Aesthetic Results of Superomedial Pedicle Technique in Reduction Mammaplasty

Tariq Abdulqadir AL – Hamdany*, Ahmed Khalaf Jasim, Gheiath Sabri Ghani*****

ABSTRACT:

BACKGROUND:

Breast reduction for mammary hypertrophy is a highly effective procedure with high degree of patient satisfaction. There are many methods of breast reduction which involve removal of excess tissue with reshaping of overlying skin while maintaining a viable nipple areolar complex.

OBJECTIVE:

The purpose of this study is to evaluate the use of the superomedial technique as an effective method for reduction mammoplasty.

PATIENTS AND METHODS:

A total of 30 patients underwent reduction mammoplasty by utilizing superomedial pedicle technique between 2010 and 2013. Those patients were evaluated postoperatively in terms of their aesthetic and functional satisfaction, viability of nipple – areolar complex and nipple sensory preservation.

RESULTS:

The distance from suprasternal notch to nipple ranged 28-32cm on both breasts. The mean breast tissue resection was less than 1000 g on both breasts, the amount of nipple transposition ranged from 8cm – 10cm. All patients were satisfied with postoperative results. All patients had viable nipple, except in one breast who had partial nipple – areolar complex necrosis (1.6%). nipple areolar sensation was preserved in 93.3% in the immediate postoperative period, and after 6 month all patient had preserved nipple areolar sensation.

CONCLUSION:

The superomedial pedicle technique for reduction mammaplasty is simple and safe procedure with good postoperative aesthetic results.

KEY WORDS: reduction mammoplasty, superomedial pedicle, nipple areolar complex.

INTRODUCTION:

Reduction mammaplasty represents one of the clearest examples of the interface between reconstructive and aesthetic plastic surgery[1] .

Breast reduction is surgical reduction of breast volume to achieve a smaller, aesthetically shaped breast mound with concomitant relief of potential symptoms of mammary hypertrophy. In addition, there is some evidence to suggest that the breast reduction may reduce the individual risk of breast cancer [2].

*Plastic Surgeon, Medical City, AL – Shaheed Ghazi AL– Hariri Hospita

**Department of Surgery, Collage of medicine, Baghdad University

***Plastic Surgeon, Medical City, AL – Shaheed Ghazi AL – Hariri Hospital.

Patients with large breast experience a significant range of symptoms, some severe enough to interfere with activities of daily life. Patients with large breast commonly report significant neck and shoulder pain. They may develop grooves in their bra straps, some patients have even had to eliminate some activities from their lives because of their large breast get in their way [3].

There are many methods of breast reduction, which basically involves removal of the excess breast parenchyma, excising and reshaping the overlying skin envelope while maintaining a variable nipple – areolar complex[4].

Common surgical options of reduction mammaplasty include amputation with free nipple graft as well as bipedicle and inferior pedicle technique. All these methods are used extensively; however there are disadvantages to each when used for severe mammary hypertrophy. Disadvantages

include reduced nipple sensation, nipple areolar necrosis, hypopigmentation and poor breast projection [5-7].

The superomedial pedicle technique, first described by Orlando and Guthrie in 1975[8], was merely an extension of the superior pedicle method and was further refined by Finger et al [9]. In this technique the nipple – areolar complex (NAC) is transposed on a supermedial de – epithelialized pedicle which contains a layer of subcutaneous tissue to protect the dermal blood supply, the nipple is laterally rotated into place instead of folding the pedicle upward [10].

NAC circulation is provided by internal mammary perforators and lateral thoracic branch; they become more superficial as they approach the NAC. Here branches from both vessels anastomose into a circular pattern in the majority of the cases. By incorporating a medial component to the superior pedicle, additional vascular supply by means of internal mammary system is obtained [11].

Anatomical findings of female corpses have shown a thin horizontal fibrous septum, originating from the pectoral fascia along the level of the fifth rib, heading toward the nipple. This fibrous septum lies in between a cranial and a caudal vascular network, and being mesentery-like, it is responsible for the supply of the NAC, this septum was first described as independent entity by Wuringer and colleagues [12].

