

Case Report

Fluoroscopy-Guided Injection of Autologous Mechanically Filtered Adipose Tissue for Chronic Sacroiliac Joint Pain: A Case Report

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Abstract

Introduction: Chronic sacroiliac joint (SIJ) pain is a frequent cause of low-back pain and remains challenging to diagnose and treat due to complex anatomy, overlapping clinical features, and limited long-term efficacy of conventional therapies. **Case Presentation:** We report the case of a 74-year-old woman with chronic right-sided sacroiliitis associated with spondyloarthritis, presenting with persistent gluteal pain refractory to nonsteroidal anti-inflammatory drugs, physiotherapy, and steroid injections. The patient underwent a dual imaging-guided intra-articular injection, consisting of pre-procedural ultrasound assessment and fluoroscopy-guided needle placement to confirm intra-articular access prior to injection. Autologous adipose tissue purified through mechanical filtration, without enzymatic manipulation, was administered. Pain intensity decreased from a visual analog scale (VAS) score of 8/10 at baseline to 2/10 at three months, with sustained improvement up to 12 months, functional recovery, and discontinuation of analgesic therapy, without procedure-related complications. **Conclusions:** This case suggests that dual imaging-guided intra-articular injection of mechanically filtered autologous adipose tissue may be feasible in selected patients with refractory SIJ pain. No causal inference can be drawn from a single case, and further studies are required to evaluate safety and clinical effectiveness.

Keywords: sacroiliac joint pain; sacroiliitis; fluoroscopy-guided injection; autologous adipose tissue; regenerative therapy



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1. Introduction

The sacroiliac joint (SIJ) plays an important biomechanical role in load transfer between the axial skeleton and lower limbs and represents a recognized source of chronic low-back and pelvic pain. The diagnosis of SIJ-related pain remains challenging because clinical presentation often overlaps with lumbar spine, hip, and periarticular disorders, while imaging findings may not always correlate with symptom severity [1,2]. Inflammatory sacroiliitis associated with spondyloarthritis may lead to persistent pain, functional impairment, gait limitation, and reduced quality of life despite pharmacological and rehabilitative treatment [1].

Conservative management generally includes nonsteroidal anti-inflammatory drugs (NSAIDs), physiotherapy, and image-guided steroid injections. However, long-term clinical benefit is frequently limited, and minimally invasive interventional procedures such

as radiofrequency ablation and biologic injections have progressively emerged as potential therapeutic options in refractory cases [1–4]. Among these approaches, mechanically filtered autologous adipose tissue has recently attracted interest because of its possible modulatory biological activity and minimally manipulated preparation process. Nevertheless, evidence supporting its use in inflammatory sacroiliac disorders remains limited [4–6].

The present report describes the clinical course and imaging-guided treatment of a patient with refractory inflammatory sacroiliac joint pain, treated with fluoroscopy-guided intra-articular injection of mechanically filtered autologous adipose tissue.

2. Case Report

A 74-year-old woman with chronic right-sided sacroiliitis associated with spondyloarthritis was referred to our center because of persistent posterior gluteal pain radiating to the proximal thigh for more than 12 months. Pain intensity was rated as 8/10 on the visual analog scale (VAS) and was associated with marked functional limitation, impaired gait, and reduced tolerance to prolonged standing and walking. Previous treatment with NSAIDs, physiotherapy, and image-guided steroid injections had failed to provide durable clinical improvement.

Clinical examination revealed positivity of FABER, Gaenslen, and Thigh Thrust provocative maneuvers on the right side. No findings suggestive of hip osteoarthritis, lumbar radiculopathy, or greater trochanteric pain syndrome were identified. Magnetic resonance imaging (MRI) demonstrated synovitis and subchondral inflammatory changes involving the right sacroiliac joint, consistent with active sacroiliitis. Diagnostic SIJ block resulted in temporary pain relief and supported the sacroiliac joint as the primary pain generator [1,7].

Because of refractoriness to conventional therapies, a minimally invasive biologic approach was proposed. Under local anesthesia, 20 mL of abdominal adipose tissue was harvested using a sterile cannula and processed using a single-use mechanical filtration device without centrifugation or enzymatic manipulation (Figures 1 and 2).

