

Successful Treatment of Calcium Hydroxylapatite Nodules With Intralesional 5-Fluorouracil, Dexamethasone, and Triamcinolone

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ABSTRACT

Although infrequent, non-inflammatory nodules are potential complications associated with dermal filler injections. There is a lack of consensus in the literature regarding potential treatments to help resolve nodules associated with calcium hydroxylapatite (CaHA) filler injections. This case report describes the successful treatment of a non-inflammatory nodule related to CaHA injection using a combination of 5 fluorouracil, dexamethasone, and triamcinolone.

INTRODUCTION

In the past two decades, non-surgical cosmetic procedures such as injectable fillers have seen an enormous rise in popularity: 5.8 million injectable procedures were performed in 2013, up from 4.8 million in 2012 (ASAPS 2013). Part of the reason for this growth is due to the FDA approval of new fillers for temporary soft tissue augmentation, such as the semi-permanent filler, calcium hydroxylapatite (CaHa) in 2006.¹ Along with this rise in popularity comes an increase in the number of complications associated with these cosmetic procedures. Some of the adverse effects associated with soft tissue filler procedures include bruising, swelling, lumps, nodules, erythema, pain, necrosis, infection, and granuloma formation.²

A complication associated with increased morbidity and anxiety for the patient is nodule formation with the use of CaHa. Nodules are sometimes described as granulomas; however, this is incorrect, as granulomas typically appear later and require a histopathologic evaluation to be diagnosed.³ Granulomas can be secondary to infection or biofilm formation, whereas non-inflammatory nodules can be caused by overcorrection with filler, placement of product too superficially, or injection into a muscle.^{3,4}

The injection of CaHa intradermally or at the level of the dermal-subdermal junction induces neocollagenesis by activating fibroblasts.⁵ The placement of excess product in one area may form a nodule by activating this fibrohistiocytic process leading to collagen deposition. Though this complication is less common with more experienced injectors, it may still be one of the main reasons providers are discouraged from using this soft tissue filler versus hyaluronic acid.

Historically, it has been a challenge to dissolve potential nodules formed by CaHa. Treatments described in the literature include intralesional corticosteroids, needle disruption, saline in conjunction with erbium laser, and fractional carbon dioxide laser therapy with variable results.^{3,6-8} The authors propose a solution to alleviate non-inflammatory nodules caused by CaHa with an intralesional injection of 5-fluorouracil (5-FU), dexamethasone, and triamcinolone.

CASE REPORT

A 47-year-old male presented to our clinic for treatment of a nodule on the left mid jawline. He reported that the nodule developed three weeks after injection of CaHa to the lower jawline area. On examination, a 1.3 cm firm, round, mobile, endophytic nodule was noted on the left mid jawline. Upon firm palpation of the lesion, a yellowish-orange hue was noted underneath the skin. The patient denied any tenderness associated with palpation of the lesion. There were no skin changes, erythema, or sign of infection noted. A 1.6 mL solution was made using 1.0 mL of 5-FU 50 mg/mL, 0.5 mL of dexamethasone 4 mg/mL, and 0.1 mL of triamcinolone 10 mg/mL. The patient was treated with a single 0.2 mL injection directly into the nodule (Figure 1). The patient tolerated the procedure well, with no erythema or edema noted immediately after injection. When the patient returned the next day for evaluation, there was a marked reduction (~50%) in the size of the lesion (Figure 2). The patient had a second follow up one week later, and > 90% reduction of the lesion was noted. Complete resolution of the nodule was achieved by 6 weeks post-injection.

CONCLUSION

The management of complications secondary to soft tissue fillers varies on the basis of the type of filler used. In the case of hyaluronic acid, hyaluronidase has been used with good results to treat overcorrection or improperly placed product.³ However, with CaHa, there is no similar solution. The authors propose that a combined solution of 5-FU, triamcinolone, and dexamethasone may help to address this issue.

5-FU is a pyrimidine analog that exerts antimetabolic activity, leading to an inhibitory effect on human fibroblasts.⁹ The use of 5-FU and triamcinolone has been reported as an efficacious treatment option in non-inflammatory nodules.⁹ The addition of a corticosteroid to 5-FU has been described to reduce the risk of adverse effects associated with 5-FU such as burning sensation, pain, erythema, and hyperpigmentation.⁹ Dexamethasone may exhibit a complementary cytoprotective effect on fibroblasts when combined with triamcinolone; use of triamcinolone alone induced fibroblast apoptosis at a significantly higher level.¹⁰

We report the successful treatment of a non-inflammatory nodule related to CaHa injection using a combination of 5-FU, dexamethasone, and triamcinolone. Following treatment with this combination, no scarring, atrophy, telangiectasia, or dyspigmentation was noted in our patient. Further studies are necessary to determine the usefulness of this treatment method in other types of soft tissue filler nodules.

Figure-1. Nodule prior to treatment.



Figure-2. Nodule decreased in size by 50% when measured one day after injection of solution.



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