conducted with 30 postpartum female participants diagnosed with DQT. Participants were randomly divided into two groups: Group A received Kinesio-taping with conventional therapy, while Group B received only conventional therapy, including phonophoresis and rehabilitative exercises. Treatment was given over 4 weeks, with 3 sessions per week. Outcome measures included the Patient-Rated Wrist Evaluation (PRWE) and hand grip strength, assessed at baseline, 2 weeks, and 4 weeks. **Result:** Both groups showed significant improvement in PRWE scores and grip strength. However, Group A showed significantly greater improvement ($p < 0.05$) than Group B. **Conclusion:** Kinesio-taping combined with conventional physiotherapy is more effective than conventional therapy alone in reducing pain, improving wrist function, and enhancing grip strength in post-partum women with Dequervain's Tenosynovitis.

KEYWORDS

Abductor pollicis longus (APL), Dequervain's Tenosynovitis (DQT), Extensor pollicis brevis (EPB)

INTRODUCTION

Dequervain's disease, also known as Dequervain's Tenosynovitis (DQT), is a painful condition involving the tendons on the outer side of the wrist. It results from inflammation of the tendons that control thumb movement, particularly the extensor pollicis brevis (EPB) and abductor pollicis longus (APL).^[1] Women aged between 30 and 50 are most commonly affected, with the condition often developing during the post-partum period. Symptoms typically emerge 4 to 6 weeks after childbirth.^[2] Stenosing tenosynovitis of the hand and wrist tendons can result from factors such as edema, fluid retention, and repetitive or forceful hand movements.^[3] This condition is often caused by repetitive wrist strain, commonly from carrying infants. Fluid retention in lactating mothers, likely due to hormonal changes, may also contribute, typically within the first three months postpartum.^[4] Dequervain's Tenosynovitis causes pain and swelling near the base of the thumb, worsened by thumb movements like grasping or pinching. Pain typically develops gradually and is felt over the radial styloid.^[5]

A physical exam may show tenderness over the first dorsal compartment.^[6] In clinical practice, the Finkelstein and Eichhoff tests are frequently employed to diagnose Dequervain disease. Dequervain's Tenosynovitis is usually treated non-surgically with options like corticosteroid injections, thumb splints, NSAIDs, and hand therapy. Surgery is considered only if these fail.^[1] Iontophoresis, galvanization, diadynamic and interferential currents, light therapy, and ultrasound are all effective treatment modalities for this condition.^[7] Kinesio taping, developed by Kenzo Kase, is used to lift the skin, reduce pain and swelling, support movement, align fascia, and promote lymphatic drainage.^[8]

Review of Literature

Ismail Eralp Kacmaz et al (2019) conducted a study on efficacy of kinesio-taping in Dequervain's Tenosynovitis. It was a retrospective study and concluded that Kinesio-taping was identified as an effective treatment for Dequervain's disease

Hypothesis

Null Hypothesis

- H0₁: There will be no significant improvement in the recovery of postpartum de quervain's tenosynovitis patients who will receive Kinesiotaping along with Phonophoresis and Rehabilitative exercises.
- H0₂: There will be no significant improvement in the recovery of postpartum de quervain tenosynovitis patients who will receive Phonophoresis along with Rehabilitative exercises.

Alternate Hypothesis

- H1₁: There will be significant improvement in the recovery of postpartum de quervain's tenosynovitis patients who will receive Kinesiotaping along with Phonophoresis and Rehabilitative exercises.
- H1₂: There will be significant improvement in the recovery of postpartum de quervain tenosynovitis patients who will receive Phonophoresis along with Rehabilitative exercises.

METHODS

Study Design: This Randomized Controlled Trial was conducted at the Outpatient Department of University College of Physiotherapy, GGSMCH, Faridkot, within period between September 2024 to March 2025. The study aimed to evaluate the effectiveness of Kinesio taping on pain and grip strength in postpartum Dequervain's Tenosynovitis.

