

Effect of Shockwave with Pilates Exercise on Postpartum Coccydynia

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ABSTRACT

The purpose of this study was to examine the impact of the SHOCKWAVE WITH PILATES EXERCISE upon the disability and pain experienced by postpartum women with coccydynia. Forty women from the ages of 25 to 35 with a BMI ranging from 20 to 30 kg/m² were diagnosed with postpartum coccydynia. This study lasted from January to May of 2025 and included participants chosen at random from the gynaecology outpatient clinic at Kasr El Ainy University Hospital. Twenty women were assigned to each of the two groups at random; group A (Control group): It consists of 20 patients in 1st week after delivery. They will be treated by conventional medical treatment usually involves non-steroidal anti-inflammatory drugs (NSAIDS) (diclofenac potassium 25-mg) tablets two times per day only. While, group B (Study group) It involves 20 patients in 1st week after delivery. They will be treated by traditional medical treatment consists of NSAIDS (diclofenac potassium 25-mg tablets two times per day) and as well as shockwave on coccygeal area with pilates exercise for 1 session /week for 4 week. Measures of pain intensity were determined by visual analogue scale, levels of disability were determined by Oswestry Disability Questionnaire Index, and levels of serum cortisol. The study demonstrated that both groups experienced a statistically significant reduction in pain intensity and an enhancement in functional performance levels. However, when comparing the two groups, it was discovered that the study group (B) received shock wave exercise with Pilates had a significantly lower pain level ($P=0.001$) and a significantly higher level of functional performance ($P=0.0001$) than the control group (A) received medical treatment. Conclusion: could concluded that: shockwave with pilates exercise is an effective treatment for decreasing pain in postpartum women having coccydynia.

Keywords: Shockwave; Pilates exercise; Pain intensity level; Disability level; Postpartum; Coccydynia

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INTRODUCTION

Coccydynia is a painful disorder that affects the area around the coccyx. In most cases, this symptom manifests as pain or discomfort when sitting; nevertheless, it may become much more severe while engaging in activities that require hip extension, such ascending stairs. The incidence is five times higher in women than in males, while it may impact anyone of any age or gender [1]. As soon as the mother's body, hormone levels, as well as uterine size revert to a non-pregnant condition after delivery, the postpartum (or postnatal) period starts [2].

The purpose of a physiotherapy evaluation is to detect any limitations that could have triggered the pain or made it more likely to persist. Some examples of these elements include physical (weakness, stiffness), mental (depression, movement phobia, and catastrophising) and social (workplace, for example). The subjective evaluation, which involves obtaining a patient's medical history, is crucial, while the objective evaluation, which involves conducting clinical tests, is used to either confirm or reject hypotheses developed from the subjective evaluation [3].

One FDA-approved treatment option is extracorporeal shock wave therapy (ESWT), which involves directing

shock waves to the painful area. ESWT may be able to alleviate pain since it stimulates analgesia and promotes more tissue regeneration [4].

These Pilates exercises are often suggested as a way to prevent and alleviate back pain, especially low back pain (LBP). In addition to stretching out tight muscles in the back and strengthening the core, they also teach proper posture [6]. Compared to a conservative physiotherapy exercise program, a Pilates exercise program that included ESWT was more effective in alleviating chronic LBP and improving dynamic balance [7].

II. SUBJECTS, MATERIALS, AND METHODS

This study was carried out to examine the impact of shock wave with pilates' exercise on postpartum coccydynia.

1.SUBJECTS:

This study was conducted on Patients are complaining Coccydynia within one week postpartum. Their ages will be ranged from 25 to 35 years old. Multipara women. They are medically stable and provided a written consent form to participate in the study. The patient will be examined by orthopedic.

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1.1. Group design of patients:

Patients were randomized into two equivalent number groups:

1.1.1. Control group (G1):

It consists of 20 patients in 1st week after delivery. They will be treated by conventional medical treatment usually consists of non-steroidal anti-inflammatory drugs (NSAIDS) (diclofenac potassium 25-mg) tablets two times per day only.

1.1.2. Study group (G2):

It consists of twenty patients in 1st week following delivery. They will be treated by conventional medical treatment consists of NSAIDS (diclofenac potassium 25-mg tablets twice a day) and as well as shockwave on coccygeal area with pilates exercise for 1 session /week for 4 week

2. MATERIALS (EQUIPMENT):

There were two main types of tools used in this investigation: measurement tools and treatment tools:

2.1. Measurement equipment:

In this study, the following measuring tools were utilized:

2.1.1. Informed consent form:

Prior to taking part in the study, every patient voluntarily signs a written permission form.

