

Three Slips Dermo-Fascial Brassiere Breast Reduction Technique

AMR MAGDY, M.D.

The Department of Plastic Surgery, Faculty of Medicine, Ain Shams University.

ABSTRACT

Bottoming out is one of the most annoying late sequel after breast reduction operations. Many modifications of the known techniques as well as the development of new modalities with modifications of pedicle sites, dimensions and vector addressed this problem with variable success. The value of the superficial fascial support was brought into attention and it was manipulated in different ways to achieve better long-standing results. The three slips dermo-fascial brassiere breast reduction technique is based on this concept. A superior pedicle breast reduction is designed with inverted T final scar. The dermis and fascia over the inferior and lateral parts of the breast tissue to be excised is spared and divided into three slips. The middle one holds up and supports the breast by pulling its inferior part and fixing it to a high point on the chest wall retromammary to prevent vertical ptosis and ensures upper pole fullness. The two lateral slips are sutured together to contain the breast into a strong envelop that prevent the flattening which usually accompany bottoming out, transverse ptosis. Good long-term results were obtained regarding shape, contour and glandular position.

INTRODUCTION

The rapid evolution of breast reduction techniques are now directed towards surgical precision and ultimate patient satisfaction. The state of the art concept is shifted from obtaining excellent aesthetic results to the maintenance and longevity of these results and address minor details that were overlooked earlier.

Upper pole fullness, adequate projection, reduced scar size and visibility as well as the prevention of bottoming out are the hot issue on the table now. The latter two problems are the most difficult to prevent.

Due to the great stretchibility and extendibility of the skin [1], bottoming out is a frequent accusation of old breast reduction techniques that mainly depend on dermal suspension [2-4].

Dermal suspension techniques are now modified or abundant for techniques that provide long lasting, stable and predictable results. Different modalities were described, as glandular shaping [3,5,6], fixing

the breast to the pectoral fascia [7-9], utilizing pedicles from the superior pole [8], changing the arc of rotation of the pedicle [10], using dermal strips [11], dermal flaps [12], muscle flaps [13], pectoral fascial pockets [14], the use of ligamentous structures within the breast tissue [15], shaping sutures [16] or even using synthetic materials as polyglycolic mesh [17] or silicon lamina [18], to hold and maintain the breast shape and position.

Even after applying the previously mentioned procedures, still bottoming out take place [19-21]. Therefore, the need for alternative means of suspension became a necessity, especially in large reductions.

The role and function of the superficial fascial system, is well appreciated after the extensive work of Lockwood [22,23]. Though some consider its consistent existence as well as its strength and value are doubtful, in a recent clinical and histological study [25], the fascia was present and well defined in all the breasts examined.

This strong fascia is dissected as a dermo-fascial layer as there is no surgically dissectible plan between the two layers [25]. The inclusion of this fascial layer added a lot to longevity of the results of the different techniques where it was employed [26,27].

The superficial fascia was used in various modes. Lockwood [23] sutured this layer separately from the dermis using non-absorbable sutures to prevent tension on the skin producing better scars. Others sutured it to the pectoral fascia circumferentially [20] or for suspending the breast by suturing it high to the pectoral fascia [26,27].

The vertical sagging of the parenchyma in the lower pole of the breast increases the length of the inframammary scar and leaves the nipple at a higher position. The accumulation of the glandular tissues in the lower part of the breast results in emptiness of the upper pole. Accompanying this

vertical glandular ptosis, there is lateral drift of the ptotic parenchyma, that I like to refer as transverse ptosis (Fig. 1). This transverse ptosis results in increase in the transverse diameter of the lower part of the breast in addition to stretch and widening of the vertical scar.

The use of non-absorbable sutures [23], internal glandular shaping [5,6], internal sutures [16] and pillars suturing [8,10] limit these late changes. The application of intervening materials, whether natural, as dermal flaps as an internal brassiere [20], or synthetic as polyglycolic acid mesh [17] or silicon lamina [18], sutured to the gland peripheries was also tried. They produced a flattened appearance, loss of projection, carry the risks of extrusion, infection and change in texture if synthetic materials were used [12,28].

