

Volumization and Global Biostimulation Using Calcium Hydroxyapatite Filler: A Dual Approach for Hand Rejuvenation

Noury Adel, MSc

Summary: The present study was performed to evaluate the efficacy of injecting both nondiluted and diluted calcium hydroxyapatite filler into the dorsal surface of the hands in the same session, in addition to repeating the same approach along two different postoperative intervals (2 and 4 months). The study included 40 female patients who complained about the visibility of the veins and tendons, and loss of skin elasticity in their hands. First, 0.5 mL of nondiluted calcium hydroxyapatite filler was injected in each hand using a cannula through a single entry point (total of 1 mL for both hands), and the next step was injecting a diluted calcium hydroxyapatite. The same protocol was repeated at 2 and 4 months postoperative. All patients were followed up at the following intervals for recording their satisfaction score: 14 days, 2 months, 4 months, and 6 months. Postoperative measurements of the patient satisfaction score at 14 days follow-up showed a significant increase in their satisfaction; this was maintained up to 6 months postoperative. Combining both nondiluted and diluted calcium hydroxyapatite filler injections for hand rejuvenation in the same session may provide more stable results than using each formula alone or in different sessions. (*Plast Reconstr Surg Glob Open* 2023; 11:e5396; doi: 10.1097/GOX.0000000000005396; Published online 17 November 2023.)

INTRODUCTION

The aging process takes place in all areas of the body, and one of the most affected areas with aging is the hands, where the visibility of the veins and tendons is considered to be not aesthetically pleasing for many people.¹ Different fillers have been used for hand rejuvenation.² Calcium hydroxyapatite fillers such as Radiesse are used for both volumization (if injected in a nondiluted state) or biostimulation (if it is hyper diluted).³ In its pure form, the gel carrier is maintained, but the gel disperses if it becomes diluted.^{4,5}

Several types of studies reported using either nondiluted Radiesse or diluted Radiesse for hand rejuvenation, but so far, no single study describes the use of both forms in the same session for hand rejuvenation. That is why it is necessary for the current study to evaluate the use of both

formulas, giving both volumization for areas of atrophy and biostimulation for the skin quality.

MATERIALS

The study was comprised of 40 White female patients aged 45–57 years, complaining of the appearance of veins and tendons and loss of skin elasticity in their hands. Only patients with grade 4 according to the five-point hand grading scale⁶ were included in the study. The postoperative patient satisfaction score was recorded by asking the patient to report how satisfied they feel about the results of the treatment on a scale from 1 to 5:

- 1 = Not satisfied
- 2 = Less satisfied
- 3 = Quite satisfied
- 4 = Satisfied
- 5 = Very satisfied

Postoperative recording was performed at 14 days, 2 months, 4 months, and 6 months, using the same scoring grade.

Oral and Maxillofacial Surgery Specialist, Private Practice, Cairo, Egypt.

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Radiesse + filler (Merz Pharmaceuticals GMBH) was used. A single syringe was used for each patient at the baseline treatment, followed by another syringe at 2 months and another one at 4 months, so a total of three syringes were used for the whole treatment plan for each patient. A single point of entry was located 2 cm medial to the ulna border, where skin pinching was performed in step 1 and 2 only; then a 22 G 50-mm cannula (Softfil, France) was introduced. The injections were performed as follows:

- Step 1: Injecting 0.5mL of pure Radiesse into the right hand
- Step 2: Injecting 0.5mL of pure Radiesse into the left hand.
- Step 3: The rest of the syringe was used as a soft diluted blend (0.5mL pure Radiesse diluted with a 1.5mL saline), which was equally distributed in both hands.

The same protocol was repeated respectively at the 2 and 4 month follow-ups. All injections were performed in a series of linear retrograde and anterograde injections. The nondiluted Radiesse was placed at the dorsal intermediate laminae, whereas the diluted Radiesse was placed at the dorsal superficial laminae. (See Video [online], which shows the stages of the injection procedure.)

RESULTS

None of the patients reported any serious complications after any of the procedures at all stages. All patients

Takeaways

Question: Does the use of both nondiluted and diluted calcium hydroxyapatite filler in the same session for hand rejuvenation give superior results to the use of each alone?

