

TELOXOME in the Management of Severe Femoral Condyle Chondromalacia in an Active Adult: MRI, Pain Relief and Functional Recovery

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Citation: Wang WJ, Cho WL, Yu PL. *TELOXOME in the Management of Severe Femoral Condyle Chondromalacia in an Active Adult: MRI, Pain Relief and Functional Recovery. Int Clin Med Case Rep Jour* 2025;4(4):1-7.

Received Date: 18 April, 2025; **Accepted Date:** 20 April, 2025; **Published Date:** 22 April, 2025

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ABSTRACT

This case report investigates the therapeutic efficacy of TELOXOME, a novel stem cell-derived biologic agent developed by Conti new medical INC. (Taipei, Taiwan), in the treatment of advanced femoral condyle chondromalacia refractory to conventional management. A 46-year-old male athlete, previously diagnosed with Grade IV chondromalacia and unresponsive to multiple intra-articular interventions including platelet-rich plasma (PRP) and hyaluronic acid (HA) injections, was selected for treatment. The patient received a series of three intra-articular TELOXOME injections over a treatment period spanning 1.5 years, with follow-up assessments conducted at defined intervals. Magnetic resonance imaging (MRI) was performed at baseline, six months after the second injection and two years following the sixth injection to evaluate cartilage regeneration and structural integrity. Serial MRI imaging revealed progressive improvement in cartilage morphology, with notable restoration of articular cartilage in the femoral trochlear groove and reduction in subchondral bone edema. Additionally, laboratory findings demonstrated a significant decrease in C-reactive protein (CRP) levels, suggesting a concurrent reduction in systemic and local inflammation. Clinically, the patient reported marked alleviation of pain and functional improvement. These findings indicate that TELOXOME may exert both regenerative and anti-inflammatory effects in severe chondromalacia, potentially addressing a major unmet need in patients unresponsive to standard therapeutic approaches. This case highlights TELOXOME as a promising candidate in regenerative orthopedics and underscores the importance of further controlled clinical trials to validate its safety, efficacy and long-term outcomes. TELOXOME may represent a viable and innovative strategy for the treatment of cartilage-related disorders such as chondromalacia and osteoarthritis, particularly in patients for whom conventional therapies have failed.

Keywords: TELOXOME; Platelet-rich plasma; Hyaluronic acid; Orthopedics

INTRODUCTION

Knee pain is a common clinical complaint and may result from inflammatory processes affecting both the patellofemoral and tibiofemoral joints in individuals across a wide age range, including both young adults and older populations [1,2]. Among the various etiologies, osteoarthritis-a progressive, degenerative joint disorder characterized by articular cartilage degradation and chronic inflammation-affects more than 300 million people globally [1].

Chondromalacia, a condition often conflated with osteoarthritis, specifically targets the superficial layer of hyaline (transparent) cartilage covering the articular surfaces of bones within the joint. This pathological process involves the softening, fissuring, fragmentation and eventual erosion of the cartilage, most commonly involving the patellofemoral articulation [1,3]. This condition is frequently referred to as patellar chondromalacia, patellofemoral pain syndrome or "runner's knee," and is particularly prevalent among athletes and physically active individuals [2]. Etiologically, chondromalacia may be associated with traumatic injuries, repetitive overuse and, in some cases, iatrogenic causes such as corticosteroid injections. It is more commonly observed in joints previously subjected to trauma or biomechanical deformity. Clinically, patients may present with anterior knee pain, localized swelling, discomfort exacerbated by activities such as stair climbing or prolonged knee flexion and a subjective sense of knee instability or fatigue. Pain provoked by direct pressure on the patella is also a hallmark symptom, which may significantly impair functional mobility [4].

The pathophysiology of chondromalacia is multifactorial, involving a complex interplay of mechanical, structural and anatomical factors. These include traumatic insult, increased susceptibility of cartilage to mechanical stress, patellofemoral joint instability, bony morphological variations, altered patellar tracking and occupational stressors [2,4]. Managing chondromalacia presents clinical challenges due to the absence of a universally accepted treatment protocol. Conservative approaches are typically prioritized and may include the use of patellar-stabilizing braces, targeted physical therapy to enhance quadriceps strength orthotic devices to correct biomechanical abnormalities and non-steroidal anti-inflammatory medications. Although platelet-rich plasma (PRP) injections and regenerative therapies have emerged as potential interventions, these modalities are not part of the standard treatment regimen in regions such as Taiwan and lack consistent, high-quality evidence demonstrating long-term efficacy [2,4,5].

