Mikel Sanchez, J Tissue Sci Eng 2017, 8:4(Suppl)
DOI: 10.4172/2157-7552-C1-039

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Combination of intra-articular and intraosseous injections of platelet rich plasma to treat severe knee osteoarthritis

Knee osteoarthritis is a mechanically induced, cytokine and enzyme-mediated cluster of disorders affecting the whole joint. Intraarticular delivery is the conventional modality to deliver PRP in patients with knee osteoarthritis and it has been shown to be safe and efficacious in improving clinical symptoms. Nevertheless, intraarticular therapy faces other challenges when treating chronic nonsystemic sterile-inflammatory conditions as in the case of knee osteoarthritis. One significant challenge is a short joint dwell time of drugs, since the lymphatic drainage clears proteins in a few hours. This is not the case of PRP, since it acts as a dynamic liquid scaffold with a fibrin network from where GFs are gradually released into the tissue. Moreover, the increasingly recognized role of SB in the pathophysiology of osteoarthritis might render the intraarticular route insufficient to tackle all the joint tissues involved in KOA. Intraosseous delivery strategy for local, prolonged, and sustainable release of GFs has been proven to be efficacious in some musculoskeletal pathology, non-union fractures, osteoporosis, and bone fracture healing among them. The combination of intraarticular and intraosseous injections of PRP is an *in situ* local biological "joint-centric" approach to treat severe knee osteoarthritis addresses the SM, SF and superficial zone of AC by intraarticular injections of PRGF, and deep zones of AC and SB through PRP intraosseous infiltrations. Intraosseous infiltrations of PRP modulate SB homeostasis by antioxidative stress protection, adipogenesis suppression, and improvement in bone mineralization effect. The combination of intraarticular and intraosseous injections of PRP might offer a new therapeutic tool to address the knee joint pathology as a whole, by reaching the SM, SF and superficial zone of AC by intraarticular injections, and the deep zones of AC, and SB through PRP intraosseous infiltrations.

Biography

Mikel Sánchez attends his medical studies at the University of Bordeaux (France) and performs the validation that allows him to obtain a degree in Medicine and Surgery from the University of the Basque Country in 1979. He specializes in Traumatology and Orthopedic Surgeryat the Santiago Apóstol hospital in Vitoria-Gasteiz. During this period, he is a collaborator of the facial traumatology department of this hospital, performs the doctorate courses and remains attached to the services of rheumatology, neurosurgery and general surgery, as complementary training to his specialty. He is a physician attached to the hospital's trauma department until 1993. Since that same year he dedicates exclusively to his activity in the private hospital sector and two years later creates the Arthroscopic Surgery Unit (UCA). In 2000 he began his professional activity at the La Esperanza Clinic of the USP Hospitals group in Vitoria-Gasteiz as medical director and as head of the department of traumatology, orthopedics and arthroscopic surgery. That same year creates the Unitof Arthroscopic Surgery (UCA) in the facilities of the clinic. He is a pioneer in the advancement of Arthroscopic Surgery in Europe and in Spain. He is part of the Leeds-Keio working group, Rheumatism Research Unit, University of Leeds, UK and Department of Orthopedic Surgery, Keio University, Japan. The Leeds-Keio Group was an Anglo-Japanese collaboration aimed at promoting the development of arthroscopic surgery in Europe and Japan, especially knee and shoulder ligament replacement surgery.

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