Breast Surgery Under Local Anesthesia

Second-stage Implant Exchange, Nipple Flap Reconstruction, and Breast Augmentation

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KEYWORDS

• Breast reconstruction • Local anesthesia • Nipple • Areola • Nipple-areola complex (NAC) • Star flap • Implant exchange • Silicon breast implant

KEY POINTS

- Local anesthetic as an alternative to general or monitored anesthesia care (MAC) has been used for the past 30 years.
- Several health risks associated with general anesthesia/MACs are not present with local sedation, providing a safer option for the patient as well as the surgeon.
- When attempting to perform surgery under local anesthesia, consider the patient's desires and tolerance to being awake for the procedure. If anxiety is associated with the procedure or the needle, intravenous sedation is added to the anesthetic plan. A neurologic assessment of the breast mound area is performed, evaluating for light touch and pressure as well as pain.
- The star flap and the tattoo method for nipple-areola complex reconstruction, in conjunction with the Keller Funnel sizer to tissue expander exchange to silicon implant performed under local anesthesia, allow a single-site wound and minimal stress, time, and financial burden to the patient, but provide optimal aesthetic results and psychological benefits.

INTRODUCTION

As of 2011, more than 93,000 patients were undergoing breast reconstruction. Of those 93,000 patients, two-thirds of the procedures were implant based.[1] More than 60,000 of these patients were postmastectomy breast reconstructions.[2]

Implant-based reconstruction is more frequently performed in 2 stages, with the first tissue expander stage performed immediately after the mastectomies. Results for implant reconstruction have become reliable and have even improved in the setting of radiation therapy in certain instances.[3] Although performing the first stage of reconstruction usually requires general anesthesia, the second stage seems more amenable to performing the procedure under local anesthetic, which can be performed with small incisions with the techniques to be described in this article. Breast augmentation, which is more involved compared with second-stage breast implant reconstruction, has been shown to be performed successfully under local anesthetic.[4]

Reconstruction of the nipple-areola complex (NAC) is most frequently associated with breast cancer and, consequently, mastectomies, and it is also indicated in burn or trauma deformities, complications of reduction mammaplasties, and congenital or developmental disorders.[5] Increase in case

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numbers over the years has led to many techniques being developed and revised to accommodate the aesthetic objectives of a nipple-areolar reconstruction. The unique texture and color of the NAC makes developing an alternative challenging. Since first being documented by Adams[6] in 1949, the reconstruction of the areola has historically been accomplished via the nonoperative side sharing techniques, grafting from other sites, NAC saving or banking, dermabrasion, and tattooing. Some of these have been used in conjunction with ultraviolet light to facilitate better pigmentation. Reconstruction of the nipple has been achieved through grafting, centrally based flaps, subdermal pedicle flaps, internal nipple prostheses, or autogenous implants.[5] Although skin grafting in conjunction with areolar tattooing can provide an aesthetically pleasing result, it requires a skin graft to be harvested, which in turn produces an additional donor site wound. As an alternative, star flaps in combination with tattooing can provide an equally aesthetically pleasing result without the need for an added site wound.

Local anesthetic as an alternative to general or monitored anesthesia care (MAC) has been used for the past 30 years[4] and provides many benefits to the patient. Several of the health risks associated with general anesthesia/MACs are not present with local anesthetic, providing a safer option for the patient as well as the surgeon. In addition, as an outpatient procedure with no sedation, patients can go home immediately following the procedure, as opposed to general anesthesia/MACs with which the patients must recover from the anesthetic gasses in the postanesthesia care unit (PACU). Furthermore, patients are not required to abstain from the consumption of food or beverages after midnight on the night before their procedure, which alleviates the need for an additional change in the patient's routine. Patients benefit financially from the procedure being performed under local anesthesia as well. The costs to the patient are significantly less because an anesthesiologist is not necessary for the procedure; recovery in the PACU after stage 1, 2, or both is not necessary; and the only anesthetic is a local medication.

In breast reconstruction, it is therefore feasible to perform tissue expander exchange to permanent breast implant and third stage nipple flap reconstruction under local anesthesia with successful and reliable results. In our practice this is the usual method.

TREATMENT GOALS AND PLANNED OUTCOMES

Treatment goals for restoring the NAC and exchanging sizers for silicon implants are commonly the same regardless of the surgeon's technique. Position, size, shape, texture, pigmentation, permanent projection, scar position, and symmetry are essential components for aesthetically pleasing results. The end result must be created in a way that allows patients to readily incorporate the change into their healthy body images. This concentration on the optimization of psychological benefits has been shown to have a positive influence on the overall recovery course of women undergoing postmastectomy breast reconstruction.[7]

TISSUE EXPANDER EXCHANGE TO PERMANENT BREAST IMPLANT

Preoperative Planning

The patient is marked in the preoperative holding area with a surgical marker. We use an existing scar to make the incision and generally excise the scar with 1-mm margins in order to provide clean tissue for the subsequent closure. Patients are given 1 dose of prophylactic antibiotics covering gram positives, unless the patient has had a previous infection, in which case we refer to previous cultures to guide our choice of antibiotics. A recent analysis study that searched the literature for antibiotic regimens using 1 dose preoperatively, at 24 hours, and greater than 24 hours showed no significant difference between 24 hours and greater than 24 hours of antibiotic use after surgery. One dose was associated with higher infection rates.[1] However, the literature lacks any randomized trials to answer this question and most plastic surgeons continue to justify their antibiotic protocols based on their training and experience.

Patient Positioning and Procedure

Patients are placed on the operating room table in the supine position with their arms extended out on arm extensions and wrapped with gauze wraps to facilitate sitting the patient up during the procedure to look for symmetry. A chlorhexidine skin preparation is used and, if the procedure requires only a small incision and a simple exchange from a tissue expander to a permanent implants, a small amount of 1% lidocaine with 1:100,000 epinephrine mixture is injected into the incision line and deeper as the surgeon dissects down toward the muscle and capsule/acellular dermal junction. If concomitant revisions of the breast flaps are needed, intravenous sedation and intercostal blocks can be injected, as described by in a recent study.[4] The blocks are injected into the intercostal spaces 3 to 7 with a 1% lidocaine and 0.25% bupivacaine with 1:100,000 equal parts mixture. This mixture is injected at the midaxillary line and the