2.1.2. Recording datasheet:

Personal details such as name, age, residence, weight, and height are included.

2.1.3. Height and Weight scale:

At baseline, all female subjects in both groups (A&B) had their height, weight, and BMI measured using a health scale.

2.1.4. Visual analogue scale:

Both prior to and after the treatment, pain assessments were carried out. This is a tool for measuring subjective features or attitudes that can't be evaluated directly.

2.1.5. Oswestry Low Back Pain Disability Questionnaire:

Low back pain was assessed using this questionnaire. It was used to measure the level of pain in both the A and B groups both prior to and following the treatment.

2.1.6. Serum cortisol level

The adrenal glands produce the steroid hormone cortisol. It aids in stress response, glucose regulation, and immune system function.

2.1.7 Pressure algometer

It is crucial to quantify the pain utilizing an algometer in order to diagnose pain and monitor it.

2.2. Treatment equipment:

The following tools were used to accomplish the treatment:

2.2.1. Shockwave:

Shockwave applicator is applied directly to coccygeal region most tender point in which pain is localized. Prior to their participation in this trial, all patients were provided with a thorough description of the procedure and were asked to sign an authorized written permission form.

3.1. Evaluative Procedures:

Prior to treatment initiation and after five weeks of therapy, assessments and measurements were taken in both groups.

3.1.1. History Taking:

The names, ages, weights, and heights of all patients were documented in a recording datasheet.

3.1.2. Weight and height measurement:

The BMI, height, as well as weight were estimated using a height and weight scale. Throughout the measurement, the patients were asked to wear a thin layer of clothing.

3.1.3. Oswestry Disability Questionnaire Index:

This questionnaire was used for assessment low back pain. The questionnaire examined perceived level of disability in 10 everyday activities of daily living this questionnaire has been designed to give us information as to how your back pain has affected your ability to manage everyday life. There were 10 questions, each question has score from 0 to 5 [8].

I don't have pain at this moment. Score = 0

Currently, the pain is very mild. Score = 1

Currently, the pain is moderate. Score = 2

Currently, the pain is quietly severe. Score = 3

Currently, the pain is very severe. Score = 4

Currently, the pain is the worst imaginable at the moment. Score = 5

Questionnaire women should answer all of the questions. On a scale from 0 to 5, ODI rates each item. When the answer is closer to 0, it means that the assessed activity can be continued with no or minimal impairment. A higher number indicates that the pain-related impairment is more severe. The total score for an ODI may be anywhere from zero to fifty or one hundred percent (to get the percentage, just multiply the score by two), depending on the number of points given for each answer.

3.1.4 Serum cortisol level

It aids in stress response, glucose regulation, and immune system function. A blood sample is used for the test. Blood draws are done by inserting a needle into a vein in the patient's arm or hand.

3.1.5. Pressure algometer

Pressure algometry has been shown to be a safe, effective, and non-invasive method to explore the physiological and clinical processes that contribute to muscle pain conditions.

3.2. Treatment Procedures:

3.2.1. Medical treatment:

This protocol was used for both groups (A&B). Conventional medical care typically involves taking non-steroidal anti-inflammatory medications (diclofenac potassium 25 mg) twice daily.

3.2.2 Shockwave Therapy:

It was given to the study group (G2) only. The treatment impulses are 2400 extracorporeal shockwave impulses every session followed by pilates exercise.

Frequency: 8 hz is use for all the treatment session

Energy density: 0.11 mj/mm²

Duration: 10:15 minutes depend on patient tolerability.

3.2.2 Pilates exercise:

After application of shockwave patient received active pilates exercise each session 1 set of 10 repetition each exercise (Pelvic Curl, Spine Twisting in Supine, Single Leg Stretching exercise, Rolling Up, Rolling-Like-a-Ball, Leg Circles, All Fours, spine Extension).