This septum roughly separates the breast into a superior two- thirds and an inferior one-third. Although uniformly present in breast with any degree of hypertrophy, the septum and its associated mesentery tend to be more distinct in thinner patients who exhibit more of fibrous nature to their breast. In breasts with a great fat content, and particularly in the obese, the septum becomes less readily identifiable [13].

Innervation of NAC is generally felt to be due to fourth lateral intercostal branch. Craig and skyes[14] found, however, that the nipple and areolar are regularly supplied by the third, fourth and fifth anterior cutaneous verves as well as the fourth and fifth lateral cutaneous nerves. This would explain the preservation of sensation despite probable severance of the fourth lateral cutaneous branch or so – called nerve to the nipple [11].

In this study we represent our experience in using the superomedial pedicle in reduction mammaplasty.

PATIENTS AND METHODS:

Thirty patients with bilateral breast hypertrophy underwent reduction mammaplasty using supermedial nipple – areola transposition technique between 2010 and 2013. Their ages were ranged between 25 – 45 years old. The amount of resected tissue per breast varied in different cases, with mean of less than 1000 g excised tissue per breast.

Routine preoperative examination and investigation was done to all of the patients which included hematological investigation and virology survey, ECG was done for those patients above 40 years old.

Preoperative multi view photographs were done to all patients.

Preoperative marking:

While patient erect, the sternal notch and midline are marked, a point is then made on the right and left clavicle 7 – 8 cm away from the sternal notch, from this point breast meridian is established by dropping a line from this point through nipple and continuing inferiorly across the infarmmary line. Then the inframmary fold is marked between the anterior axillary lines to sternal edge. The new nipple position is marked just below the level of the inframmary fold or 20 – 22cm from sternal notch.

A wire keyhole pattern is then adjusted to the new nipple location, with limbs measuring 7 – 9 cm each and the angle of divergence of the limb is about 70 – 90 degree. The limbs are joined by straight line that is directed medially and laterally to the respective ends of the inframmary crease.

The superomedial pedicle is marked from the center of the new areola position passing around NAC and ends either or near the bottom of medial limb of inverted V. The flap length is between 6-8 cm. as shown in figure (1).

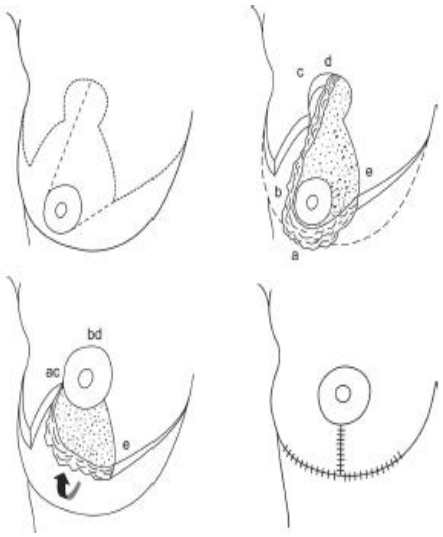

Figure 1: Preoperative marking [10]

Operative Technique:-

All operations were done under general anaesthesia with patient in supine position.

After sterilization and draping, infiltration of xylocaine with 1: 200,000 adrenalines into the incision, avoiding nipple pedicle region.

The planned areola is circumscribed, leaving at least 4 centimeters around the areolar margin.

The skin above the pedicle is deepithelized with preservation NAC.

The pedicle is developed by incision along the marking, the pedicle is held by hook, and incision is made along the margins of the pedicle superiorly, laterally and inferiorly. The pedicle is then deepithelized and raised and undermine at least 2-cm in thickness at the nipple and beveled slightly toward the base. Once the pedicle has been raised and protected, the breast tissue itself was removed in inverted C shape. The breast tissue is aggressively removed in the medial wedge area, as well as inferiorly and laterally, taking care not to undermine the pedicle and leaving it fully attached to the chest wall.

In order to obtain free rotation of the dermaglandular pedicle, the dermis of the pedicle is incised where it joins the keyhole medially, a dermal back cut at the most inferior portion of pedicle may be required to facilitate its rotation upward.

