

Reduction Mammoplasty Based on Superomedial Flap

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ABSTRACT

Background: Superomedial pedicle reduction mammoplasties based on horizontal septum have been performed for the last two years. Although a multitude of techniques exist for the purposes of reduction mammoplasty, this technique of preserving the horizontal septum is a relatively new one, with promising results. This study aims to shed light on the clinical efficacy of this technique.

Methods: This study reduction mammoplasty procedures conducted at different centers over the period of two years from Jan 2014 to Dec 15. A total of 14 patients and 28 breasts, all of which underwent superomedial pedicle reduction mammoplasties with of horizontal septum were retrospectively analyzed. The mean follow up duration was 6.2 months. Preoperative and postoperative measurements, resection weight, postoperative complications and patient satisfaction were all taken into consideration.

Results: The average elevation of the NAC was 9.1cm in left breast and 9.5cm in right breast. Average resection weight was 548 grams. Complications were rare. Complete or partial necrosis of the areola, decrease or loss of NAC sensitivity, seroma formation, or scar hypertrophy was not encountered. 10.71% of breasts developed superficial wound dehiscence, 7.14% of breasts had postoperative hematoma not requiring surgical intervention, while 3.57 % showed signs of areola

widening. Overall, 92.85% of the patients were satisfied with the procedure, with 57.14% being extremely satisfied.

Conclusion: A horizontal septum is consistently present in all breasts, carrying with it a network of blood vessels and nerves from the chest wall to the nipple. Reduction mammoplasties based on this septum are safe and reliable, with excellent aesthetic and functional results, even with large resection weights. This technique has the potential of reducing the number of complications, preserving postoperative NAC sensitivity and decreasing postoperative areola necrosis.

Keywords: Reduction Mammoplasty, Superomedial Flap, NAC.

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BACKGROUND

Breast hypertrophy, also known as mammary hypertrophy, macromastia or gigantomastia, can be defined as the top 10th percentile in breast size of the female population¹ or, as enlargement of the breast exceeding 600grams.² Excessively large breasts cause physical, psychological and aesthetic problems, prompting patients to seek treatment. Chronic pain of head, neck, shoulder, bra groove, back or breast are frequent complaints.³ Reduction mammoplasty is the definitive treatment and treatment of choice for mammary hypertrophy.⁴

Various techniques of breast reduction are available, along with numerous modifications based on individual surgeon's expertise, experience and preference. Superior pedicle vertical scar mammoplasty is a favorite of surgeons worldwide due to its obvious advantage of minimal scar and long-lasting aesthetic improvement.^{5,6} It may results in compromised perfusion of NAC, venous congestion, ill-defined inframammary fold and reduced or completely absent NAC sensitivity.^{7,8} Inferior pedicle

mammoplasty is shown to better preserve NAC sensitivity but is associated with a somewhat unnatural final shape of the breast.⁹ The purpose of this study was known to yield better results aesthetically as well as in terms of NAC sensitivity and vascularity and also projection of the nipple and breast.

METHODS

Retrospective study was conducted among 14 patients, 28 breasts with mammary hypertrophy underwent reduction mammoplasty from January 2014 to December 2015. An informed consent was obtained from each patients. All the surgeries were based on superomedial pedicle with preservation of horizontal septum and performed by the same surgeon. Neck, shoulder and back pain were reported by patients before surgery.

The patients ranged in age from 19 to 42 years of age, with an average age of 28 years. The weight of resected breast tissue ranged from 400 grams to 1200 grams, with an average of 548

grams. Follow up duration ranged from two weeks to two years, with an average follow up duration of 6.2 months.

Pre-operative marking is on the breast with patient's standing position. The new nipple position is marked at the level of the inframammary fold along the breast meridian.

Patient is positioned in supine, the areolar diameter 4.1 cm. pedicle oriented superomedial, one third of the total base width is along the medial vertical lines and two third of the width is along horizontal lines. Mean base width of the pedicles is 8.4 cm.

Surgical Technique

Infiltrating with 2% lignocaine and 1:200,000 adrenaline is done along the area of excision (avoid in pedicle). Incision is made;

pedicle is de-epithelialized, taking care to remove only epidermis, while preserving dermis and sub dermal plexus leaving NAC intact. Dermoglandular excision is done in perpendicular fashion down to the pectoral fascia to achieve medial pedicle and preserve horizontal septum is maintained. Trifurcation suture is placed between two pillars of breast glands, lateral and medially avoiding twisting and kinking of the pedicle. Skin edges are stapled temporarily.

