

Article

Role of Autologous Micro-Fragmented Adipose Tissue in Osteoarthritis Treatment

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Abstract: Osteoarthritis (OA) is the most common complex musculoskeletal disorder, resulting from the degeneration of the articular cartilage and characterized by joint pain and dysfunction that culminate in progressive articular cartilage loss. We present our experience in the management of hip and knee OA by means of the intra-articular injection of fat micrograft, describing our approach, which was developed from the belief in the powerful reparative effect of autologous fat graft on damaged tissue, as well as its natural lubricating effect on the joints. Inclusion criteria were as follows: men and women, aged 20 to 80 years, that referred articular pain of the hips and/or knees, showing initial-stage degenerative OA. From October 2018 to July 2023, a total of 250 patients underwent treatment with the Sefficare[®] device (SEFFILINE srl, Bologna, Italy). The Superficial Enhanced Fluid Fat Injection device was used to perform autologous regenerative treatments in a safe, standardized, easy, and effective way on 160 women, 64%, and 90 men, 36%. A total of 190 procedures (76%) involved the knees, with 20 patients who were bilaterally treated, while 60 procedures, all unilateral, involved the hips (24%). The mean age at treatment was 52.4 years. Before treatment, each patient had undergone X-rays and Magnetic Resonance Imaging (MRI) of the painful hip/knee to evaluate and grade the articular OA. Postoperatively, each patient was assessed after one, three, six, and twelve months. The donor site postoperative course was uneventful other than minimal discomfort. Clinically, the ROM (range of motion) of the treated knee/hip increased an average of 10 degrees 3 months after treatment, but the stiffness was reduced, as reported by the patients. The VAS (Visual Analog Scale) was submitted at 3, 6, and 12 months, demonstrating a progressive reduction of pain, with the best score obtained at six months postoperatively. In total, 85% of patients were satisfied one year after treatment, with a considerable improvement in pain and quality of life. The satisfactory outcome of this minimally invasive procedure indicates that the intra-articular injection of fat micrograft can replace or considerably delay the need for the classical major joint replacement surgery, thanks to its impact on the quality of life of patients and financial cost.

Keywords: osteoarthritis (OA); autologous micro-fragmented adipose tissue; intra-articular injection; stromal vascular fraction (SVF); pain reduction; regenerative medicine



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1. Introduction

Osteoarthritis (OA) is the most common complex musculoskeletal disorder, resulting from the degeneration of the articular cartilage and characterized by joint pain and dysfunction that culminate in progressive articular cartilage loss [1]. OA mainly involves the weight-bearing joints (i.e., knees and hips) due to chronic high stress. Risk factors for OA include age, heredity, lifestyle factors, obesity, and local conditions (such as biomechanical consequences of joint injury, joint laxity, or malalignment). Its occurrence is expected to increase exponentially as the world population ages and obesity increases [2]. The usual patient presentation is joint pain, swelling, morning joint stiffness, progressively