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Treatment of Lumbar Intradiscal Pathology by Means of Percutaneous Through the Use of Tissue Micrografting Soft of the Auricular Cartilage (Perichondrium), of the Patient Himself

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Abstract

Aim: The principle on which this technology is based is to use healthy counterpart connective tissue of the same patient processed with KIT to regenerate its own damaged tissue. The affinity of the donor and recipient tissue used contributes a high differentiation and potentiality obtaining as a result a great cellular regenerative efficiency.

Method: 1). Fill the Rigeneracons kit, if three levels are made with 1.2 ml of injectable physiological saline, per facet is 0.2 ml. 2). Insert the punch into the kit in the corresponding department under the knife. 3). Process the indicated time. 4). Extract the result of the process with a syringe. 5). Application to the area to be treated. Clinical studies have demonstrated the safety and feasibility of using SVF in patients with degenerative disc. No major safety problems were observed and the procedures were well tolerated in all patients. In addition, patients showed statistically significant improvements in several parameters. The current study provides encouraging viability data on the Intradiscal treatment of stem cells and suggests some clinical benefits of SVF therapy in patients with degenerative disc.

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Introduction

The principle on which this technology is based is to use healthy counterpart connective tissue of the same patient processed with KIT to regenerate its own damaged tissue. The affinity of the donor and recipient tissue used contributes a high differentiation and potentiality obtaining as a result a great cellular regenerative efficiency. Patented technology applied to a surgical instrument, sterile and disposable, which by means of mechanical disintegration in small tissue particles isolates SVFs with high regenerative power.

1:1 ratio with 1 cm 2 of healthy tissue (biologically different). We regenerate 1 cm 2 of damaged tissue. Proportion 1:20 with 1 cm 2 of healthy tissue (biologically homologous) we regenerate 20 cm 2 of damaged tissue.

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New microfinance theory

It is based on the Theory of Tissue Micrograft. Using woven homologous fabric (autologous) + kit you get how: the regeneration of damaged tissue.

Surgical concept: The smaller the dimension of the graft, the easier it is to integrate into the implanted tissue.

Biological concept: The size of the SVF (Vascular Stromal Fracture) cells is approximately 50 microns. This selection and isolation we obtain are those that have a greater potentiality, greater power of differentiation and a high efficiency in cell regeneration. E.g. To regenerate articular cartilage we use: auricular cartilage + perichondrium articular cartilage: It is a cartilage of hyaline type that lacks vascularization whose free surface is not covered by perichondrium.

Perichondrium: A layer of fibrous and compact connective tissue that lines the cartilage, except the joint. It is highly innervated and vascularized.

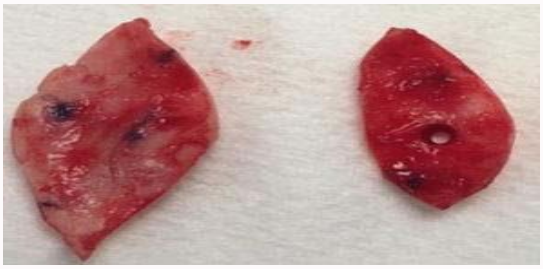

Figure 1: Perichondrium 3 punches.

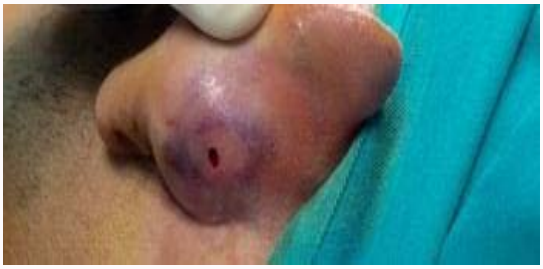

Figure 2: Extraction area of the punch pavilion auriculares.

Regenerative homology

When we extract healthy connective tissue homologous to the damaged tissue that we want to regenerate, the action of the SVF induced by the pericytes and endothelial cells that increase its vascularization is increased, therefore we take advantage of 95% of its: 1. Differentiation capacity, 2). Potentiality, 3). Efficiency.

When we extract healthy connective tissue different from the damaged tissue that we want to regenerate, only fibrocytes, chondrocytes and osteoblasts would be acting, so we use only approximately % of your: Differentiation capacity, 2). Potentiality, 3). Efficiency. The only cells with the capacity to differentiate and therefore with the potential to regenerate are the SVF (Vascular Stricture Fraction). This type of cells represents approximately 5% of the cell population when we perform a Micrograft.

Method and Technique

Cell preparation and intervention in the study is based on following technique.

Protocol: Pathology of column

- Application of the SVF injection of active regenera
- Number of punch: 3 punch of 2.5 mm (Figure 1)
- How much serum injectable 0.2 ml per facet
- How many minutes of motor 6 minutes
- Extraction area of the punch pavilion auriculares (Figure 2)
- Pathology of the column: Facet join Syndrome-Pain
- Where is injected: Nucleus pulposus: Focus of Pain
- Special material: Trocars appropriate for
- Infiltration of the spine (It must be done in the operating room) (Figure 3).

