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Adjusting Thickness before Injection: A New Trend for Preparing Collagen-stimulating Fillers

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Collagen-stimulating fillers provide excellent filler treatment choices for many patients. In recent years, a new trend for preparing collagen-stimulating fillers by adjusting their thickness continues to evolve.

Currently there are four collagen-stimulating fillers available in the market: poly-L-lactic acid (PLLA; Sculptra; Galderma, Fort Worth, Tex.),[1,2] calcium hydroxylapatite (CaHA; Radiesse; Merz, Frankfurt, Germany),[3] polycaprolactone (PCL; Ellanse; Sinclair, London, UK),[4] and poly-D,L-lactic acid (PDLLA; AestheFill; REGEN, Seoul, South Korea).[5]

PLLA and PDLLA are both lyophilized powders stored in vials. Before injection, reconstitution with sterile water (SWFI) is required.[1,2,5] For PLLA, initial recommendations in the past advised one vial be reconstituted in 3 mL or less of SWFI. However, lots of adverse events happened thereafter. Hence the dilution amount has now been increased to 5 mL or more of SWFI to become a thinner suspension, and the incidence of adverse events decreased significantly.[1] Nowadays, practitioners use SWFI from 4 mL or less to 31 mL or more according to their preference and for different applications.[2] PDLLA is officially designed to be reconstituted in SWFI from 1.4 to 8 mL, for wrinkle correction from deep to shallow.[5] In our experience, we have been using SWFI from 1.4 to 24 mL for a wide range of applications, from deep injection for volume augmentation to superficial injection for fine line improvement. CaHA and PCL are both gel-like suspensions prefilled in syringes. They can be injected immediately without reconstitution.[3,4] They are both thick fillers, which makes them ideally suited for deep implantation. When they are injected superficially, focal accumulation of the products may easily happen because of their high viscosity and cohesivity. Consequently, consensus recommendations of saline dilution (1:1) and hyper-dilution (1:2 to 1:6) of CaHA have emerged.[3] For PCL, although there are few published reports of dilution methods (one study used saline dilution 1:4),[4] many practitioners have been using identical dilution methods for preparation, with overall good results (Table 1).

These four biostimulators comprise their specific biodegradable microparticles suspended in an aqueous carboxymethyl cellulose gel carrier.[1–5] As a result, they can all be prepared from thick to thin suspensions. When in a thick dilution state, they should be injected deeply, and are suitable for correction of deep wrinkles or for volume augmentation, like an implant. On the other hand, when in thin dilution state, they can be injected superficially, and are suitable for overall fine facial wrinkle correction. As the dilution reduces pressure on the plunger, it reduces risk of needle clogging, eases filler delivery for the injector, facilitates its even spread, minimizes unevenness, decreases risk of papules and nodules, provides better coverage, and creates a better overall result.[1–5] Moreover, there are many factors that can affect the final injection result, not to mention that every kind of biostimulator has its own unique properties. Thus, anyone who plans to use these products must be knowledgeable of them and the management of the adverse events should they arise. Nevertheless, adjusting thickness before injection is now a new trend for preparing collagen-stimulating fillers.

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Table 1. Comparison of Four Collagen-stimulating Fillers

	Dosage Form	Storage	Components	Reconstitution before Use	Thickness—Official Recommendation	Thickness—Clinical Practice in the Usage
PLLA[1,2]	Lyophilized powders	Vial	PLLA microparticles Mannitol CMC	Yes	Reconstitution with SWFI in ≤3 mL (in the past) In 5 mL (nowadays)	Reconstitution with SWFI in from ≤4 to ≥31 mL
PDLLA[5]	Lyophilized powders	Vial	PDLLA microspheres CMC	Yes	Reconstitution with SWFI in from 1.4 to 8 mL	Reconstitution with SWFI in from 1.4 to 24 mL
CaHA[3]	Gel-form suspension	Syringe	CaHA microspheres CMC	No	No dilution	Dilution with NS from 1:0 to 1:6
PCL[4]	Gel-form suspension	Syringe	PCL microspheres CMC	No	No dilution	Dilution with NS from 1:0 to 1:4

CMC: carboxymethyl cellulose.

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REFERENCES

1. Alessio R, Rzany B, Eve L, et al. European expert recommendations on the use of injectable poly-L-lactic acid for facial rejuvenation. *J Drugs Dermatol.* 2014;13:1057–1066.
2. Lin MJ, Dubin DP, Goldberg DJ, et al. Practices in the usage and reconstitution of poly-L-Lactic Acid. *J Drugs Dermatol.* 2019;18:880–886.
3. Goldie K, Peeters W, Alghoul M, et al. Global consensus guidelines for the injection of diluted and hyperdiluted calcium hydroxylapatite for skin tightening. *Dermatol Surg.* 2018;44 suppl 1:S32–S41.
4. Kim JS. Changes in dermal thickness in biopsy study of histologic findings after a single injection of polycaprolactone-based filler into the dermis. *Aesthet Surg J.* 2019;39:NP484–NP494.
5. Chen SY, Chen ST, Lin JY, et al. Reconstitution of injectable poly-D,L-lactic acid: efficacy of different diluents and a new accelerating method. *Plast Reconstr Surg Glob Open.* 2020;8:e2829.