

# Efficacy of Shockwave Therapy for Alleviating Sacroiliac Joint Pain in Postmenopausal Patient - A Case Study

Dr. Tejal Santosh Varpe<sup>1</sup>, Dr. Shubham Vinay Gajare<sup>2</sup>

<sup>1</sup>PG Student

Email: [tejalvarpe12345\[at\]gmail.com](mailto:tejalvarpe12345[at]gmail.com)

<sup>2</sup>PG Student

Corresponding Author Email: [shubhamphysio8249\[at\]gmail.com](mailto:shubhamphysio8249[at]gmail.com)

**Abstract:** *Sacroiliac joint pain is a common source of discomfort that significantly affects the quality of life, particularly in postmenopausal women. As a result, postmenopausal women may be more susceptible to conditions such as sacroiliitis, arthritis, and other related pain syndromes. Shockwave therapy, a non-invasive treatment modality that utilizes acoustic waves to promote healing, has gained attention in recent years for its potential in managing chronic pain conditions. Sacroiliac joint pain is a common but often underdiagnosed condition that can significantly impact the quality of life, particularly in postmenopausal women who may already be experiencing various musculoskeletal issues due to hormonal changes. Shockwave therapy has emerged as a promising modality, utilizing acoustic waves to promote healing and reduce pain in musculoskeletal conditions. A single case study of Postmenopausal women with sacroiliac joint pain with Bilateral lower limb Weakness. The score of DSIJQ reduced from 64 to 14 and NPRS was reduced by 7<sup>th</sup> Phase to 1<sup>st</sup> phase. A significant improvement was observed. Four-week shockwave therapy is a safe, non-invasive, and effective method for minimizing pain intensity, and boosting functional ability in postmenopausal women with sacroiliac joint pain. The findings from this case study could have significant implications for clinical practice, offering new avenues for treating sacroiliac joint pain and improving the management of musculoskeletal issues in postmenopausal women.*

**Keywords:** Shockwave Therapy, DSIJQ, NPRS

## 1. Introduction

Contemporary women spend about one-third of their lives in the postmenopausal period due to increased life expectancy. Chronic pain affects women more than men, and it worsens with aging. The transition from pre-menopause to post-menopause is associated with reduced estrogen production, resulting in enhanced pain experience.

In addition, menopause related fatigue, insomnia, and mood changes have all been shown to increase pain perception. One of the most common symptoms connected with this stage of life is joint pain.

The sacroiliac joint is a common source of pain around the pelvic joints and lower back with pain in thighs. It influences about 15% to 25% of population. Sacroiliac dysfunction is a state of altered mechanics, whichever an increase otherwise declining from the conventional average or the existence of an unusual motion.<sup>3</sup> It was known as a disorder triggering pain to arise from the sacroiliac joint and is produced by the expanded or unusual ilia movement nearby the sacrum and soreness of sacroiliac joint structures (capsule, pain receptors and ligaments situated within the joint).<sup>4</sup>

Numerous physical therapy interventions, such as patient education, bracing, massage, mobilization, manipulation, therapeutic exercises, aerobic conditioning, and electrotherapeutic modalities like transcutaneous electrical nerve stimulation and ultrasound are effective in treating sacroiliac joint pain. Additionally, using the force exertion of the muscles to cure joint problems is another option offered by the muscle energy technique.

Shockwave therapy is a novel conservative method of treatment for musculoskeletal pain produced by a range of illnesses. Since it inhibits pain transmission and suppresses the inflammatory response, it is considered a good choice for alleviating lumbo-pelvic pain and enhancing its function in recent years.<sup>1</sup>

Extracorporeal shockwave is an acoustic wave having high positive pressures of >1000 bar (100 MPa) developed within an extremely short rise time, followed by a low pressure phase. This low-pressure phase is of tensile stress which is equivalent to 100 bar (10 MPa). Due to the low pulse duration of ESWT (3 to 5  $\mu$ s) and low frequencies, it's absorption by the tissues is minimal and therefore no thermal effect is generated by this therapy.

The proposed mechanisms of action for SWT include the following:

- Promote neovascularization at the tendon-bone junction,
- Stimulate proliferation of tenocytes and osteoprogenitor differentiation,
- Increase leukocyte infiltration,
- Amplify growth factor and protein synthesis to stimulate collagen synthesis and tissue remodeling.

Although menopause is a difficult time for most women and its symptoms have a significant influence on their well-being and life quality, research regarding the benefit of physical therapy interventions on postmenopausal sacroiliac joint pain is lacking. Therefore, this study was conducted to examine the effect of shockwave therapy on pain sensitivity, intensity, and

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functional disability in postmenopausal women with sacroiliac joint pain.

