The superior pedicle mammaplasty for the treatment of pedunculous breast

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AIM OF THE STUDY: *The superior pedicle mammaplasty is a technique frequently employed in the treatment of breast ptosis, associated or not with hypertrophy of the gland, followed by satisfactory results. This technique is normally not indicated in severe breast ptosis (pendulous breast) because of the excessive length of the pedicle supplying nipple-areola-complex (NAC), with the risk of ischemia. In these cases the standard technique is the free-nipple-graft mammaplasty. However, the deepen knowledge about vascular anatomy of the breast and the habitude to perform superior pedicle mammaplasty, induced the authors to indicate this technique even in these cases improving the aesthetic and functional outcomes.*
MATERIAL AND METHODS: *The authors present a series of 30 patient with pendulous breasts, with sternal notch-nipple distance equal or superior to 32 cm (45 cm maximum; mean value 35.1), treated with the superior pedicle mammaplasty with inverted "T" scar. The results confirm the reliability of superior pedicle for the nipple-areolar complex blood supply, associated with satisfactory aesthetic results due especially to the good breast projection.*
CONCLUSIONS: *They conclude that superior pedicle technique mammaplasty, even if normally not indicated in these cases, is instead suitable for the treatment of pendulous breasts with great sternal notch-nipple distance, permitting to take advantages of this technique.*

KEY WORDS: Breast ptosis, Breast vascularization, Mammaplasty, Superior pedicle.

Introduction

The free-nipple-graft mammaplasty is the surgical procedure usually indicated for the treatment of pendulous breast, wether or not associated with hypertrophy of the gland,.
The techniques based on the superior pedicle for nipple transposition are normally not indicated in these cases because of the excessive length of the pedicle imposed by ptosis. However, the free-nipple-graft mammaplasty is frequently associated with unsatisfactory aesthetic outcomes (insufficient breast and nipple projection, dyschromy of the areola, etc.) [1].
For this reason, thank to the deepen knowledge about vascular anatomy of the breast and the habitude to perform superior pedicle mammaplasty, we extend the indication of superior pedicle based technique to the above mentioned cases.
In this paper we present the results of this practice.

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Patients and methods

Thirty patients with severe breast ptosis associated with hypertrophy in 22 cases, underwent surgery between January 2003 and March 2005 Only breasts with a sternal notch-nipple distance equal or superior to 32 cm (45 cm maximum; mean value 35,1) were considered in this series (57 breasts). The age of patients ranged from 21 to 66, with an average of 38; nine were smokers and one diabetic. One woman was previously operated for the same indication with poor result. An average of 548 g of mammary tissue was removed, with a maximum of 1600 g and a minimum of 100 g. The maximum follow-up period was 24 month and the minimum 2 months with an average of 10,2 months.

SURGICAL TECHNIQUE

The same technique of superior pedicle mammaplasty with "T" inverted pattern scar, inspired to the one described by Winer [2] in 1973, was used for all patients. The main difference was the presence of glandular tissue deeply in the pedicle. After folding, repositioning and suturing the dermo-glandular pedicle and the areo-

la with surrounding periareolar skin, the medial and lateral pillars were sutured together with 2/3 absorbable stitches, to the pectoralis fascia on the breast axis, to increase the breast projection and reduce the breast base. A drain was placed in both breasts. Then the periareolar, vertical and the horizontal suture were performed.
The average length of procedure was 2,2 hours, and all patients were discharged four days postoperatively, after drains removal.

Results (Fig. 1 to 3)

The patients were normally examined by surgeon 2 days (first dressing), 15 days, 6 months and 12 months postoperatively. At 2 days postoperatively, one patient showed venous congestion of left areola and partial epidermolysis without consequences for final result. Another patient was noted 1 week after surgery, to have a small necrotic area in the inferior contour of right and left areola. She healed with local treatment (Flammazine® ointment and Jelonet® gauze) 40 days after surgery. Four patients had unilateral delayed wound healing inferiorly in vertical suture, which spontaneously healed.
All patients were satisfied or very satisfied with the result of mammaplasty. The judgment of surgical team (about shape, volume, position on thorax, symmetry, breast projection, scar quality) [3], was good/very good in 25 cases. All patients had a partial recovery of the sensibility of the nipple-areolar complex after month follow-up.
For three patients secondary surgery was required with local anesthesia, to treat lateral ear-dogs of horizontal scar and one of them showed also bilateral nipple retraction, treated, under general anesthesia, 14 month later by glandular reshaping with submammary access.
Two patients showed a bilateral increase of length of areola/submammary-fold distance, for which no secondary surgery was required.

