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Case Series

Physiotherapy Section

Self-Myofascial Release as an Adjunct to Conventional Treatment for Sacroiliac Dysfunction in Chronic Low Back Pain Patients: A Series of Fifteen Cases

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ABSTRACT

Foam Rolling (FR) is a Self-Myofascial Release (SMR) technique in which individuals use a roller or similar device to apply controlled pressure to specific muscle groups. Recent research indicates that using foam rollers and related tools improves pain, Range Of Motion (ROM), recovery, and functional performance. But its role in sacroiliac dysfunction has not been reported. The present case series of 15 cases (10 Females, 5 Males) emphasises the effect of FR, in combination with conventional treatment, on pain and functional outcomes in patients with chronic Low Back Pain (LBP) associated with probable sacroiliac dysfunction. The results were recorded over two weeks, and the ability to maintain improvement at the fourth week was assessed. Fifteen patients (mean age 29.13 years) were assessed using the Numeric Pain Rating Scale (NPRS), Pain Pressure Threshold (PPT), and Oswestry Disability Index (ODI). A foam roller was applied to the hamstring, iliopsoas, and quadratus lumborum for anterior (n=7), posterior (n=5), and upslip (n=3) dysfunction, respectively, along with conventional therapy. The findings demonstrate a mean reduction of 3.53 and 12.3 points in pain and functional status, respectively, measured using NPRS and ODI after two weeks of intervention. Also, the mean improvement in PPT was 1.78 from baseline to the 2nd week of treatment. At the 4th week, two cases, Case 7 and 8, showed an increase in pain with disability at follow-up.

Keywords: Muscles, Pain perception, Physical functional performance, Range of motion

INTRODUCTION

The LBP represents a significant public and occupational health concern, imposing substantial professional, economic, and social burdens. Approximately, 84% of individuals in the general population experience at least one episode of LBP during their lifetime, with recurrence being common [1]. Globally, Sacroiliac Joint (SIJ) involvement is identified in approximately 15% to 30% of individuals presenting with mechanical LBP [2]; While the SIJ itself may be a primary source of pain, alterations in the joint's form and force closure mechanisms, as well as its load-transfer function, can also contribute to symptom development [3].

Muscle imbalance has additionally been proposed as a potential source of pain. This perspective suggests that the SIJ itself may remain structurally unaffected, while dysfunction exists within the surrounding musculature. Such muscular imbalances can reduce flexibility in the lumbopelvic muscles, potentially leading to a cycle of chronic disuse, progressive functional decline, and increased pain perception [4]. Moreover, SIJ-related pain primarily interferes with transitional activities, including rolling, rising from a seated position, and stair ambulation [5].

The FR is a SMR technique in which individuals apply targeted pressure to specific muscle groups using a specialised tool [6]. In the SIJ stability role of Hamstring, Iliopsoas, Tensor fascia lata and erector spinae are appreciated for joint support [7]. Limited studies reported on the role of myofascial release on targeted muscles in different types of SI dysfunction [8,9]. The present case series provides a detailed description of foam rollers as an adjunct to conventional therapy on pain and functional status in patients with chronic LBP associated with probable sacroiliac dysfunction.

CASE SERIES

The present case series reports on fifteen patients (mean age 29.13 years) diagnosed with chronic LBP associated with unilateral SI dysfunction (anterior, posterior, or upslip) who attended the Physiotherapy Outpatient Department. Diagnosis was confirmed using SI pain provocation tests and clinical assessments specific to each dysfunction type. Fifteen cases with 10 females and five males, aged 20-40 years and usually overweight patients were involved.

All patients underwent a structured diagnostic evaluation to confirm SIJ dysfunction. Confirmation required at least three positive findings out of five SIJ pain provocation tests (high thrust, Flexion, Abduction, and External Rotation (FABER), Gaenslen's, compression, distraction). For anterior and posterior innominate dysfunction, a minimum of three positive results out of five clinical assessments, including iliac crest height, pelvic symmetry of Posterior Superior Iliac Spine (PSISs) and Anterior Superior Iliac Spine (ASISs), and the supine-to-sit test, were necessary. For upslip dysfunction, a positive standing flexion test was mandatory [10].

