

Autologous Cartilage Micrograft Transplantation

From the Ear to the OA knee:

Changes in Cytokines levels and Clinical Outcomes

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ON GOING

INTRODUCTION & OBJECTIVES

Knee osteoarthritis is a degenerative joint disease driven by inflammation and progressive cartilage breakdown. Pro-inflammatory cytokines such as IL-1 β , IL-1 α , TNF- α , IL-6 and IL-8 contribute to cartilage degradation, pain, and functional impairment.

Osteoarthritis is the most common joint disease, affecting approximately 10-15% of adults over 60 years, with increasing prevalence due to aging and obesity.

OBJECTIVES

- To **evaluate the effect** of an intra-articular injection of auricular cartilage micrograft suspension (Mytocele MSK by Regenera Activa).
- Determine **the % of patients that report an improvement** after the procedure throughout PROMs at 3, 6 and 12 months.
- Determine at what time the patients **start noticing improvement**.
- **Radiological evaluation** and changes in MRI images at baseline and 12 months after the procedure.
- **Cytokines Measurements** (IL-1 β , IL-1 α , IL-6, 8 and TNF α) to study the **inflammation profile** of the patients.

METHODS

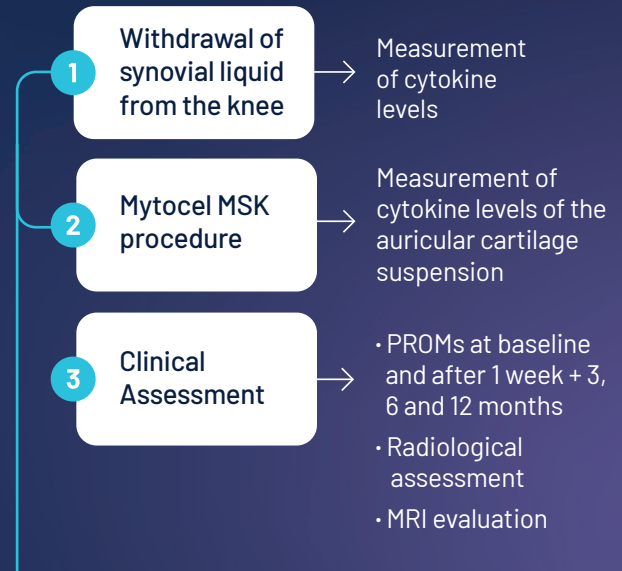


30 patients

Age range: 18 to 75 years

Condition: LK grade 2-3

- OA without traumatic meniscus lesion
- Without autoimmune and oncologic processes



CYTOKINES

IL-1 β : initiates cartilage degeneration and joint pain.

IL-6: OA progression and joint dysfunction

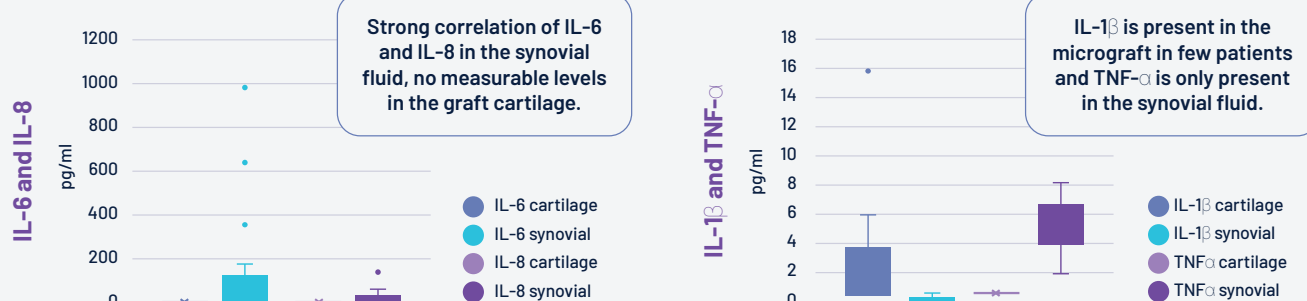
IL-8: stimulates synovitis

TNF- α : Amplifies synovitis via early MMPs

- Based on the cytokine levels, an inflammatory profile is created for each patient.
- In orthobiologics, the degree of inflammation present at the initial stage (prior to the intervention) influences the effectiveness of the therapy.

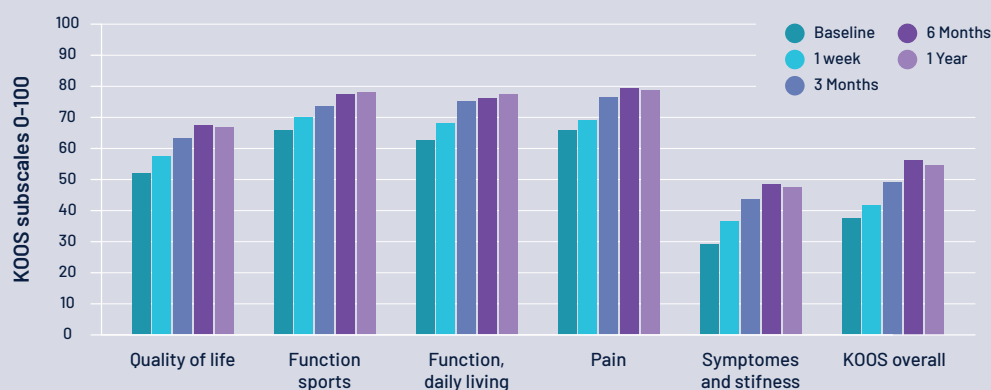
RESULTS

Cytokines Measurements Typical OA inflammatory profile



Clinical Assessment

Significant improvement of all subscales of KOOS (with 15 points) until 6 months and maintained up to 1 year.



Radiological Findings

- Cartilage grading is ICRS 2-3 in the femoral and patellar regions.
- Bone marrow lesions are mainly present in the patella.
- No change at 6 months, a positive trend in a few cases with less damage.

Correlations

Patellofemoral bone marrow lesion profile: low inflammation, better baseline condition and less improvement after the treatment

Inflammatory OA profile: high levels of cytokines, worse baseline symptoms and better improvement after the treatment.

DISCUSSION & CONCLUSIONS

- It has **quick results**, as early as **1 week post procedure** compared to other orthobiologics options. And the improvement lasts even after 12 months.
- No surgery neither hospitalization needed - **NO stress** for the patient
- In 5% of the patients the early inflammatory reaction are due to **increase levels of IL-1 β** in the auricular micrograft suspension.
- Mytcel MSK works better in **osteoarthritic knees with inflammation and significant cartilage damage**, while cases with a marked patellofemoral bone marrow lesion don't respond as well to the same treatment.