Reelevating the Mastectomy Flap: A Safe Technique for Improving Nipple-Areolar Complex Malposition after Nipple-Sparing Mastectomy

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INTRODUCTION

Over the past decade, nipple-sparing mastectomy (NSM) has become increasingly popular. Patients who undergo NSM and breast reconstruction report superior aesthetic results, improved psychosocial well-being, self-image, and sexual function. Nonetheless, NSM is not without risks and a common complication related to NSM with reconstruction is malposition of the nipple-areolar complex (NAC). This disfiguring complication is present in up to 75% of NSM with implant-based reconstruction. The NAC is most commonly displaced laterally and superiorly due to relative skin excess of the medial and inferior breast. A number of operative strategies to manage NAC malposition after implant-based reconstruction have been published, all of which involve making additional breast scars. We propose a simple method to reposition the displaced NAC after implant-based reconstruction by reelevating and redraping the entire mastectomy flap. This avoids a new visible breast incision and is safe and effective for mild-to-moderate malposition.

PATIENTS AND METHODS

This study was conducted in adherance with the guiding principles of the Declaration of Helsinki. A retrospective chart review of all patients undergoing NAC relocation in the senior author’s practice from January 2012 through June 2016 was performed. All patients who had partial submuscular, acellular dermal matrix (ADM)–assisted implant-based reconstruction were included. All patients had signed informed consent for nipple repositioning as part of staged implant-based breast reconstruction. Patient demographics, breast/NAC characteristics, surgical outcomes, and complications were recorded.

Operative Technique

NAC reposition is performed simultaneously with tissue expander or implant exchange. After prosthetic exchange is completed and the capsule is closed, the subcutaneous plane is infiltrated with tumescent solution of dilute lidocaine with epinephrine. A variable area of mastectomy flap is elevated away from the underlying pectoralis muscle.

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ADM (see video, Supplemental Digital Content 1, which demonstrates reelevation of the mastectomy flap to allow mobilization of the NAC over the breast mound. This video is available in the “Related Videos” section of the Full-Text article on PRSGlobalOpen.com or available at http://links.lww.com/PRSGO/A489). The previous mastectomy incision or a new inframammary fold incision is used (Fig. 1). Patients early in the series underwent limited undermining, but as the safety of the technique became evident, undermining became more extensive. Currently, we prefer to reelevate the entire mastectomy flap as greater mobility is gained with more undermining. The deep surface of the mastectomy flap and NAC are then sutured to the pectoralis muscle or ADM at the desired location with multiple 2-O absorbable quilting sutures at 2–3 cm intervals. The skin incision is closed without drains. In the last 15 patients, NAC position change was measured preoperatively and intraoperatively with the patient in the sitting position.

**RESULTS**

Thirty-four patients were identified, undergoing reposition of 44 NACs (Table 1). Except for 1 patient who underwent direct to implant reconstruction, all patients underwent 2-stage tissue expander to implant reconstruction. All patients were nonsmokers. Average time between nipple reposition and previous surgery was 115 days. Thirty-three breasts used inframammary fold incisions for nipple reposition and 37 had the entire flap undermined. Nineteen breasts had undergone a nipple delay procedure 2–3 weeks before mastectomy, as described by Jensen et al. and others.10

Mean follow-up was 421 days. There was no incidence of postoperative ischemia, necrosis, or seroma formation. No implants required explantation. In cases where NAC movement was measured, NAC could be reliably moved up to 3 cm. Two patients underwent this procedure twice, 1 year apart, to readvance 2 NACs. The aesthetic outcome was significantly improved in most patients (Figs. 2, 3), except in breasts with severe malposition or inelastic skin due to radiation.

**DISCUSSION**

NAC malposition can be a disappointing complication following NSM. Nonetheless, accurate nipple placement is sometimes elusive. The NAC position is dependent on the interaction between the skin envelope and the underlying breast mound and often migrates unpredictably during healing and the expansion process.

Other authors have described treatment of NAC malposition using crescentic mastopexy, transposition flaps, and free nipple grafts, all of which involve additional visible incisions.3–8 Our method treats the skin envelope as a
distinct, mobile entity and moves the NAC by redraping the mastectomy flap over the breast mound. This is typically performed during the second stage of a prosthesis-based reconstruction. In our experience, the NAC could be reliably moved up to 3 cm when the entire mastectomy flap was undermined. Repeating this procedure to gain more mobilization of the mastectomy flap is safe. Not all patients will obtain satisfactory results from this procedure. Those who have severe malposition or inelastic skin will need other alternative procedures. In mild-to-moderate cases of NAC malposition, this is a reasonable first-line procedure, since “no bridges are burned.”

Previous authors may have avoided undermining the NAC due to concerns regarding perfusion. We reason that a surgical “delay” is performed during the initial mastectomy, essentially creating a well-vascularized flap. The senior author works with 5 different oncologic breast surgeons with variable mastectomy skin flap thickness, so we believe this is universally safe. Reelevating the skin envelope several months postmastectomy does not result in further ischemic insult. None of the breasts in our series developed ischemia or necrosis after undergoing NAC and mastectomy flap reelevation. A formal nipple delay procedure had been performed 2–3 weeks before the mastectomy in 19 breasts. Although the rate of initial mastectomy flap necrosis postmastectomy was lower in the delay group, NAC repositioning did not cause ischemia in any of the breasts that did not initially undergo a nipple delay.

This study’s shortcomings are its retrospective, non-randomized nature and the variable degree of mastectomy flap elevation. Although this technique has not yet been performed in prepectoral implant reconstructions, we believe it is applicable as well.

**CONCLUSIONS**

Reelevating the mastectomy skin flap to correct malposition of the NAC after NSM is a safe and effective option and avoids additional scars. It allows redraping of the skin envelope over the implant and does not threaten perfusion of the nipple areolar complex. Its utility is limited by
the elasticity and availability of the skin envelope in the opposite vector of desired NAC movement. This technique can reliably move the NAC up to 3 cm and can be repeated to further improve NAC position.

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