NAC is then laterally rotated in 90˚ degree upward (i.e. the 9-o'clock point on the areola now becomes the 12 - o'clock).

After that the pedicle is fixed to the pectoral fascia by 2/0 polyglactine suture to give more projection of the breast tissue, then the nipple – areola complex is inset into new position and closed with 4/0 nylon suture after that the medial and lateral pillar of breast tissue are then sutured together with 2/0 polyglactin . After hemostasis is secured, the skin is closed with interrupted deep dermal suture with 3/0 Vicryl, the skin is then closed with subcuticular 3/0 nylon suture. No drains were used in all of our cases.as shown in figure (2).

Figure 2: Preoperative marking and final immediate shape of the breast after superomedial reduction mammaplasty.

A gauze bandage is lightly placed over the incision and secured into position by using adhesive plaster.
The dressing is removed next day to inspect the breasts and the patients were kept on injectable 3rd generation cephalosporine for 1st 48hr, to be follow by 7 day oral antibiotic.
Patients were kept on sport bra for at least 2 months postoperatively. The patients were followed up 6 month to 1 year postoperatively.

RESULT:

Thirty patients with bilateral breast hypertrophy underwent supermedial pedicle reduction mammaplasty between 2010 and 2013. Their ages ranged between 25 and 45 years old. The amount of resected tissue per breast was less than 1000 g. Breast measurements were obtained with patient in standing position. The distance from sternal notch to nipple ranged 28-32 cm on both breasts. The amount of nipple transposition ranged from 8 – 10 cm.
The results were acceptable by patients from both aesthetic and functional point of view. All patients were satisfied with breast shape and nipple projection, and all patients reported relief of preoperative symptoms such as neck and back pain.as shown in figure (3)

Figure 3: Anterior and lateral view at 1 week postoperative.

Nipple – areola viability was maintained in all breasts, except one breast that underwent partial nipple and areola necrosis, it healed with secondary intention with repeated daily dressing.

Sensation was retained in 56 of 60 breast (93.3%) , in 4 breast (6.6%) there was temporary loss of sensation , with complete recovery of nipple sensivity within 6 months post operatively . Sensation was assessed by light touch.

Complication was grouped into early or late complications as seen in table - 1 - below.

Table 1: Early and late postoperative complications.

Complication	Breast	%
Early complications		
Partial Nipple – areola necrosis	1	16.6%
Dehiscence at T junction	5	8.3%
Late complications		
Nipple – areola sensory loss*	4	6.6%
Scar hypertrophy	6	10%

*Complete recovery of nipple sensation within 6 months.

Wound dehiscence at the T – junction occurred in 5 breast (8.3 %) and treated conservatively with repeated daily dressing. Scar hypertrophy was noticed in 6 breast (10%). it affected both the vertical and horizontal limbs of T – junction, and it was treated conservatively with silicone gel with good result.

DISCUSSION:

Heavy pendulous breast are often a source of chronic pain and discomfort for a woman. Although women may request reduction mammaplasty to relieve pain and discomfort, many also hope that is the procedure will improve their appearance [15].

For many women, breast reduction offers a resolution of the functional and aesthetic problems associated with large breast. That is why this operation is associated with high patient acceptance and satisfaction [16].

The ideal reduction mammaplasty should produce perfect breast size, shape and projection with minimal scarring, normal nipple sensation and ability to loctate. Ideally should be easy and expeditious, free from complications and reproducible by most surgeons [17].

The bipedicle procedure of Mckissock[18] and inferior pedicle technique of Robbins [19] have become the mainstay of modern reduction mammaplasty. A major criticism of these operations has centered on loss of projection that occur over time with "bottoming out" of breast tissue from gravity [20].

The superior pedicle technique was designed to avoid the late loss of projection while allowing easy transposition of nipple – areolar complex, the main drawback of this procedure is that its pedicle length was limited and neurovascular compromise could occur with larger pedicle , in addition to the difficulty with enfolding of dermal pedicle[4].

The superomedial pedicle was designed to shorten pedicle length and broaden pedicle width as mean of enhancing blood flow and maintaining innervation of the nipple-areola complex [21].