Discussion

The correct positioning, with reliable vascularization, of nipple-areolar complex (NAC) is an important problem of all mammaplasty procedures.
In 1930, Schwarzmann [4] described a surgical procedure for mammaplasty or mastopexy in which the viability of the nipple-areolar complex was only based on dermal circulation. He demonstrated that the NAC had an alternative blood supply to that one coming from breast parenchyma, and that the correct positioning of the NAC was possible regardless of the type of glandular excision.
Weiner [2], in 1973, noting the good viability of NAC in subcutaneous mastectomy, described a *single superiorly-based dermal pedicle.* In this procedure the blood supply of the nipple was based on superior-dermal pedicle permitting a great mobility for nipple transposition, undistorted pedicle and no retraction of the inferior skin edges with easy modeling of breast cone associated with satisfactory aesthetic results.
Hugo [5], modified the technique of McKissock, cutting the inferior connection of the vertical double pedicle, repositioning the NAC to its new location with only superior pedicle (12 cm average length, range 5/18 cm). No NAC loss was reported in his series.
After them, many authors used and described surgical procedures of mammaplasty based on the same criteria, with various modifications [6,7,8].

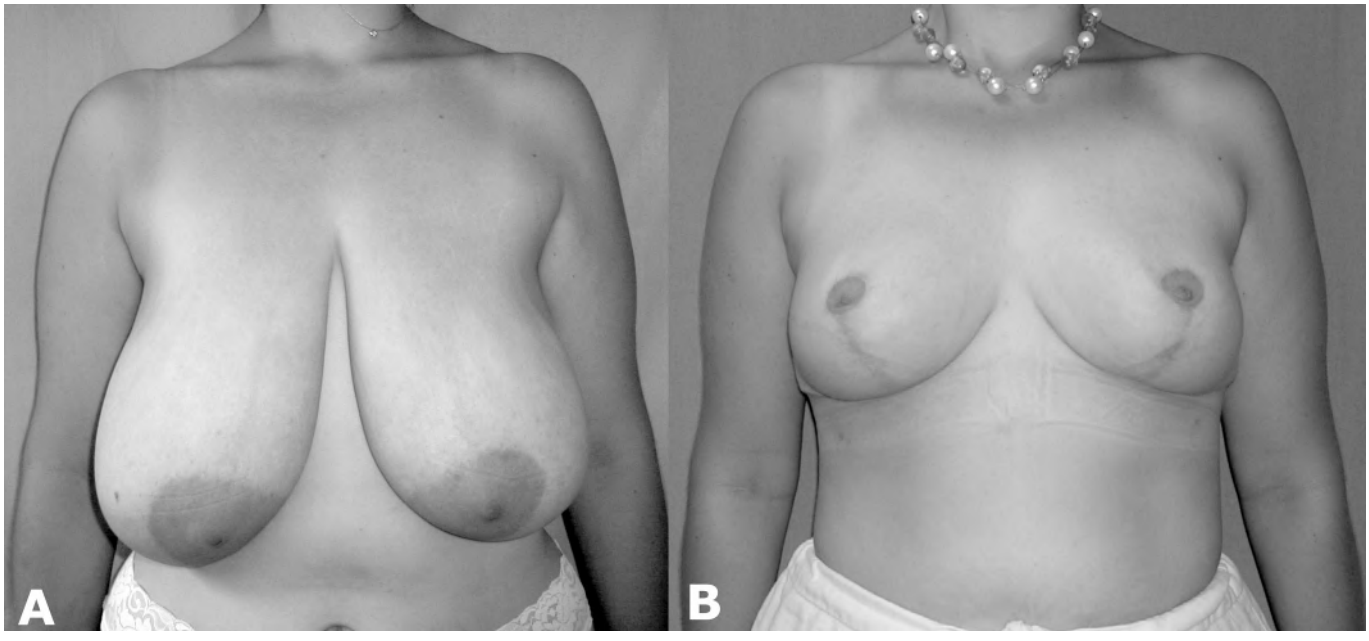

Fig. 1: A): A 31 year-old, ex smoker, distance SN/N 38 cm right; 36 cm left. B): result after 1 year (tissue removed 700g right and 680g left).