Patient is positioned upright to assess breast symmetry, fullness and nipple position. Negative pressure drain is placed and secured with 3-0 silk. Closure of tissue is done in layers with 3-0 and 5-0 vicryl and skin with 6-0 prolene.

Table 1: Patient's Profile (n=14)

Descriptions	Minimum	Maximum	Average
Age	19 years	42 years	28 years
Weight of Resection tissue	400grams	1200 grams	548 grams
Follow up	2 weeks	2 years	6.2 months

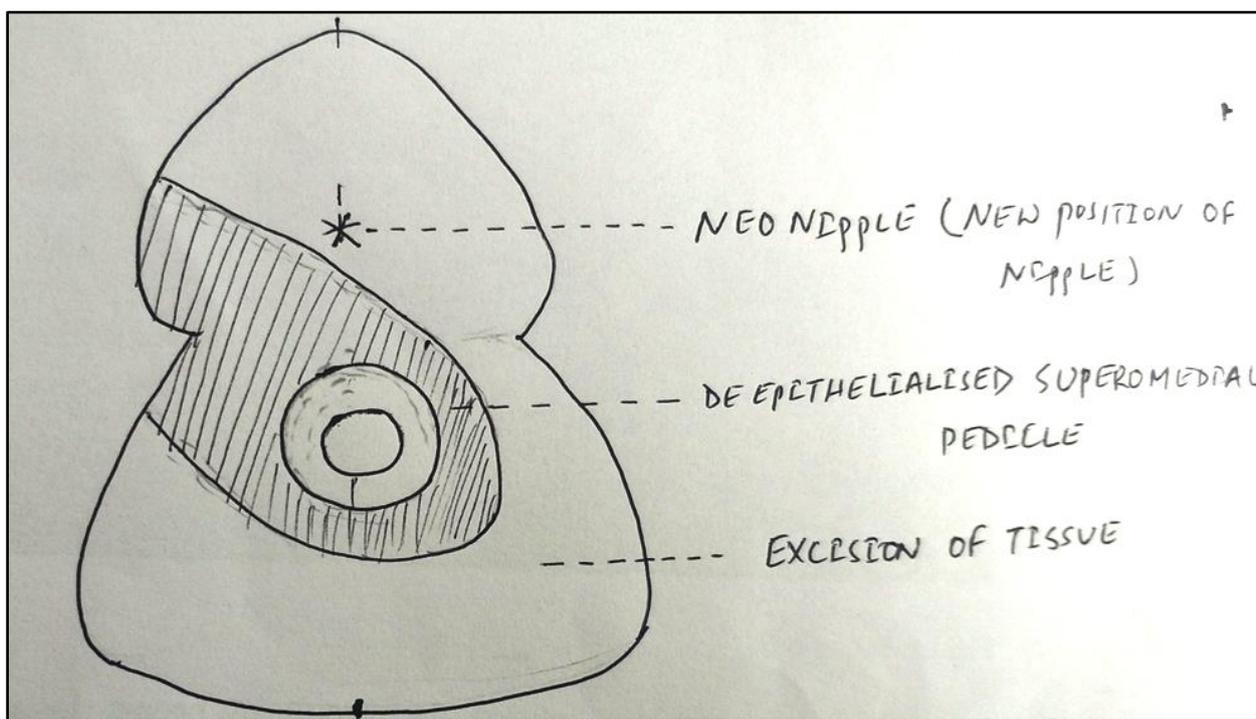


Figure: 1 Pre-operative Marking

RESULTS

The preoperative sternum to nipple measurement of the left breast was 35.8cm in average while postoperative measurement was 26.7cm in average. The average elevation of the NAC was 9.1cm. Similarly, the mid-clavicle to nipple distance of the left breasts was in average 35.4cm preoperative and 26.9cm postoperative. On the right breast, the preoperative and postoperative average measurements were 35.1cm and 25.6cm respectively, making a mean elevation of the NAC by 9.5cm. The average mid-clavicle to nipple distance of the right breasts was 34.2cm preoperative and 25.8cm postoperative. Follow up period from 2 weeks to 2 years with an average duration is 6.2 months.

