

The Free Nipple Breast Reduction Technique Performed with Transfer of the Nipple-Areola Complex over the Superior or Superomedial Pedicles

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52.1 Introduction

Patients with gigantomastia refer to plastic surgeons due to problems with self-esteem caused by the negative body image, limitation in exercise and daily activities, and other physical complaints [1]. Numerous techniques for breast reduction have been developed until today, all with certain advantages and disadvantages [2–7]. Although there are many alternatives for patients with moderate breast hypertrophy, surgical options for patients with massive breast hypertrophy or severe ptosis are more limited. In this latter group of patients, the free nipple reduction technique described by Thorek in 1922 is still used frequently [8] despite disadvantages such as hypopigmentation, graft loss, lactation disorders, reduced sensitivity, and projection loss [9–11].

In the method described, the NAC is transferred over the full-thickness superomedial or superior pedicles which we believe provides

more satisfactory results with respect to projection. In this technique, it's possible to minimize the projection loss resulting from the conventional free nipple technique.

52.2 Technique

52.2.1 Patient Markings

The markings were made according to the classical Wise pattern (Figs. 52.1 and 52.2). With the patient standing, the sternal midline, inframammary fold, suprasternal notch, and breast meridian were marked. The new nipple position was determined as the point where the IMF intersected with the breast meridian. The amount of excision was determined by moving the breast medially and laterally. The length of the vertical limb beginning from the lower edge of the areola was 6.5 cm (9 cm from the nipple). The length of the superior or superomedial pedicle was determined according to the estimated amount of resection. The maximum pedicle length was determined as 10 cm to prevent compression in the vertical plane. The superomedial pedicle allowed a longer pedicle length due to the rotational advantage; mean length was 11 cm (range: 8–14 cm). In the superior pedicle, the base of the pedicle was planned as wide as the areolar opening, whereas it had an average width 8 cm in the superomedial pedicle. When deemed necessary, 8 × 8 cm rectangular

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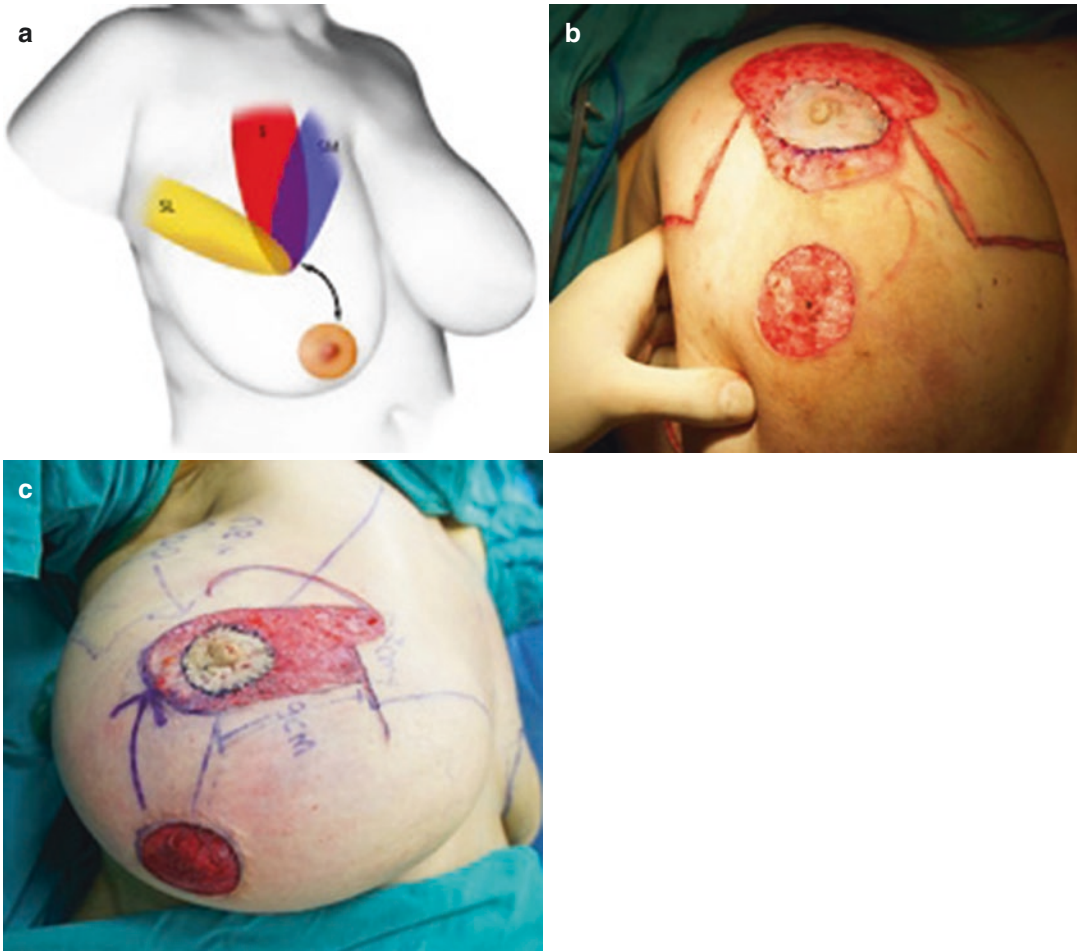