## 2. Need of the Study

Sacroiliac joint pain is a common but often underdiagnosed condition that can significantly impact the quality of life, particularly in postmenopausal women who may already be experiencing various musculoskeletal issues due to hormonal changes. The prevalence of sacroiliac joint dysfunction in this demographic necessitates effective pain management strategies.

The therapy being examined, Extracorporeal Shockwave Therapy, have demonstrated potential in the treatment of sacroiliac joint pain. Each intervention presents unique mechanisms for alleviating pain, reducing inflammation, and promoting tissue repair. Shockwave therapy has emerged as a promising modality, utilizing acoustic waves to promote healing and reduce pain in musculoskeletal conditions. However, there is limited research specifically focused on its efficacy for sacroiliac joint pain in postmenopausal women.

Hence, need of my study is to evaluate the efficacy of shockwave therapy for alleviating sacroiliac joint pain in postmenopausal patients.

### Aim of the Study

The aim of this study is to examine the efficacy of shockwave therapy for alleviating sacroiliac joint pain in postmenopausal patients.

### Objective of the Study

- To evaluate the effect of shockwave therapy for alleviating sacroiliac joint pain in postmenopausal patients.
- To check the reduction in pain severity using NPRS for subject with sacroiliac joint pain.

## 3. Case Study

We outline the case of a 51-year-old female patient who was apparently alright six months back; then, she started complaining of lower back pain after long sitting, for which she went to the local hospital and was managed conservatively. Due to the persistence of symptoms, she went to Wenlock District Hospital physiotherapy OPD on

December 8, 2022. She also has a history of decreased ROM and Crepitus when she bends or during work since 1 year. The patient also has a history menopause 1.5 years ago. She was referred for x-ray and MRI for the same complaints, where she diagnosed with an enthesopathy. A planned physiotherapy protocol was made for the patient considering all the complaints and symptoms.

### Table 1: Intervention

**Warm up:** Lower Limb Range of motion (5 min each X 10 reps x 1set)

**Shockwave Therapy (1500 shocks with frequency of 16 Hz)**

**Cool Down:** Lower Limb Stretching ( 10 sec hold X 10 reps x 1set X 5 min each)

## 4. Procedure

Subjects were explained about the procedures and techniques, and it was practiced before and after every session.

- Subject were given Extracorporeal Shockwave Therapy along with stretching exercises.
- Subjects were assessed for DSIJQ score and NPRS on SI joint, the same was marked with a marker.
- The subject was then administered ESWT (1500 shocks with frequency of 16 Hz) followed by passive stretching (30s hold X 3 times).
- The subjects were then kept for 30 minutes under supervision.
- The duration of each session was about 45 minutes. These sessions were administered thrice in a week for four weeks i.e., a total of 12 sessions were administered.



Figure 1: Shockwave therapy Machine



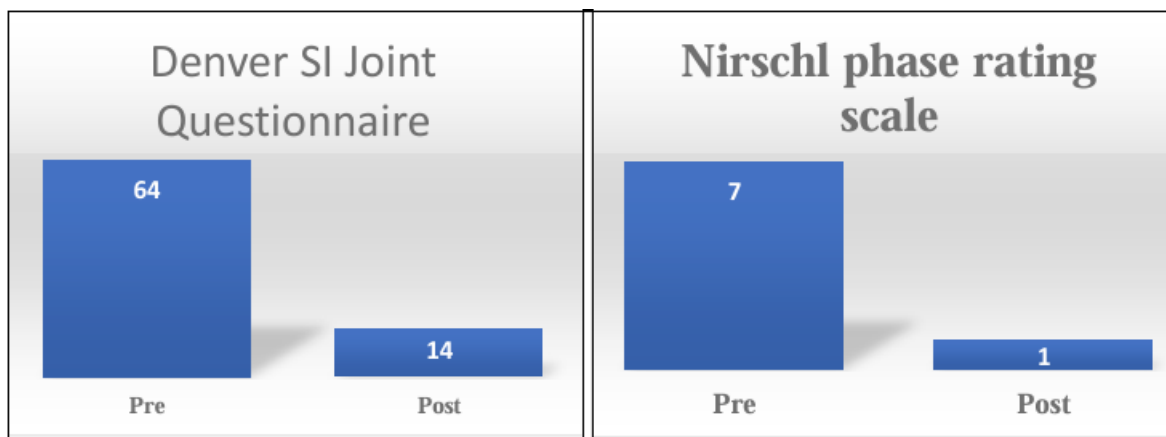
Figure 2: Therapist Giving ESWT to Patient

**Outcome Measures**

- 1) Denver SI Joint Questionnaire: It is reliable tool to measure SIJ disability and detect changes in disability after targeted SI joint treatment.
- 2) NPRS: It is used to quantify pain intensity.

