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## Intra-articular injection of adipose-derived stem cells in the treatment of knee Osteoarthritis: A prospective case series study

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**Background:** Osteoarthritis is a degenerative disease of synovial joints that causes progressive loss of articular cartilage presenting by pain, stiffness and greatly affected quality of life and activity of daily living. The definitive treatment modality is to regenerate damaged articular cartilage. The aim of this study is to evaluate the effect of intra-articular injection of Adipose-Derived Stem cells (ADSCs) on the functional status of the osteoarthritic knee joint in terms of diminishing pain, improving quality of life and returning to previous activities.

**Subjects and Methods:** 20 patients have recruited 8 males, 12 females, age range: 33-63 with a mean of 48.9y.

▷ **Inclusion Criteria:**

- Healthy patients with no major co-morbidities
- Kellgren and Lawrence grade I to III.
- VAS >3 for at least 4 months
- Limited or no response for conservative treatment

▷ **Exclusion Criteria:**

- Kellgren and Lawrence Grade: IV Late Stage Osteoarthritis
- Intra-articular injection for treatment within 2 months prior to this enrollment.
- Rheumatoid or inflammatory cartilage disease
- Crystalline disease (gout or pseudogout)
- Joint Infections

▷ **Patients assessment:**

- Full Knee examination
- AP Weight bearing X-ray K&L Grade
- WOMAC arthritis knee score
- VAS- Pain
- Knee ROM

**Informed consent Intervention:** Lipoaspiration was performed, Adipose-Derived Mesenchymal Stem Cells (ADSC) were isolated from the stromal vascular fraction. One intra-articular injection of ADSCs was injected in patients with mild to moderate knee osteoarthritis.

### Results:

1. The VAS score showed improvement from an average of 4.80 (pre-injection) to 1.60 (post-injection) with 32% Improvement.
2. WOMAC Pain score showed improvement from an average of 61.9 (pre-injection) to 83.8 (post-injection) with avg. 22% improvement.
3. WOMAC symptoms: The symptoms showed improvement from an average of 66.06 (pre-injection) to 86.43 (post-injection) with an average of 20.37 %
4. WOMAC- activities of daily living showed improvement from an average of 76.16 (pre-injection) to 88.67 post-injection with avg. 18% improvement
5. Knee range of motion ROM was measured using a goniometer before and after the injection and showed improvement from an average of 137.5° (pre-injection) to 145.4° (post-injection) with average 7.9° improvement

**Conclusions:** This study reached its predetermined primary outcomes, intra-articular injection of ADMSCs into osteoarthritic knee was not associated with apparent adverse events, but an improved function of the knee measured with WOMAC over 6 months of follow-up

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