Findings: The proposed technique provided good results up to 6 months.

Meaning: The combined use of nondiluted and diluted calcium hydroxyapatite filler for hand rejuvenation may provide better results than the use of each formula alone, provided that both formulas are injected in the same session.

reported a high satisfaction score at the 14-day follow-up; however, this score decreased at the 2-month follow-up followed by a regain in the score at the 4 and 6 month follow-ups (Figs. 1 and 2). Statistical analysis for the recorded data were done as shown in Table 1 and Figure 3.

DISCUSSION

The goal of this study was to evaluate the combined use of nondiluted and diluted calcium hydroxyapatite filler as an antiaging treatment for hand rejuvenation. The nondiluted component will give a volumizing effect for the atrophic areas, whereas the diluted component will give a biostimulation for the skin quality by collagen and elastin induction. It is of paramount importance to understand that because the calcium hydroxyapatite



Fig. 1. A patient's hands before the injection.



Fig. 2. Postoperative view of the hands after the combined use of nondiluted and diluted calcium hydroxyapatite filler.

Table 1. Comparison between Patient Satisfaction at Day 14 and Other Measurements in the Study Group

Follow-up Interval	Satisfaction Score	Paired Sample <i>t</i> Test			
		Mean Diff. ± SE	Change%	<i>t</i>	<i>P</i>
14 days	4.61 ± 0.33	—	—	—	—
2 months	2.00 ± 0.47	P1 -2.61 ± 0.44	-56.6%	6.681	<0.001*
4 months	4.40 ± 0.51	P2 -0.21 ± 0.04	-4.6%	1.683	0.367
6 months	4.79 ± 0.17	P3 0.18 ± 0.03	3.9%	1.415	0.537

P1: comparison between 14 days and 2 months; P2: comparison between 14 days and 4 months; P3: comparison between 14 days and 6 months.
 **P* < 0.001 is considered highly significant.

spheres are maintained in both formulas, this will lead to a continuous boosting of the collagen and elastin with a high degree of local and global stimulation for the tissue layers. In our study, we were aiming for a double-layered treatment to provide a synergism in terms of biostimulation on different tissue layers. We also emphasize that all our patients were followed up to 6 months and showed good results up to this period and that we only evaluated patient satisfaction. However, further studies with longer follow-up periods and larger sample sizes with further investigations using different software for skin analysis will help with better assessment for our proposed technique.

CONCLUSIONS

The use of both nondiluted and diluted Radiesse for hand rejuvenation will offer not only a volumization

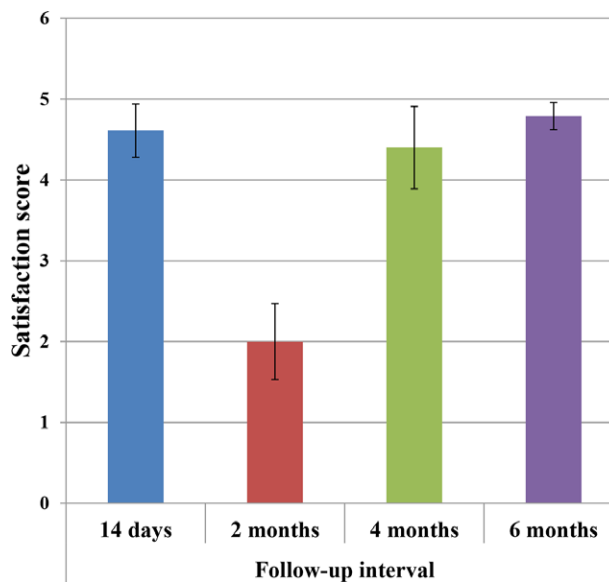


Fig. 3. Column chart showing the mean value and SD of patient satisfaction. Black line at the top indicates the error bar.

effect for the areas of volume loss because of the nondiluted component, but will also help in increasing the skin thickness and improving the skin elasticity due to the diluted component, both of which will provide synergism in terms of collagen and elastin formation.

Noury Adel, MSc
 Oral and Maxillofacial Surgery Specialist
 Private Practice
 Cairo, Egypt
 E-mail: dr.noury100@gmail.com

DISCLOSURE

The author has no financial interest to declare in relation to the content of this article.

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