**Outcome measures**

Outcome Measures	Pre- Test	Post- Test
Denver SI Joint Questionnaire	64 %	14 %
NPRS (Nirschl Phase Rating Scale:)	7	1



**5. Results**

As per the table no.1 the score of DSIJQ reduced from 64 to 14 and NPRS was reduced by 7<sup>th</sup> Phase to 1<sup>st</sup> phase. As significant improvement was observed.

**6. Discussion**

Sacroiliac (SI) joint pain is a common but often underdiagnosed condition, especially in postmenopausal women. The sacroiliac joints, which connect the spine and pelvis, can be a source of chronic low back pain, particularly when inflammation, dysfunction, or degeneration occurs. In postmenopausal women, hormonal changes contribute to alterations in musculoskeletal health, including decreased

bone density and altered joint function, making this group particularly vulnerable to SI joint pain. Shockwave therapy, a non-invasive treatment that involves the application of acoustic waves to the affected area, has gained attention for its potential in alleviating musculoskeletal pain. This discussion explores the case study of shockwave therapy's efficacy in treating sacroiliac joint pain in a postmenopausal patient, considering relevant clinical insights, underlying mechanisms, and broader implications.

In postmenopausal women, sacroiliac joint dysfunction is a frequent cause of chronic lower back pain. The decline in estrogen levels during menopause leads to a reduction in collagen and cartilage, making the sacroiliac joints more susceptible to degeneration. Additionally, decreased bone

mineral density increases the risk of osteoporotic fractures, further contributing to joint instability and pain. This can manifest as a localized pain in the lower back or buttocks, often exacerbated by activities such as standing, walking, or sitting for extended periods. Diagnosing sacroiliac joint pain requires a thorough clinical evaluation, as it shares symptoms with other conditions such as lumbar disc herniation or hip osteoarthritis.

Shockwave therapy, or extracorporeal shock wave therapy (ESWT), is a technique that involves applying high-energy acoustic waves to a specific area of the body. These waves induce mechanical vibrations, promoting blood flow, tissue healing, and pain relief. In the context of musculoskeletal pain, shockwave therapy is believed to exert several effects:

- 1) Pain Reduction: Shockwave therapy activates mechanisms that inhibit pain transmission, such as the release of endorphins and the modulation of inflammatory mediators.
- 2) Tissue Regeneration: The mechanical pressure from the shockwaves stimulates collagen production and cell proliferation, promoting tissue healing in damaged structures, such as ligaments and tendons, around the SI joint.
- 3) Improved Blood Flow: The therapy increases local blood circulation, which aids in the removal of inflammatory substances and the delivery of nutrients necessary for tissue repair.

The case study under discussion focuses on a postmenopausal woman experiencing chronic sacroiliac joint pain. She presents with typical symptoms of SI joint dysfunction, including localized pain in the lower back and buttocks, with difficulty performing activities such as walking or sitting. The patient's history reveals multiple risk factors, including reduced bone density and previous episodes of low back pain, which were exacerbated following menopause.

Post-treatment, the patient reported a significant reduction in pain intensity, as measured by the Nirschl phase rating Scale (NPRS). Additionally, the patient experienced a marked improvement in functional capacity, including the ability to sit, stand, and walk with less discomfort. The range of motion around the SI joint also improved, and the patient was able to resume many activities of daily living without experiencing debilitating pain. Importantly, there were no significant side effects associated with the therapy, though the patient experienced some mild transient soreness after the initial sessions.

The case study demonstrates that shockwave therapy can be highly effective in reducing pain and improving functionality in patients with sacroiliac joint dysfunction. The patient's significant reduction in pain and improved mobility suggest that shockwave therapy may be an effective treatment modality for SI joint pain in postmenopausal women, particularly those who are not responsive to more conventional treatments like oral medications or injections.

## 7. Conclusion

Four-week shockwave therapy is a safe, non-invasive, and effective method for minimizing pain intensity, and boosting

functional ability in postmenopausal women with sacroiliac joint pain. The significant improvements observed in both pain severity and functional disability score. In present case study, according to result it can be concluded that effect of extracorporeal shockwave therapy shown considerable improvement in pain reduction.

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