Patients were excluded if neural provocation tests such as the Slump test elicited radiating pain with motor or sensory deficits, if combined movement tests produced localised facet pain, or if painful hip rotations and active trigger points were present in the thoracolumbar region. Additional exclusions included a history of skin allergy in the thigh, pelvic, or lumbosacral regions, recent fracture or surgical intervention within the preceding three months, and in-flare or out-of-flare sacroiliac dysfunction.

Five cases (4 females, 1 male) with a mean symptom duration of three to eight months reported posterior innominate dysfunction, two were involved in other physical activities, including walking. The right SIJ, with the iliopsoas muscle, was involved in four of five cases.

Three cases (3 females) with a mean duration of symptoms ranging from four to five months reported upslip dysfunction, with one involved in other physical activities, including walking. The left SIJ with the quadratus lumborum muscle was involved in two out of three cases.

Seven cases (3 females, 4 males) with a mean symptom duration of three to 16 months reported anterior innominate dysfunction, two were involved in other physical activities, including walking. The left SIJ, along with the hamstring muscle, was involved in five of seven cases [Table/Fig-1].

All patients received SMR (FR) targeted to the muscle associated with the dysfunction, combined with conventional therapy.

The amount of pressure was regulated by distributing body weight over the foam roller, with the hands and feet used as needed to reduce or support the load. The roller was positioned beneath the targeted tissue, and participants performed controlled back-and-forth body movements over the roller, with pain intensity not exceeding seven out of 10 on the pain scale. The release was applied for 20-30 seconds, five repetitions for three days per week (alternating days) for two weeks.

For anterior, posterior, and upslip dysfunction, the therapist targeted the hamstrings, the iliopsoas, and the quadratus lumborum, respectively [Table/Fig-2] [11-13].

Only five out of 15 patients reported participating in other physical activities during the intervention period in addition to the treatment program. The average frequency per week of these other activities was 6 (5-7), the duration of each session was one hour (0.5-1.5), and intensity was moderate (low to high). The most common activities were walking and brisk walking.

The outcomes were recorded at Day-1 (baseline), at the end two weeks and after four weeks (follow-up, carry-over effect).

Across all three dysfunction types (upslip, anterior innominate, posterior innominate), patients demonstrated clinically marked reductions in pain intensity following two weeks of intervention [Table/Fig-3-5].

The mean NPRS score decreased from 4.73 at baseline to 1.27 post-intervention, with the same mean maintained at four-week follow-up. However, five out of fifteen patients showed a mild increase in pain intensity at follow-up (a rise of 1-2 points), suggesting marginal worsening in perceived pain levels for a subset, though not severe enough to be considered adverse.

The PPT values improved substantially, rising from a mean of 1.53 at baseline to 3.31 at two weeks and 3.60 at follow-up (mean=1.78). This reflects reduced pain sensitivity and sustained benefit.

Case no.	Age (in years/gender)	Probable diagnosis dysfunction type	Injured side	BMI (Kg/m^2)	Duration of symptoms (months)	Physical activity
1	24/Female	Upslip dysfunction	Left	26.5	5	No
2	40/Female	Anterior innominate dysfunction	Right	23.4	3	No
3	37/Female	Anterior innominate dysfunction	Left	25.8	10	No
4	23/Male	Anterior innominate dysfunction	Left	26.7	12	Yes
5	21/Female	Upslip dysfunction	Left	21.5	4	Yes
6	26/Male	Posterior innominate dysfunction	Right	26.8	6	No
7	34/Female	Posterior innominate dysfunction	Right	26.7	3	No
8	29/Male	Anterior innominate dysfunction	Left	24.9	12	No
9	23/Female	Posterior innominate dysfunction	Right	25.4	6	Yes
10	30/Female	Upslip dysfunction	Right	28.4	4	No
11	22/Male	Anterior innominate dysfunction	Right	29.4	3	Yes
12	21/Female	Posterior innominate dysfunction	Left	21.5	8	Yes
13	24/Male	Anterior innominate dysfunction	Left	26.7	12	No
14	27/Female	Posterior innominate dysfunction	Right	23.4	3	No
15	36/Female	Anterior innominate dysfunction	Left	25.4	16	No

[Table/Fig-1]: Clinical and demographic details of fifteen patients with SIJ dysfunction.