Idea of the technique:

The three slips dermo-fascial brassiere breast reduction technique was developed in a trial to overcome the shortcomings of the present breast reduction techniques. The idea is using the strong superficial fascia to support the weight of the breast and the pedicle sharing this load between the dermal envelop represented by the peri-areolar sutures and the pectoral fascia. This is done by wrapping a slip of the fascia around the inferior pole of the pedicle and holds it up in its desired place to prevent its later ptosis as a function of gravity and stretch of the skin brassiere. The lateral slips are utilized to maintain the shape of the breast and prevent the lateral drift of the parenchyma that accompanies postoperative sagging, the transverse ptosis.

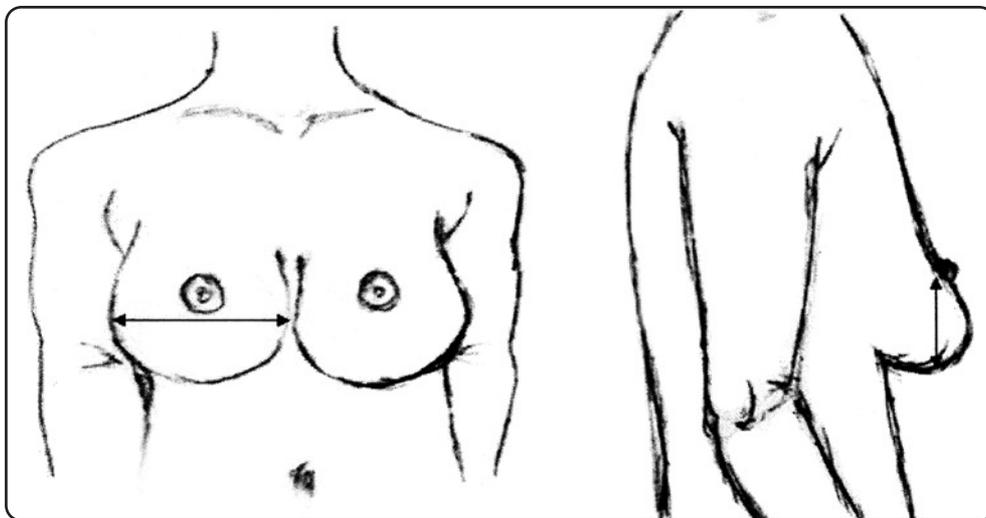


Fig. (1): Diagrammatic representation of the increase in the transverse diameter of the lower part of the breast due to lateral drift of the parenchyma accompanying bottoming out, the transverse ptosis.

MATERIAL AND METHODS

During the period from January 2005 to June 2006, 18 patients with moderate to severe degree of breast enlargement underwent bilateral reduction mammoplasty using the three slips dermo-fascial brassiere breast reduction technique. They were followed-up for 6-15 months.

Their age ranged between 18-45 years and the supra-sternal notch to nipple distance ranged from 29 to 37cm. All patients were fit for surgery and at least one-year lactation free. Mammography was done for those above 35 years.

Surgical technique:

Vertical pedicle breast reduction is designed as in Lejour technique [8] in 15 patients and the superio-medial pedicle design [9] in three patients with large breasts. Inverted T pattern skin closure was done in all patients and the splay angle is determined by the breast displacement technique.

De-epithelialization includes the skin overlying the part of the pedicle within the angle of the inverted T and that overlying the area to be excised sparing the areola. If the areola is too large, an outer ring of the areola is included in the deepithelialization to reach the desired diameter.

The lower edge of the pedicle is marked on the de-epithelialized part 2cm caudal to the areolar rim. The dermo-fascial flap is then dissected within the deepithelialized region.

The inferior edge of the fascial flap is first exposed through an incision made at the inframammary sulcus leaving a 2mm rim of the fascia attached to the skin using a number 15 blade. The dissection proceeds upwards in a plane directly under the fascia using blunt scissors till the caudal limit of the pedicle centrally and the transverse limbs of the inverted T incision on both sides.

During dissection, blood vessels running through, and supplying the fascia are seen within the dermo-fascial layer. This dissection is easy and performed rapidly as no deep strands are encountered in this region (Figs. 2,3).

