

## Hair Mesotherapy

Zekayi Kutlubay\* and Özge Karakuş

Cerrahpaşa Medical Faculty, Department of Dermatology, Istanbul University, Istanbul, Turkey

Mesotherapy is a minimally invasive technique that consists of the intradermal injection of variable mixtures of natural plant extracts, homeopathic agents, pharmaceuticals, vitamins, enzymes, hormones and other bioactive substances in microscopic quantities. Mesotherapy was first described by Frenchman Dr. Michel Pistor in 1952. He first administered procaine intravenously to treat an asthmatic patient and found that the patient's hair loss was treated. Then he started to experiment on intradermal injections of procaine for various indications and named the method as "mesotherapy" in 1976. The use of mesotherapy, whether scientifically proven or not, has been outspreading over 50 years [1,2,3]. The term mesotherapy means the treatment of the mesoderm, which is one of the three primary germ layers in the early embryo that develops into connective tissue, muscle and the circulatory system. Mesotherapy is used in the treatment of cellulite, local fat deposits - xanthelasma, lipoma, alopecia, rejuvenation - wrinkles, skin tightening, hyperpigmentation and melasma, body contouring and scar reduction. Compounds used in mesotherapy applications are lidocaine, procaine, xylocaine for local anesthetics; NaCl 0.9 % for diluents; MgSO<sub>4</sub>, pantothenic acid, biotin, cobalamin, B complex vitamins, vitamin B12, vitamin C, vitamin A, zinc, selenium for minerals and vitamins. The main substance of mesotherapy is procaine [2,4,5]. Mesotherapy has been used for several years in Europe and South America for body contouring. Its introduction and application is about 10-15 years in Turkey. Mesotherapy describes a technique by which mixtures of medications and other compounds are injected directly into a diseased area so that systemic effects of oral or intravenous medications can be avoided. The composition of common mesotherapy formulations is selected and mixed in a "cocktail" before injection [3]. A lot of substances can be added such as piroxicam for the antiinflammation effect, pentoxifylline for circulation stimulation, tretinoin for the collagen regeneration, finasterid, dutasterid, biotin and minoxidil for hair growing, aminophilin, cafein and phosphatidylcholine for lipolysis. There is no standardized formulation for mesotherapy and ingredients vary depending on indications. The components and combination of injected material is based on anecdotal reports or the physician's experience [5,6]. There are no clinical data that have been published that include standardized regimens, treatment protocols. The science of mesotherapy can be advanced only by scientific and clinical research [7,8] (Table 1 and 2).

### General Mesotherapy Applications

The various injection techniques within classical mesotherapy are described based on their depth of injection, from the surface or epidermis to the deep dermis and subcutaneous tissues.

- Intra-epidermal
- Papular
- Nappage
- Point-by-point [9,10]

### Hair Mesotherapy

Hair mesotherapy can also be called "mesoplasty" or "mesohair". It represents a variety of minimally invasive techniques in which medications are directly injected into the scalp in order to improve alopecia and hair growth. Mesotherapy acts on the epidermis,

dermal connective tissue, the circulation, the immune system and the neurosensory system. This therapy is effective at some certain forms of alopecia. Acute diffuse alopecias such as telogen effluvium and stress alopecias androgenetic alopecias, alopecia areata are the forms that mesotherapy can be used with good results. It is not effective at hair shaft dystrophies or scarring alopecias. In the hair mesotherapy, there is lack of mixture and application scheme whose effectiveness has been proved scientifically. Content of cocktails changes due to physician's practice and experience [9,10,11]. The effects of treatments are to restore and increase local microcirculation, provide nutritional input, slow down the programmed process of follicular involution, stimulate the hair's environment through needling and complement other treatments [4,12]. The chemicals that are claimed to stimulate hair growth and new hair production are buflomedil, minoxidil, finasteride, dutasteride, biotin, vitamins and organic silicium.

### Vasodilators

In the treatment of alopecia; procaine, buflomedil, pentoxifylline, ginkgo biloba, minoxidil can be used as vasodilator. By the vasodilatation, local microcirculation is restored and get stronger. Buflomedil is an alpha-adrenoceptor antagonist and a weak calcium channel blocker. Ginkgo biloba also has antiedema effect. Minoxidil is very important and effective drug for hair loss. It is shown that minoxidil enhances hair growth by prolonging the anagen phase and induces new hair growth in androgenetic alopecia. We do not use

Dermato-cosmetological	Medical conditions
Cellulite	Osteoarthritis
Mezolift	Asthma
Rejuvenation	Headache
Body sculpting	Fibromyalgia
Alopecia	Insomnia
Striae	Lower back pain
Local fat deposits	Sports injuries

Table 1: Mesotherapy Indications [5,9,10].