S. No.	Dysfunction type	Targeted muscle	Foam rolling parameters	Conventional therapy
1.	Anterior innominate dysfunction	Hamstring muscle	A hard type 45×10 cm foam roller with medium density, made of Ethylene Vinyl Acetate Copolymer, was used. The release was applied for 20-30 seconds; five repetitions for three days per week (alternating days) for two weeks.	self-mobilisation of the SIJ, hip muscle isometric strengthening exercises (10 repetitions, twice a day), piriformis stretch, glutei stretch, knee to the same shoulder stretch, quadriceps stretch, and hamstring stretch (30 seconds hold with 3 repetitions, twice a day) (5 reps×2 sets x 10 sec hold) Moist heat therapy (20 min) TENS therapy (80 Hz, using square wave 100µs pulses for 15 min).
2.	Posterior innominate dysfunction	Iliopsoas muscle		
3.	Upslip dysfunction	Quadratus lumborum muscle		

[Table/Fig-2]: Self-Myofascial Release (SMR) with conventional therapy based on dysfunction [11-13].

Upslip dysfunction	Case 1	Case 5	Case 10
Numerical pain rating scale (NPRS)			
Pre	6	4	3
Post (2 week)	2	0	0
Follow-up (4 week)	2	0	0
Pressure Pain Threshold (PPT)			
Pre	1.43	1.04	1.08
Post 2 (week)	3.26	2.79	3.23
Follow-up (4 week)	3.53	2.84	4.65
Oswestry Disability Index (ODI)			
Pre	55.56	42.22	28.89
Post (2 week)	31.11	28.89	26.67
Follow-up (4 week)	31.11	24.44	22.22

[Table/Fig-3]: NPRS, PPT and ODI in upslip dysfunction.

Nonetheless, three patients (Cases 2, 11 and 7) demonstrated a decrease in PPT at follow-up compared to post-intervention, indicating increased sensitivity in those individuals [Table/Fig-4,5]. Functional outcomes measured by the ODI showed consistent improvement. Mean ODI scores decreased from 41.04 at baseline to 28.74 at two weeks (mean reduction= 12.3), and further to 27.87 at follow-up. The minimal change between two weeks and follow-up suggests maintenance of benefit. However, two patients (Case 7 with posterior innominate dysfunction [Table/Fig-5] and Case 8 with anterior innominate dysfunction) [Table/Fig-4] showed baseline disability scores at follow-up, indicating relapse. Importantly, no adverse events were reported. All participants completed the prescribed intervention protocol without missed sessions due to symptom exacerbation. The mild increases in pain or disability observed in a few patients at follow-up were not clinically significant or adverse.

Anterior innominate dysfunction	Case no. 2	Case no. 3	Case no. 4	Case no. 8	Case no. 11	Case no. 13	Case no. 15
Numerical pain rating scale (NPRS)							
Pre	6	6	5	4	4	3	6
Post (2 weeks)	3	0	2	1	1	0	2
Follow-up (4 week)	2	1	0	2	2	0	1
Pressure Pain Threshold (PPT)							
Pre	2.76	1.08	1.83	1.12	1.25	2.48	1.06
Post (2 weeks)	3.98	2.65	3.07	3.02	4.12	4.01	3.78
Follow-up (4 week)	3.43	2.96	3.42	3.34	3.64	4.33	3.89
Oswestry Disability Index (ODI)							
Pre	42.22	62.22	35.56	44.44	40	35.56	31.11
Post (2 weeks)	28.89	33.33	26.67	33.33	24.44	26.67	26.67
Follow-up (4 week)	26.67	31.11	26.67	44.44	22.22	22.22	26.67

[Table/Fig-4]: NPRS, PPT and ODI in anterior innominate dysfunction.

