Archives of Clinical & Experimental Dermatology

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OPEN ACCESS JOURNALS

Pilot Study | Vol 6 Iss 2
ISSN: 2583-6374
https://dx.doi.org/10.46527/2583-6374.163

Innovative Hybrid Filler Approach: Calcium Hydroxyapatite and Hyaluronic Acid with Multilayer Bio-Stimulation for Enhanced Body Contouring and Cellulite Reduction - Pilot Study

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Received: September 18, 2024; **Accepted:** November 05, 2024; **Published:** November 15, 2024

Abstract

The demand for body contouring, particularly buttock enhancement, has surged in recent years, reflecting evolving societal beauty ideals influenced by factors such as size, shape, and ethnicity. Modern patients prefer less invasive procedures that reduce downtime and complications. This pilot study explores the use of a hybrid solution combining calcium hydroxylapatite (CaHA) and hyaluronic acid (HA) for buttock enhancement, addressing issues such as sagging, cellulite, and contour irregularities. A pilot study was conducted with four patients who received subcutaneous superficial and deep injections of the hybrid solution. Results indicated significant improvements in volume and contour, with volumetric increases of up to 835.08 cc, alongside high patient satisfaction and minimal adverse effects. The findings suggest that this individualized approach effectively enhances buttock aesthetics while promoting skin texture and firmness. Further research is needed to assess the long-term efficacy of this technique.

Citation: de Vasconcelos RCF, Crocco EI, Sessa DD, et al. Innovative Hybrid Filler Approach: Calcium Hydroxyapatite and Hyaluronic Acid with Multilayer Bio-Stimulation for Enhanced Body Contouring and Cellulite Reduction - Pilot Study. Arc Clin Exp Dermatol. 2024;6(2):163.

1. Introduction

The demand for body contouring and enhancement procedures has significantly increased in recent years, with buttocks enhancement becoming one of the most popular treatments in dermatology and plastic surgery. Gluteal aesthetics is complex, evolving throughout history and varying depending on ethnicity and gender. Several factors, including the size, shape, and roundness of the buttocks, contribute to their attractiveness and society's idealization of the perfect body. Modern patients seeking buttocks enhancement are opting for less invasive procedures that offer minimal downtime, reduced pain, and lower risks of complications. Evaluating the buttocks often reveals multiple challenges, such as sagging, cellulite, contour irregularities, and volume loss. The complexity of treating cellulite, particularly in women, is heightened by underlying changes in the hypodermis and early fibrotic transformations, making aesthetic improvements in this area particularly difficult. Therefore, achieving satisfactory results requires a multifaceted approach, focusing not only on volume restoration but also on enhancing skin texture and firmness [1,2].

Radiesse™, a biocompatible, biodegradable, and resorbable calcium hydroxylapatite (CaHA) filler, has demonstrated effectiveness in improving both skin quality and contour by stimulating collagen production. While CaHA has been successfully used for facial rejuvenation and in body areas such as the arms, neck and abdomen, its application in buttocks contouring provides the advantage of combining deep tissue projection with subdermal biostimulation, addressing skin laxity and firmness. In 2019, Kim J. described a multilayer injection technique that included CaHA filler for ischial soft tissue treatment, demonstrating improvements in both skin quality and tissue volume. The intradermal and subdermal injections of CaHA promoted collagen production, leading to enhanced skin texture and elasticity [3].

Despite these benefits, there is currently no standardized protocol that customizes the dilution and depth of CaHA Hybrid application for buttocks contouring, tailored to each patient's unique needs. However, combining CaHA with hyaluronic acid (HA) has been shown to further optimize results. HA, already established in body contouring treatments, can enhance the immediate outcomes of the procedure, leading to higher levels of patient satisfaction. Studies have shown that while HA is temporary, it provides long-lasting improvements, with a significant portion of patients reporting satisfaction up to two years after treatment. This study proposes an individualized treatment approach using a hybrid solution of CaHA and HA to address aesthetic concerns such as volume loss, contour irregularities, and skin laxity in the buttocks, aiming to achieve optimal and lasting results [4,5].

2. Materials and Methods

In this pilot study, a total of four patients underwent buttocks enhancement using a combination of HA and CaHA in 2022. Written informed consent was obtained from all patients before enrollment. The patient profile consists of individuals who express concerns about loss of volume, irregular contours, and skin laxity in the gluteal area. Exclusion criteria for treatment with biostimulators and hyaluronic acid in the gluteal area were: pregnant individuals; the presence of infection at the treatment site; lactating individuals; patients with previous gluteal implants or other fillers and individuals with known allergies to biostimulators or hyaluronic acid; patients with a history of autoimmune diseases or bleeding disorders; patients on anticoagulant therapy or with skin conditions affecting the treatment area; and individuals who are not able to provide informed

consent or have unrealistic expectations regarding treatment outcomes. Inclusion criteria were patients over 18 years of age; complaints of volume loss, contour irregularities, or skin laxity in the gluteal area. 3D photographs were taken using the Vectra 3D XT software, Canfield Scientific Inc, NJ, USA, for measurement analysis.