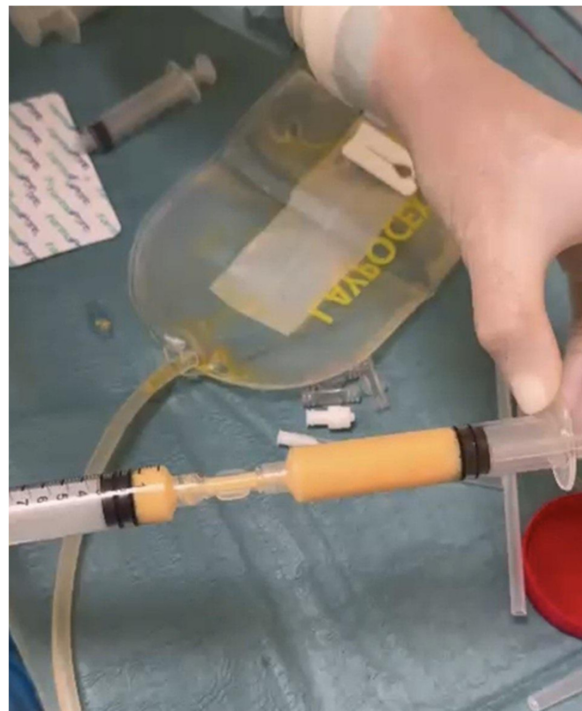


Figure 1. Mechanical filtration process of autologous adipose tissue. The lipoaspirate is processed through a closed, sterile, single-use device without centrifugation or enzymatic manipulation, yielding a homogeneous product ready for injection.

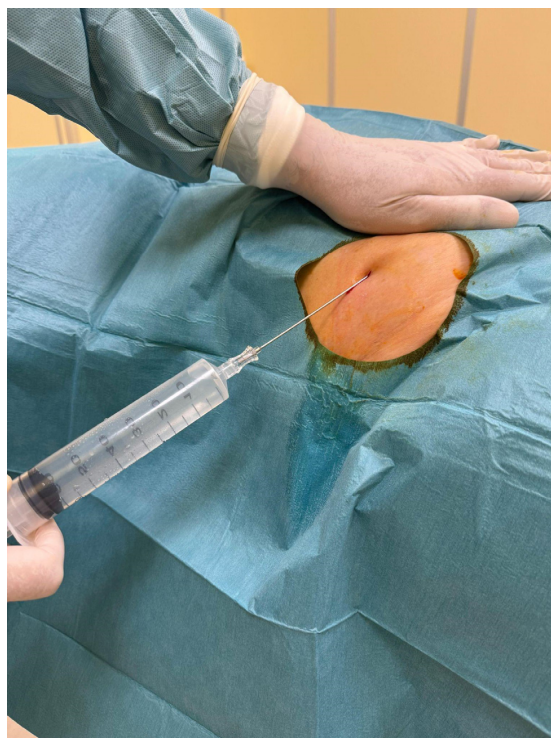


Figure 2. Mini-liposuction of abdominal subcutaneous adipose tissue performed under local anesthesia to obtain autologous fat for subsequent mechanical filtration and therapeutic injection.

A pre-procedural ultrasound evaluation was performed to assess periarticular soft tissues and identify the safest procedural trajectory. Fluoroscopy-guided intra-articular needle placement was subsequently performed with radiological confirmation of correct joint access prior to injection of the mechanically filtered autologous adipose tissue (Figure 3) [7].

