

## Original Article

# Periareolar augmentation mastopexy: A new approach dealing with the cases as tuberous breasts

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## ABSTRACT

**Background:** Periareolar augmentation mastopexy is one of the most demanded operations at Plastic Surgery clinics. Nevertheless, it is one of the leads of malpractice claims in United States caused by the high patient expectations and the standard surgical techniques which may result in common complications. The aim of this report is to present a new surgical approach to solve these complications. **Methods:** After establishing a working hypothesis, we performed a revision study of our patients and we came to the following conclusion: in order to perform a periareolar mastopexy for ptosis correction, breast has to be tuberous at any level and to have abnormally short inferior pole. These findings may explain the main complications from periareolar augmentation mastopexy with the standard surgical techniques. Consequently, we started a prospective observational study including 56 patients following a new surgical technique which deals the cases as tuberous breasts. **Results:** During three years, fifty-six periareolar mastopexies were performed with this new surgical approach with one year follow-up. No major complications were observed and 40 of the patients (71%) described the results as very positive. **Conclusion:** "If a periareolar mastopexy can be performed, then it must be a tuberous breast". According to this, a new surgical technique for periareolar augmentation mastopexy has been developed obtaining an improvement in our surgical results and achieving a totally different view on this pathology, which has not been reported in literature yet.

## KEY WORDS

Aesthetic breast surgery; anomalies; breast base; periareolar mastopexy; ptosis; tuberous breast

## INTRODUCTION


Periareolar augmentation mastopexy is one of the most demanded operations at plastic surgery clinics. Many new patients, generally young (in

their 30's) and after a recent pregnancy, come to the plastic surgeon to restore their breasts to previous firm appearances and restoration without any scar. This seems logical for patients coming with moderate ptosis

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and wishing to have breast augmentation as well or at least their appearance before maternity.

Nevertheless, periareolar augmentation mastopexy is one of the leading contributors for malpractice claims in the United States. High patient expectations combined with less elaborate procedures may not always achieve desired goals.<sup>[1,2]</sup>

Despite the large number of published articles and different surgical techniques described for periareolar augmentation mastopexy<sup>[3-6]</sup> the outcomes are still not optimal.

The common complications are [Figure 1]:

- Tendency of the implant to cranially migrate due to insufficient space in the lower quadrant and the vertical traction by the pectoralis major muscle.
- Immediate flattened appearance due to inadequate cutaneous envelope.
- Early formation of 'waterfall' appearance due to glandular drooping during the 1<sup>st</sup> year post-surgery
- Widening of periareolar scars.

Indeed, our patients presented a moderate incidence of these complications.

From the need to improve on this much-requested technique, we studied these complications in our patients, taking into account the surgical indications and the outcomes.

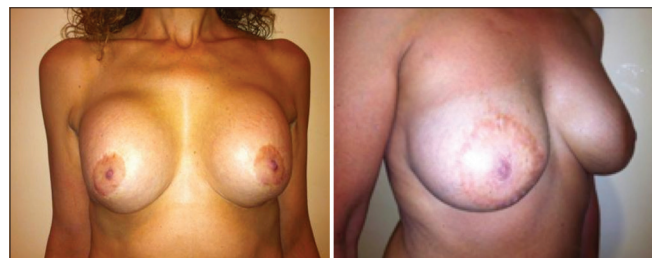
We established a hypothesis, and with all the findings noted, we developed a new therapeutic approach.

## MATERIALS AND METHODS

### Working hypothesis

#### *Patient selection for periareolar mastopexy*

Usually, to justify the indication for a periareolar mastopexy, the patient has to fulfil two basic criteria:



**Figure 1:** See common complications after standard periareolar mastopexy (flattened shape with low projection, early formation of waterfall, widening of periareolar scars)

- The nipple must lie below the level of the inframammary fold (otherwise, merely an implant will solve the problem).<sup>[7]</sup>
- The distance from the sternal notch to the nipple has to be lesser than or about 23–24 cm (if the distance is more than 23–24 cm a mastopexy, with either a vertical scar or with an inverted-T technique is indicated).