Lidocaine without vasoconstrictor and saline solution was employed for dilution purposes. For deep-plane injections, 2 mL of Hyaluronic acid gel CPM (Cohesive Polydensifed Matrix) HAV (Belotero Volume®) was combined with 4 ml of diluent, and 3 ml of CaHA (Radiesse duo®) premixed was administered per side 1:2 proportion. For subdermal applications, 3 mL of CaHA was diluted with 12 mL of diluent (saline solution and lidocaine) and injected using the fanning technique with three entry points to address shape and skin laxity. The primary outcome measures encompassed improvements in buttock contour, skin laxity, and patient satisfaction, evaluated through clinical assessments and standardized patient questionnaires.

3. Results

In this case, the results demonstrate an improvement in both volume and shape, with clear evidence of repositioning as shown in the following images and measurements from the Vectra analysis. Pre-procedure measurements in the right and left profile, as well as posterior/ posterior-lateral views, indicate a baseline of 35.9 inches (FIG. A, C, E, G, I). Postprocedure, the same views revealed an increase to 36.9 inches, reflecting a gain of +1 inch (FIG. B, D, F, H, J). Furthermore, the posterior-lateral and posterior views showed significant volumetric increases of +835.08 cc on the right side and +599.76 cc on the left side (FIG. K, L, M, N, O, P).

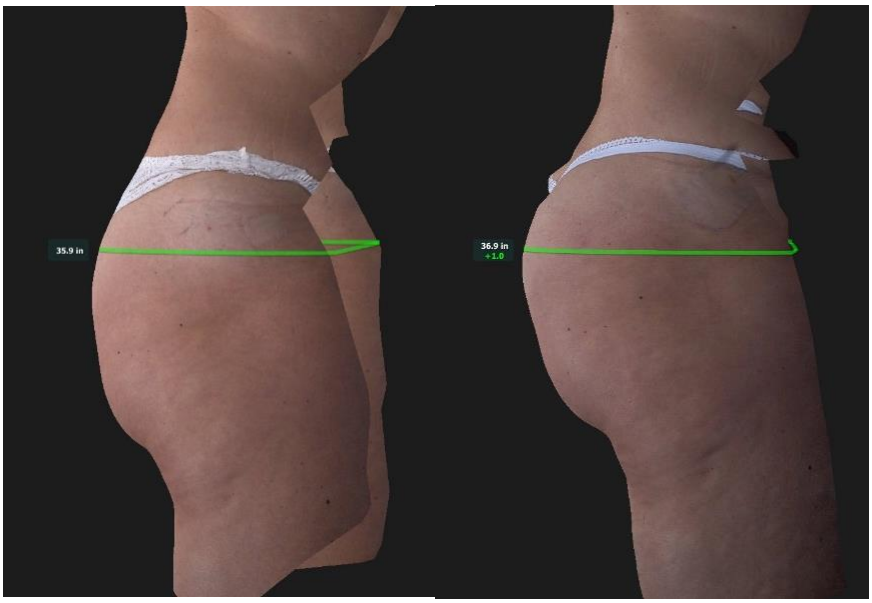
The procedure was met with a high degree of satisfaction among all four patients, with minimal adverse effects reported. Two cases presented mild edema and light bruising, which resolved without complications.