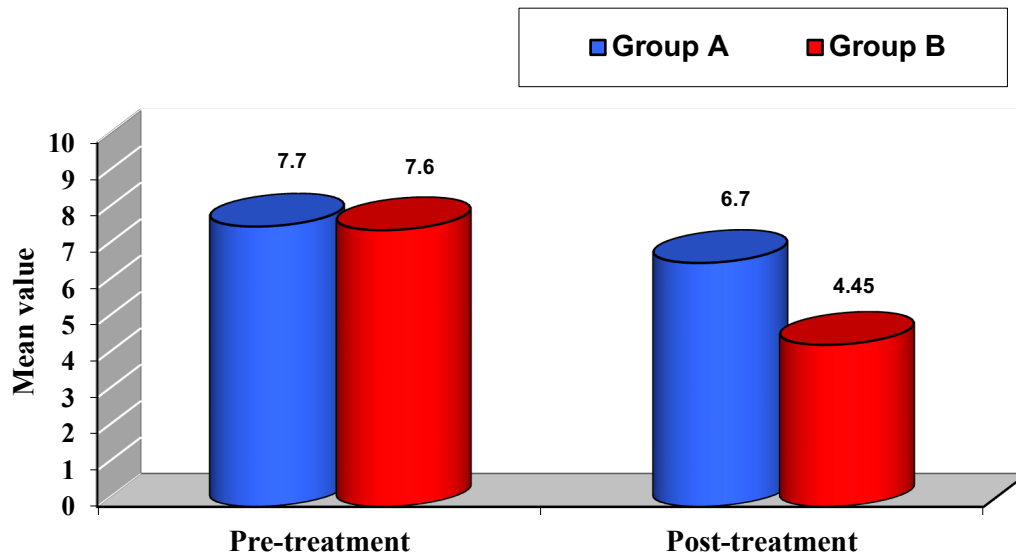
III. STATISTICAL ANALYSIS

Group A had an mean age of 27.40 ± 1.60 years, a weight of 161.25 ± 5.47 cm, a height of 64.75 ± 6.68 kg, as well as a BMI of 24.84 ± 1.25 kg/m². These values were obtained for group B: 27.50 ± 1.64 years, 159.75 ± 6.00 cm,

63.40 ± 7.41 kg, along with 24.77 ± 1.4 kg/m², respectively. Weight ($t=0.605$, $p=0.549$), height ($t=0.827$, $p=0.414$), BMI ($t=0.154$, $p=0.878$), and age ($t=-0.195$, $p=0.846$) were not significantly different among the two groups.

