



Reconstruction of Areolar Projection Using a Purse-String Suture Technique

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Background: Nipple–areolar complex creation is the last step in the breast reconstruction process and plays a significant role in patients’ overall satisfaction. Although numerous surgical techniques have been described to create the nipple, very few procedures address the natural contour of the areola.

Methods: We describe a surgical technique using a purse-string suture for improved areolar projection. After creation of nipple–areolar complex using a CV flap, evenly spaced stab incisions are made in a circular pattern, approximately 5 mm outside of the boundary of the proposed areola. Using these incisions, a nonabsorbable purse-string suture is placed in the deep dermis. The diameter is cinched down to the desired measurement, providing areolar projection.

Results: Our experience using this technique has provided a satisfactory and stable projection of the areola in 10 patients with at least 1 year follow-up for each patient. There was no spitting of purse-string sutures in any of these patients, and there was no late areolar widening after at least 1 year follow-up. This provides a means for symmetry with an unreconstructed contralateral side.

Conclusions: Improving aesthetic outcomes for areola reconstruction may further refine our goals of an ideal breast reconstruction. (*Plast Reconstr Surg Glob Open* 2015;3:e453; doi: 10.1097/GOX.0000000000000431; Published online 16 July 2015.)

Nipple–areolar complex (NAC) creation is the last step in breast reconstruction after mastectomy and plays a significant role in patients’ overall satisfaction.¹ It is generally performed 3–4 months after the breast mound creation (either implant-based or autologous-based), often as an outpatient procedure and potentially under local anesthesia.² Multiple techniques, such as the cervical visor (CV), bell, star, skate, and S-flap, have been described

in the literature for NAC reconstruction.^{3–11} The goal of NAC reconstruction is to replicate the size, projection, color, and position of the contralateral breast or the preoperative condition. Although it is possible to replicate most of the parameters, loss of areolar and nipple projection continue to be significant challenges with the currently described techniques.^{12,13} Furthermore, the tension of the reconstructed breast tends to flatten projection over time. We have developed a simple purse-string suture technique to create sustained areolar projection and minimize tension on the healing nipple creation.

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SURGICAL TECHNIQUE

The authors of this article have a combined experience of more than 40 years of using the standard CV technique for nipple creation. Recently, we have added the areola projecting purse-string technique

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during the nipple creation. The procedure is generally done about 3 months after definitive surgery or revision of the breast mound. Positioning of the new NAC on the reconstructed breast is marked preoperatively in the upright position. Intraoperatively, the NAC markings are confirmed after injecting local anesthetic agents at the proposed sites of incisions. Using the standard CV technique,⁹ the flaps are elevated and then transposed and sutured in place. The wounds are closed in 2 layers with 4-0 Monocryl and 6-0 nylon.

The attention is then shifted to the creation of areolar projection. Using the contralateral areola diameter as a template (in unilateral reconstructions) or forming symmetric patterns (in bilateral reconstructions), 12–15 small curvilinear (around 2 mm each) skin incisions are evenly (about 8 mm) spaced approximately 5 mm outside of the desired areola diameter with an 11 blade scalpel. A double-armed 2-0 Ethibond/GoreTex or Prolene suture is then placed in either direction, through the previously created skin incisions, starting at 12-o'clock position. This is kept relatively deep to prevent suture spitting or showing through the skin. The purse-string suture is completed on meeting of both ends at the 6-o'clock position (Fig. 1). The areola diameter is then cinched down to the desired measurement, thereby elevating the areola and decreasing tension on the base of the nipple creation by countering the radial pull of the surrounding tissue. The curvilinear incisions are closed with 6-0 chromic sutures (Fig. 2). The NAC is then tattooed about 2 months after the above-mentioned procedure to complete the breast reconstruction. Fine-tuning of the areola diameter can be performed at this time.

RESULTS

In this series of 10 patients, they maintained good areolar projection secondary to the addition of purse-string suture technique, represented in preoperative and postoperative photographs (Figs. 3A, B). All the patients retained their projection after at least 1 year of follow-up. There was no spitting of purse-string sutures in any of these patients, and there was no late areolar widening after at least 1 year follow-up.

DISCUSSION

NAC creation is a critical step in breast reconstruction. In a study published by Wellisch et al,¹ the patients who had NAC creation as a part of their breast reconstruction reported significantly greater satisfaction compared with the patients who did not undergo NAC creation for their breast reconstruction. Distortion, flattening, and widening of the areola are commonly seen with periareolar surgery in mastopexy and reconstruction.^{14–16} Loss of natural areolar projection can result in a digression from the preoperative NAC appearance and may cause anxiety or distress to the patients.