Fig. 52.1 (a) Major pedicle options for NAC transfer. *S* Superior, *SM* Superomedial, *SL* Superolateral. (b) Superior pedicle prepared for NAC transfer, (c) Superomedial pedicles prepared for NAC transfer

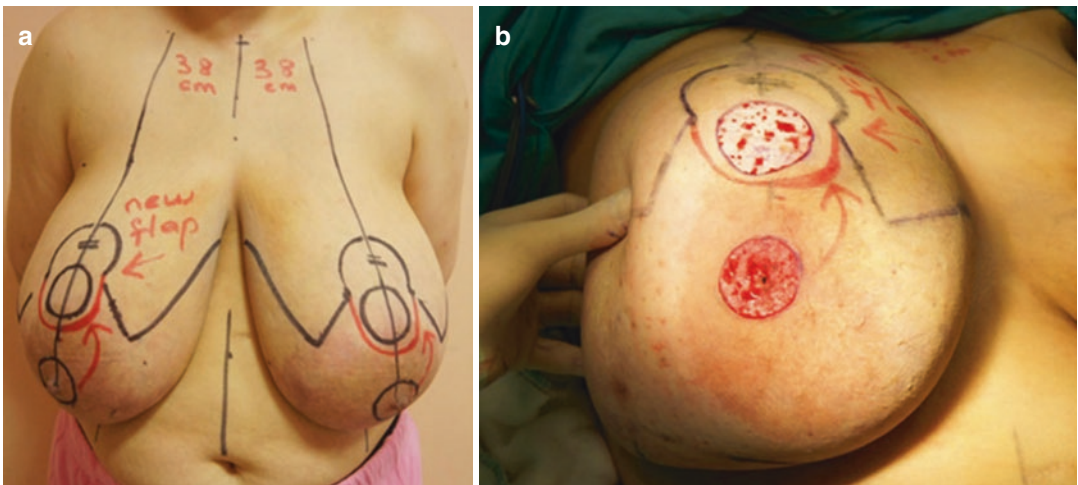


Fig. 52.2 (a) Preoperative markings. (b) NAC is taken as a full-thickness skin graft (FTSG). (c) 3 × 2 cm dermal rectangular flaps are prepared centrally to increase the nipple projection. (d) Adaptation of the NAC to its new place on the superior pedicle