4. Discussion

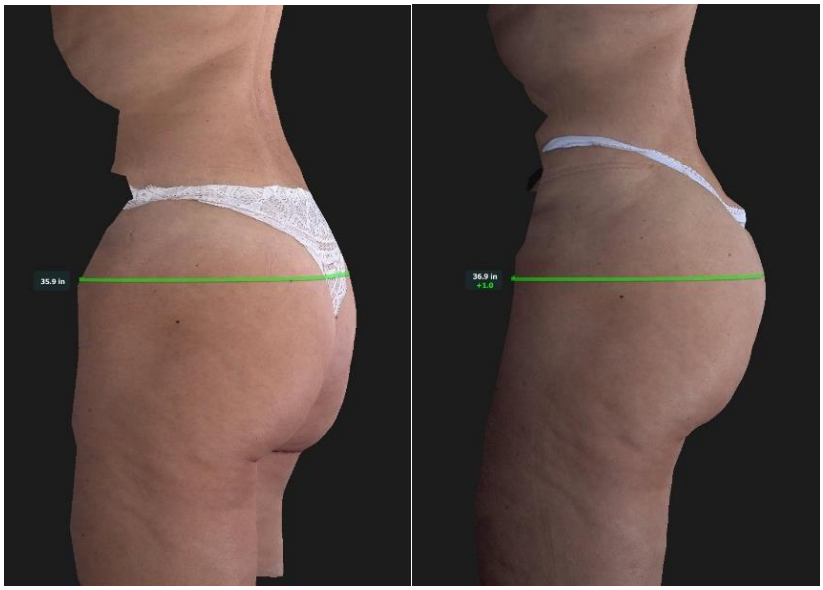
The results of this study indicate that the combination of HA and CaHA in a hybrid solution offers significant improvements in buttocks contour and skin laxity. The deep plane application of Hybrid CAHA - HA CPM HV, combined with the use of a diluted solution for subdermal biostimulation, appears to effectively address the multifaceted aesthetic challenges of this area [6,7]. The tailored dilution and injection techniques facilitated an individualized approach, optimizing volume replacement, dermal strengthening, and superficial fascia thickening [8,9]. Additionally, the results showed changes in volume measurements: The biostimulatory properties of CaHA play a key role in enhancing neocollagenesis, which not only improves skin quality but also aids in the restoration of volume. In particular, when combined with hyaluronic acid (HA), this hybrid approach becomes even more effective, especially in the deep fat compartment beneath the fascia. HA's ability to attract and retain water significantly complements CaHA's volumizing and collagen-stimulating effects, enhancing both the projection and contour of treated areas. This synergy proves especially beneficial in areas where precise volumization and skin texture improvement are. Studies confirm that the use of both substances in a hybrid approach can effectively address multiple aesthetic concerns, including skin laxity and contour irregularities in the gluteal area [3,7]. The use of varying dilutions and injection depths in this multilayered technique further optimizes the treatment. Customizing the approach to the patient's specific anatomical features allows for more precise outcomes. Literature supports this method, showing that deeper injections of CaHA

are effective for volumization, while superficial injections improve skin quality and laxity. Adding HA in these layers helps enhance the overall aesthetic by promoting smoother contours and better skin hydration, reinforcing the importance of combining these two agents in aesthetic treatments [1,2,4].

These findings demonstrate that the method is effective in enhancing volume and contour. Using lidocaine without vasoconstrictor and saline dilution allowed for greater spread precision and patient comfort during the procedure. However, the long-term effects of this approach warrant further investigation, particularly concerning the durability of results and the potential for cumulative collagen-stimulating effects with repeated treatments [10-12].

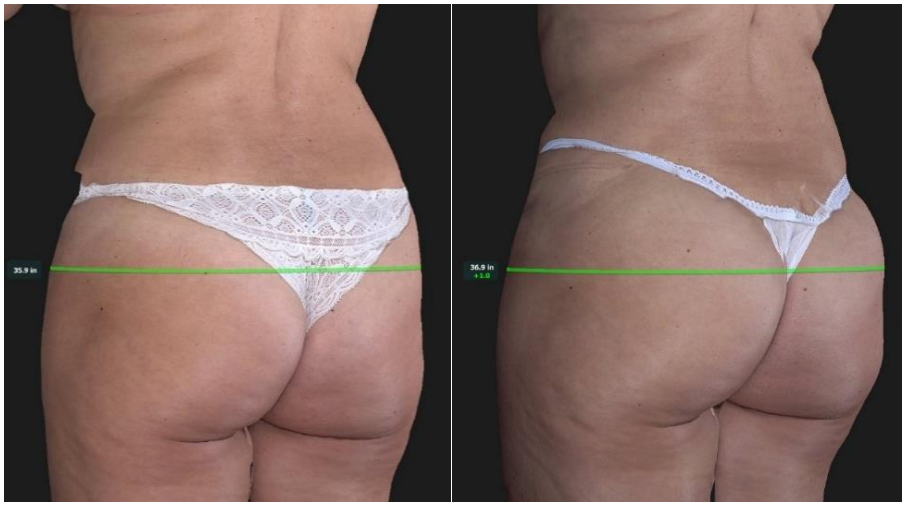


A: Right profile view - pre: 35.9 in B: Right profile view - post: 36.9 in (+1).