Subjects: Fifty patients were enrolled in the study, and 30 who met the inclusion and exclusion criteria were selected and randomly divided into two equal groups using a randomized number table. The study lasted for 4 weeks, and informed consent was obtained from all participants. Female patients aged 25–40 years, within 3 months postpartum, with pain and swelling around the radial styloid, tenderness over the first extensor compartment, difficulty in gripping, an NPRS score greater than 4, and positive Finkelstein and Eichhoff tests were included. Patients were excluded if they were male, had fractures of the radius, ulna, or hand, ligament injuries, wrist osteoarthritis, osteoporosis, rheumatoid arthritis, entrapment neuropathies such as carpal tunnel syndrome or radiculopathy, dorsal wrist ganglions, systemic or inflammatory diseases, a history of hand surgery, Wartenberg syndrome or had received corticosteroid or analgesic injections in the radial wrist region.

Outcome measures: Assessment was done before the beginning of the study and then reassessed at the end of 2nd week and final assessment was done at 4th week. All the patients were evaluated in the following outcome measures: Patient Rated Wrist Evaluation and Hand grip strength. Data analysis was done by using paired and un-paired t test.

Intervention: Group A: Kinesio-taping with Conventional physiotherapy which includes phonophoresis and rehabilitative exercises which mainly include stretching and strengthening exercises. Phonophoresis was administered using sodium diclofenac (Omnigel) as the coupling medium. The parameters for the treatment were as follows: Mode: Continuous, Intensity: 0.5 W/cm², Frequency: 3 MHz, Duration: 5 minutes. **Group B:** Conventional physiotherapy-same as group A

Table 1 Rehabilitative Exercises^[6]

	Exercise	Instructions
1st Week	• Thenar Muscle group stretches • Forearm extensor / flexor stretches	• 15-20 second hold, 8-10 reps for each respective stretch, 3 sessions per week
2nd Week	• Eccentric unweighted hammer curls • Eccentric weighted hammer curls	• 3 sets of 10-15 repetitions • During the concentric (radial deviation) movement phase, help with the other hand. • After achieving functional tolerance for 15 repetitions, add ½ kg of dumbbell.
3rd Week	• Eccentric thumb extension and abduction exercises with elastic band. • Eccentric weighted hammer curls	• 2 sets of 10-15 repetitions for each respective exercise, 3×/wk. • Assist with other hand during concentric movement phase • Progress to 3 sets of 15 repetitions; add resistance once functional tolerance for 15 repetitions attained
4th Week	• Eccentric wrist extension/flexion with dumbbell • Eccentric forearm pronation/supination with Theraband	• 2 sets of 10-15 repetitions 3 ×/wk. Add weight once functional tolerance for 15 repetitions attained • 2 sets of 10-15 repetitions 3 ×/wk. Add resistance once functional tolerance for 15 repetitions attained • Assist with other hand during concentric movement phase

Table 3 Paired T-test for Comparison at 0th week, 2nd week and 4th week Scores Measurements of PRWE and Hand Grip Strength of Group A and B

Data Analysis within the groups								
	Group A Kinesio-taping + Conventional				Group B Conventional			
Outcome measures	Mean ± SD 0th day	Mean ± SD 2nd week	Mean ± SD 4th week	P value	Mean±SD 0th day	Mean±SD 2nd week	Mean±SD 4th week	P value
PRWE	75.267 ± 8.4618	52.067 ± 5.0880	24.133 ± 5.0796	<.001*	75.900 ± 5.9378	67.233 ± 7.5590	55.367 ± 11.1090	<.001*
Hand grip strength	10.967 ± 2.1715	14.660 ± 2.3655	24.133 ± 2.2772	<.001*	10.813 ± 2.1132	11.973 ± 2.1063	14.033 ± 1.5619	<.001*

Comparison of 0th day, 2nd week and 4th week of PRWE and hand grip strength within the Group A and B has shown that, a statistical difference was detected as $p<.001^*$ for all variables in both groups as shown in table 3, showing that in patients with DQT are helpful in lowering pain and improving functional disability and hand grip strength.