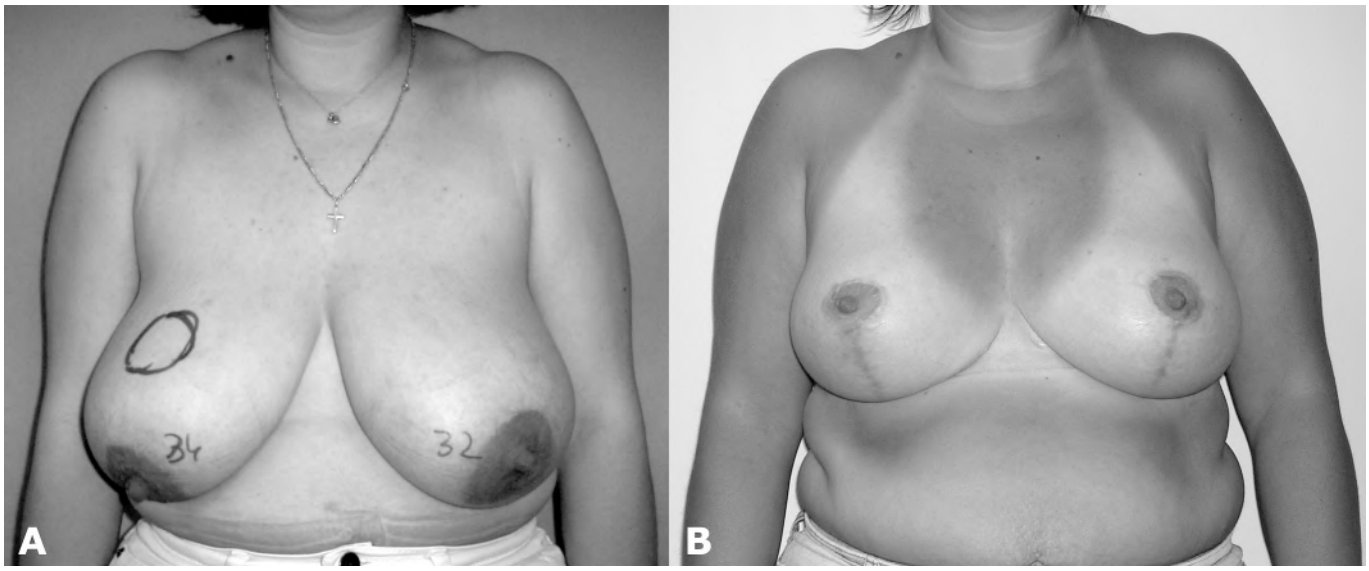

Fig. 1: A): A 30 year-old, distance SN/N 34 cm right; 32 cm left. B): result after 6 months (tissue removed 670g right and 730g left).

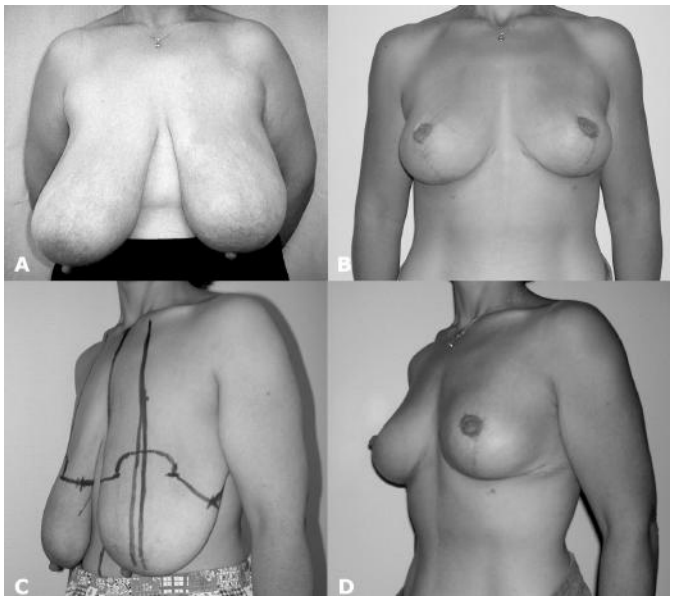

Fig. 1: A) A: 36 year-old, smoker, slight asymmetry, distance SN/N 43 cm right; 41 cm left. B): result after 1 year (tissue removed 520g right and 480g left). C): Lateral view before and after surgery (D) showing the satisfactory projection of the breast.

