

# A Single Intra-Articular Injection of Autologous Micro-Fragmented Adipose Tissue and Chondral Shaving Diminishes Knee Pain and Improves Quality of Life in Patients with Symptomatic Osteoarthritis

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## INTRODUCTION

Articular cartilage lesions are generally associated with symptoms, such as joint pain and reduced function, and with disability, and often progress to end-stage osteoarthritis (OA). A variety of non-invasive and non-surgical strategies have been implemented with variable success rates. Recently, the use of adipose-derived stem cells has created substantial interest and their use has produced promising clinical outcomes. However, published studies to date have used expensive multi-step processes involving the use of scaffolds, cells, and growth factors, either alone or in combination with each other. Thus, a minimally manipulated adipose tissue that provides, in one-step, the key elements to support a natural reparative response would have remarkable clinical relevance.

## OBJECTIVE

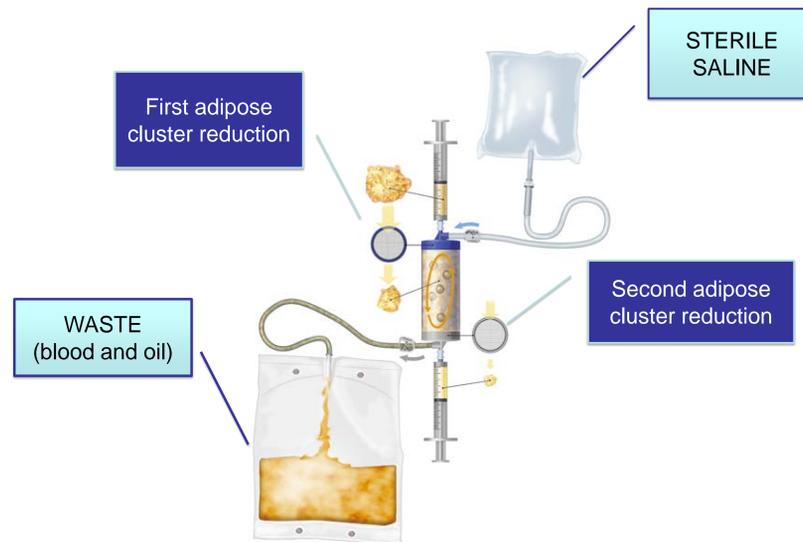
To explore whether autologous and micro-fragmented adipose tissue (Lipogems®), associated with a chondral shaving procedure, could improve symptoms and function in patients with knee osteoarthritis.

## METHODS

Thirty-five patients affected by symptomatic knee osteoarthritis underwent an arthroscopic procedure associated with an injection of Lipogems®. Indications for the treatment were knee chondropathy ICRS grade >II, constant pain and failure of conservative treatments for at least 12 months. Contraindications for the treatment were OA KL grade >III, axial defects >10, metabolic disorders and BMI >40. Pre-operative assessments included standard X-rays, MRI, direct physical examination, and KOOS questionnaire. In addition to the injection of Lipogems®, 21 patients underwent a chondral shaving procedure (group SH) and 14 patients had also a meniscectomy (group SM), because of a meniscal injury no longer repairable.

Micro-fragmented adipose tissue was obtained using a minimal manipulation technique in a closed system. The entire process, carried out in one surgical step,

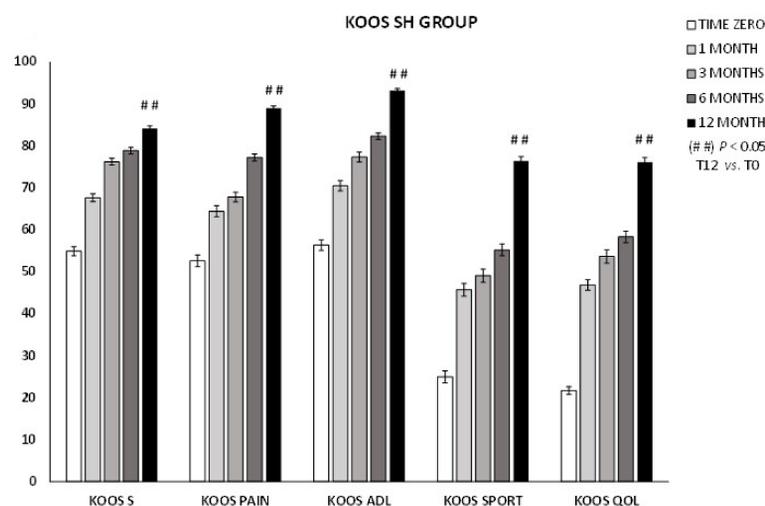
was performed in total immersion in physiological solution minimizing any trauma to the cells. Micro-fragmented fat (10 cc) was injected intra-articular after the arthroscopic procedure.



The Lipogems® system

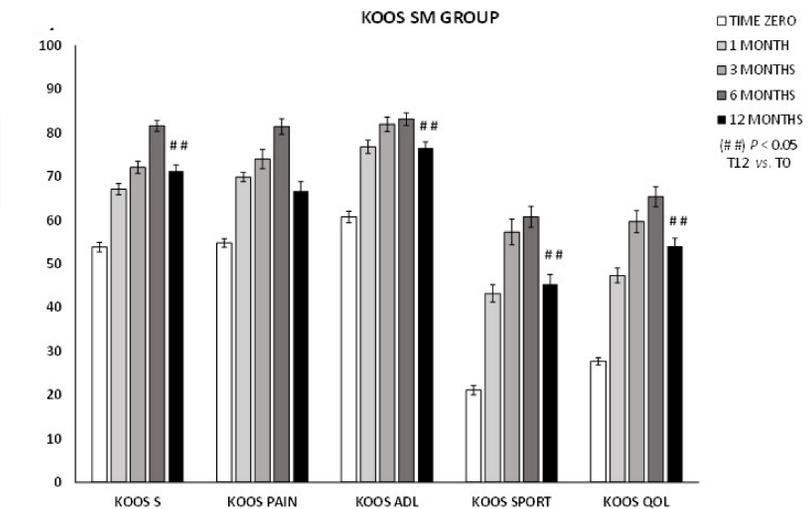
## RESULTS and DISCUSSION

Patients receiving Lipogems® and chondral shaving (SH) revealed a steady improvement of all the clinical scores from pre-operative evaluation to 12 months follow-up, with KOOS sport and quality of life being the most improved. Same trend for the WOMAC.



Patients undergoing also meniscectomy (SM) revealed a steady improvement of all the clinical scores until 6 months, followed by a slight decrease at 12 months, with KOOS sport and quality of life being

the most improved. Same trend for the WOMAC.



Considering the improvement between the pre-operative scores and 12 months follow-up, the outcomes appeared influenced by sports activity and gender. Indeed, females showed better improvements in KOOS functional score with respect to males, while sport activity has a negative influence on this parameter. Similarly, the sport score was less satisfying for patients who actively practice sport. The degree of OA seems not affecting the outcomes.

On average, 92% of SH patients and 74% of SM patients clinically improved and 100% of them were satisfied with the treatment. No patient worsened compared to the pre-operative condition or underwent additional treatment.

No adverse events nor relevant complications were recorded.

## CONCLUSIONS

The results of this study show the safety and efficacy of using Lipogems® injection associated with arthroscopic chondral shaving for the treatment of diffuse knee chondropathy. The single-step procedure is easy, fast, minimally invasive, safe, and provides a sustainable clinical benefit.

## REFERENCES

For references: <http://www.lipogems.eu/bibliography.html>