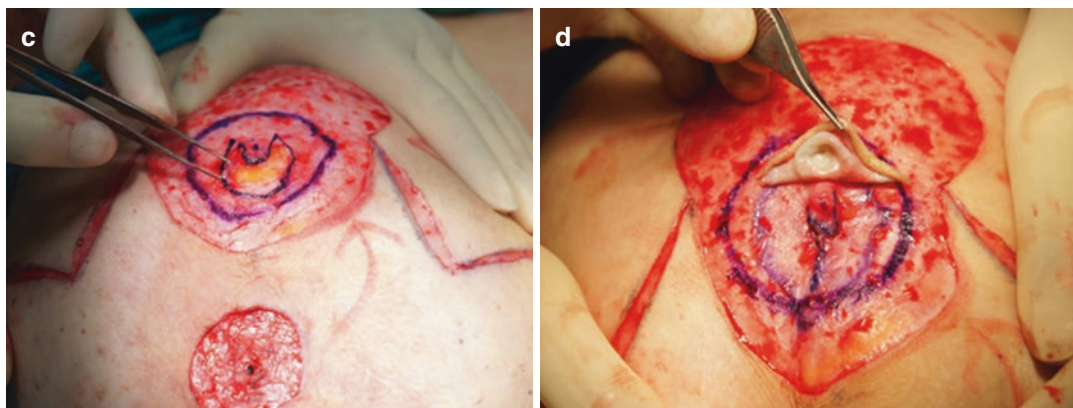


Fig. 52.2 (continued)

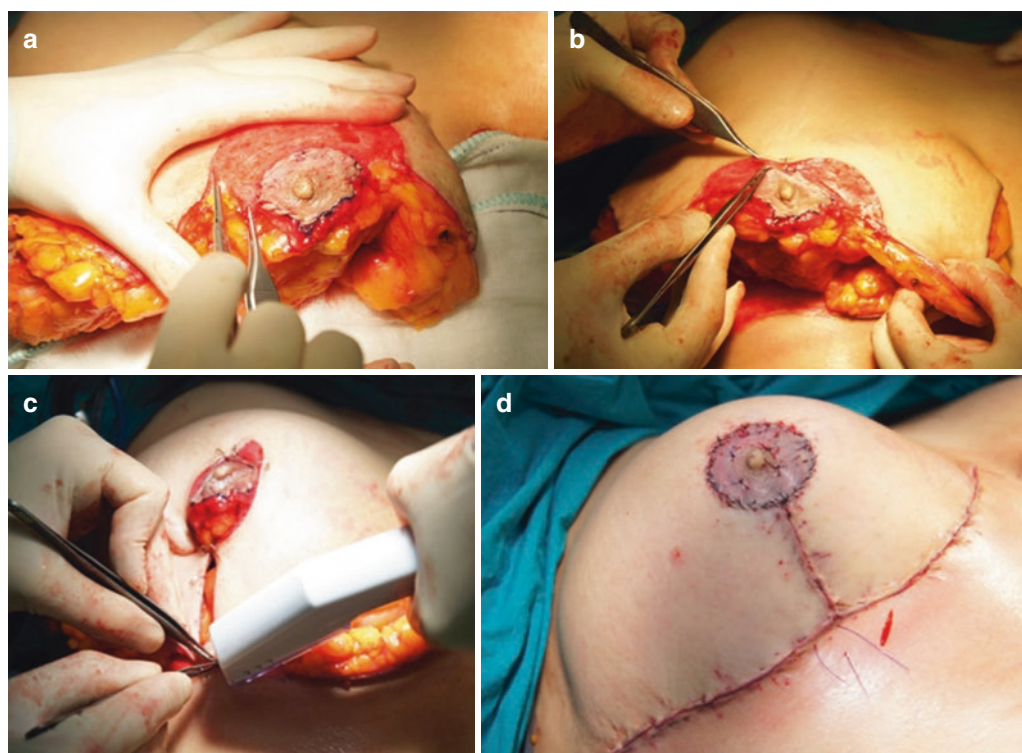


Fig. 52.3 (a) The glandular resections performed with leaving a full-thickness superior pedicle. (b) Adaptation of the NAC to its new place. (c) Skin flap closure. (d) Final result with considerable breast projection

flaps were planned to further increase the inferior projection.

52.2.2 Surgical Technique

Standard Wise pattern breast reduction skin incisions were made. First, the NAC was taken as a full-thickness skin graft (FTSG), (Fig. 52.2).

