

FAT GRAFTING WITH STEM CELLS IN THE FACE

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ABSTRACT

Background: fat injection with stem cells has shown in various researches to improve the viability of fat cells, durability when injected into the face. **Objectives:** fat injection with stem cells used for correction of volume loss and skin aging of the face in general and in the periocular region. **Methods:** the stem cells with fat was injected in the periorbital, perioral areas, Zygoma, Nasolabial folds, Cheek and Lips, Marionette Lines, Chin and Zygomatic-Malar Region. **Results:** the record of 10 patient were reviewed, average follow up time was 6 months and average volume of implanted fat was 20 ml. Good and excellent results were achieved for volume restoration and skin improvement in all patient. Complications were minor, appeared in 2 cases, lumpiness and irregularity. **Conclusion:** the fat administered with stem cells was effective for treating age related Lip-atrophy, reducing Facial Rhytids and improving skin quality. The fat injected with stem cells has helped to improve oxygenation and increase blood supply to various areas of the face, especially in the lips, were it increased lip moisture and redness.

KEYWORDS: fat injection, stem cell injection.

INTRODUCTION

Skin trophy and volume loss are major factors involved in facial aging, contributing to formation of Facial Rhytids, skeletonization and pseudo-descend of the Midface.

Early signs of facial aging affect the Periocular Region and include: thinning of the Eyebrows, deepening of the Superior Sulcus, development of infraorbital hollows and Atrophy of the Midface.

Similar changes occur in the Perioral region, contributing to the development of Nasolabial folds, Marionette lines and Lip Atrophy.

Some volume changes can be iatrogenic; for example, over aggressive Blepharoplasty may lead to hollowing of the upper and lower eyelids.

Other volume deficits may have a constitutional basis and be evident since adolescence or early adulthood.



Figure 1: A,B signs of facial aging

METHODS

The study population comprised 10 patients treated between November 2015 and September 2016, all of them provided with informed consent.

Areas of injection, quantity of implanted fat were documented for each patient.

After treatment, the charts of all patient were reviewed and standardized protocol for fat harvesting and preparation was established prospectively.

Fat aspiration was performed while the patient was under local anesthesia.

The standard solution: Ringer Lactate(500ml), mixed with Lidocaine(500mg), Sodium Bicarbonate(5meq)and Epinephrine(0.5%).

Then the solution injected into the selected donor site.

Manual aspiration of fat was performed with 10ml syringe mounted with 20cm, 2.5mm multi-holes canula.

Preferred harvesting sites were Suprapubic region, Hip, Pretrochanteric region and inner aspect of the Thigh.

After the aspiration syringe was filled, the harvested fat was mixed with ringers solution to rinse the anesthetic from the fat and to facilitate fat precipitation.

The fat was Centrifuged for 1 minute at 2000RMP.

PRP was obtained by drawing blood from the patient directly into 4.5ml Citrate-containing vacutainer tube and was Centrifuged at 1000RMP for 2minutes.

In a sterile syringe, the concentrated PRP was mixed with fat to obtain a final concentration of 10%of total fat harvested.

The fat was injected throughout the face by mainly 2 types of Cannulas: 20 gauge, 9cm Canula for injection into infra-Orbital hollow, Zygomatic-Malar region, Temporal region, Mandibular region.

23-gauge, 4cm Canula for injection into the Tear Trough Nasolabial folds and into the Lips.

Infra-Orbital nerve block was used for anesthetizing the Cheeks and Upper Lip.

Mental nerve block was used to anesthetizing the Lower Lip.

The level of injection was Subdermal in the Zygomatic-Malar region, Zygomatic Arch, Temporal Fossa, Malar mounds and Perioral areas.

The fat was injected at the level of Orbicularis Oculi muscle in the region of Brow, Lower Eyelids, Tear Trough and infra –Orbital hollows.

In the Lips, fat was injected into the level of Orbicularis Oris muscle.

Small visible bulges that occasionally formed in the eyelids at the time of injection were flattened by digital pressure.



Figure 2: A: infiltration canula, B: Harvesting canula, C&D: injection cannulas.

RESULTS

During the study period, 10 patients underwent fat injection with stem cells, the mean age was 45years (range: 25-65y).

The main outcome measures were restoration of volume, reduction of facial Rhytids and improvement of skin quality.

All complications were minor, 1 case with irregularity and 1 case with visible lumpiness.

DISCUSSION

The skin atrophy and volume loss are major contributors to facial aging.

Thus ideally, the face should be rejuvenated by restoring lost volume and improving skin quality simultaneously.

Volume restoration is a key component of facial rejuvenation that is commonly treated with injectables of commercial cosmetic filler or autologous fat.

New evidence supports the role of PRP-enhanced fat grafting for skin rejuvenation, increase fat graft survival and improve wound cosmesis.

Hence, the combination of fat graft with stem cells provide a potential more powerful effect on skin regeneration which likely contributed to the clinical improvement in Facial Rhytids and skin quality observed in our patient.

PRP also provide fluidity to the fat, allowing easy Egress from small-bore Canula under minimal digital pressure.

Fat injection with stem cells is much more beneficial when compared to commercial fillers in terms of improving skin quality and texture, lesser complications and more economic.



Figure 3: A&C infraorbital hollow, B&D fat injection infraorbital, zygoma, zygomatic-malar region, lips.



Figure 4: A&C preoperative, B&D immediate post filling.



Figure 5: A&C 55 years old lady shows the signs of facial aging, B&D fat injection into infraorbital hollow, lips, nasolabial folds, marionette lines, zygoma, zygoma-malar region (immediate).

CONCLUSION

This study demonstrates that fat grafting with stem cells is safe and effective Methode to correct volume loss and improve skin quality throughout the face, including the Periocular and Perioral regions.

Stem cells and fat graft, is rich in viable adipocyte and stem cells, it may be utilized for volume augmentation as well as skin regeneration.

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