There were no systemic or life threatening complications. Our main concern, the complete or partial necrosis of the areola and loss of NAC sensitivity were not seen in any patient.

Out of a total of 28 breasts, 2 breasts accounting for 7.14% of total, showed signs of postoperative hematoma, but did not require surgical evacuation. 3 breasts, accounting for 10.71% of total, developed superficial wound dehiscence, and 1 breast, accounting for 3.57% of total, showed signs of areola widening.

Patient Satisfaction

Out of the 14 patients, 8 were extremely satisfied with the procedure and postoperative appearance of their breasts. 5 were satisfied, while 1 was dissatisfied.

The dissatisfied patients expressed dissatisfaction with the appearance of the scar and postoperative size of her breasts, wishing more tissue had been resected. Overall, 92.85% of the patients were satisfied with the procedure, with 57.14% being extremely satisfied.

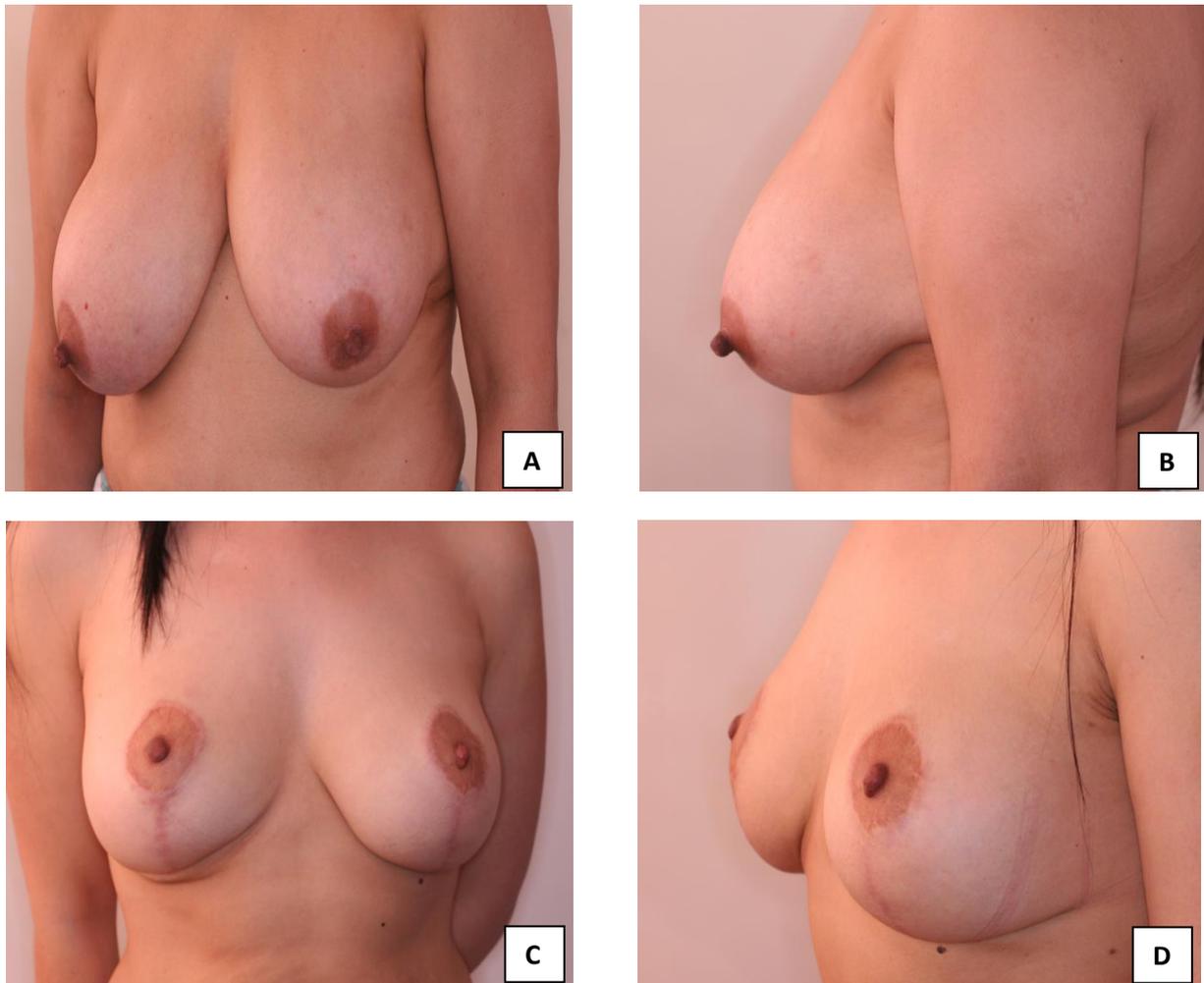


Figure 2 (A, B): Pre op anterior and lateral view of 31 years old women with mammary hypertrophy, (C, D) Post op 6 months after removal of 470 gm tissue from each breast, NAC is viable and sensate with excellent nipple projection.

DISCUSSION

Aesthetic consideration and minimal scar used to be the main concern regarding reduction mammoplasty. Over the past decades, numerous techniques have evolved and been perfected, which have provided surgeons with a wide range of options for the best aesthetic results. The main concern now is in preserving the neurovascular integrity of the nipple areola complex. Regarding this aspect, the results of individual techniques vary greatly and some techniques are found to be superior to the others.¹⁰

The neurovascular integrity of the NAC has been said to depend on a variety of factors. Resection mass, age, skin types, obesity, history of smoking and pre-existing comorbidities have all been implicated with compromised post-operative NAC sensitivity. High resection mass was thought to be the most important factor in causing diminished NAC sensitivity.¹¹⁻¹⁴ Recent studies, however, have shown the technique used for mammoplasty was found to be the main cause of reduced nipple sensitivity and NAC necrosis.¹⁰

Superior pedicle techniques are found to have numerous problems. Kinking of pedicles and difficulty in folding the pedicles frequently occur in large, fibrous breasts. This results in compromised perfusion of NAC, venous congestion, ill-defined inframammary fold and reduced or completely absent NAC sensitivity.^{7,8} Various authors have described modifications to superior pedicle techniques by creating Superomedial and superolateral pedicles instead of purely superior ones.¹⁵ Different authors, starting from Skoog, published this concept of creating a