### *Evolution of mammary ptosis*

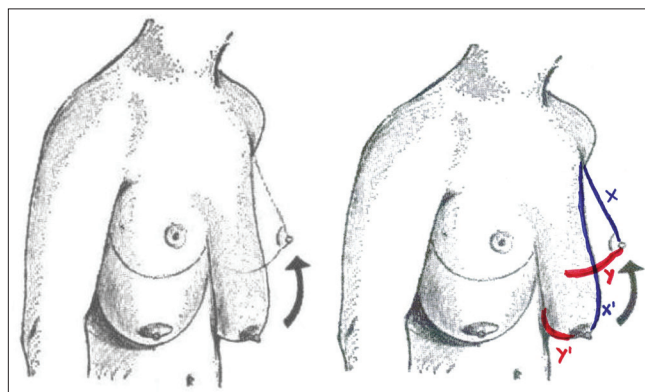
The appearance of the ideal breast has an inferior pole (distance from the nipple to inframammary fold) of 5–7 cm and the distance from the sternal notch to the nipple is 19–21 cm<sup>[8,9]</sup> with the nipple lying above the level of the inframammary fold.

When there is an involution with a resulting ptosis, the nipple lies below the level of the inframammary fold, as shown in the diagram [Figure 2].

If the inferior pole is normally constituted (distance from nipple to inframammary fold: 5–7 cm minimum [y, y']), the distance from the sternal notch to the nipple (x, x') will obligatorily be higher than those 23–24 cm established as a basic criteria to perform a periareolar mastopexy.

### *Conclusion drawn from these two concepts*

For a breast to meet the two requirements established above to undergo a periareolar mastopexy (nipple located below the level of the inframammary fold and distance from sternal notch to nipple <24 cm), it should necessarily have an abnormally short inferior pole, meaning that it would belong to the group of the so-called anomalies of the breast base, widely known as tuberous breasts.



**Figure 2:** Involution with a resulting ptosis, where the nipple-areola complex goes beyond the submammary crease. If the distance from nipple to submammary crease (y, y') is normal (6–8 cm), the sternal to nipple distance (x, x') will be higher than those 23–24 cm established to perform a periareolar mastopexy

### Revision of our patients' database

From this criteria, the medical records and photographs of our patients having undergone a periareolar augmentation mastopexy were reviewed. It was observed that they already had an abnormally short inferior pole when the pre-operative measures were taken.

Checking the pre-operative measurements of these patients (total amount 137 patients), 100% had an abnormally short inferior pole. The average measurement obtained from these patients was  $4.5 \text{ cm} \pm 0.2$  standard deviation (SD) from areola to mammary crease, and none of them exceeded the minimum for a normal breast (5 cm).

### Final reasoning

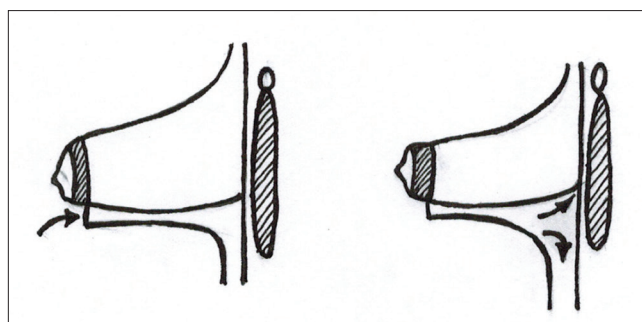
To fix the indication to perform a periareolar Augmentation mastopexy for ptosis correction, the breast has to be tuberous at any level and to have an abnormally short inferior pole (<5 cm).

### Impact on therapeutic level

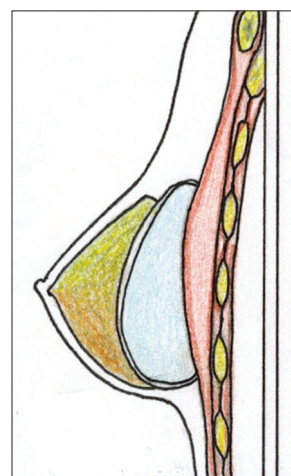
The above findings may explain the main complications from periareolar augmentation mastopexy with the standard surgical technique (cranial migration, flattened shape, early formation of waterfall or cascade, widening of periareolar scars). Consequently, we decided to tackle the problem differently and began to perform periareolar augmentation mastopexy dealing with the cases as tuberous breasts. Our modified therapeutic plan was as following:

