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Stromal Vascular Fraction treatment for knee osteoarthritis: preliminary results

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Background and aims

Knee osteoarthritis (KOA) is a chronic degenerative joint condition characterised by the progressive destruction of the articular cartilage. Treatment with stromal vascular fraction (SVF) contains adipose derived mesenchymal stem cells and is among the new strategies to treat KOA. SVF efficacy and safety has already been proven but the use of a standardised SVF product is needed to better analyse clinical and radiological improvements.

Methods

We present 6 cases of unilateral chronic KOA who underwent a standardised SVF treatment (CelStem®). The treatment is made from the autologous adipose tissue acquired via liposuction and prepared by biotechnologists in a clean room manufacturing environment. Few hours after, the SVF treatment is injected intraarticularly in the affected knee. Magnetic resonance images (MRI) analysis through MOCART classification, pain and functional outcomes (VAS and KOOS) are assessed before and 1-year after the treatment. Adverse effects are reported.

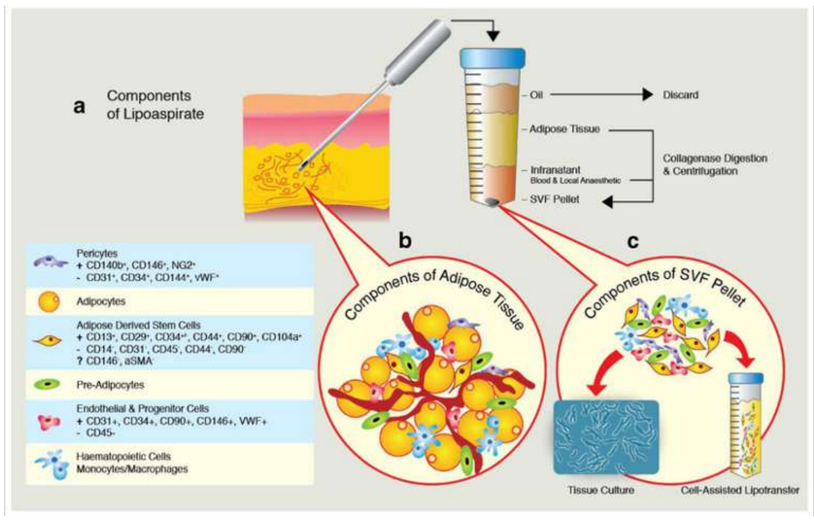


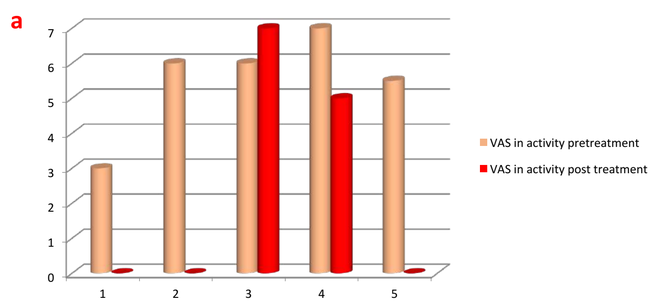
Illustration of the components of lipoaspirate (a), adipose tissue (b) and SVF (c). Use with permission of Springer Nature.

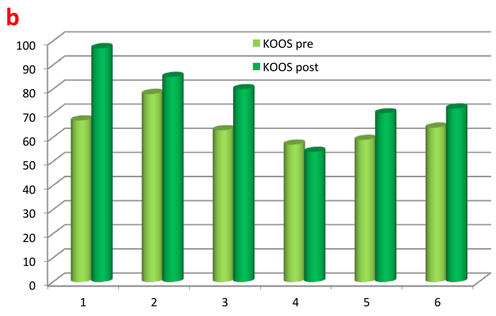
Sex	Age	Weight	Height	BMI	Knee
Male	55	78	1,77	24,8970602	Left
Male	59	114	1,75	37,2244898	Right
Female	41	70	1,69	24,5089458	Right
Male	58	60,5	1,69	21,1827317	Right
Male	63	84,5	1,69	29,5857988	Right
Female	54	89,5	1,69	31,3364378	Left

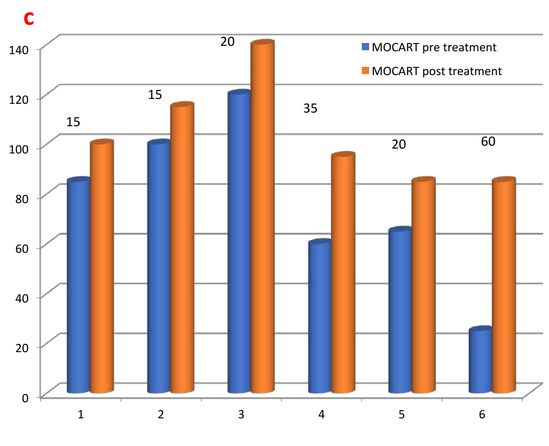
Characteristics of the patients

Results

4 men and 2 women, middle aged (mean age 54), mean body mass index 27.17, were treated with SVF: two left and four right knees. MOCART classification improved in all cases whereas VAS and KOOS did it in 4 patients (21.53, 4.1 and 14.62 points of average improvement, respectively). No adverse effects were reported.