Surgical intervention may be considered in cases refractory to conservative management. Arthroscopic procedures such as cartilage debridement, plica excision or lateral retinacular release are common options [2]. In severe cases, open realignment surgery or even patellofemoral joint replacement may be warranted, although these procedures carry inherent risks and do not guarantee resolution of symptoms. Given the complexity of diagnosis and treatment, a multidisciplinary approach is often recommended for effective management of patellar chondromalacia [2,4].

Treatment strategies must be individualized, as no single therapy has proven universally effective. When conservative management fails to yield satisfactory outcomes, regenerative options such as stem cell-based therapies may be explored [1,4-8]. Surgical intervention remains a last resort due to its variable outcomes and

potential for persistent symptoms. In the present follow-up case study, we describe a patient previously diagnosed with femoral condyle chondromalacia via magnetic resonance imaging (MRI) who underwent six intra-articular TELOXOME injections over a treatment period spanning three weeks to 1.5 years [3,6-8]. The results, including imaging and clinical assessments, are presented in detail below.

MATERIALS AND METHODS

One milliliter (1 mL) of TELOXOME, an innovative stem cell-derived therapeutic agent developed by Continew medical INC., Taipei, Taiwan [2,7,8], was administered as a localized intra-articular injection into the patient's left knee. The second and sixth injections were delivered 3 weeks and 1.5 years, respectively, following the initial treatment. To evaluate the efficacy and long-term effects of the therapy, magnetic resonance imaging (MRI) scans were conducted prior to the first injection, as well as six months and two years after the second and sixth injections, respectively, allowing for comprehensive assessment of the knee's structural changes over time [3].

RESULTS

A 46-year-old male athlete was diagnosed with Stage IV chondromalacia nine years prior to this study. Despite receiving two intra-articular injections of platelet-rich plasma (PRP) and two additional injections of hyaluronic acid (HA), his symptoms persisted with minimal clinical improvement [4,5,9]. Following the administration of three intra-articular injections of TELOXOME, a stem cell-derived therapeutic agent, significant clinical and radiological improvements were observed [1,7,8]. Post-treatment magnetic resonance imaging (MRI), as illustrated in (Figure 1), revealed a marked reduction in cartilage degeneration, indicating a notable improvement in chondromalacia severity [10]. In addition to the radiological improvements observed on serial MRI, laboratory evaluation revealed a significant reduction in C-reactive protein (CRP) levels—from an elevated baseline of 1.27 mg/dL to within the normal reference range—following TELOXOME therapy [11-13]. This notable decline in CRP, a well-established biomarker of systemic and localized inflammation, suggests a meaningful anti-inflammatory effect associated with the treatment [12,13]. These findings further support the therapeutic potential of TELOXOME in addressing both the inflammatory and structural components of advanced chondromalacia, particularly in cases resistant to conventional management strategies.

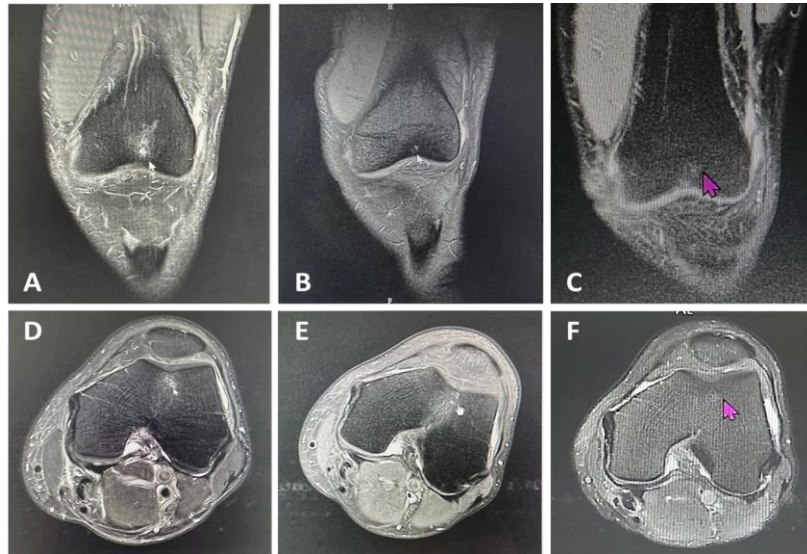


Figure 1: Serial T2-Weighted Magnetic Resonance Imaging (MRI) of the Left Knee Demonstrating Structural Improvements in Chondromalacia Following TELOXOME Therapy