Addition of a purse-string suture to the CV technique, along the proposed areolar margin, resulted in improved areolar projection. Few other papers in the literature discuss the use of purse-string sutures for improving both nipple and areola projection. Hammond et al¹⁷ suggested locking the outer periareolar incision to the inner areolar incision with GoreTex sutures in patients undergoing mastopexy to create a stable areolar size and shape that is resistant to change over time. In another study, Weinfeld et al¹⁸ suggested circumareolar incisions that are

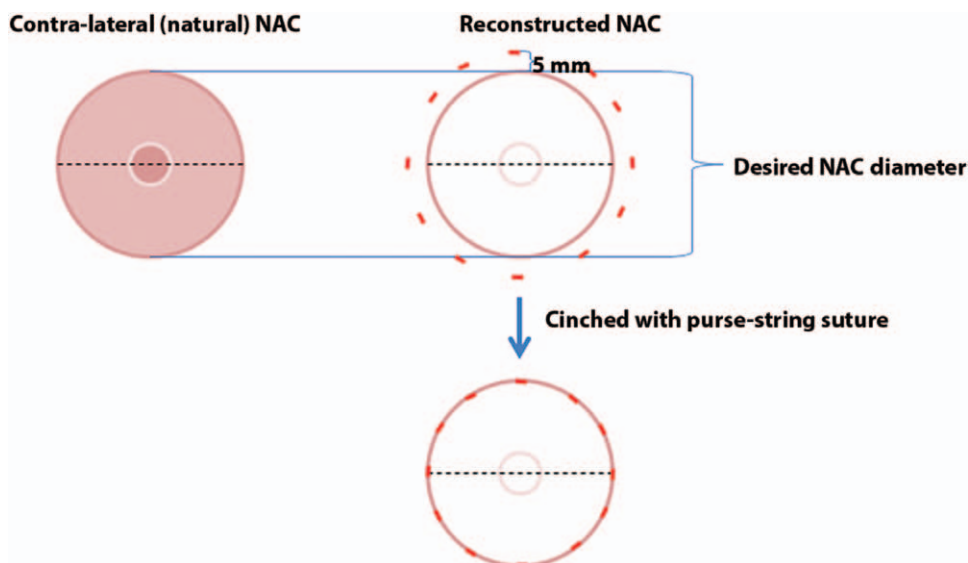


Fig. 1. Purse-string suture technique to improve areolar projection.



Fig. 2. Intraoperative image of a representative patient with purse-string suture technique for areolar projection.

made beveling outward from the areola to elevate the periareolar breast skin, which is then closed with a purse-string GoreTex suture. Van Laeken et al¹⁹ described a two-step technique using a purse-string suture technique for nipple projection with a full-thickness skin graft for areola reconstruction. In a different study, Hammond et al²⁰ also described a modified skate flap technique using a purse-string suture for nipple elevation.

Our purse-string suture technique to achieve a sustained areolar projection is reproducible and can be easily adopted by any reconstructive surgeon. It also can be used with both implant-based and autologous-based breast reconstructions. Even though we use a CV technique for nipple creation, our modification for areola projection can be applied to any other nipple creation techniques. We recommend using a nonabsorbable suture for achieving long-term areolar projection. Unlike other techniques, it does not require a separate skin graft harvest for areola creation and can be completed as a single operation under local anesthesia. We did not have suture spitting in any of the patients. However, long-term data would be more helpful and are a limitation of our study.

CONCLUSIONS

This article describes a novel technique for creation of natural areolar projection in the reconstructed breast. Usage of purse-string suture technique with permanent suture may result in sustained areolar projection, while decreasing tension on the base of the newly created nipple. The improved aesthetic outcomes of NAC creation can result in improved patient satisfaction.

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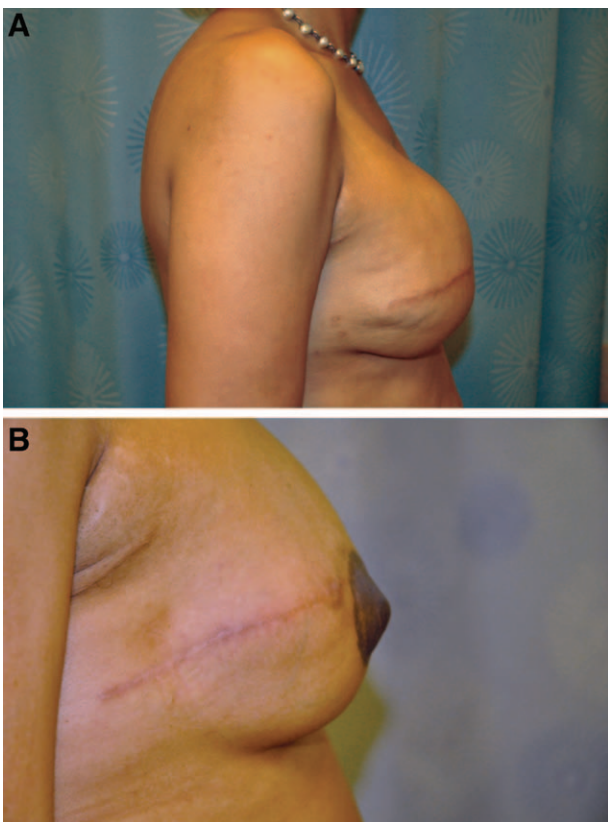


Fig. 3. Preoperative (A) and postoperative (B) picture of NAC reconstruction demonstrating good areolar projection.

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