Posterior innominate dysfunction	Case no. 6	Case no. 7	Case no. 9	Case no. 12	Case no. 14
Numerical Pain Rating Scale (NPRS)					
Pre	5	6	5	4	4
Post (2 weeks)	2	3	1	0	1
Follow-up (4 week)	2	4	0	0	2
Pressure Pain Threshold (PPT)					
Pre	0.72	1.61	2.35	1.56	1.57
Post (2 weeks)	2.89	3.33	3.78	3.68	2.89
Follow-up (4 week)	3.07	2.63	4.96	4.21	3.06
Oswestry Disability Index (ODI)					
Pre	44.44	51.11	28.89	33.33	40
Post (2 weeks)	33.33	31.11	26.67	28.89	24.44
Follow-up (4 week)	31.11	40	22.22	26.67	22.22

[Table/Fig-5]: NPRS, PPT and ODI in posterior innominate dysfunction.

DISCUSSION

Overall, the study observed that the SMR technique using a foam roller as an adjunct to conventional therapy (multi-modal therapy) led to improvements in pain and functional outcomes, which were maintained at the 4-week follow-up in different probable SIJ dysfunction cases. Also, the intervention produced consistent benefits over time with carry over effects.

At the end of our 2-week foam-rolling program as an adjunct, we observed substantial improvement in patients' symptoms. However, at the follow-up assessment, mild relapse in pain and functional status was observed in some patients, indicating that the maintenance effect of FR was limited and less persistent over time. In a similar study, Fijavž J et al., demonstrated that a 4-week foam-rolling program produces long-term benefits, enhancing mobility and increasing PPT in the lower back. Participants showed the greatest improvements immediately after four weeks of treatment, with gradual decreases over time; however, their findings remained statistically superior to those of the control group even after six months [8]. Also, Cheatham SW and Baker R suggested that FR can produce an immediate reduction in PPT in the ipsilateral agonist and antagonist muscles, as well as in contralateral muscle groups, in both male and female participants [12].

The FR disrupts trigger points, which are localised areas of increased muscle stiffness characterised by taut bands and nodules that develop as a result of sustained muscle spasms. Although these trigger points are often non-painful, they have been associated with reduced muscle strength, increased fatigue, and heightened stiffness, all of which can impair performance. A 2021 study showed improvement in pain as reported by the NPRS following a single session of Fascial manipulation delivered at least 20 centimetres from the Posterior superior iliac region [13].

A study by Santos IS et al., aimed to evaluate the effects of using a foam roller on pain intensity in individuals with chronic and acute musculoskeletal pain and observed that only two randomised clinical trials found a significant benefit in pain intensity of adding FR associated with a therapeutic exercise protocol in individuals with patellofemoral pain syndrome and chronic neck pain [14]. Trager RJ et al., reported that, based on a meta-analysis of 16 RCTs, SIJ manual therapy does not significantly reduce pain. In contrast, evidence indicates a statistically significant moderate effect on disability among adults with SIJ-related pain [15]. Another study by Rodríguez-Pastor JA et al., showed superior results of osteopathic manipulation for SIJ dysfunction than electrotherapy in LBP patients with SIJ dysfunction [16]. However, a study in 2021 had shown a similar decrease in pain and patient-reported disability with myofascial release or manipulative therapy at the sacral region in LBP with SI Dysfunction cases presenting as pelvic pain [17]. Except for a pilot study and an RCT [13,17], no other study reported the role of SMR in SI dysfunction. This case series highlighted the role of SMR as an adjunct to conventional treatment in probable cases of SIJ dysfunction.

Limitation(s)

The present study has its limitations. The diagnostic criteria for SIJ dysfunction should include both pain provocation tests and image-guided intra-articular blocks or advanced imaging. Also, as a SIJ dysfunction diagnosis will require not only anterior, posterior, but also lateral and oblique views of X-ray, the diagnosis was done only based on provocation tests, though patients had at least a probable supporting diagnosis from anterior and posterior views.

CONCLUSION(S)

The present case series demonstrated that FR and corrective exercise (multi-modal therapy) is an effective approach for managing chronic LBP patients with sacroiliac dysfunction. Although further studies with larger groups, a longer follow-up period and a prospective design are needed, the present case series reaffirms the protocol of foam roller as an adjunct in the treatment of probable SIJ dysfunction among chronic LBP patients.