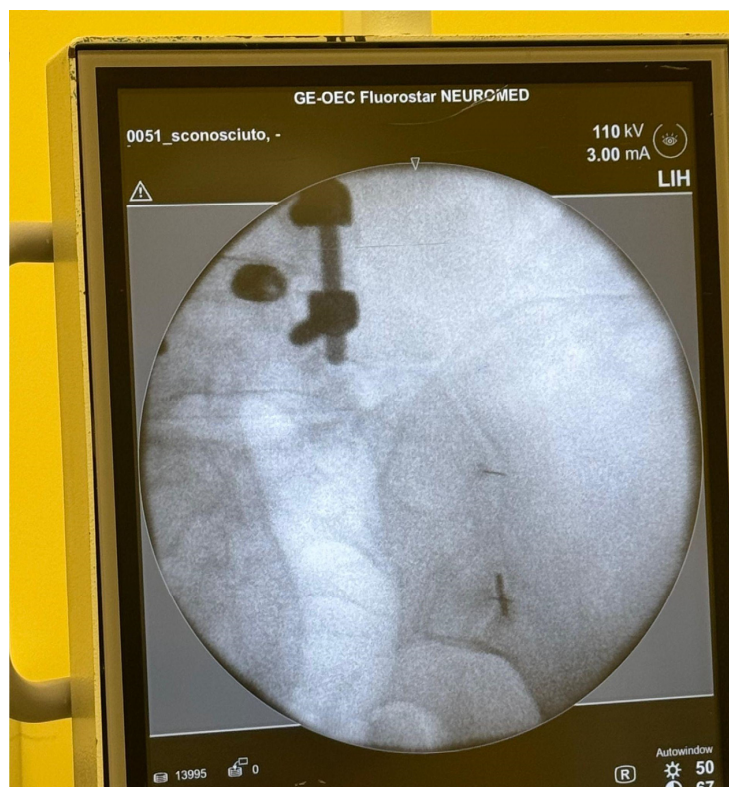


Figure 3. Luoroscopic confirmation of correct intra-articular needle positioning prior to injection.

At one-month follow-up, pain intensity decreased to VAS 3/10, with significant improvement in gait and daily activities. At three months, further improvement to VAS 2/10 was observed, together with discontinuation of NSAID therapy. Clinical benefit remained stable at six months. At twelve months, the patient reported mild residual pain (VAS 3/10) with substantial functional recovery and negativization of provocative maneuvers. No local or systemic complications were observed during treatment or follow-up. Follow-up ultrasound evaluation demonstrated reduction in periarticular inflammatory findings.

3. Discussion

This report describes the use of fluoroscopy-guided intra-articular injection of mechanically filtered autologous adipose tissue in a patient with chronic inflammatory sacroiliac pain, refractory to conventional therapies.

In the present patient, clinically relevant pain reduction and functional improvement were observed during follow-up, together with the discontinuation of anti-inflammatory medication. However, no causal relationship between the intervention and the observed clinical outcome can be established from a single-patient observation.

Previous reports have described several minimally invasive approaches for sacroiliac joint pain, including corticosteroid injections, radiofrequency procedures, platelet-rich plasma, and biologic approaches [2–5]. Nevertheless, evidence remains heterogeneous, particularly in inflammatory sacroiliac disease.

Mechanically filtered autologous adipose tissue has been hypothesized to exert local modulatory biological effects through paracrine signaling and interaction with the periarticular microenvironment [8,9]. However, the biological rationale in inflammatory sacroiliitis cannot be directly extrapolated from the osteoarthritis-related literature, and the underlying mechanisms remain incompletely understood. Therefore, the present clinical observation should not be interpreted as evidence of regenerative efficacy or disease-modifying activity.

Several limitations must be acknowledged. This report describes a single patient without a control group, and the spontaneous fluctuation of symptoms over time cannot be excluded. Placebo-related effects associated with invasive procedures may also have contributed to the observed improvement. Furthermore, no follow-up magnetic resonance imaging was performed to correlate clinical evolution with structural modifications.

Despite these limitations, the present case suggests the technical feasibility of dual imaging-guided intra-articular administration of mechanically filtered autologous adipose tissue in refractory inflammatory sacroiliac pain.

A properly designed comparative study would help determine whether the observed clinical improvement is specifically attributable to mechanically filtered autologous adipose tissue rather than to placebo effects, natural symptom fluctuation, regression to the mean, or the procedural intervention itself. Although this case report represents only a single-patient observation and cannot support causal inference, it provides an initial clinical documentation of an approach that is increasingly being explored in real-world practice for refractory musculoskeletal pain conditions. Direct comparison with established treatments, such as corticosteroid injections, radiofrequency procedures, hyaluronic acid, or other biologic interventions, would provide stronger evidence regarding relative effectiveness, patient selection, and durability of outcomes, thereby substantially strengthening the scientific conclusions.

4. Conclusions

This case report describes the use of fluoroscopy-guided intra-articular injection of mechanically filtered autologous adipose tissue in a patient with refractory inflammatory sacroiliac joint pain. Sustained clinical improvement and functional recovery were ob-

served without procedure-related complications during follow-up. However, no causal relationship can be established from a single clinical observation, and the biological mechanisms underlying the observed improvement remain uncertain. Further prospective controlled investigations are necessary to evaluate the safety, reproducibility, and long-term effectiveness of this minimally invasive biologic approach in sacroiliac joint disorders.

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Conflicts of Interest: The authors declare that they have no conflicts of interest related to this work. Alfonso Maria Forte is affiliated with Forte Research Group as Medical and Scientific Director. This affiliation is institutional only. Forte Research Group had no role in the design of the study; in the collection, analysis, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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