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A NEW MALE NIPPLE AREOLAR COMPLEX DESIGN IN TRANS MEN CHEST MASCULINIZATION

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Summary

Background. Chest-Wall Contouring is generally the first surgical step Trans Men sex reassignment surgery. In case of medium/big size and ptotic breast, free nipple graft technique is the procedure of choice. The position and aspect of neo-nipples are of paramount importance to resemble a male chest. The aim of the present paper was to develop and apply a simple new method of nipple-areola complex free graft.

Methods. From January 2018 to December 2020 a novel nipple areola complex (NAC) grafting technique was developed and used when dealing with breast amputation and NAC graft in patients with nipple projection and dimension > 1 cm. The graft was taken from the pigmented skin from the areola leaving a central 5 mm diameter of thoracic/recipient skin.

Results. 15 patients (30 NACs) were treated with the described new NACs graft technique. All patients healed uneventfully and none of them required revision surgery or correction.

Discussions. Traditional nipple grafts harvested from the areola are often flat or depressed. Nipple grafts harvested from large and projected female nipples are frequently associated with partial necrosis, graft discoloration and need for revision surgeries or tattoos. In our series, the use of a graft harvested from the pigmented skin of the areola and leaving a central 5 mm diameter of thoracic/recipient skin creates a 3D shadow effect similar to the one of a male nipple. This original and simple procedure can aid surgeons with reproducible nipple reconstructions in free nipple graft mastectomy in case of large nipples.

Key words: top surgery, chest masculinization, gender surgery, nipple reconstruction

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INTRODUCTION

Chest wall masculinizing surgery represents a general gender reassignment procedure that trans men patients request. Different surgical procedures can be used, depending on the patients' characteristics such as breast size and ptosis, nipple-areola complex position and age. They involve the mammary gland and skin excess removal and reshaping with repositioning of the nipple-areola (NAC) complex [1].

The reconstruction of a male NAC from the female one requires precise evaluation of the nipple projection, the NAC position, shape, and size [2,3].
In trans men chest wall contouring, free nipple grafting after double-incision mastectomy is required when dealing with ptotic breasts, in order to obtain a flat and pleasant chest contour with the NAC positioned in the correct male anatomic position [4,5].
Bustos et al. published a systematic review of techniques and outcomes dividing studies concerning nipple-areola reconstruction in transgender or gender-non conforming patients undergoing double-incision mastectomy in standard free nipple-areola grafts or alternative techniques [6].
Standard free nipple-areola grafts for nipple-areola reconstruction are indicated for medium-to-large size breasts with wide/ large NA or ptotic breasts. The procedure consists of en-bloc removal of both NAC, resizing of the areolas and re-grafting on the chest. The NAC is generally configured in a circular shape. Postoperative complication rate reported was low. Development of nipple necrosis (partial or full-thickness) ranged between 0 and 11.1%, whereas 13.6% of patients required NAC revision surgeries. Patients reported overall high satisfaction with good aesthetic outcomes [7].
Alternative free nipple-areola grafting techniques for nipple-areola reconstruction for aesthetic purposes have been reported in five studies.
Three of them describe a technique based on composite NAC grafts, the areola and the nipple are disassembled and separately resized before being grafted [8-10].
Another technique described the use of a modified skate local flap used to create the neo-nipple. This technique uses a free areolar graft from the native NACs to enclose the skate flap [12].
Another technique described the splitting of one of the native NACs into two halves. Each half is then converted into an oval shape and grafted to the chest [7].
Postoperative complications rate reported is also low. Development of nipple necrosis (partial or full-thickness) varied between 0 and 9.4%, while 10% of patients required NAC revision surgeries.
In present study, we introduce a novel, simple and reproducible technique to create an aesthetic male NAC in trans men patients with large nipples through free nipple grafting.

MATERIALS AND METHODS

From January 2018 to December 2020 a novel NAC reconstruction technique in trans men chest contouring was developed by the first author. All patients completed the psychiatric and legal pathway (and had a favorable court ruling). All patients were aged between 20 and 54, with an average age of 31. Trans men patients, with nipple projection > 1 cm and nipple diameter > 1 cm, undergoing double-incision mastectomy and free nipple grafting, were treated with a modified NAC graft reconstruction (Fig. 1).

Figure 1. Pre-operative photo: patient with a nipple projection and dimension > 1 cm.

Surgical technique

We performed the standard pre-operative markings in upright position (Fig. 2). We positioned the incision lines on the lower border of the pectoralis major muscle: the central part was horizontal whereas the lateral part was oblique and oriented cranially, in the direction of the pectoralis major fibers. All the surgeries were performed under general anesthesia. First of all, an oval-shaped area at the peripheral aspect of the NAC, measuring 2.5 x1.5 cm was bilaterally harvested as a full thickness

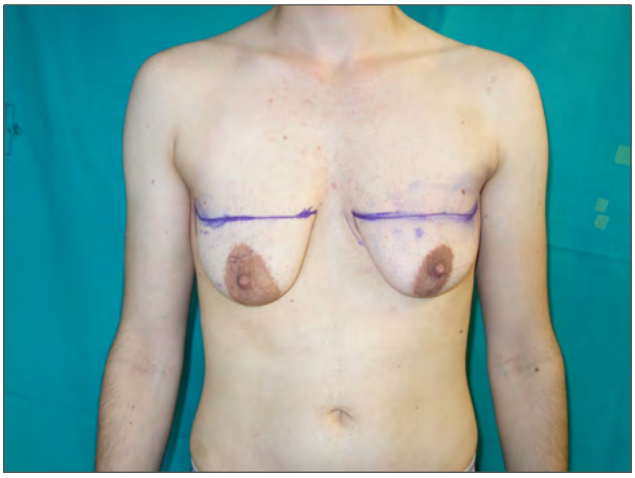

Figure 2. Pre-operative markings.