In our work the superomedial pedicle technique was used. the amount of tissue resected from each breast ranged 750-960 g . The final results were acceptable by all the patients. All patients were satisfied with breast shape and nipple projection, and after 1 year follow up period no " bottom out " or pseudoptosis was seen, this complication is particularly evident after few years of follow up period in case of inferior pedicle mammaplasty , the explanation of this phenomenon is related to remaining breast tissue on inferior pole , causing pressure on the vertical limb which gradually tend to increase its length , resulting in bottoming out. While in superomedial technique, the upper breast tissue is preserved and large amount of tissue is removed from inferior pole, and both medial and lateral breast pillar are used for projection and pedicle support which may explain the lack of late bottoming out of breast in super medial reduction mammaplasty[22][23].

Only one breast out of 60 (1,6%) had unilateral partial nipple areola necrosis which healed by secondary intention with daily dressing, this was consistence with Tarek A. Said et al where superomedial reduction mammaplasty was used in 30 patients and one case developed partial necrosis of areolar edge and healed spontaneously[10]. In another study done by Alex G. London et al. [24], 8 breasts out of 122 breasts (6.5%) had minor areolar sloughing following superomedial reduction mammaplasty. In both of the above mentioned studies they used superomedial pedicle technique for resection of more than 1000 g per breast with mean suprasternal notch to nipple distance more than 30 cm. in our series the NAC transposition was 8-10 cm to its new position.

T- Junction dehiscence occurred in 22 breasts (18%) in Alex G. London et al. [24] study, while in our study 5 breast (8.3%) developed postoperative T- Junction dehiscence. Hauben described commencement of the key suturing starting laterally so that the lateral excess skin is pushed medially to relieve tension at tripod point. He advised not to place a suture at this point at all [25]. It seems this dehiscence in our cases is due to moderate tension at this point.

The safety of superomedial pedicle and viability NAC is attributed to its broad pedicle (superiorly and medially base) which is encompass the perforator of internal thoracic artery. The dominant medial component of superomedial pedicle incorporates the blood supply by mean of internal thoracic system. The superior component allows design of a wider pedicle which enhances its safety [24].

Additionally, the pedicle is based superomedially and NAC can be rotated laterally thus avoid the

kinking which can occur with superior pedicle technique, particularly in larger reduction[10].

In our study sensation was retained in 56 of 60 breasts (93.3%) and in 4 breast (6.6%) there was temporary loss of sensation with complete recovery of nipple sensibility within 6 months postoperatively, in Tarek A. Said et al. series nipple sensation was preserved in 41 breast (82%) out of 60 breast, he tested sensation by touch and 2 – point discrimination while we assessed nipple sensation by touch only. This sensory preservation of nipple is due to sensory supply of nipple – areola complex come equally from medial and lateral aspect through anterior and lateral cutaneous branch of 4th intercostal respectively additional nerve supply come from the anterior cutaneous branches of 2nd to 5th intercostal nerves and the lateral cutaneous branches of the 3rd to 5th intercostal nerve[10], this would explain the preservation of sensation despite probable severance of fourth lateral cutaneous branch or so called nerve to the nipple[11].

Another advantage of this technique is less deepithelializing compared with the inferior pedicle for same size reduction this significantly decrease the operating time needed by deepithelialization.

Superomedial reduction mammoplasty initially was limited to moderate breast hypertrophy mean < 700 g per breast and < 12cm mean nipple transposition. Finger et al. used the technique for reduction as large as 4100g per breast and nipple transposition up to 30 cm with no total nipple necrosis [24]. In this study we used superomedial pedicle technique for moderate hypertrophic breast (less than 1000 g breast resection and average pedicle length 6-8 cm) since we thought that with very long pedicle, torsion or twist may occur, in addition, a relatively narrow pedicle is further compressed under the closed cutaneous flap. All these factors may result in venous congestion and NAC loss.

CONCLUSION:

The superomedial pedicle technique is safe and reliable procedure in patients with gigantomastia, it is easy to learn and quick to perform, with long lasting cosmetic result and with better preservation of sensation to nipple areola complex.

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