The dermo-fascial layer is lifted and the glandular resection is performed following the skin markings and may extend upwards as a triangle behind the pedicle.

Adequate hemostasis is ensured and the areola nipple complex is transposed to its new position and the patient is put in sitting position.

The glandular pillars are sutured together using 2/0 no-absorbable sutures from cephalad caudally and from superficial to deep and breast conning is achieved.

The dermo-fascial layer is then divided into three slips, a central one corresponding to the width of the areola (4-5cm) and two lateral slips (Fig. 4).

Using no 0-prolene sutures, the central slip is sutured to the pectoral fascia retromammary at the highest possible level determined by the available length of the slip taking care not to excrete much pull on the areola/nipple complex forcing them to face downwards.

In huge breasts or in patients asking to lift the breast while maintaining a relatively big size, this step can be done before suturing of the pillars, so no much length is wasted around the inferior edge of the gland and directly lifts the weight of the pedicle (Fig. 5).

The medial fascial slip is then wrapped around the coned breast. Its upper edge is sutured to the lateral glandular pillar while its lower edge is sutured to the pectoral fascia at a level slightly

higher to the inframammary sulcus. The lateral slip is then pulled medially over the medial one and is sutured to it and to the pectoral fascia. Any remaining excess is excised. This adds to the shaping and roundness of the breast and raises the inframammary fold (Figs. 6,7).

Sometimes the medial and lateral pillars need to be released for 1-2cm at their lateral limits to prevent the creation of tight bands or furrows on the skin surface at the inferior segment of the breast.

Incisions are closed in three layers, deep facial non-absorbable sutures to the 2mm facial strip that was left at the inframammary sulcus, absorbable subcutaneous sutures and final intradermal non-absorbable sutures.

Usually no drains are required and compressive dressing is applied. The patients are advised to wear sportive bras for three weeks postoperatively.

RESULTS

Bilateral reduction mammoplasty using the three slips dermo-fascial brassiere breast reduction technique was done on 18 patients with moderate to severe degrees of breast enlargement with good to excellent results according to patient satisfaction. The average amount of excision ranged from 400 to 950gm per breast. The nipple transposition distance ranged between 7-15cm. Superior pedicle was done in 15 patients while superio-medial pedicle was done in three cases.

All patients had intact sensations and retained the breast shape and projection without the occurrence of postoperative ptosis, vertical or transverse, that was maintained through out the follow-up period that ranged from 6-15 months (Figs. 8-10).

There were no sloughing, hematomas or infections. Only two patients developed seroma, one developed minimal unilateral seroma that resolved after five days and the other was bilateral that disappeared after repeated aspiration for 8 days. Asymmetry was observed in two patients and symmastia in one with large breasts. The scars were unnoticeable in all patients except for three patients with skin type four and five who developed slight hyper-pigmentation. Wound disruption never occurred. Stitch sinus occurred in three cases and one of the patients developed a hypo-pigmented spot overlying this area.

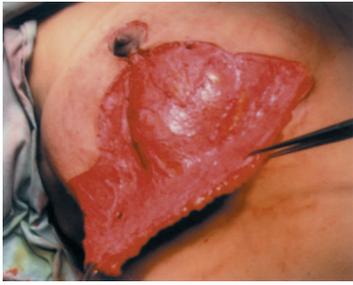


Fig. (2): The dermo-fascial layer is dissected starting from the inframammary sulcus upwards.

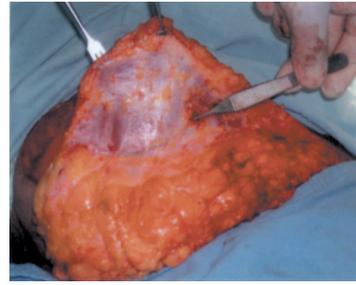


Fig. (3): The dissection stops at the inferior border of the pedicle 2Cm caudal to the lower edge of the areola, blood vessels can be seen running through the fascia.

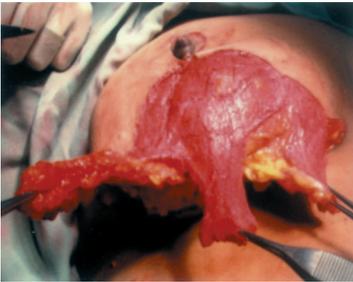


Fig. (4): The dermo-fascial layer is divided into three slips.