Table no.4 Unpaired T-test for Comparison at 0th week, 2nd week and 4th week Scores Measurements of PRWE and Hand Grip Strength Between Group A and B

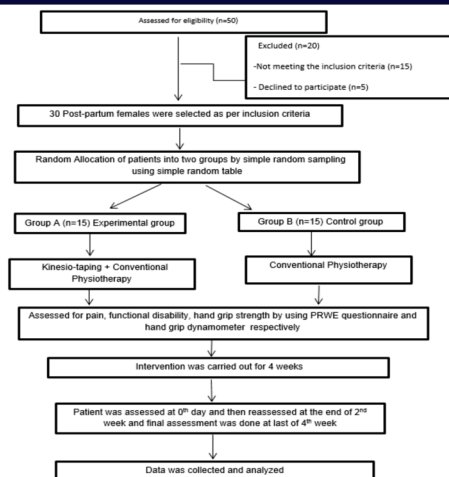
Data Analysis between the groups								
	Group A Kinesio-taping + Conventional				Group B Conventional			
Outcome measures	Mean ± SD 0th day	Mean ± SD 2nd week	Mean ± SD 4th week	P value	Mean ± SD 0th day	Mean ± SD 2nd week	Mean ± SD 4th week	P value
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Comparison of 0th day, 2nd week and 4th week of PRWE and hand grip strength between the Group A and B has shown that, a statistical difference was detected as $p<.001^*$ for all variables in both groups as shown in table 3, showing that in patients with DQT are helpful in lowering pain and improving functional disability and hand grip strength.

DISCUSSION

Dequervain's Tenosynovitis affects post-partum women, causing pain and reduced hand function, especially during activities like breastfeeding. This can disrupt breastfeeding and daily life, particularly for working mothers. This study examines the effectiveness of Kinesio-taping as a safe, non-invasive treatment to alleviate pain and improve grip strength in these women.

In the current study, Group A showed greater improvement in wrist function and grip strength compared to Group B. This was due to the therapeutic benefits of Kinesio-taping, which reduces inflammation and alters pain perception, allowing participants in Group A to perform daily tasks like lifting and gripping with less discomfort.

**Consort Flow Diagram**

RESULT

SPSS version 21 was used to analyze the data. Statistical significance was set at $p<0.001^*$.

Table 2 Shows the Mean and Standard Deviation of Age

Group	N	Mean	Std. Deviation
A	15	29.73	2.840
B	15	29.20	2.111
Total	30	29.47	2.474

Group (A): Fifteen patients were included in this group. The data in table 1 shows the mean age 29.73 ± 2.840 Group (B): Fifteen patients were included in this group. The data in table 1 shows the mean age 29.20 ± 2.111

The findings of this study are consistent with those of Restu Nugraheni et al. (2020), who found Kinesio-taping more effective than ultrasound therapy in reducing pain in individuals with Dequervain's Tenosynovitis.^[7]

The results of the present study are in line with those of Kamalakannan M et al. (2020), who demonstrated that Kinesio-taping was more effective in reducing pain and enhancing quality of life.^[8]

The findings of the present study also align with those of Keynoosh Homayouni et al. (2014), who compared Kinesio-taping with physiotherapy in the treatment of Dequervain's disease. Their results demonstrated a significantly higher success rate in the Kinesio-taping group, suggesting it was more effective than physiotherapy in managing the condition.^[9]

However, the study by Mohamed Ahmed Awad et al. (2017) also highlighted the positive impact of phonophoresis. In a comparative analysis between phonophoresis and Kinesio-taping for post-partum Dequervain's Tenosynovitis, results indicated that phonophoresis was

more effective in alleviating pain and reducing disability levels than Kinesio-taping.^[10]

CONCLUSION

This study concluded that Kinesio-taping along with Conventional Physiotherapy and Conventional Physiotherapy alone are effective in reducing pain and improving hand grip strength and functional disability but Group A is more effective than Group B.

Limitations of the Study

The sample size for the study was small and the study was restricted to small geographical area of Faridkot. There was no longer follow-up and the study duration was also less.

Future Scope for the study is that limitations of the study provide scope for further research and opportunities to expand knowledge and also studies including different outcome measures. Further, there is scope for randomized control trials with large sample size and longer duration of intervention to improve the quality of evidence and generalizability of the findings.

Acknowledgment

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Disclosure of Conflict of Interest: There was no conflict of interest.

Statement of Ethical Approval: Ethical Clearance of the study was taken from institutional ethical committee of University College of Physiotherapy, Baba Farid University of Health Sciences, Faridkot Punjab.

Statement of Informed Consent: Informed consent was obtained from all individual participants included in the study.

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