lateral or medial pedicle and rotating it by 60 to 90 degrees.¹⁵⁻¹⁹ These modifications, even though solving the problems of pedicle kinking, fail to address the issue of higher incidence of reduced NAC sensitivity.^{20,21}

Anatomically, the anterior and lateral cutaneous branches of 3rd 4th and 5th intercostal nerves account for sensitivity of the nipple and NAC.^{19,22,23} These nerves are easily injured when resection of breast tissue is carried out in lower half of the breast. In some cases, this neural regeneration does not occur, resulting in permanent insensitivity of the nipple and diminished sensitivity of the NAC.¹¹

Inferior pedicle techniques have the advantage of protecting the lateral cutaneous branches of the intercostal nerves. The only damage is to the medial nerve supply of the NAC, which causes reduced sensitivity of the superior and medial parts of the NAC. However, the long-term aesthetic results of the inferior pedicle techniques are not very satisfactory. Bottoming out of the lower pole of the breast occurs over time, giving the breast a box-like, unnatural appearance. Hammond and other authors have proposed various modifications to counteract this disadvantage of inferior pedicle.⁹

This technique preservation of the horizontal septum carries with deep branch of the 4th lateral intercostal nerve, which is the main nerve supplying the NAC, as well as branches from the thoracoacromial, lateral thoracic and 4th to 6th intercostal arteries. Thus, a pedicle designed with this septum in mind preserves the

neurovascular integrity of the NAC. This technique is shown to preserve the sensitivity of the NAC even in immediate postoperative period.

In this septum based mammoplasty technique relies on a centromedial pedicle, owing to the fact that most of the hypertrophy is usually present in central and infero medial parts of the breast. Choosing a superomedial pedicle allows for safe resection of the areas with the most fullness, at the same time preserving the horizontal septum. This allowed for an aesthetically pleasing postoperative appearance of the breast, as well as minimum rates of complications. Partial or complete necrosis of the areola and diminished or absent postoperative sensitivity were not encountered. These results are comparable to various studies performed by other researchers.

CONCLUSION

This technique has the potential to minimize the number of complications, especially necrosis and decreased sensitivity of NAC, and also achieve final aesthetic appearance. This technique can be safely chosen for all patients requiring reduction mammoplasty.

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