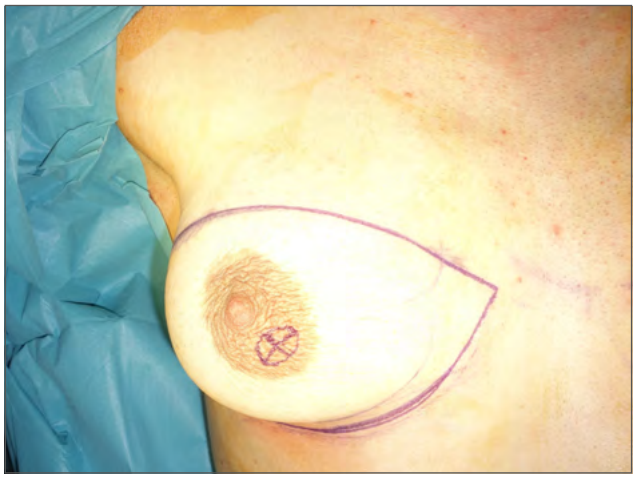

Figure 3. Intra-operative markings of the pigmented area to be harvested from the areola.

Figure 5. New NAC position drawn with the central 5 mm skin paddle.

skin graft at the periphery of the areola and then thinned (Fig. 3). During the double-incision mastectomy, we temporarily placed the grafts in saline solution. Once the double-incision mastectomy was performed (Fig. 4), the NAC new positions were drawn and the final NAC position was then chosen 1-1.5 cm cranially from the scar in an oblique elongated direction (Fig. 5), with the patient placed in a semi-upright position.

After the new NAC position was established and marked, an oval area of 2.5 x 1.5 cm was de-epithelialized leaving a central area of intact skin of approximately 5 mm in diameter (Fig. 6). At this point, the areola graft was positioned in the recipient area (Fig. 7), making a central hole with fine scissors allowing for the recipient skin to be placed precisely in the center of the graft (Fig. 8), as a neo-nipple. The skin grafts were then secured with 4-0 and 5-0 absorbable sutures [11] and a tie-over was

Figure 6. New NAC dehepitelized, leaving a central 5 mm skin paddle area.

Figure 4. Double-incision mastectomy performed.

Figure 7. Pigmented areola graft positioned.

Figure 8. A small incision in the central part of the graft is performed to accommodate the 5 mm skin paddle of the thorax.

Figure 9. Dressing with a traditional tie-over.

performed with non-adherent gauze, to fix the graft in place (Fig. 9).
All patients had a thoracic binder that was placed in theatre and used for at least for 30 days after surgery. NAC grafts were checked seven days after surgery. All the sutures both from the breast and the grafts were removed 14 days after surgery.

RESULTS

Between 2018 and 2020, 15 chest wall masculinization (30 NACs) with the described new nipple-areola graft technique were treated.
All NACs graft healed with no graft loss; compressive dressings were removed seven days postoperatively, and the stitch removal was performed 14 days after surgery. The average size was 3 x 2.5 cm for the areola, 4 mm for the diameter of the nipple. The NACs projection was evaluated with a ruler during the follow up

Figure 10. Post-operative at 6 months.

and we experienced no loss of projection, compared to the intraoperative assessment, since the new nipple is made of autologous thorax skin.
No NACs necrosis or NACs discolorations were observed, and no NAC revision surgery was necessary for any of the patients (Fig. 10).

DISCUSSION

One of the main issues encountered while performing chest masculinization surgery is the choice of the best surgical technique to achieve a pleasant final morphological result, with a NAC position and shape that most resembles the typical male one which is smaller, elliptical and more laterally located on the chest wall when compared to the female one [12,13].
In patients with ptotic and/or large breasts, free nipple grafting is the preferred technique as it allows to place it in the selected position with the chosen shape. The main problems of this technique, especially in patients with large nipples (diameter and projection > 1 cm) include loss of nipple projection and the difficulty in obtaining a pleasant aspect. Nowadays many techniques have been described, such as free NAC standard graft [14], modified NAC graft [15] in association with injectable substances [16,17]; however, there is not a scientific evidence regarding which type of nipple re-positioning and reconstruction should be

preferred when dealing with trans men chest masculinization.
In selected cases, the NAC grafting as described in the present paper may represent the technique of choice for safe and pleasant results. This simple and reliable technique allows for better and more precise tailoring of the size both of the nipple alone and of the entire nipple-areola-complex. Moreover, the skin placed at the center of the NAC adds a chromatic change, giving the graft a 3D "lights and shadows" effect.
The limitations of this study include its retrospective nature, the absence of patient-reported outcomes data and the comparison with other techniques. Further studies will be needed to define the outcomes.

CONCLUSIONS

When dealing with enlarged nipples, in chest masculinization surgery, when the double-incision mastectomy is selected, the NAC positioning and reconstruction technique described in the present article, in our hands, represents the gold standard.

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Conflict of interest statement

The Authors declare no conflict of interest.

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Author contributions

VR: A,W
CS: DT, W
LG: D,W
LS: D,W
GP: A,W

Abbreviations

A: conceived and designed the analysis
D: collected the data
DT: contributed data or analysis tool
S: performed the analysis
W: wrote the paper
O: other contribution (specify contribution in more detail)

Ethical consideration

The Authors declare that they have no conflicts of interest to disclose.
The study was registered within the internal database of audits held in the Hospital institution The paper is an observational longitudinal study, it follows the STROBE checklist for cohort studies.
All patients filled an informed valid consent prior to the surgery. This study was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki as revised in 2013.

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