Then superior or superomedial flaps were prepared and deepithelialized. The new determined site of the areola was marked on these pedicles using a marker. In order to increase the nipple projection, 3×2 cm dermal rectangular flaps were prepared in the middle of the new NAC area. The NAC prepared as a FTSG was placed directly over this pedicle. Therefore the subsequent stages of the operation were converted into

a superior or superomedial pedicled reduction mammoplasty technique. The inferior, medial, and lateral glandular tissues around the pedicle were resected as a single piece (Fig. 52.3). Depending on the pedicle, the NAC was placed into its new location with rotational (superomedial pedicle) or direct vertical (superior pedicle). During shaping, care was taken to avoid excessive thinning of the full-thickness dermoglandular pedicles or shearing them from the thoracic wall. In order to decrease the tension in the NAC and to provide stabilization, the full-thickness pedicles were sutured to the pectoral fascia at the level of the second intercostal space using 2/0 PDS sutures. In conditions where there were severe skin laxity and inadequate projection,

8 × 8 cm inferior rectangular flaps were prepared as described above. These deepithelialized flaps were pulled upward and stabilized to the pectoral fascia at six points using 2/0 PDS. After hemostasis, glandular and skin sutures were placed, and vacuum drains were inserted. The NAC applied as a FTSG was covered using a tie-over dressing with mild compression.

52.2.3 Postoperative Care

The tie-over dressing on the nipple graft is removed at the postoperative seventh to tenth day. Antibacterial impregnated gauze dressing is applied on the NAC area daily. Drains are



Fig. 52.4 (a) Preoperative. (b) Thirteen months postoperative after reduction performed with the transfer of the NAC on the superomedial pedicle



Fig. 52.5 (a) Preoperative. (b) Fifteen months postoperative after reduction performed with the transfer of the NAC on the superior pedicle

removed at the discretion of the physician based on the amount. A surgical bra is instructed to be worn for a month. Patient results are demonstrated in Figs. 52.4, 52.5, and 52.6.

52.3 Discussion

There are numerous options described previously for breast reduction: the inferior, lateral, superolateral, superior, superomedial, central, and bipedicle ones are among the most commonly used [2–7, 12]. Most of these techniques provide satisfactory results in mild or moderate levels of macromastia. The main problem occurs in patients who require large amounts of resection.



Fig. 52.6 (a) Preoperative. (b) Fourteen months postoperative after reduction performed with the transfer of the NAC on the superior pedicle

In patients with severe hypertrophy, most of the pedicled techniques risk the NAC circulation due to pedicle length and greater amounts of resection.

In cases with severe gigantomastia, breast amputation and free nipple graft application is a useful and a reliable method; however, it has disadvantages including hypopigmentation, graft loss, failure to lactate, decreased sensation, and decreased breast projection [9–11]. Therefore some authors have tried to avoid the free nipple method and modified the pedicled reduction methods to achieve more reliable

and aesthetically more pleasing methods [10, 13–16]. Nahabedian et al. [13] modified the medial pedicle reduction mammoplasty method. He stated that the pedicle length and the associated limitation in the rotational arch limited the use of the superomedial pedicle in large breasts and tried to solve the problem by narrowing the pedicle base and detaching the superior connections of the pedicle. Gerzenshtein et al. [15] emphasized the contribution of the perforators to the NAC circulation in inferior pedicle breast reduction, and they safely used the inferior pedicle in severely hypertrophic breasts by maximal

preservation of the connections to the chest wall. In 2010, Wettstein et al. [14] published a series of 10 patients with average SN-N distance 44 cm, and who underwent a mean resection amount of 1450 grams. They showed that by thinning the pedicle, the superior pedicle breast reduction technique could be used in patients with massive hypertrophy and ptosis in a way that could provide superior fullness and projection. Basaran et al. [16] tried to solve this problem by introducing a patient-based approach in another study. The technique relies on determining the major pedicle by using a color Doppler USG and designing a pedicle that includes these vessels. This method has enabled a safer reduction in patients with severe macromastia.