Fig. (5): The central slip is fixed to the pectoral fascia retro-mammary.



Fig. (6): The medial slip is fixed to the lateral pillar and to the pectoral fascia at a level slightly higher to the inframammary sulcus.



Fig. (7): The lateral slip is sutured to the medial one and to the inframammary fold as the medial one and the caudal excess is seen hanging below to be trimmed.



Fig. (8): A 18-year-old patient with bilateral breast hypertrophy. (Left) Preoperative views. (Middle) Postoperative views, one-month follow-up. (Right) 11-month follow-up with maintenance of results.

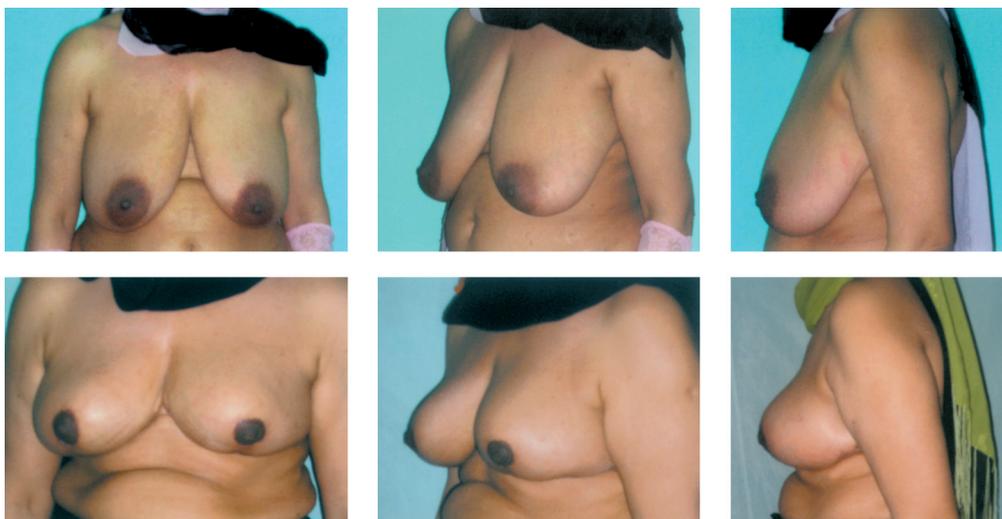


Fig. (9): A 36-year-old patient with bilateral breast ptosis. (Above) Preoperative views. (Below) Postoperative views, 6-month follow-up.

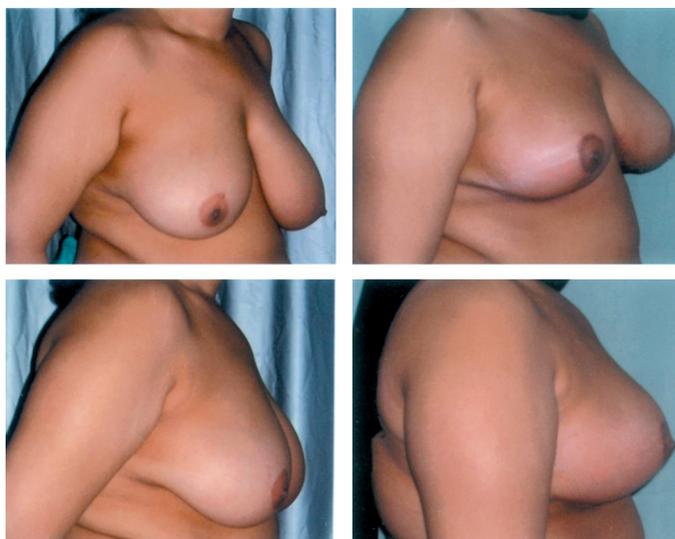


Fig. (10): A 27-year-old patient with bilateral breast hypertrophy. (Left) Preoperative views. (Right) Postoperative views, 15-month follow-up.

