

3<sup>rd</sup> International Conference & Exhibition on

## **TISSUE PRESERVATION AND BIOBANKING &**

6<sup>th</sup> International Conference on

## **TISSUE ENGINEERING AND REGENERATIVE MEDICINE**

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### **Regenerative effect of autologous mesenchymal stem cell injection on cartilage defects**

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**Background:** Chondrogenesis is a well-orchestrated process in which chondroprogenitors undergo proliferation and chondrocyte differentiation. Because cartilage lacks blood supply, it shows poor regenerative power and subsequent wound healing. Cartilage degeneration caused by disease or trauma carries great clinical implication on the function of joints. The end stage of cartilage damage frequently leads to osteoarthritis (OA), resulting in a significant impairment of the quality of life of millions of people. MSCs are multilineage progenitors responsible for the normal turnover and repair of mesenchymal tissues, such as bone, cartilage, ligament, and fat. *In-vitro* expanded MSCs can differentiate into chondrogenic, adipogenic and osteogenic lineages.

**Aim:** The objective of this work was to evaluate the regenerative effect of cell therapy in cases of acute and chronic OA canine models of surgically induced partial thickness chondral defects injected with autologous bone marrow derived MSCs.

**Study Design:** This work was done on 24 knees of male domestic mongrel dogs. OA was induced by doing surgical chondral defects then injected intra-articular with MSCs. Dogs were divided into the following groups: acute (injected after 1 day), chronic (after 1 month) and control group received conventional treatment. The dogs were sacrificed after 1, 2, 6 and 8 weeks of injection. Assessment by histological scoring of cartilage repair (Os Score) for blind randomized samples and by clinical examination for lameness degree scores was done.

**Results:** Our results showed that dogs possess characteristics that are not found in traditional rodent models and confirmed the efficacy of direct intraarticular injection of MSCs to home and function in cartilage defects both in acute and chronic lesions.

**Conclusion:** This study concludes that the local delivery of MSC is a good therapeutic option for O A.

#### **Biography**

Dr Wael Abo Elkheir has completed his Ph.D at the age of 35 years from Cairo University. He is the co-founder and board member of the Egyptian Society for Progenitor Stem Cell Research, a society initiated with the mission of enhancing scientific research and cooperation in the field of stem cell research and regenerative medicine. He is the director of a number of registered clinical trials in the field of stem cell therapy, especially for neuro-regeneration and musculoskeletal disorders. He has published more than 20 papers in reputed journals.

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