Last stage cardiac failure
Renal disease
Diabetes mellitus (Especially patients using NPH insuline
Patients on medication for cardiac arrhythmias, aspirin, warfarin, heparin..
Pregnant and lactating women
Patients with cancer
Patients being hyperallergic to medications used in the cocktail

Table 2: Mesotherapy Contraindications [9,10].

\*Corresponding author: Zekayi Kutlubay, Cerrahpaşa Medical Faculty, Department of Dermatology, Istanbul University, Istanbul, Turkey, E-mail: zekayikutlubay@hotmail.com

Received February 13, 2012; Accepted February 16, 2012; Published February 21, 2012

Citation: Kutlubay Z, Karakuş Ö (2012) Hair Mesotherapy. Hair Ther Transplant 1:e102. doi:10.4172/2167-0951.1000e102

Copyright: © 2012 Kutlubay Z, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

minoxidil over than 1-2 cc within the mesotherapy cocktail because it may be painful for the patient. Hypotension can be seen due to excess vasodilatation [12,13,14].

**Procaine:** It is best known for its anesthetic property. Procaine is used in mesotherapy in the form of chlorhydrate of procaine, 1% to 2%. It is antiarrhythmic and vasodilator [3].

**Conjoctyl (organic silicium, salicylate of monometilsilanotriol):** It is anti-oxidant effective drug. Silicon is an element in the structure of elastic connective tissue. It acts as a coenzyme in the synthesis of the macromolecules of the interstitial matrix. In the microcirculation, it modifies the venous capillary and lymphatic permeability. Organic silicium increases collagen production [3].

### Vitamins

Vitamin B5 or dexpanthenol, biotin, vitamin C, A, B1, B2, B3, B6, B8 can be added to the cocktail. If patients have deficiencies and their micronutrition is not sufficient, these vitamins are very helpful to provide the input. Dexpanthenol is converted into pantothenic acid which is the prosthetic group of coenzyme A. It is important in the metabolism of carbohydrates. Dexpanthenol is necessary for the epithelial development and regeneration, growth of skin's accessory structures. Biotin acts as a coenzyme and growth factor. Vitamin C acts as an antioxidant and helps in collagen and elastin production. Vitamin A is substantial for collagen-regenerating action [2,12,14].

### Trace elements

Cobalt, copper, lithium, magnesium, manganese, phosphorus, selenium, sulphur, zinc can be used. Except rare allergic reactions, they do not have any contraindications. Trace elements are recommended in telogen effluvium and all deficiency-related conditions [2,12,15,16].

### Hormones

Cyproterone acetate, finasteride, dutasteride can also be used. They are efficacious in androgenetic alopecia. Finasteride should not be used on women. Problems with libido and impotence can occur but its incidence is rare [2,12]. Calcitonins, dexpanthenol, X-Adene, ginko biloba also can be used. Ginko biloba augments circulation. An active constituent, diterpenes, inhibits platelet activating factor and decreases platelet aggregation. Ginko biloba also acts as a vasomodulator. Before the injection, the scalp must be cleaned with clorhexidine or 70% alcohol. The injection technique mostly used on the scalp, is superficial intradermal application. Here injections are given at a depth of 2-4 mm at an angle of 30°-60°. The cocktails can be applied by using nappage technique that can be done manually or by mesotherapy gun. When there is an associated disorder, the practitioner should target the areas of alopecia. In androgenetic alopecia injections are applied on the whole of the scalp especially to fronto-temporal and vertex areas. The frequency of sessions are arranged according to patient, disease and the practitioner. Once a week for 4 weeks, once every 2 weeks for 2 months and maintenance treatment every 2 months are the schedules of treatments. We prefer to apply hair mesotherapy once in two weeks for at least 10 sessions and then once a month for 5 months. The hair must not be washed within 24 hours. 2-10 ml is the minimum amount required to cover the whole scalp. A 4 mm needle should be used, the standard mesotherapy needle or *Lebel* needle. The entire scalp is treated part by part with special emphasis on the alopecic areas. Varying cocktails can be used in alternation during the different sessions, depending on their efficacy [8,12,14,16].

### Cocktails [2,12,14]

Procaine 2%	1ml	Buflomedil	2ml
Buflomedil	1ml	Calcitonin 100U	1ml
Silicium	2ml	Multivitamins	2ml
Multivitamins	1ml		

Procaine 2%	2ml	Buflomedil	1ml
Biotin	1ml	Procaine	2ml
Dexpanthenol	1ml	X-Adene	1ml
Vitamin C	1ml	Silicium	1ml

Dexpanthenol	1ml	Dexpanthenol	1ml
Minoxidil	1ml	Biotin	1ml
Procaine	2ml	X-Adene	1ml
		Procaine	1ml

By this modality of treatment, hair loss reduces, regrowth can be seen. A test trichogram should be carried out after one year to be visible and meaningful. Injections can cause pain. An anesthetic cream could be applied 30 minutes before the operation to reduce the pain. Rarely local reactions such as edema, bruising, pruritus and pain may happen. Treatments has never had to be stopped and may be conducted indefinitely, as long as the patient tolerates. No adverse effects develop. There are also some cases of alopecia that are seen as a complication after mesotherapy treatment. In one case report, there were two cases of acute patchy alopecia after mesotherapy for the treatment of androgenetic alopecia. Histopathologic features showed an almost complete absence of terminal anagen hair follicles and a marked increase in the number of telogen germinal units and catagen follicles suggested an acute noncicatricial alopecia similar to anagen effluvium. There are certain case reports seen mycobacterial cutaneous infections after mesotherapy in the literature [14,17,18,19].