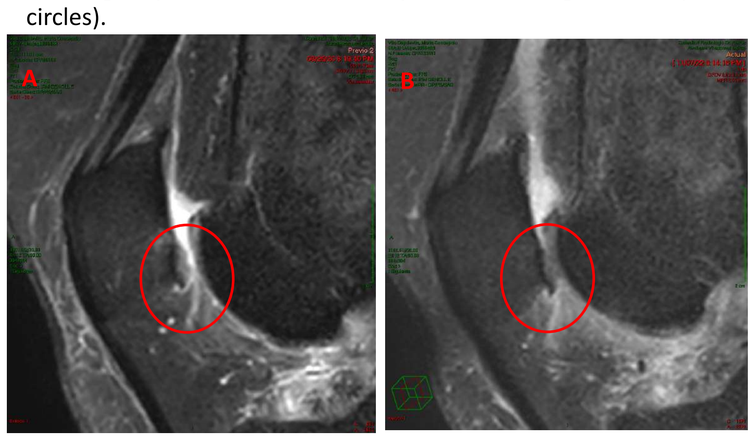


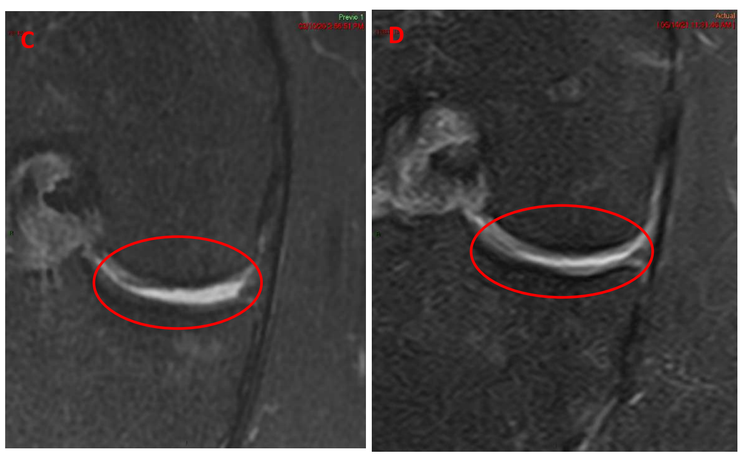




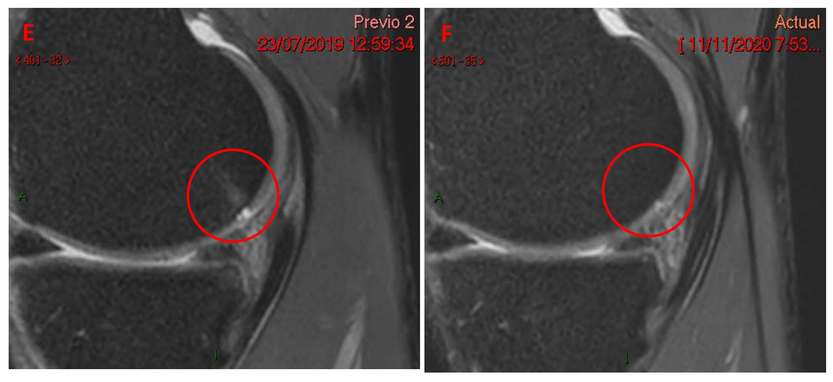
VAS (a), KOOS score (b) and MOCART classification (c) differences between pre and post treatment

Sagital knee MRI images pre (A) and post (B) SVF treatment showing improvement of femoropatellar cartilage lesion (red circles).





Coronal knee MRI images pre (C) and post (D) SVF treatment showing greater thickness of femorotibial cartilage (red circles).



Sagital knee MRI images pre (E) and post (F) SVF treatment showing improvement of focal cartilage lesion (red circles).

Conclusions

A manufacturing standardised SVF product is safe and seems to be effective for KOA with radiological evidence of cartilage regeneration.

Boada-Pladellorens A, Avellanet M, Pages-Bolibar E, Veiga A. Stromal vascular fraction therapy for knee osteoarthritis: a systematic review. Ther Adv Musculoskelet Dis. 2022 Aug 16;14:1759720X221117879. doi: 10.1177/1759720X221117879. PMID: 35991523; PMCID: PMC9386815.

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