DISCUSSION

Though every effort was made to prevent bottoming out and post operative loss of breast projection, they remain to be the most common unsatisfactory late sequels after breast reduction. The published trials to overcome these problems achieved varying results.

In our technique, this was considered in addition to many factors, to attain immediate good results and maintain it. As superior pedicle techniques produce good breast shape and are known to have less chance of bottoming out than inferior pedicle, we adopted the superiorly originating pedicles, (superior in 15 cases and superior-medial pedicle in 3 cases). This provided upper pole fullness and

eliminated the inherent tendency of postoperative sagging that accompanies inferior pedicle [10] by preventing the dragging effect of the weight of the pedicle. This is boosted by the fascial manipulations and undermining under the upper pole to fix the central fascial slip.

The superficial fascial layer in the breast was proved to be a strong layer that withstands tension and resists stretch [23]. The vascularity of the fascia is excellent and a rich vascular network is seen during its dissection (Fig. 3). Being autologous, the complications and side effects related to the use of synthetic materials as in other techniques [17,18] were eliminated and allowed for its integration in the tissues.

In fact, many techniques [12,20] utilize the fascia indirectly through working on a dermal deepithelialized flaps (pedicles) without detaching it from the underlying gland as a separate layer. So, the fascia is included in these techniques, but where it was fixed? This is the main issue; as if it is fixed to loose tissues it will not hold tension for long time.

Some techniques suture the dermal or facial flaps to the pectoral fascia at the level of the inframammary fold [12]. This might help in preventing severe postoperative ptosis. But as it has no lifting effect, mild sagging can still take place with the accumulation of the glandular tissue at the lower pole of the breast leaving the upper one empty, a problem that was addressed in other techniques [26,27] as well as this one by anchoring it higher.

Ultimate benefits of the fascia were obtained by tailoring and adapting it to conform to breast shape. This was achieved by dividing it into three slips to target different objectives. The slinging effect of the central slip, that is not stretchable, holds the glandular bulk high in its place and maintaining the upper pole fullness and keeping the parenchymal bulk behind the areola. This is both anatomical and physiological as it recreates and mimics the naturally present ligamentous attachment [29].

The utilization of the lateral slips and their crossing greatly assist in coning of the breast and maintaining the base to cone ratio [30] to provide transverse sling and a controlled admirable shape. After all, this hinders any tendency for lateral drift of the parenchyma or transverse ptosis.

The fixation of the inferior borders of these lateral slips to the pectoral fascia to a higher position than the inframammary crease assists in raising the level of the crease providing an additional factor in the prevention of ptosis and a better appearance of the areola/nipple complex [10,23,31].

The crossing of the lateral slips aids as well in eliminating any tension on the vertical part of the scar that has long been a source of troubles namely; disruption, widening or hypertrophy.

Non-absorbable sutures [23] are used in all sutures involving the fascia. They provided a longer support and, being deeply situated, they are not palpable.

The technique is also applicable to large breasts by using a superior-medial pedicle, as was done

in three of our cases, to permit smooth upward transposition of the nipple areola complex without crumbling of tissues in the superior pole or exerting tension on the peri-areolar sutures.

Though the inverted T scar closure become controversial now [32], it provides the best control and match between skin and parenchymal excision [1,19]. Better scar quality can now be achieved after the elimination of tension by the use of the lateral fascial slips [23].

In patients with small reductions who ask for minimal scars, vertical scar design can be used and the central slip is anchored as usual, but on the expense of eliminating the lateral slips. Only their stumps are sutured together in the midline, as in Lockwood technique, to eliminate the tension on the vertical scar instead of crossing them over each other.

The long-term follow-up showed that using the superficial fascia in holding and shaping the breast in breast reduction operation withstands high tension breast repair and added to the final outcome, longstanding results and patient satisfaction.

Conclusion:

The three slips dermo-fascial brassiere breast reduction technique proved to be useful in attaining and maintaining a perfect conical and protruding breast. It has many advantages that put it in line with the top commonly used techniques for breast reduction. It is easy, reliable, needs no special skills, has a fast learning curve and, most importantly, is what you see is what you will get and retain for a long time. Moreover, the concept and the characteristic steps can be adapted to be applied with other technical modalities giving it versatility.

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