### Conclusion

Hair mesotherapy is a non-surgical, relatively painless injection technique. Despite the fact that there is very little scientific evidence sustaining its widespread use, the field of hair mesotherapy have grown enormously in the past few years, becoming a common method in cosmetic medicine. Its use in cosmetic medicine to eliminate hair loss is gaining in popularity. To ensure a satisfying cosmetic result, it is critical to use the correct cocktail and injection technique. No long term side effects have been seen in thousands of patients.

### References

1. Mysore V (2010) Mesotherapy in Management of Hairloss - Is it of Any Use? Int J Trichology 2: 45-46.
2. Kutlubay Z, Engin B, Serdaroglu S, Tuzun Y (2010) Mezoterapide kullanılan ilaçlar. Dermatol 1: 85-89.
3. Kutlubay Z (2011) Evaluation of mesotherapeutic injections of three different combinations of lipolytic agents for body contouring. J Cosmet Laser Ther 13: 142-153.
4. Atiyeh BS, Ibrahim AE, Dibo SA (2008) Cosmetic Mesotherapy: Between scientific evidence, science fiction, and lucrative business. Aesthetic Plast Surg 32: 842-849.
5. Vedamurthy M (2007) Mesotherapy. Indian J Dermatol Venereol Leprol 73: 60-62.
6. Merritt LA (2007) The scientific basis of mesotherapy. Aesthetic Mesotherapy and Injection Lipolysis in Clinical Practice. Ed. Madhere S. 2<sup>nd</sup> Edition. New York, Informa Healthcare 25-46.
7. Sivagnanam G (2010) Mesotherapy - The french connection. J Pharmacol Pharmacoter 1: 4-8.

8. Herreros FO, Moraes AM, Velho PE (2011) Mesotherapy: A bibliographical review. *An Bras Dermatol* 86: 96-101.
9. Serdaroğlu S, Kutlubay Z (2008) Mezoterapi. *Dermatoloji*. Ed. Tüzün Y, Gürer MA, Serdaroğlu S, Oğuz O, Aksungur VL. 3<sup>rd</sup> Edition. İstanbul, Nobel Tıp Kitabevleri 2357-2365.
10. Sarkar G, Garg VK, Mysore V (2011) Position paper on mesotherapy. *Indian J Dermatol Venereol Leprol* 77: 232-237.
11. Jäger C, Brenner C, Habicht J, Wallich R (2012) Bioactive reagents used in mesotherapy for skin rejuvenation in vivo induce diverse physiological processes in human skin fibroblasts in vitro- a pilot study. *Exp Dermatol* 21: 72-75.
12. Omer F (2007) The treatment of hair loss in mesotherapy. *Aesthetic Mesotherapy and Injection Lipolysis in Clinical Practice*. Ed. Madhere S. 2<sup>nd</sup> Edition. New York, Informa Healthcare 109-143.
13. Yoo HG, Chang IY, Pyo HK, Kang YJ, Lee SH, et al. (2007) The additive effects of minoxidil and retinol on human hair growth in vitro. *Biol Pharm Bull* 30: 21-26.
14. Özdoğan S, Erdal M, Feyman DO, Tan S (2011) Saç mezoterapisinin alopesi tedavisindeki yeri. *J Clin Anal Med* 2: 5-8.
15. Saper RB, Rash R (2009) Zinc: an essential micronutrient. *An Pham Physician* 79: 768-772.
16. Özmen S, Demir HY, Yavuzer R, Atabay K (2005) Alternatif estetik uygulamaları-1: Mezoterapi. *Türk Plast Rekonst Est Cer Derg* 13: 195-201.
17. Duque-Estrada B, Vincenzi C, Misciali C, Tosti A (2009) Alopecia secondary to mesotherapy. *J Am Acad Dermatol* 61: 707-709.
18. Regnier S, Cambau E, Meningaud JP, Guihot A, Deforges L, et al. (2009) Clinical management of rapidly growing mycobacterial cutaneous infections in patients after mesotherapy. *Clin Infect Dis* 49: 1358-1364.
19. Difonzo EM, Campanile GL, Vanzi L, Lotti L (2009) Mesotherapy and cutaneous *Mycobacterium fortuitum* infection. *Int J Dermatol* 48: 645-647.