This figure presents coronal and sagittal T2-weighted MRI scans obtained at three critical time points while treatment. (A) and (D) represent baseline images captured prior to the initiation of TELOXOME therapy, illustrating severe Grade IV chondromalacia localized to the femoral trochlear groove of the left knee. These images reveal significant cartilage thinning, surface irregularity and subchondral changes. (B) and (E) were obtained three weeks following the administration of the second intra-articular TELOXOME injection. These scans show early signs of cartilage regeneration, with visible improvement in cartilage surface continuity and reduction in signal changes indicative of inflammation. (C) and (F) illustrate MRI findings two years after the sixth TELOXOME injection, demonstrating further structural restoration of the articular cartilage, improved cartilage thickness and decreased subchondral bone edema. T2-weighted sequences were used for optimal visualization of cartilage integrity and hydration, particularly beneath the femoral condyle and along the femoral trochlear surface. These serial images collectively support the therapeutic efficacy of TELOXOME in promoting cartilage repair and mitigating degenerative changes associated with chronic chondromalacia.

DISCUSSION

The results of this clinical case study demonstrate the promising therapeutic potential of TELOXOME, a stem cell-derived biologic agent, in the treatment of advanced chondromalacia, particularly in cases where conventional treatments have proven ineffective. The patient in this study, who had previously undergone multiple treatments including PRP and HA injections with minimal success [1,5,14,15], exhibited significant improvements following a series of three intra-articular TELOXOME injections (7,8). These findings are supported by MRI results, which revealed marked structural regeneration of the cartilage and a reduction in degenerative features of chondromalacia over the course of the study. The initial MRI images indicated severe cartilage damage, consistent with Stage IV chondromalacia [7,8]. After receiving the first TELOXOME injection, the patient showed clear signs of cartilage repair six months later, as evidenced by progressive structural improvements observed in subsequent MRIs. This improvement was maintained, with further structural enhancements noted even two years after the final injection.

These results highlight TELOXOME's potential in regenerating damaged cartilage and preventing further degeneration, particularly in patients who have exhausted other treatment options.

In addition to the structural improvements, a notable reduction in C-reactive protein (CRP) levels was observed following TELOXOME treatment. CRP is a key biomarker for systemic inflammation and its decrease suggests that TELOXOME not only facilitates cartilage regeneration but also reduces the inflammatory processes associated with joint degeneration [16]. This finding underscores the dual therapeutic potential of TELOXOME, addressing both the structural and inflammatory components of chondromalacia, which are crucial for effective long-term management of the condition. The results of this study also underscore the limitations of conventional treatments for chondromalacia. Although treatments such as PRP and HA injections are commonly employed, their efficacy in advanced stages of chondromalacia remains inconclusive [5,14,16], with many patients experiencing only temporary relief. The case presented here demonstrates that TELOXOME, a stem cell-derived therapy, offers a promising alternative that may help overcome the limitations of traditional therapies by promoting cartilage regeneration and mitigating inflammation [8,9]. Despite the promising results, this case study is limited by its small sample size, as it involves only a single patient. Therefore, the findings should be interpreted with caution and further research is needed to determine the generalizability of these results. Larger, randomized controlled trials are required to evaluate the safety, efficacy and long-term outcomes of TELOXOME in a broader patient population [9,17]. Additionally, it would be beneficial to compare TELOXOME with other stem cell-based therapies and conventional treatments to establish its relative effectiveness in managing chondromalacia [5,9,14].

Furthermore, while the patient in this study experienced significant improvements, the durability of these effects remains to be fully determined. Long-term follow-up studies are necessary to assess the sustainability of cartilage regeneration and the impact on knee function over time. The optimal treatment regimen, including the frequency of injections and the duration of follow-up required for maintaining therapeutic benefits, should also be explored in future research [18-20].

In conclusion, the findings from this case study provide strong evidence supporting the potential of TELOXOME as an effective regenerative therapy for advanced chondromalacia, especially in patients who have not responded to conventional treatments. The improvements observed in both clinical and radiological assessments suggest that TELOXOME may offer a viable treatment option for promoting cartilage repair and reducing inflammation in knee joints affected by degenerative conditions. Given the increasing prevalence of knee osteoarthritis and related pathologies, further clinical investigations are crucial to confirm the efficacy of TELOXOME and establish it as a mainstream therapeutic approach for cartilage-related knee disorders.

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