

# Hyaluronic Acid Gel Filler for Nipple Enhancement Following Breast Reconstruction



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## PRACTICE POINTS

- The use of injectable hyaluronic acid (HA) gel to restore 3-dimensional contour of the nipple following nipple-areola complex (NAC) reconstruction is a noninvasive procedure that contributes to patient well-being.
- The use of HA gel for NAC augmentation can be performed in an office setting and may eliminate the need for secondary reconstructive surgeries.

The loss of the 3-dimensional contour of the nipple-areola complex (NAC) following surgical breast reconstruction is a technical challenge for the physician and a psychological burden for many breast cancer patients. The use of injectable dermal fillers to enhance nipple projection is a simple noninvasive procedure with immediate and adjustable volume results that positively impact patient satisfaction. The utility and safety of injectable hyaluronic acid (HA) gel make it an ideal filler for restoring the natural feel and contour to the delicate structure of the NAC and in some cases may represent a simple solution following breast reconstruction.

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The most frequently used surgical techniques in nipple-areola complex (NAC) reconstruction involve the use of local tissue flaps and yield the fewest complications, though these techniques can be associated with up to a 75% loss in nipple projection over time.<sup>1</sup> In a best-case scenario for both the surgeon and the patient, the NAC is preserved during mastectomy; however, even when the tissues are spared, an eventual loss of nipple projection is expected due to atrophy and

contraction of the healing skin.<sup>2</sup> Loss of nipple projection is the most common attribute that patients dislike regarding their NAC reconstruction results. Additional efforts made to restore the natural look and feel of the NAC provides undeniable benefit to the patient in the form of improved body image and psychosocial well-being.<sup>3</sup>

Augmentation with a grafted material can include cartilage or fat (autologous grafts), calcium hydroxylapatite or polymethyl methacrylate (PMMA)(alloplastic grafts), and acellular dermal matrix or biologic collagen (allografts). Among these options, successive treatment with autologous fat has been shown to provide satisfactory projections over time with minimal complications.<sup>4</sup> However, an additional consideration associated with graft augmentation is the need for an additional surgical site (autologous grafts) or the possibility that graft material may not be compatible with subsequent breast examination techniques. For example, calcium hydroxylapatite is a radiopaque material that may interfere with the interpretation of radiography and mammography.<sup>5</sup>

The use of injectable hyaluronic acid (HA) dermal fillers to enhance nipple projection represents a noninvasive procedure with immediate and adjustable results. A variety of dermal fillers that do not interfere with subsequent breast imaging needs have already been successfully used for nipple reconstruction including HA 60% plus acrylic hydrogel 40%, PMMA microspheres in a bovine collagen 3.5% gel, and poly-L-lactic acid.<sup>5-7</sup>

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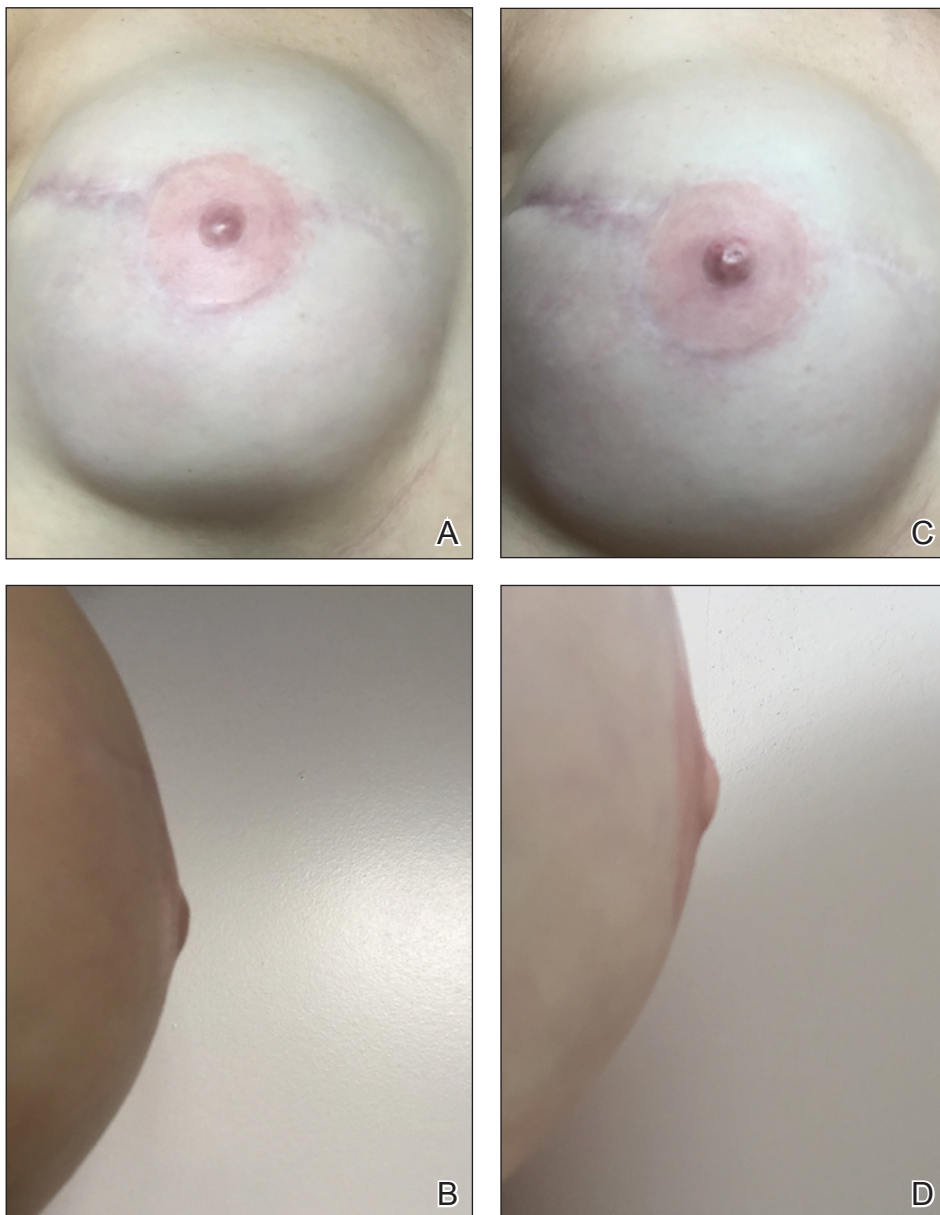
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The results achieved with HA 60% plus acrylic hydrogel 40% were as much as a 2.5-mm mean increase in nipple projection after 12 months for 70 nipples reconstructed using a small wedge from the labia minora.<sup>5</sup> In these treatments, an initial injection of 0.1 to 0.3 mL of filler into each nipple along with a 0.2-mL injection at the base of each nipple was made. Further optional treatments at 2 and 4 months after the initial injection were made using up to 0.3 mL additional volume depending on filler reabsorption.<sup>5</sup> Results achieved with PMMA microspheres in a bovine collagen 3.5% gel included a 1.6-mm mean increase in nipple projection at 9 months

