

## Biopsy Follow-Up After Application of Poly-D-Lactic Acid (PDLA)

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### Keywords

Collagen, Poly D-Lactic Acid, Biostimulation, Neocollagenesis, Biopsy

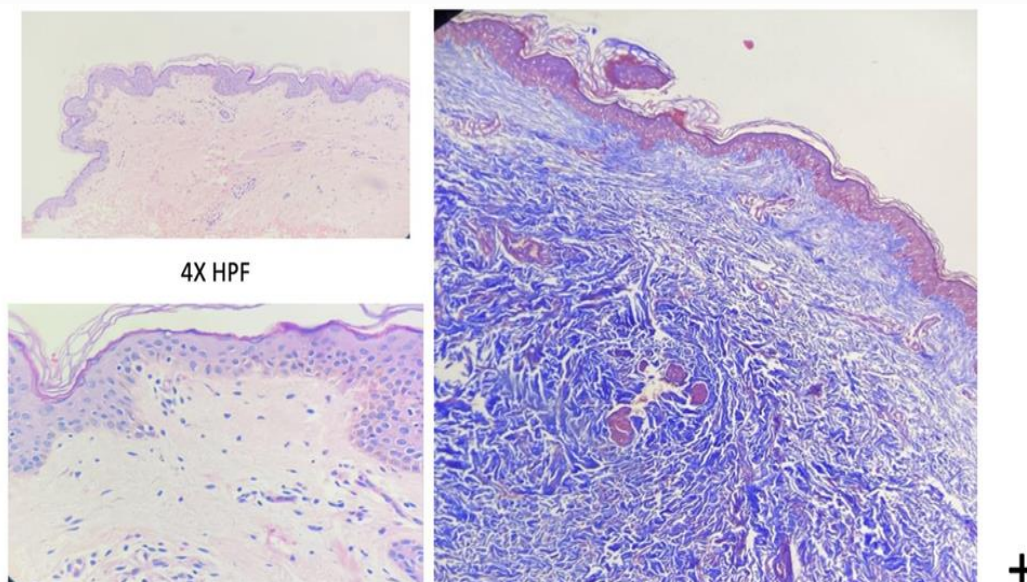
### Introduction

Over the last few years, there have been a number of important changes in how we appreciate and understand the aging face. Volume loss is now recognized as a major component of facial aging. Treatment options that replace lost volume are increasingly used for recontouring and rejuvenation of the aging face [15]. Hyaluronic acid fillers have been the most popular cosmetic procedures worldwide over the past years. Lately, bioestimators have gained wide popularity as the latest trends in beauty enhancement injectables. Natural beauty look is the latest trend in cosmetic procedures all over the world, dermal fillers such as hyaluronic acid has decreased in popularity because of its volumizing effect [9], and its persistence on the tissues all over the years [13-14]. For this reason, several patients demand not only that the product is dissolved, but also, they are in search of a procedure with a natural effect that provides minor volume with a tightening and firming effect on

the skin while looking for a youthful image [11-12]. Biostimulators are the current trends in cosmetic procedures, they have been in the market for more than 14 years [8], substances such as Poly -D – Lactic Acid (PDLA) are capable of inducing collagen synthesis stimulating fibroblasts by causing a sub clinical inflammatory reaction [1-3]. PDLA microspheres provide scaffolds for collagen fibers formation [5-10], leading to the rejuvenation of the aged skin [6-7]. These substances are absorbent and biocompatible within the tissue, some reports refer that the lasting effect of PDLA can be up to 2 years [4], however there are no reports showing the exact timing collagen synthesis begins so we aimed to show with a biopsy evidence that the collagen stimulation begins from the 7th day after the application.

### Case Presentation

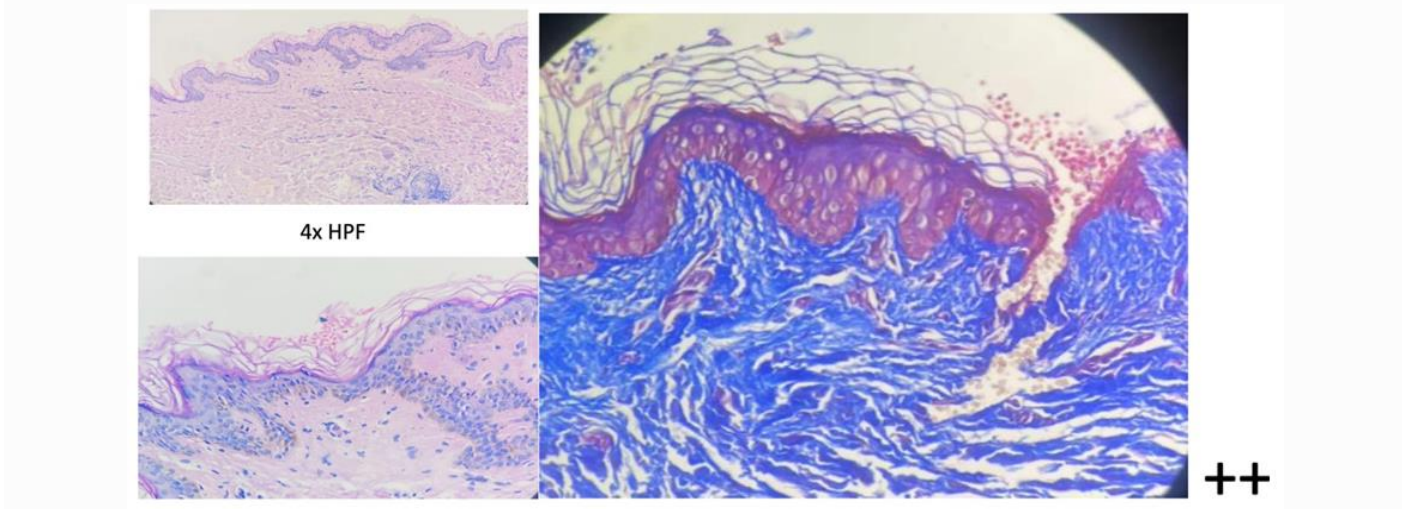
A 30-year-old female, without medical records of allergies or immune diseases, was injected with PDLA (Aesthefill) on the inner arm area and three biopsies were taken. The first one was called basal biopsy since the biopsy sample was taken without any substance injected (Figure 1).



