

Effectiveness of isometric exercises in patient with Sacroiliac Joint Dysfunction

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Abstract: The Sacroiliac Joint (SI) joint is one of the larger joints in the body having the wavy surface and fits together. The very mild motion that does occur is a combination of sliding, tilting and rotation. Sliding movement is probably only a couple of millimeters, and may tilt and rotate two or three degrees. By this case investigation the data suggest that Trans Cutaneous Electrical Nerve Stimulation, mobilization and isometric exercise program is a significant intervention to reduce the pain along with the beneficial improvement in disability level in a patient with sacroiliac joint dysfunction.

Key words: Ortho, Sacroiliac Joint, Isometric Exercise, Physiology, TENS

INTRODUCTION

Sacroiliac Joint Dysfunction:

The SI joint is one of the larger joints in the body. The surface of the joint is wavy and fits together. Very little motion occurs in the SI joint. The motion that does occur is a combination of sliding, tilting and rotation. The most the joint moves in sliding is probably only a couple of millimeters, and may tilt and rotate two or three degrees.

There are following several factors that may contribute to the development of sacroiliac joint dysfunction (R. L. Tingny, 1985). These factors need to be assessed and corrected with direction from a physiotherapist which is,

- Muscle weakness or tightness
- Lower limb length differences
- Biomechanical abnormalities
- Poor posture
- Sedentary lifestyle
- Poor core stability
- Inappropriate lifting technique
- Trauma

Common Symptoms:

Pain over the PSIS, ASIS, and posterior iliac crest, in the posterior thigh, groin, and buttock, Pain while ambulating (walking), ascending and descending the stairs, and during transitional movements. Patient also complains pain in the coccyx which is known as coccydynia which is due to sacral rotation (G. Mirkin, 2006)

Sacroiliac Joint Is Commonly Treated By:

(1) Electrical modalities like- Ultrasound, Electrical stimulation (Micro current), Short Wave Diathermy (SWD) and TENS.

(2) Exercise therapy includes the- Massage (both manual & mechanical), Stretching exercises, and spinal stabilization exercises.

(3) Manual Therapy-Spinal Mobilization.

(4) Others-whirl pool & hydrotherapy, Ice packs, hot packs, Correction of mattress & Foot wear.

(5) Ergonomic advices.

Case Description:

A 50 years old male farmer was referred to Muscular Skeletal Rehabilitation Unit, Dept. of Physiotherapy, Navodaya Medical College Hospital and Research Center, Raichur, with complaining of pain in low back area. He had to leave his work due to severe pain since last 3 months. He was diagnosed as Sacro-iliatis.

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Because of pain, he was having much difficulty in his day to day life, the major problem concerned with his functional activities like sitting for a long duration ,standing for longer duration, while trying to lie, in walking, in traveling, lifting the object, problem in forward bending, and he also having problem in social function.

He gave history of fall during the stepping down from the stair before 3 months and from that day onwards he got the pain in lower back region.

Assessment:

On pain assessment, Patient had mechanical (after fall) type of pain with sudden onset since last 3 months at the low back and gluteal region.

Patient complaint that the pain was pin pricking type and pain was aggravated during the movement (ADL activities) especially while forward bending, and it reduces after taking rest. Irritability of the pain was moderate.

Severity of the pain is measured in the Visual analogue scale (VAS) and score was 6.

On palpation, tenderness was present at the low back and gluteus region.

On examination , Patient was able to bend forward and touch the ground with his finger but having extra pain on buttock region, backward movement was painful and he was able to do very little movement, Side flexion was also less but left side having more movement compare to the right side.

Patient was unable to stand / sit for longer duration which was decreasing his functional activities.

Special Tests:

(1) Gaenslen's test-positive:

Gaenslen's test is performed with the patient supine (on the back). The hip joint is maximally flexed on one side and the opposite hip joint is extended.

This maneuver stresses both sacroiliac joints simultaneously. Pain the SI Joint indicating test is positive.

(2) Pelvic compression test- Positive:

Patient in supine lying with back support, therapist is holding both ASIS and apply distraction force on pelvis, patient feel pain at gluteus region, is indicating SI Joint Dysfunction.

(3) Sacral Thrust:

Prone. Anterior pressure on sacrum with palm.

Table 1: Outcome measures

Section	Measure	Treatment Score	
		Pre	Post
Section-1	Pain intensity	2(40%)	1(20%)
Section-2	Personal care	2(40%)	1(20%)
Section-3	Lifting	4(80%)	3(60%)
Section-4	Walking	3(60%)	1(20%)
Section-5	Sitting	3(60%)	2(40%)
Section-6	Standing	3(60%)	1(20%)
Section-7	Sleeping	2(40%)	0
Section-8	Sex life	3(60%)	2(40%)
Section-9	Social life	2(40%)	2(40%)
Section-10	Travelling	3(60%)	2(40%)
Total		54%	30%

Intervention:

On basis of research evidence, we used TENS (Trans Cutaneous Electrical Nerve Stimulation) and Isometric exercise.

Isometric Exercise:

Isometric exercise or isometrics are a type of strength training in which the joint angle and muscle length do not change during contraction (compared to concentric or eccentric contractions called dynamic/isotonic movements).

Isometrics are done in static positions, rather than being dynamic through a range of motion.

Isometric Exercises Program:

- Procedure-Patient in prone lying and asked him to extend his both the lower limb.
- Procedure-Patient in prone lying and asked him to extend his neck.
- Procedure-Patient in supine lying with both knee flexed and foot is placed over the ground and asked the patient to lift his pelvis upward (bridging).

- Procedure-Patient in supine lying and placed the bed roll below the ankle joint and asked the patient to pressed.

These all the exercise are given at the rate of 10sec for each contraction, and 10 contraction is given in each set, these all exercises is given 2 sets daily for 15 days.

Outcome Measures:

The Oswestry Low Back Pain Disability Questionnaire we taken as a outcome measures because it is used to assess patients with low back pain by determining its impact on the activities of daily living (Robert Jones and Agnes Hunt, 1980).

Questionnaire description: 10 sections describing the pain and its impact and each section scored from 0 to 5 with higher values indicating more severe impact. Every section has 5 score starting from score 1 to score 5, indicating that 20% of disability to 100% of disability.

Interpretation:

0% to 20%:

Minimal disability: The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise.

21%-40%:

Moderate disability: The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.

41%-60%:

Severe disability: Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.

61%-80%:

Crippled: Back pain impinges on all aspects of the patient's life. Positive intervention is required.

81%-100%:

These patients are either bed-bound or exaggerating their symptoms.

Result:

According to Visual Analogue Scale (VAS) the pain reduced from the score of 6 to 2 and According to The Oswestry Low Back Pain Disability Questionnaire, the disability level reduced from 54% to 30% after 15 days of treatment plan.

Discussion:

Spinal stabilization exercises (including isometric exercises) are more effective in decreasing pain and d disability compared to conventional physical therapy alone in patients with low back & sacroiliac joint pain (R. Sylvia *et al.*, 2007).

Conclusion:

Tens, mobilization and Isometric exercise program is an effective intervention for reduction in pain as well as decrease in the disability level in a patient with sacroiliac joint dysfunction

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Ethical Clearance:

This study is given clearance under specific concern in accordance with the approval of Navodaya Medical College Hospital & Research Center, Raichur.

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