More recently, Ricbourg [9] confirmed, with a very detailed anatomic study of the breast vascularization, the clinical available findings about reliability of the dermal arterial supply of the nipple-areolar complex, pointing the role of cutaneoglandular plexus.

Even if Nakajima [10] has affirmed later that only lateral or medial dermal pedicle can ensure blood supply for nipple-areolar complex, the random pattern of the cutaneoglandular system and clinical observations prove that it doesn't exist vinculum about the orientation of the pedicle supplying the NAC.

The venous drainage in this kind of flaps is carried out by superficial venous plexus, which becomes functionally important in certain conditions, like the mammary hypertrophy [9]. The superficial venous plexus, that constitute the Haller's circle around the areola, is more developed in superior quadrants of the breast, regardless of the age [6,10].

In our series all patients had severe breast ptosis associated with hypertrophy in 22 cases. They were an indication for a free nipple graft mammaplasty, because of increased sternal notch-to-nipple distance.

We have performed the superior pedicle technique even in these cases because of observation about reliability of the blood supply of the dermo-glandular pedicle and the very satisfactory results, especially in term of breast projection. In addition, the superior pedicle seems more logical to use because it relocates tissues to their original position and allows easier secondary surgery in case of recurrent ptosis and excess of volume [7].

The glandular tissue included in the pedicle; may improve the reliability of its blood supply, for the presence of the pre-glandular arterial system [9]. The increased thickness of the pedicle has the advantage to relocate a large amount of well vascularized mammary tissue centrally and deeply in the new breast cone, improving projection.

No patients complain about the inverted "T" scar. They, principally, considered the shape of the breast and the new location of the NAC. The inverted "T" method is believed to be associated with a lack of projection and squareness of the inferior breast [11]. In our series the approach of glandular pillars and the relocation of posterior breast amount, contrasted these undesired outcomes. The "T" scar allows easy reshaping of inferior contour, especially in large breasts with lateral prolongation.

Conclusions

We believe that the superior dermo-glandular pedicle mammaplasty is a suitable solution in the treatment of severe ptosis (up to 45 cm) with pendulous breast thanks to the reliability of vascular plexuses supplying the nipple-areolar complex. This well known procedure gives predictable and satisfactory aesthetic results also in these cases, where it is normally contraindicated,

Riassunto

La mammoplastica a peduncolo superiore è una tecnica frequentemente utilizzata nel trattamento delle ptosi mammarie associate o meno ad ipertrofia e che dà risultati soddisfacenti. Essa non trova però generalmente indicazione nelle ptosi mammarie severe, data la eccessiva lunghezza del peduncolo che irrora il Complesso Areola Capezzolo (CAC) ed il conseguente rischio di ischemia. In questi casi sarebbe preferibile la tecnica dell'innesto libero del CAC.
Tuttavia, le sempre più approfondite conoscenze sull'anatomia vascolare della mammella e l'esperienza acquisita con questa tecnica a peduncolo superiore, hanno indotto gli autori a utilizzarla anche nelle ptosi importanti ottenendo dei risultati estetici e funzionali più soddisfacenti rispetto alla tecnica dell'innesto libero del CAC.
In questo lavoro vengono presentati 30 casi di ptosi mammaria severa (mammelle pendule) in cui la distanza tra il capezzolo e l'incisura sternale era uguale o superiore a 32 cm (max 45 cm; media 35,1 cm), trattati con la tecnica di mammoplastica a peduncolo superiore con cicatrice a "T" invertita. La tecnica impiegata era ispirata a quella descritta da Weiner nel 1973, con alcune modifiche tra cui l'inclusione di tessuto ghiandolare nel contesto del peduncolo. I risultati sono stati buoni/molto buoni in 25 casi. La vascolarizzazione del complesso areola capezzolo è sempre stata soddisfacente ed in un solo caso è stata osservata bilateralmente una piccola area di necrosi nel contorno inferiore della mammella, guarita spontaneamente e senza conseguenze sul risultato finale.

Queste osservazioni confermano che la mammoplastica a peduncolo superiore rappresenta una tecnica appropriata per il trattamento delle ptosi severe (fino a 45 cm) grazie all'affidabilità dei plessi vascolari che irrorano il complesso areola capezzolo. Anche in questi casi, in cui sarebbe formalmente controindicata, questa conosciuta e diffusa tecnica permette di ottenere dei risultati estetici prevedibili e soddisfacenti.

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