### New therapeutic plan

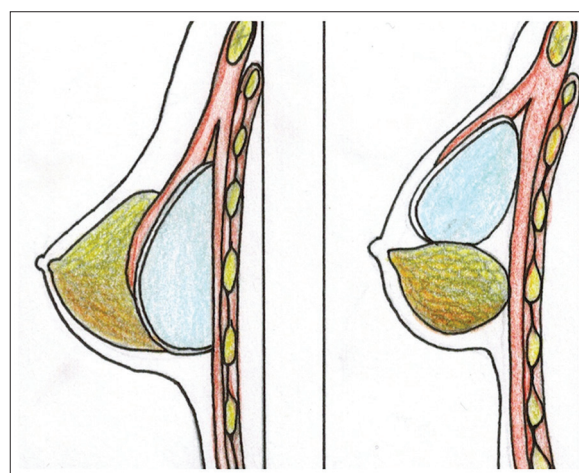
1. Extra-glandular approach, practically subcutaneous, based on freeing all the skin from the glandular complex until the new submammary crease is reached, with minimal invasion of the skin in the belly area to avoid differences between gland and implant and the formation of a 'double bubble' [Figure 3].
2. Freeing of lateral and medial flaps of the gland allowing an adequate rise of the breast *per se*.
3. Gland dissection from the muscle to perform a dual plane type II<sup>[10]</sup> to allow an adequate gland rise, to let the gland drape freely over the implant.
4. Dissection of sub-muscular pocket.
5. Placement of an anatomical implant with maximum projection to create the most horizontal support plane to prevent 'waterfall' effect. With this anatomical implant, maximum projection is achieved to prevent a truncated cone shape [Figures 4-6].



**Figure 3:** Extra-glandular approach, freeing all the skin from the glandular complex, reaching the new submammary crease, treating to invade the skin of upper abdomen as little as possible



**Figure 4:** Compare the different placements of the anatomical implants [Figures 4 and 6]. Figure 4 shows subglandular placement, which would facilitate breast ptosis as the breast matures, being the prosthesis in the lower part of the breast



**Figure 5:** In 'A' is showed another incorrect placement of the anatomical implants: The subpectoral implantation at the same level as the gland, it would facilitate cranial migration of the prosthesis with drop of the gland and waterfall effect, which can be seen in 'B'

6. Skin closure of nipple-areola complex with unabsorbable suture (as it resists mechanical stresses better), performing round block technique by freeing



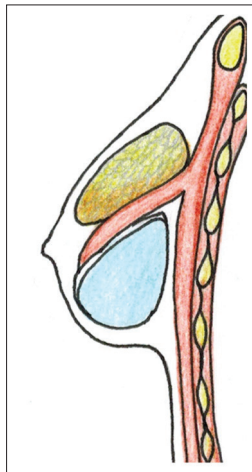
all the dermis from the skin to better drape the nipple-areola complex. These new modifications result in a breast with wider space in the lower quadrants, which allow better adaptation of the implant and a pleasing shape to the breast. The unpleasant tendency to upper migration is thus avoided [Figures 5 and 6].

At the same time, high profile implants make possible a support plane that permits the satisfactory evolution of the breast over time and adequate projection.

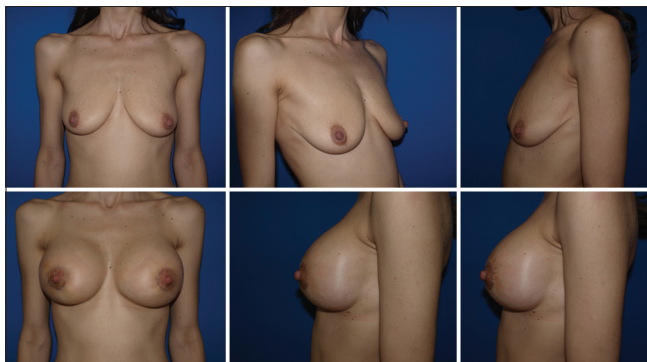
Following this new surgical technique we started a prospective observational study wherein, we included 56 patients who accomplished the former criteria for periareolar mastopexy but considered as tuberous breasts.