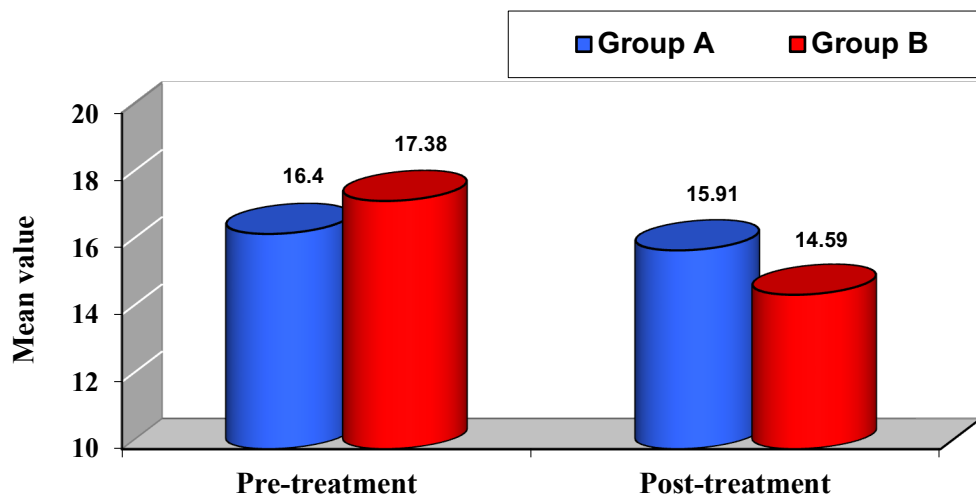
IV. RESULTS

Visual Analogue Scale

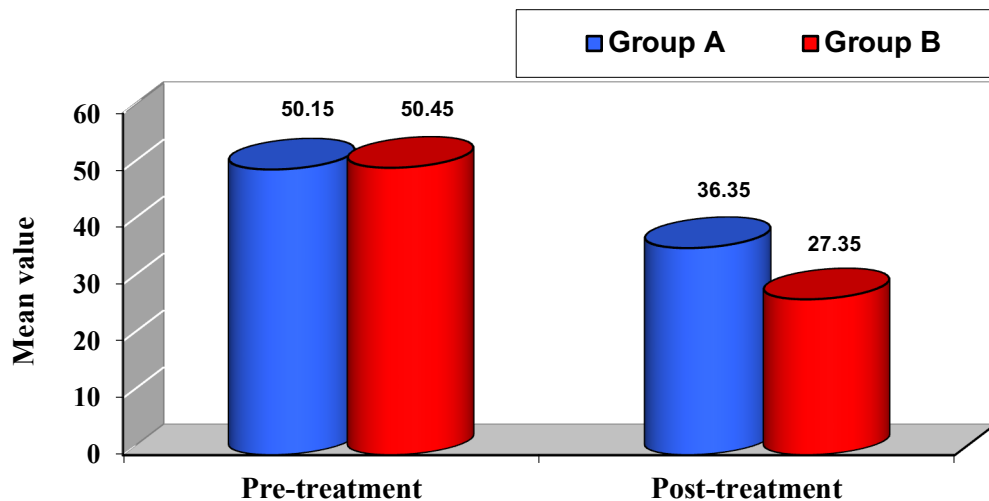


Mean values of VAS in both groups pre- and post-treatment

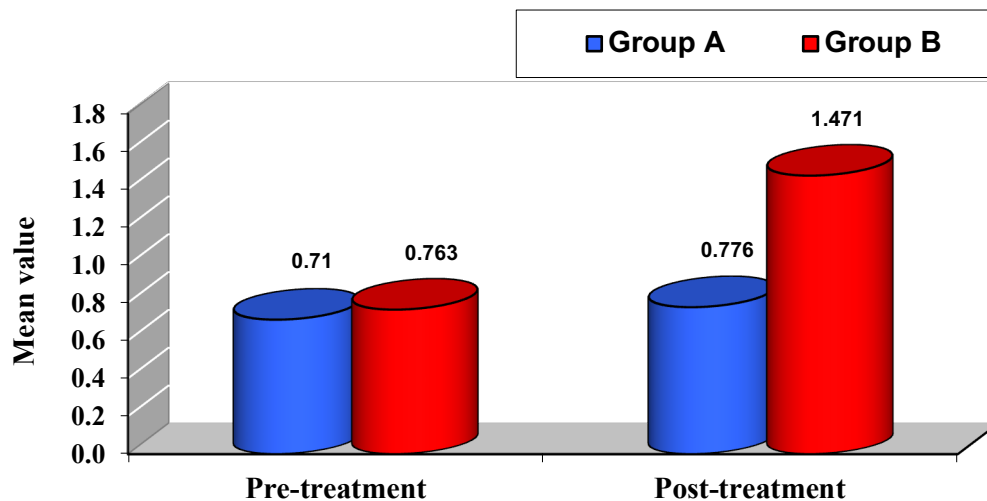
Serum cortisol



Mean values of serum cortisol in both groups pre- and post-treatment.

Oswestry functional disability index

Mean values of Oswestry functional disability index in both groups pre- and post-treatment.

Pressure algometer

Mean values of pressure algometer in both groups pre- and post-treatment.

V. DISCUSSION:

The purpose of this study was to examine the impact of kinesiotaping on pain as well as disability in postpartum coccydynia. A total of forty women with postpartum coccydynia were chosen. Their ages varied from 25 to 35, and their BMI varied between 20 and 30 kg/m². From January to May of 2021, participants were chosen from the outpatient clinic of the gynaecology department at Kasr El Ainy University Hospital. The study continued for five months. These women were evaluated using the VAS, the Modified Oswestry Disability Questionnaire (MODQ), along with blood pressure and cortisol levels.

Twenty women made up each of the two groups that were randomly assigned. 20 women from the first week after giving birth made up group A, which constituted the control group. They received NSAIDS (diclofenac potassium 25 mg) twice daily as their conventional medical therapy.

There were twenty patients in Group B, (Study Group), during the first week after birth. Conventional medical treatment included administering NSAIDS (diclofenac potassium 25 mg tablets two times per day) and incorporating shock wave therapy with Pilates exercises performed once weekly for four weeks.

The results in group B (study group) revealed a statistical significant decline in the score of MODQ evaluated at after-treatment when compared with pre-treatment. As group (B) had received 12 sessions of shock wave on coccygeal region with pilates exercise, three sessions per week for four weeks, in addition to the Conventional medical treatment included administering NSAIDS (diclofenac potassium 25 mg tablets two times per day).

The current study come in agreement with the study performed by Taheri et al. [9], who found that improvement in range of motion (ROM) increased as a result of shock

wave on coccygeal region with pilates exercise. The improvement in trunk ROM was hypothesized to be a result of the reduction in pain intensity.

Furthermore, Lin et al. [10] observed that the use of shockwaves improved disability. In contrast to the present study, study done by Rompe et al. [11], who disagree with our results and demonstrated a little improvement in ROM, when apply shockwave in additional to exercise.

On the contrary, a pervious study done by Lim et al. [12], come in contradiction with our results either due to application of pilates exercise.

VI. CONCLUSION

On the basis of this study, it could be concluded that shock wave on coccygeal region with pilates exercise is an effective treatment for decreasing pain in postpartum women having coccydynia

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