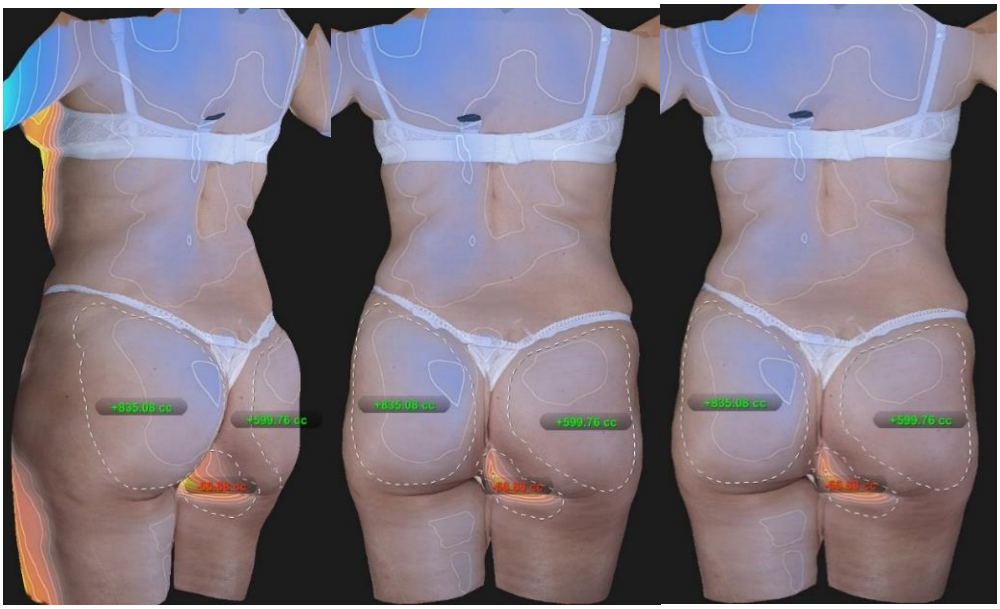
C: Left profile view - pre: 35.9 in D: Left profile view - post: 36.9 in (+1).

E: Posterior view - pre: 35.9 in F: Posterior view - post: 36.9 in (+1).

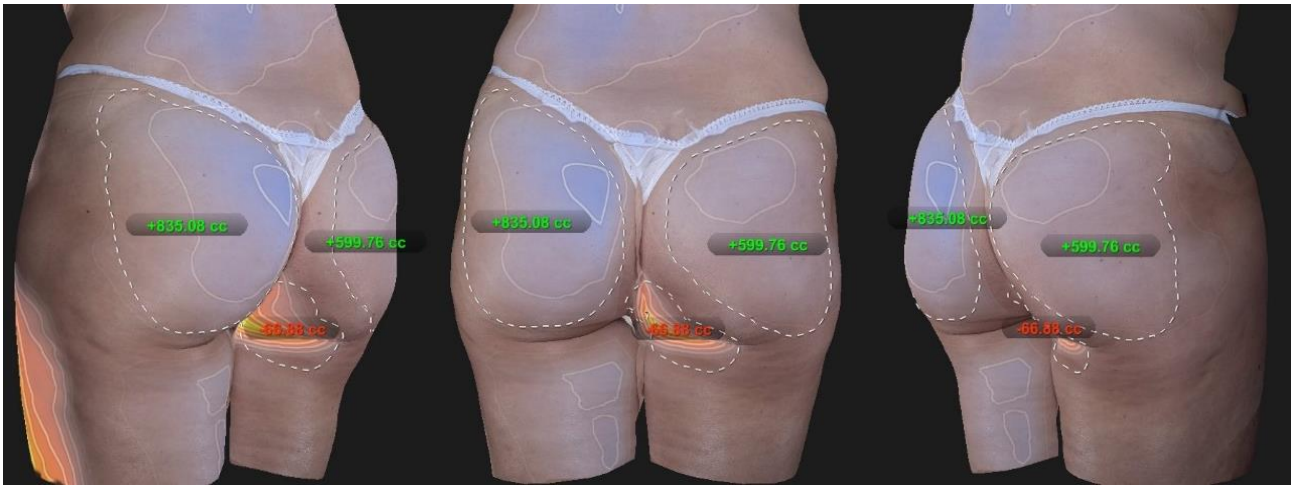


G: Posterior-lateral view - pre: 35.9 in H: Posterior-lateral view - post: 36.9 in (+1).

I: Posterior-lateral view - pre: 35.9 in J: Posterior-lateral view - post: 36.9 in (+1).



K: Left posterior-lateral view - post: +835.08 cc (Right); +599.76 cc (Left) L: Posterior view - post: +835.08 cc (Right); +599.76 cc (Left) M: Right posterior-lateral view - post: +835.08 cc (Right); +599.76 cc (Left).



N: Left posterior-lateral view - post: +835.08 cc (Right); +599.76 cc (Left) O: Posterior view - post: +835.08 cc (Right); +599.76 cc (Left) P: Right posterior-lateral view - post: +835.08 cc (Right); +599.76 cc (Left).

5. Conclusion

This study demonstrates that a hybrid solution of HA and CaHA, applied using a tailored dilution and injection protocol, can provide significant improvements in buttocks aesthetics, including contour enhancement and skin laxity reduction. The proposed method represents an innovative and comprehensive approach to buttocks beautification, with the potential to optimize patient outcomes and satisfaction. Future studies should focus on the long-term efficacy and safety of this treatment, as well as the development of standardized protocols for broader clinical application.

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