Supplemental Digital Content 1: 
Personal Experience and Techniques with PLLA Panfacial Treatment

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From “Current concepts in the use of PLLA: Clinical synergy noted with combined use of microfocused ultrasound and poly-L-lactic acid on the face, neck, and décolletage”

Soft Tissue Fillers and Neuromodulators: International and Multidisciplinary Perspectives. A Supplement to Plastic and Reconstructive Surgery

Financial Disclosures
Dr. Fitzgerald is a Speaker, Trainer, Consultant, and Advisory Board Member for Allergan, Galderma, Merz, and Valeant.
What I use and why I like it for this region

This video is a demonstration of panfacial filling with poly-l-lactic acid (PLLA) (Sculptra Aesthetic, Galderma, Upsala Sweden). In my experience the ideal candidate for treatment with PLLA is a 30-60 year old with mild to moderate global volume loss, good to fair skin elasticity, and congenital, ethnic, or age related craniofacial insufficiency. I like it because I’ve found that the results are subtle and natural and that a long duration of effect can be achieved in this population with less product, fewer treatment sessions, and high patient satisfaction.

I also use it to increase midface projection in some ethnic groups such as African American and Asian patients. Finally, nice results can be achieved when this product is used to replace volume in the temporal/lateral cheek compartment in facelift patients with post operative lipoatrophy or skeletonization or to improve skin integrity in older patients with elastotic skin. However, it should be noted that these two indications may require a lot of product and/or a lot of treatment sessions.

Technique pearls and pitfalls

Early problems with this product, especially papules and nodules, are now recognized to stem from suboptimal preparation or placement. The common denominator in the prevention of these early adverse events is the avoidance of overcorrection or “too much, too soon”. Current consensus guidelines outline the evolution of methodology with this product and are summarized here (Vleggar D, Fitzgerald R, Lorenc ZP et al. The history behind the use of injectable Poly-l-lactic acid for facial and nonfacial volumization: The positive impact of evolving methodology. J Drugs Dermatol. 2014;13( 4): suppl 32-34.)

Proper preparation includes adequate dilution (9cc of sterile water) and hydration time (>24hrs). Additionally the product must be well suspended immediately prior to injection. Foam in the syringe or needle hub leads to constant clogging, therefore foam should be expressed from the syringe and a fresh needle placed and primed immediately prior to injection if foam or clogging is noted. (this is demonstrated in the video).

Treatment sessions should be spaced a minimum of 4 weeks apart, a longer interval is recommended for younger or plumper faces. Superficial placement, or placement in hyperdynamic muscles around the eyes or lips should be avoided. Be aware that papules and nodules have also been described with use in the neck, the dorsal hands, and the forehead.
Placement in the upper face/temple is deep to the temporalis muscle, just above bone. In a patient with a concave temporal hairline, product can be placed behind the hairline to ovalize the face. A mild shadow at the temporal sulcus can be treated directly in this area, with a conservative amount of product. Both the practitioner and the patient should be aware that a very large or deep temporal sulcus may require a lot of product (any product) to fill, and this may be expensive. If PLLA is used in these cases, it will require a number of treatment sessions to fill, requiring patience on the part of both practitioner and patient. Placement in the preauricular/lat cheek fat compartment is immediately subdermal so as to avoid placement in the parotid tissue. Placement in the mid and lower face is deep to the muscle. A supraperiosteal injection can be used in the canine fossa/around the pyriform aperature to give or restore some anterior projection to the midface. (Fitzgerald R, Vleggaar D. Facial volume restoration of the aging face with poly-l-lactic acid Dermatol Therapy, Vol. 24, 2011, 2–27) This is demonstrated in the video. All injections are preceded by a reflux maneuver.

Aesthetic endpoint
The mechanism of action of PLLA is to employ the host response to achieve the “fill” and “too much, too soon” may elicit more than the desired host response. Therefore the amount of product used at any one treatment session is determined solely and completely by the surface area to be treated at that session (using approximately 0.1-0.3cc/cm2). The final volumetric correction is determined by the number of treatment sessions. Treatment sessions should be spaced a minimum of 4 weeks apart (a longer interval is recommended for younger or plumper faces).

Safety considerations
Inadvertant intravascular injections, rarely leading to necrosis with scarring or even blindness have been described with fat as well as all commercially available fillers including PLLA. For this reason slow, low pressure injections with small amounts of product through a constantly moving needle is recommended in order to keep the reaction localized in the event it does occur. (Carruthers J, Fagian S, Rohrich R et al. Blindness caused by cosmetic filler injection: A review of cause and therapy. Plast Reconstr Surg. 2014;134: 1197-1201.) The low viscosity of this product coupled with injection with a 25 or 26 gauge needle make reflux prior to injection possible (although it should be noted that there is no data yet available on the efficacy or reliability of this maneuver).

Finally, antiseptic technique is important when injecting long lasting fillers through the skin. I use 2%chlorhexidine with sterile water (not tap water) followed by 70% alcohol.