

Hyperdilute CaHA for the ageing neck

BY CIARA ABBOTT

Calcium hydroxylapatite (CaHA) has demonstrated strong biostimulatory effects; increasing collagen and elastin production, while promoting angiogenesis and proteoglycan formation [1]. Consequently, its application as a valuable aesthetic intervention for age-related skin changes is being increasingly adopted. At particular dilutions (when CaHA – for example Radiesse® - is mixed with normal saline) there is a greater degree of neocollagenesis, with optimal tissue integration [2]. For example, 'dilute' at a 1:1 ratio (CaHA:normal saline) or 'hyperdilute' at a 1:2 ratio (and above). This is because at increasing dilutions, the elastic modulus of the product reduces, with wider distribution through the tissues and enhancing interaction with fibroblasts [3].

The hyperdilute 1:2 formulation serves as an effective treatment for the ageing skin of the neck, an area of concern for many patients seeking aesthetic improvements in clinic. Below I outline my approach to patient selection, dilution and injection technique, and protocols for treatment.

Patient selection

A useful pre- and post-treatment scoring tool that assists in correct patient selection is the neck skin laxity (NSL) scale [4] (Figure 1). Patients scoring 1–3 tend to see the most effective outcomes from this treatment. Those in the more severe category scoring 4 are more likely to be a surgical candidate or may require multiple repeated sessions to obtain improvement. Patients with excessive submental fat should be excluded, as there is unlikely to any improvement for this indication.

Neck Skin Laxity

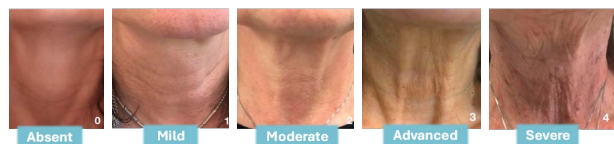


Figure 1: NSL scale.

Dilution process

Requirements:

- Two 5ml luer lock syringes
 - 1.5ml Radiesse®
 - Rapidfill connector
 - 3ml normal saline
 - 25g 50mm cannula
 - 23g blue introductory needle.
1. Attach the 1.5ml syringe of CaHA using the Rapidfill connector to a 5ml syringe and decant this into the larger syringe.
 2. With the second 5ml empty syringe, draw up 3ml of normal saline.
 3. Attach both 5ml syringes to one another using the Rapidfill connector.
 4. Now gently pass the two products back and forth, with at least 20 passes, to ensure a homogenous spread of the now hyperdiluted CaHA.
 5. Place all the product into one of the 5ml syringes (this will now contain 4.5ml of hyperdiluted CaHA in total).
 6. Reconnect this to the original Radiesse syringe so that this can be refilled to be used when injecting (for reduced extrusion force and precise controlled of delivery of product).



Figure 2: Patient treated with two sessions of 1:2 hyperdilute CaHA, eight weeks apart (photographs at 0 and 20 weeks).

Injection technique

Delivery of the hyperdilute CaHA is into the subdermal plane, therefore this a superficial injection technique, most easily performed using a cannula to ensure even distribution throughout the anterior neck skin.

1. Mark the midline of the neck, from the submandibular region inferiorly to the suprasternal notch.
2. Mark two to three zones (depending on the length of the patient's neck) from superior to inferior.
3. After creating an entry point with the 23g needle, pass the cannula in the subdermal plane, past the midline marking before beginning multiple retrograde passes of approx. 0.05ml per pass. The purpose of passing the midline before injecting product is to prevent accumulation of product down the centre, when injecting from both sides.
4. Each pass should be spread approximately 5mm apart from the previous one.
5. Deliver 2.25ml to both the left and right sides, in two to three injection zones.
6. Immediately post injection, clean and ensure the treatment area is given firm massage for approximately two to three minutes.

Treatment protocol

Depending on initial skin laxity severity, most patients will require two to three sessions of treatment approximately eight weeks apart. Following this protocol, results will be evident around three to six months, and continue to improve up to one year (Figure 2). At this point a repeat maintenance session can be administered every 10–12 months.

References

1. Yutskovskiy Y, Kogan E. Impvied neocollagenesis and skin mechanical properties after injection of diluted calcium hydroxylapatite in the neck and décolletage; a pilot study. *J Drugs Dermatol* 2017;**16**(1):68–74.
2. McCarthy AD, Soares DJ, Chandawarkar A, et al. Dilutional rheology of Radiesse: implications for regeneration and vascular safety. *J Cosmet Dermatol* 2024;**23**(6):1973–84.
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**:S32–41.
4. Guida S, Spadafora M, Longhitano S, et al. A validated photonic scale for the evaluation of neck skin laxity. *Dermatol Surg* 2021;**47**(5):e188–90.

AUTHOR



Dr Ciara Abbott, MBBS, BSc, MRCS, MRCGP, MBCAM,

Medical Aesthetics Doctor and
Medical Director of Barstable Medical Clinic, UK.

Declaration of competing interests: The author is a member of the Merz Aesthetics UK Teaching Faculty.