

Early Results of an Aminoacid-Enriched Sodium Hyaluronate Gel Used to Enhance Wound Healing in Plastic Surgery

Rauso R*

Assistant professor, University of Foggia, Italy

*Corresponding author: Raffaele Rauso, Assistant professor, University of Foggia, Italy, Email: dr.raffaele.rauso@gmail.com

Case Report

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Abstract

Wound healing leads to scarring, in aesthetic plastic surgery, often, post operative scar is seen as the most important feature of the operation by the patient and a “not so good scar” is perceived as a cosmetic defect. These may be physically and psychologically disrupting for patients, particularly in societies focused on beauty.

Topical creams, injections of botulinum toxin A and even human mesenchymal stem cells, several methods are available to attempt to decrease scar formation and improve wound healing. However, many of these techniques are used as a result of habit or popularity, with little evidence to support their efficacy [1].

Scarring is a complex process related to several issues such as, type of surgery, skin color, bad habits as smoking, etc; however, the successful repair of tissue requires a well-coordinated host response. In epithelial tissues, including skin and mucous membranes, this process may be enhanced by drugs that promote wound healing. In this context, the efficacy of commercially available hyaluronic acid (HA) formulations in tissue repair has been well documented [2,3]. The unique viscoelastic nature of HA along with its biocompatibility and non-immunogenicity has led to its use in a number of clinical applications, which include: the supplementation of joint fluid in arthritis; as a surgical aid in eye surgery; and to facilitate the healing and regeneration of surgical wounds [3,4].

Keywords: Plastic Surgery; Sodium Hyaluronate; Aminoacids

Case Report

From November 2017 to December 2017, 12 patients (2 male and 10 female) aging from 34 to 58 years old, were operated by the same surgeon for the following issues: a case of bilateral adenectomy to solve true gynecomastia, a case of non resorbable lip filler removal, a case of upper and lower lip lift, three cases of mastopexies, three cases of tummy tuck, one case of cleft lip revision and one basal cell carcinoma removal located on the lower third, medial side, of the leg.

All the patients were operated after full medical examination, and signed the consent form. After surgery, a class IIb medical device containing sodium hyaluronate mixed with glicin, proline, leucine and lysin (Sunekos Surgery, Professional Dietetics, Milano, Italy) was applied with two different protocol based on the length of the scar: In cases where a small surgical access was performed (such as lip surgery, true gynecomastia, etc), patients were asked to apply, once a day for 2 weeks, this HA-based gel; in cases where a big post operative dressing was required (such as tummy tuck, mastopexy,

etc) the gel was applied during the medication performed by professional staff at the following stages: at the end of surgery, 24h after surgery, 3 days after surgery, 1 week after surgery and 2 weeks after surgery. Careful explanations of "how to clean and manage the surgical site" were given to the patients required to apply daily by themselves the gel; a 3 mL pre-filled syringe containing the sterilized gel was given to the patients for the whole 2 weeks post operative period.

In all the cases the applied gel was well tolerated, no skin reactions, infections or other complications were recorded. All the wounds healed without post operative complications, epithelialization was observed within 15 days in the cases where the gel was applied daily and within 21 days in the second group (Fig 1-9).



Figure 1: A 26 years old man affected by true gynecomastia.

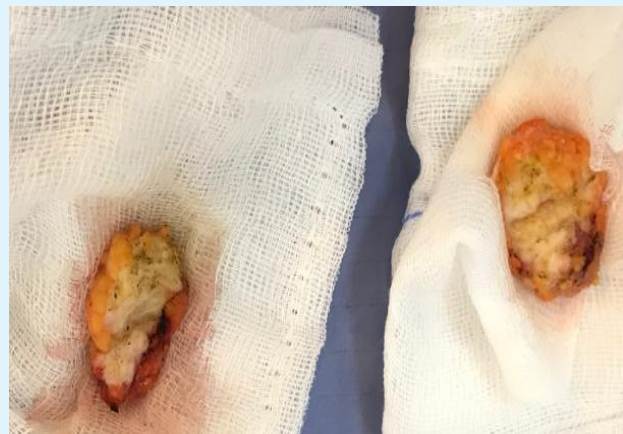


Figure 2: Mammary glands removed during adenectomy performed through an inferior emi-peri-areolar incision.