versus baseline for 33 nipples in 23 patients, which involved up to 2 injections at baseline and again at 3 months.<sup>6</sup> Treatment with poly-L-lactic acid provided a 2.3-mm mean increase in nipple projection for 12 patients after 1 year of treatment, which involved 0.5-mL injections every 4 weeks over a series of 4 treatments.<sup>7</sup>

This report describes the technique and cosmetic outcome using an injectable HA gel to postoperatively restore the 3-dimensional contour of the nipple following surgical breast reconstruction. This chemically cross-linked, stabilized HA gel suspended in phosphate-buffered saline at a pH of 7 and a concentration



Baseline and postinjection contour of the right and left nipples. Nipple projection measured 1.7 mm (right breast)(A) and 1.8 mm (left breast)(B) before injection, and both measured 3.3 mm (C and D) after injection with hyaluronic acid gel.

of 20 mg/mL with lidocaine 0.3% is indicated for mid to deep dermal implantation for the correction of moderate to severe facial wrinkles and folds, such as the nasolabial folds.<sup>8</sup>

### Case Report

A 49-year-old woman with a history of breast cancer with a focal, high-grade ductal carcinoma in situ underwent a complete bilateral mastectomy. The sentinel lymph nodes were negative at the time of mastectomy. One year later, the patient elected to have breast and nipple-areola (flap) reconstruction. Following the reconstructive surgery, her nipples had become visibly atrophic and flat, and she was interested in cosmetic enhancement.

After informed consent had been obtained from the patient, a baseline measurement of each nipple was made while the patient was standing. Each nipple was then injected with up to 0.1 to 0.2 mL of HA gel filler using a 30-gauge needle inserted 2-mm deep (bilaterally) into each nipple. The patient tolerated the procedure well with no pain, bleeding, or bruising. Although HA gel filler contains lidocaine 0.3% and tricaine can further be used to ensure patient comfort, the nipple reconstruction surgery left the patient with little sensation in the treatment area. Rubbing alcohol was used to prepare the skin prior to the procedure, and fractionated coconut oil spray with a nonadherent dressing was used postprocedure.

Following the injection, an immediate increase of 1.6 and 1.5 mm in nipple projection in the right and left breasts, respectively, was achieved with HA gel. The nipple projection of the right breast was 1.7 mm before injection (Figure, A) and 3.3 mm immediately postinjection (Figure, C). The nipple projection of the left breast was 1.8 mm before injection (Figure, B) and 3.3 mm immediately postinjection (Figure, D).

### Comment

With a single treatment consisting of 0.2 mL or less of filler volume, the HA gel used in this procedure provided an immediate mean increase in nipple projection of 1.5 mm. Although our assessment involved a single patient evaluated at baseline and immediately postinjection of HA filler only, it is reasonable to assume that subsequent reinjections would provide results comparable to other fillers. Although other fillers that are

semipermanent (acrylic hydrogel) and nonbiodegradable (PMMA) make them more durable, these properties also make the augmentation less reversible in the case of overfilling. As with all dermal fillers, rare side effects associated with injection of HA gel filler could potentially include injection-site inflammation, extrusion of filler at the needle insertion site, minimal pain or discomfort during or after injections, bruising, swelling, or delayed-type hypersensitivity reaction. Ideally, HA gel is a soft transparent filler that is reversible with hyaluronidase, an advantage not shared by other filler materials.<sup>9</sup>

### Conclusion

Nipple augmentation with HA gel is a simple noninvasive procedure that can be performed postoperatively in an office setting. The use of HA gel to restore the 3-dimensional contour of the nipple also may eliminate the need for secondary NAC reconstructive surgery while contributing to patient well-being. With proper postoperative timing, the use of HA gel for this purpose represents a simple solution to a challenging problem that often accompanies breast reconstruction.

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