Although various modifications of the pedicled breast reduction methods have been attempted, free nipple breast reduction method is unfortunately inevitable in some patients. The free nipple technique may be preferred especially in patients who have comorbidities such as diabetes mellitus, hypertension, vascular disease, and metabolic syndrome or in patients who are considered to be candidates for delayed wound healing and complications due to risk factors like obesity and smoking [17, 18]. The classical free nipple reduction mammoplasty often results in a widely based breast without projection, and recently various dermoglandular pedicles have been used for providing augmentation of the central breast mound [9, 11, 19–22]. These flaps are mostly inferior- or superior-based flaps; they have been dissected free from the pectoral fascia up to a certain extent in order to be shaped and transferred to where needed. For example, in 2007, Gorgu et al. [19] described the inferior dermaglandular pedicled modification for free nipple reduction mammoplasty. They folded the inferior dermaglandular pedicle which was planned 0.5 cm above the original inframammary sulcus and sutured it to the pectoralis major fascia. Romano et al. [23] placed the superiorly based dermal pedicles under the lateral and medial skin flaps and reported that they did not observe projection loss or flattening. Misirlioglu and Akoz [21] backfolded the superior dermaglandular pedicle, aiming to increase the central projection. Karsidag et al.

[22] described a modification of the free nipple technique where a superior dermaglandular flap was used with the vertical technique. They preserved the superior dermaglandular pedicle and sutured it to the fascia. In 1997, Abramson [24] used two dermaglandular pedicles, superior and inferior, to increase the projection. Guven et al. [9] modified the same technique by backfolding the superior flap and obtained successful results in 24 patients.

In our technique, we used a different approach to increase the projection where we could not avert a free nipple procedure in patients with severe gigantomastia. The NAC was transposed to the full-thickness superomedial or superior dermaglandular pedicles during the first stage, in contrast to other studies. After this stage, the surgical procedure resembled a pedicled breast reduction. The pedicle that carried the NAC graft could thus be reduced and thinned in a way customized for each patient. On the other hand, in all of the methods described above, after shaping and suturing of the flaps that increase the projection, the NAC is sutured directly to its final position as a standard. Although our technique shows similarities to the other techniques using the superior flaps, the thickness of the flap constructed in all of them has a thickness that ranges between 1 and 4 cm [9–11]. This is because the authors have seen this necessary for handling the flap [11, 22]. In contrast, the pedicles we prepared are pedicles that have not detached from their connections with the pectoral fascia. This has provided a significant amount of central breast tissue, thereby achieving a conical shape. The effect of this modification is not limited to only providing an effective projection. The pedicle that has been constructed feeds from both the superficial subcutaneous tissues (the second and third intercostal branches of the internal mammary artery and the lateral thoracic artery) and the deep pectoral perforators [16]. In clinical practice, this condition provides the best viability for the NAC that is placed as a full-thickness graft.

We believe that the technique we used has some advantages. The biggest advantages are its effectiveness in providing breast projection equivalent to pedicled breast reduction

techniques and allowing the surgeons to use the method that they are accustomed to and that they believe yields good results. Although superior and superomedial pedicle techniques are more popular today, some surgeons may prefer to use a different pedicle that they are more comfortable to work with. In addition, the internal mammary artery that provides significant perfusion to the breast was included in these two pedicles, which has been influential in our decision.

When choosing between two pedicles, the superomedial pedicle may be advantageous in achieving a larger breast due to its rotational advantage. The superior pedicle has folding limitation in a single plane and vertical axis. Therefore it should be remembered that a more limited flap may be constructed with the superior pedicle. Also, although this technique was applied to the Wise pattern incisions where the skin excisions are determined during patient markings, it should be remembered that the technique can be adapted to vertical pattern reductions. In that respect, this technique can be used by adapting to superolateral, central, or even inferior pedicle reduction techniques (Fig. 52.1).

Although we consider that we have obtained aesthetically successful results, the disadvantages of the free nipple technique, including loss of sensation and lactation and depigmentation risk, are valid also for our technique. Dog-ear deformity and minimal wound dehiscences especially in T-region were noted to be the most common complications with this technique.

Conclusions

The technique we described differs from the previous free nipple reduction mammoplasty modifications in many aspects. In the above-mentioned previous techniques, the designed dermoglandular flaps were used independently of the nipple-areola complex. In contrast, in this technique, the pedicles are used as a carrier and individually tailored for each patient. Therefore, various single or multiple pedicle designs can be utilized according to the preference of the surgeon and patient characteristics.

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