REFERENCES

[1] Nicol V, Verdaguer C, Daste C, Bisseriex H, Lapeyre É, Lefèvre-Colau MM, et al. Chronic low back pain: A narrative review of recent international guidelines for diagnosis and conservative treatment. Journal of Clinical Medicine. 2023;12(4):1685.

[2] Szadek K, Cohen SP, de Andrès Ares J, Steegers M, Van Zundert J, Kallewaard JW. 5. Sacroiliac joint pain. Pain Pract. 2024;24(4):627-46.

[3] Laslett M. Evidence-based diagnosis and treatment of the painful sacroiliac joint. J Man Manip Ther. 2008;16(3):142-52.

[4] Sharma D, Sen S. Effects of muscle energy technique on pain and disability in subjects with SI joint dysfunction. Int J Physiother Res. 2014;2(1):305-11.

[5] Patel VV, Sawyer EE, Mintken PE, Michener LA, Cofer CL, Lindley EM. Initial validation of a sacroiliac joint-specific disability questionnaire. Orthopedics. 2023;46(6):345-51.

[6] Boguszewski D, Adamczyk JG. Effectiveness of one-time self-massage using a foam roller in reducing functional limitations of the musculoskeletal system. Medical Rehabilitation. 2024;27(4):56-60.

[7] Narin AN, Yazgan DağLi B, Vural Cömert A, Bahar B, Özturan KE. Evaluation of lower extremity muscles shortness, flexibility, and hypermobility in adults with asymptomatic sacroiliac joint dysfunction. Arch Health Sci Res. 2022;9(1):21-26.

[8] Fijavž J, Frangež M, Vauhnik R. Effects of lower back foam rolling on the pressure pain threshold and the range of motion of the lumbar spine in healthy individuals. Frontiers in Physiology. 2024;15:1476342.

[9] Khan T, Rizvi MR, Sharma A, Ahmad F, Hasan S, Uddin S, et al. Assessing muscle energy technique and foam roller self-myofascial release for low back pain management in two-wheeler riders. Sci Rep. 2024;14(1):12144.

[10] Buchanan P, Vodapally S, Lee DW, Hagedorn JM, Bovinet C, Strand N, et al. Successful diagnosis of sacroiliac joint dysfunction. J Pain Res. 2021;14:3135-43.

[11] Woodworth S. Foam rolling: Relieve pain, prevent injury, improve mobility. London: Dorling Kindersley; 2016.

[12] Cheatham SW, Baker R. Differences in pressure pain threshold among men and women after foam rolling. J Bodyw Mov Ther. 2017;21(4):978-82.

[13] Bertoldo D, Pirri C, Roviaro B, Stecco L, Day JA, Fede C, et al. Pilot study of sacroiliac joint dysfunction treated with a single session of fascial manipulation® method: Clinical implications for effective pain reduction. Medicina. 2021;57(7):691.

[14] Santos IS, Dibai-Filho AV, Dos Santos PG, Júnior JD, de Oliveira DD, Rocha DS, et al. Effects of foam roller on pain intensity in individuals with chronic and acute musculoskeletal pain: A systematic review of randomized trials. BMC Musculoskeletal Disorders. 2024;25(1):172.
[15] Trager RJ, Baumann AN, Rogers H, Tidd J, Orellana K, Preston G, et al. Efficacy of manual therapy for sacroiliac joint pain syndrome: A systematic review and meta-analysis of randomized controlled trials. Journal of Manual & Manipulative Therapy. 2024;32(6):561-72.
[16] Rodríguez-Pastor JA, Caro-Puértolas B, Caña-Pino A, Sánchez-Preciado AM, Garrido-Ardila EM, Apolo-Arenas MD. Effect of osteopathic manipulation of the sacroiliac joint vs electrotherapy on pain and functional disability in patients with low back pain: A pilot study. Journal of Back and Musculoskeletal Rehabilitation. 2022;35(6):1219-26.
[17] Castro-Sánchez AM, Gil-Martínez E, Fernández-Sánchez M, Lara-Palomo IC, Nastasia I, de los Ángeles Querol-Zaldívar M, et al. Manipulative therapy of sacral torsion versus myofascial release in patients clinically diagnosed posterior pelvic pain: A consort compliant randomized controlled trial. The Spine Journal. 2021;21(11):1890-99.

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