

Improvement Of Osteochondritis Dissecans Of The Ankle In A 41-Year-Old Female After 12 Sessions Of Radiofrequency Treatment: A Case Report

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Abstract

Objective: To report a case of Osteochondritis Dissecans (OCD) of the talus that showed significant improvement after 6 sessions of radiofrequency treatment.

Case Summary: A 41-year-old female presented with persistent ankle pain and swelling, diagnosed as OCD. Following a conservative management approach that included 12 sessions of radiofrequency treatment, the patient experienced significant symptom relief and functional improvement.

Conclusion: This case highlights the potential effectiveness of radiofrequency treatment in managing OCD of the ankle.

Introduction

OCD of talus is a lesion of the subchondral bone that may affect articular cartilage. The lesion usually occurs on the anterolateral or posteromedial surface of the talus [1]. According to ischemic theory, blood supply of the subchondral bone is impaired due to deterioration of neoangiogenesis, which results in avascular necrosis. Repetitive micro-trauma is another suggested mechanism that could lead to development of OCD especially in young active individuals that participate intensive sports [2]. Dipaola et al classified MRI findings of OCD lesions into the following 4 categories: grade I, lesions with no break in the articular cartilage or with thickening of the articular

cartilage were classified; grade II, lesions with an articular cartilage breach and a low signal rim behind the fragment, indicating a fibrous attachment; grade III, lesions with an articular cartilage breach with T2 high signal changes behind the fragment, suggestive of fluid behind the lesion; and grade IV, lesions with a loose body and defect of the articular surface.

Case Presentation

Female patient, 41 years old pharmacist, with history of chronic ankle pain, edema and block after long standing in her pharmacy. she denied instability or previous trauma. 14 months diagnosed as osteochondritis dissecans. Treated with conservative treatment start with NSAIDs, rest and

ankle brace for 2 months followed by physiotherapy sessions for 3 months include shock wave therapy and ultrasound with light activities). PRP injection trial done twice 2 months apart with no significant improvement. At physical examination, she presented mechanical pain exacerbated with weight bearing and activity, limited range of motion (15 dorsiflexion and 35 plantarflexion), joint effusion +2/+4, lower extremity functional scale 58/80. magnetic resonance image (Figure 1a, b) showed joint effusion and osteochondral lesion of the lateral trochlear region ($2.2^{\circ} \times 1.7^{\circ} \times 0.6$ cm) with penetration of synovial fluid in to the bed of the lesion, signs that are characteristic of osteochondral fragment instability. The imaging exam also showed signs of chronic lesion, with the presence of subcortical cysts, bone edema at the base of the lesion, and partial bone marrow discontinuity of this fragment with horizontal orientation. Rehabilitation program tailored according to patient condition for 6 weeks include NSAIDs specialized exercise program combined isotonic and isokinetic exercise for 20 min 5 times per week associated with 12 radiofrequency current sessions 2 session per week. Radiofrequency circulating current generated by indiba active CT 9 module with frequency 448 khz. Session starts with 10 mints with capacitive mode at 6 indiba analogue scale to induce vascularization, followed by 15 mints resistive mode at 8 indiba analogue scale to stimulate hyperactivation of chondrocyte and osteocyte with return electrode applied on post thigh. Patient was evaluated and show empirical improvement LEFS 78/80. pain improved and edema subsided, free full ROM. The patient was released to slowly engage impact activities.

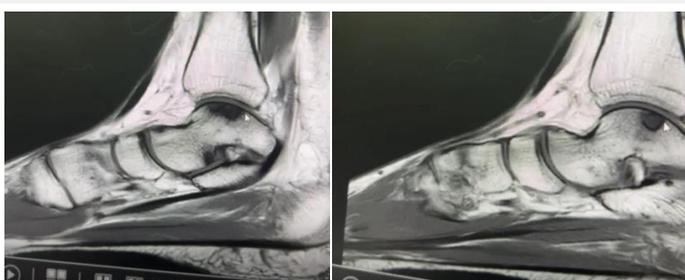


Figure 1a,b: Osteochondritis dissecans of talus grade 3.



Figure 2a,b: Healing of OCD after radiofrequency sessions.

Discussion

The great diversity in the articles and variability in treatment results, no definitive conclusions could be drawn. In initial stages with intact articular cartilage, it is thought that conservative treatment is indicated. Although there are no precise protocols for conservative strategies, it is generally accepted that such therapies should be the first choice. From the 2017 International Consensus Meeting on Cartilage Repair of the Ankle, the consensus for an optimal protocol for conservative management of an acute nondisplaced osteochondral lesion of the ankle is Immobilization for 4 to 6 weeks with touchdown weightbearing, NSAIDs could be used in cases of significant pain and swelling [4]. Up to our knowledge, no study has evaluated radiofrequency techniques as a conservative technique in management talus OCD. Nonoperative strategies for OCD lesions, such as strenuous activity restriction and physical modalities, can be beneficial, especially in skeletally immature patients with low-grade lesions. However, long-term outcomes demonstrate a more complicated picture, with 32% of patients in a retrospective study having moderate-to-severe arthritis at a mean of 34 years follow-up [2]. The therapeutic effects of RF are mainly linked to their effects on pain relief and tissue repair. These effects may be achieved either through thermal or through non-thermal mechanisms, which are essentially dose dependent. At higher doses, the cardinal effects of RF are heat-related physiological changes triggered by a rise in the tissue temperature. At substantially lower doses of RF, a discernible rise in tissue temperature is not achieved, but rather the absorption of RF energy in tissues instigate a modulation in cellular activity and alter membrane transport [5]. Cutaneous radiofrequency therapy sessions in rehabilitation increases circulation to the target areas by enhancing vasodilation, the expansion of blood vessels. This increase in blood flow brings higher concentrations of oxygen and nutrients to the targeted treatment area, which helps to speed up the healing process. In addition, increased circulation helps to reduce inflammation, which is a common cause of the pain experienced from a musculoskeletal injury (Challis, 2010). In molecular studies, radiofrequency has been shown to stimulate stem cell proliferation by targeting soft, living tissues using radiofrequency equipment guided by a therapist's unique skills. In addition, the physical, hands-on modality guides the tool by increasing deep blood flow and nutrient uptake to the injured tissues. The effect of the combined therapies often provides immediate relief to break the pain cycle, and relax muscles, and improves natural tissue regeneration as a valuable secondary outcome (Challis, 2010).

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Conclusion

The authors believe that this finding is associated with significant healing of the lesion confirmed by CT scan and advised to continue radiofrequency sessions once weakly and strengthen exercises while discontinuity of sports activities until the total recovery. The clinical and radiological results of this case were considered satisfactory, suggesting its value as a non-surgical treatment option for adult OCD.

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