Method

1). Fill the Rigeneracons kit, if three levels are made with 1.2 ml

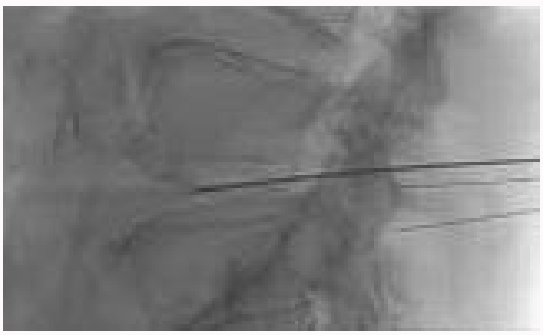

Figure 3: Infiltration of the spine.

of injectable physiological saline, per facet is 0.2 ml. 2). Insert the punch into the kit in the corresponding department under the knife. 3) Process the indicated time. 4). Extract the result of the process with a syringe. 5). Application to the area to be treated.

Discussion

Degenerative disc disease is associated with symptoms such as pain and possibly; weakness or numbness of the MMIII. Until recently, patients had few options. Surgery requires extensive recovery, and time out. Work, usually at least 6 weeks. In addition, the risk of complications is significant, apart from the complications that may arise from anesthesia, as well as the complications of the intervention, there is a risk of 1 in 10,000 of bowel or bladder incontinence and a risk of 1 in 1000 of nerve root damage. There may also be 1% to 3% risk of CSF leak, 1% risk of infection and 5% to 10% risk of spinal instability [1-3]. SVF does not require culture expansion *in vitro* and it is easy to perform the extraction. These cells can be placed directly on the disc nuclei using a minimally invasive technique guided by fluoroscopy [4,5]. Clinical studies have demonstrated the safety and feasibility of using SVF in patients with degenerative disc. No major safety problems were observed and the procedures were well tolerated in all patients. In addition, patients showed statistically significant improvements in several parameters including flexion, pain classifications, VAS, PPI and questionnaires in abbreviated form. Although ODI and BDI did not show statistically significant changes due to the low number of subjects in the trial, the data allow verifying positive trends. In addition, most patients reported improvements in their Dallas Pain Questionnaire scores [6,7]. Although the study suggests that the use of SVF is safe and feasible, further studies would be necessary to determine the true clinical effect of the treatment. Given the encouraging results in this small sample size with statistical significance, other clinical studies would be necessary [8]. Several parameters showed statistically significant improvements over a period of 6 months. A true assessment of efficacy and safety would require further phase II/III studies. However, the current study provides encouraging viability data on the intradiscal treatment of stem cells and suggests some clinical benefits of SVF therapy in patients with degenerative disc [9].

Conclusion

The present study will try to define the safety and viability of intradiscal transplantation of autologous SVF in patients with degenerative disc disease.

References

1. Miranville A, Heeschen C, Sengenes C, Curat CA, Busse R, Bouloumie A.

Improvement of postnatal neovascularization by human adipose tissue derived stem cells. Circulation. 2004;110(3):349-55.

2. Zhou L, Song Q, Shen J, Xu L, Xu Z, Wu R, et al. Comparison of human adipose stromal vascular fraction and adipose-derived mesenchymal stem cells for the attenuation of acute renal ischemia/reperfusion injury. Sci Rep. 2017;7:44058.
3. Khalpey Z, Janardhanan R, Konhilas J, Hemphill C. First in Man: Adipose-derived stromal vascular fraction cells may promote restorative cardiac function. Am J Med. 2014;127(5):11-2.
4. Ceccarelli G, Gentile P, Marcarelli M, Balli M, Ronzoni FL, Benedetti L, et al. *In vitro* and *in vivo* studies of Alar-Nasal cartilage using autologous micro-grafts: The use of the Rigenera® protocol in the treatment of an osteochondral lesion of the nose. Pharmaceuticals (Basel). 2017;10(2):53.
5. Rodriguez Y Baena R, D'Aquino R, Graziano A, Trovato L, Aloise AC, Ceccarelli G, et al. Autologous Periosteum-Derived Micrografts and PLGA/HA Enhance the Bone Formation in Sinus Lift Augmentation. Front Cell Dev Biol. 2017;5:87.
6. D'Aquino R, Trovato L, Graziano A, Ceccarelli G, de Angelis GC, Marangini A, et al. Periosteum derived micro-grafts for tissue regeneration of human maxillary bone. J Transl Sci. 2016.
7. Monti M, Graziano A, Rizzo S, Perotti C, Del Fante C, d'Aquino R, et al. *In vitro* and *in vivo* differentiation of progenitor stem cells obtained after mechanical digestion of human dental pulp. J Cell Physiol. 2017;232(3):548-55.
8. Gentile P, Scioli MG, Bielli A, Orlandi A, Cervelli V. A combined use of Chondrocytes Micro Grafts (CMG) Mixed with Platelet Rich Plasma (PRP) in Patients Affected by Pinch Nose Deformity. J Regen Med. 2016;5:2.
9. Noda S, Sumita Y, Ohba S, Yamamoto H, Asahina I. Soft tissue engineering with micronized-gingival connective tissues. J Cell Physiol. 2018;233(1):249-58.