**Figure 1:** Basal Biopsy when the PDLA has not been applied on the area, H-E with different magnification (right side) and in masson trichrome Stain (left side).

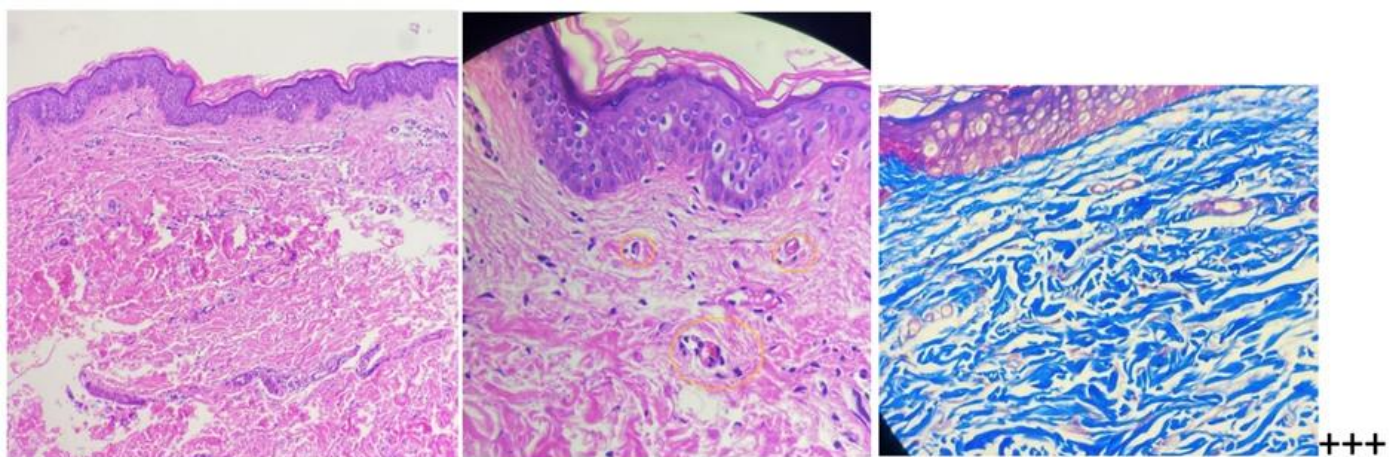
Immediately after the basal biopsy was taken, Aesthefill was injected with a fanning technique all over the inner arm area. After 7 days of application of the product a biopsy from the

treated area was analyzed via Hematoxylin and Eosin (H-E) and Trichrome stain and histological changes began to evidence (Figure 2).



**Figure 2:** Biopsy taken 7 days after the application of PDLA, H-E with different magnification (right side) and in masson trichrome Stain (left side).

21 Days after the application another biopsy was taken in the same area of PDLA application, and the histological changes were more promising (Figure 3).



**Figure 3:** Biopsy taken 21 days after the application of PDLA, H-E (two pictures right side) and in masson trichrome stain (left side).

PDLA (Aesthefill) was prepared with 7cc of sterile water and 1cc of lidocaine without epinephrin using the back-and-forth technique for dilution of the PDLA particles and it was injected immediately after the preparation on the inner arm of our patient with a fanning technique on the hypodermis layer. After 7 days of application of the product we took a sample on the same area

PDLA was applied and we began to evidence histological changes in the 2 types of Staining, Hematoxylin and Eosin (H-E) and Trichrome Stain. 21 Days after the application we took another biopsy in the same area of PDLA application, and the histological changes were more promising (Table 1).

**Table 1.** Comparison Chart of the Biopsies Taken (baseline, after 7 and 21 days).

	<b>Basal Biopsy (PDLA has not been applied)</b>	<b>Biopsy 1 (7 Days after application)</b>	<b>Biopsy 2 (21 Days after application)</b>
Fibroblasts	+	++	++
Elastic Fibers	+	++	+++
Collagen Fibers	+	++	+++
Minor Vessels	+	++	+++
Interstitial Lymphocytes	+	+	++
Perivascular Lymphocytes	+	+	+++

We can visualize changes in both types of stain hematoxylin and eosin (H-E) and Trichrome Stain, the amount of fibroblasts were double compared to the basal biopsy, elastic fibers, minor vessels, and collagen fibers were doubled after 7 days of application and tripled after 21 days of application.

### Discussion

Biostimulators induce collagen stimulation through a sub clinical inflammatory reaction. However the stimulation response is different in every patient and therefore the neo-tissue formation, immune system response can be absolutely different from one patient to another depending on age, gender and health condition, in this case our histological findings are promising and we were able to see the first response of collagen stimulation as early as 7 days ,however the age of the patient must be considered since the older the patients usually have a slower response to biostimulators due to the minor amount of fibroblasts. This case report allows us to respond with greater evidence to the query that patients ask daily in clinical practice about the time it takes for the biostimulator to give results once applied. Some pharmaceutical companies indicate that the changes begin 14 days and/or 21 days after the application of the biostimulator, and some professionals usually indicate that the changes occur after one month, two months or 3 months. This clinical case report allows us to visualize histological changes after the first week of application, these changes in the biopsies begin as early as 7 days and progressively increase over time.

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