Figure 3: Pre-operative frontal view of the left side.



Figure 4: Fifteen days after surgery; patients applied daily the aminoacids-enriched sodium hyaluronate gel.



Figure 5: Intra operative view of non resorbable filler removal after lip injections.



Figure 6: The patient 15 days after surgery; she applied daily the aminoacid-enriched sodium hyaluronate gel.

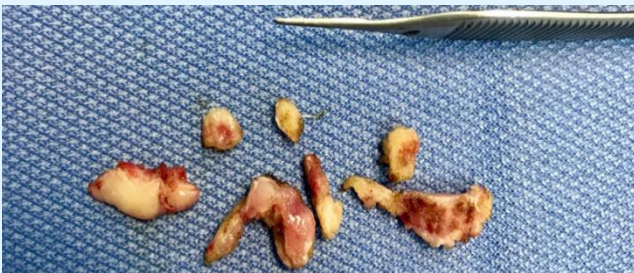


Figure 7: Tissue removed from upper lip before mucosa remodeling.



Figure 8: Wounds fourteen days after a mastopexy; this patient received professional medication applying aminoacid-enriched sodium hyaluronate gel 24h after surgery, 3 days after surgery, 1 week after surgery.



Figure 9: Wounds twenty-one days after a mastopexy; this patient received professional medication applying aminoacid-enriched sodium hyaluronate gel 24h after surgery, 3 days after surgery, 1 week and 2 weeks after surgery.

Discussion

HA is a potent stimulator of tissue repair and is widely used in dermatology and oral medicine for epidermal injuries, in this short term case series we evaluate the effort, in wound healing, of a sodium hyaluronate gel enriched with glycine, proline, leucine and lysine. Colella et al already showed how aminoacid-enriched sodium hyaluronate gel can stimulate keratinocyte motility in a fibroblast-free environment leading to enhanced epithelial wound closure [5]. In this case series, in the field of plastic surgery, very good scars outcomes were recorded whatever type of surgery has been performed, however a difference between the two groups of patients emerged: in patients who were asked to apply daily Sunekos Surgery, a reduced healing period was recorded.

Hyaluronic acid (HA) is known to be involved in fundamental physiological and pathological processes such as embryological development; migration, adhesion, proliferation and differentiation of cells; inflammation and malignancy; and wound healing [2]. HA interacts with several cell-surface receptors, which modulate HA-mediated processes that control the structure and assembly of several cell types and tissues. Aformentioned issues early explain why in the group where the gel used in this case series was applied daily a faster healing was observed; however, also in the other group an earlier epithelialisation of the wound was observed.

The limitations of this study are represented by the absence of objective evaluation and also the number of patients is low, however, from this preliminary report, early application of aminoacid-enriched sodium hyaluronate gel seems to let a faster healing of the wounds in plastic surgery practice; further objective studies are needed to confirm this hypothesis.

References

1. Baca ME, Neaman KC, Rapp DA, Burton ME, Mann RJ, et al. (2017) Reduction of post-surgical scarring with the use of ablative fractional CO2 lasers: A pilot study using a porcine model. *Lasers Surg Med* 49(1): 122-128.
2. Jiang D, Liang J, Noble PW (2007) Hyaluronan in tissue injury and repair. *Annu Rev Cell Dev Biol* 23: 435-461.
3. Price RD, Myers S, Leigh IM, Navsaria HA (2005) The role of hyaluronic acid in wound healing: assessment of clinical evidence. *Am J Clin Dermatol* 6(6): 393-402.
4. Liao YH, Jones SA, Forbes B, Martin GP, Brown MB (2005) Hyaluronan: pharmaceutical characterization and drug delivery. *Drug Deliv* 12(6): 327-342.
5. Colella G, Vicidomini A, Cirillo N, Gaeta GM, D'Amato S (2009) Aminoacid-enriched sodium hyaluronate enhances keratinocyte scattering, chemotaxis and wound healing through integral beta1-dependent mechanism. *J Stomatol Invest* 3: 21:29.