## RESULTS

Fifty-six periareolar augmentation mastopexies have been performed during the 3 years with this technique, from



**Figure 6:** We recommend performing a dual plane type II and the placement of an anatomical implant with maximum projection to create the most horizontal support plane for the gland, and to prevent truncated cone shape



**Figure 8:** Pre- and post-operative photos of periareolar mastopexy procedure

2009 to 2012 [Figures 7-9], with a minimum follow-up of 1 year. The patients' age ranged from 25 to 45 years (on average  $33.32 \pm 5.89$  SD). All the prostheses were high profiled; the volume ranged from 170 cc to 420 cc (average  $288.39 \pm 79.91$  SD), and the distance from the nipple to inframammary fold ranged from 4.00 to 5.00 (on average  $4.626 \pm 0.228$  SD cm) [Table 1]. No major infections occurred (0%) among the 56 periareolar mastopexies. There was 1 case of wound infection (1.7%) which settled with antibiotics, removal of sutures and immediate closure after refreshing the skin margins. There was partial periareolar necrosis as well (1.7%) in one heavy smoker, which needed debridement, advancing and delayed closure, without any major aesthetic sequelae [Table 2].

Regarding patients' satisfaction, 40 of them (71.43%) described the results as very positive; 8 patients (14.29%) stated that the results were moderately satisfying; 6 patients (10.71%) were equivocal and 2 of them (3.57%) did not accept the results (one of them because of

**Table 1: Age, prosthesis volumen and distance "nipple to inframammary fold" in patients with the procedure of periareolar mastopexy considering breasts as tuberous**

	Range	Average	DT
Age	25-45 years	33,32	5,89
Prosthesis volume	170-420 cc	288,39	79,91
Distance nipple to inframammary fold	4-5 cm	4,626	0,228



**Figure 7:** Pre- and post-operative photos of periareolar mastopexy procedure



**Figure 9:** Pre- and post-operative photos of periareolar mastopexy procedure

‘waterfall’ effect after weight loss, the other patient because of widening of periareolar scars) [Table 3]. Both cases required surgical correction to convert a periareolar augmentation mastopexy into ‘augmentation mastopexy with vertical scar’.

## DISCUSSION

Tuberous breasts present skin and breast tissue deficiencies, especially in the lower quadrants. Type I affects the inferomedial quadrant and type II affects both lower quadrants. Only type III presents the regular constriction and tuberosity. Tuberous breast is an extraordinarily frequent pathology. The article published by DeLuca-Pytell in Galveston showed that the prevalence of the pathology affected more than 50% of women attending a plastic surgery clinic for a breast augmentation or mastopexy.<sup>[11]</sup>

This frequency shows that this is a vast group, usually not diagnosed, camouflaged by the characteristics of the population requiring this surgery. Most of them are young women who have recently delivered, present a moderate ptosis and an involution of the gland, after breastfeeding. Moreover, they present most of the stigmata of tuberous breasts such as a certain level of areolar dysmorphism.

**Table 2: Acute and chronic complications recorded during 1 year follow up, in the group of 56 patients with periareolar mastopexy considering breasts as tuberous breasts**

<b>Acute Complications</b>	<b>Absolute number</b>	<b>%</b>
Major infection	0	0%
Skin infection/celulitis	1	1,79%
Hematoma	0	0%
Prosthesis exposure	0	0%
Partial areolar necrosis	1	1,79%
<b>Chronic Complications</b>		
Unwanted scars	1	1,79%
Capsular contracture	0	0%
Prosthesis rotation or displacement	0	0%
Prosthesis fracture	0	0%
Prosthesis exposure	0	0%
Waterfall	1	1,79%
Double bubble	0	0%
Chest wall deformity	0	0%

**Table 3. Patients' satisfaction survey results**

<b>Patient's satisfaction</b>	<b>Number</b>	<b>%</b>
Very satisfied	40	71,42857143
Moderately satisfied	8	14,28571429
Neutral	6	10,71428571
Dissatisfied with results	2	3,571428571

When the breasts are measured, and the focus is on the inferior pole, all of them present an abnormally short lower segment as well.

When a patient comes to the surgeon for a regular tuberous breast treatment, a well-defined surgical plan (Pucket)<sup>[12-14]</sup> is devised for her. Why not follow the same procedure in those patients who demand periareolar augmentation mastopexy and present the described features?

## CONCLUSION

Throughout the 3 years that our study has been undertaken, we have modified the therapeutic approach given the following empirical observation: ‘If a periareolar mastopexy can be performed, then it must be a tuberous breast’. From this, a new surgical technique has been developed obtaining an improvement in our surgical results, and we have achieved a different view on this pathology, which has not been reported in literature yet.

### Statement of ethical standards

This clinical study was approved by the Ethics Committee of Instituto de Investigación Sanitaria del Hospital Universitario y Politécnico La Fe and has been performed in accordance with the ethical standards set forth in the 1964 Declaration of Helsinki and its later amendments.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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