

No Vertical Scar Breast Weight Transfer

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Summary : Women desire beautiful breasts that are functional, pain free, and without foreign material. Vertical scars, insufficient elevation, inadequate upper pole fullness, nipple numbness, and loss of breast feeding are undesirable. Relieving pain attributed to enlarged breasts has required significant tissue removal. Software analysis of chest images, physical measurements, and desires are combined to generate a surgical blueprint. The breast is divided horizontally into two components preserving the neurovascular supply and major lactiferous ducts. The skin flap cephalad to the areola provides external coverage. The areola remains attached to a deepithelialized mound, which is rotated into a cone. Dermal straps originating from the base of the cone are looped through the pectoralis major muscle and the cone repeatedly. Weight transfer to the pectoralis major muscles eliminates pain in 54% and decreases pain in 38%. Incisions are concealed at the areola cutaneous junction and in the shadow of the breast. Upper pole fullness increased in 86% without implants or fat transfer. Nipple sensation was increased in 37% and unchanged in 44%. Overall results were excellent in 50% and good in 36%. Complications consisted of dog-ears, periareolar infection, and fat necrosis. No patient required a return to the operation room. Combining computer-aided design with plastic surgical principles creates beautiful, functional breasts without foreign material. Vertical scars are avoided, and weight transfer relieves pain. (*Plast Reconstr Surg Glob Open* 2017;6:e1593; doi: 10.1097/GOX.0000000000001593; Published online 28 December 2017.)

INTRODUCTION

The goal of mastopexy is to transpose and maintain the breast in the aesthetically desired position. Multiple passive techniques using the external skin envelope or internal suspensions with dermis, biological, or synthetic materials have been described. Active force is an alternative to passive opposition. The pectoral major muscle generates large forces along its axis. Attaching a mechanical load perpendicular to the axis stimulates the neuromuscular spindles, and the muscle compensates.¹ In situ weight transfer preserves the muscle's original functions and provides active opposition to gravity. Pain is relieved without weight removal. Weight transfer generates active forces beyond the capacity of passive mastopexies or reductions.

The breast is a soft tissue, open system that absorbs energy from earth's gravitational waves resulting in ptosis. To maintain a shape change, the second law of thermo-

dynamics requires an energy source.² The pectoral major muscle provides the energy required.

METHOD

Volume analysis of breast images is combined with physical measurements and the woman's desires to generate a surgical blueprint. The blueprint determines 15 points for each breast, 6 common points, cephalad flap thickness, cone dimensions, and weight removal. A circumareolar incision is made; then, transverse incisions are made at the cephalad areola border and near the inframammary fold. The intervening skin is deepithelialized. The cephalad flap is elevated toward the clavicle, sternum, and anterior axillary line. The deepithelialized mound is rotated into an oblique cone and sutured with 2-0 polydioxanone suture (PDS). Straps are elevated from the base of the cone at the 12 o'clock, 1:30, and 3 o'clock positions in the right breast. The 3 o'clock strap is sutured over the sternum with 2-0 Ethibond. The 12 o'clock and 1:30 straps entrain breast tissue lying outside the cone and then are looped through the pectoral major muscle back to the base of the cone repeatedly and sewn to themselves with 2-0 Ethibond (Fig. 1). The opposite breast is done in a mirror image manner, and the incisions are closed with

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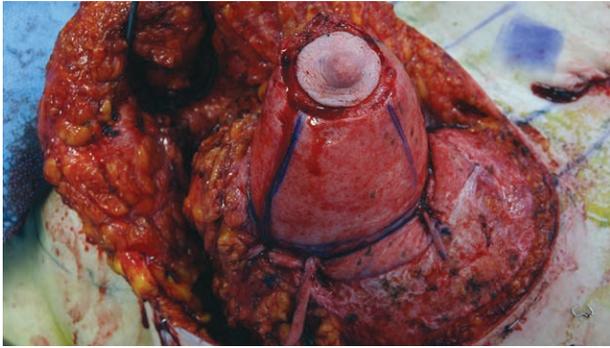


Fig. 1. Right breast is projecting after all straps have been attached. The strap attachments are visible at 9 o'clock, 7:30, and 6 o'clock positions.



Fig. 3. Thirteen months status post no vertical scar breast weight transfer with self-determined excellent results.



Fig. 2. A 35-year-old woman's preoperative photograph.

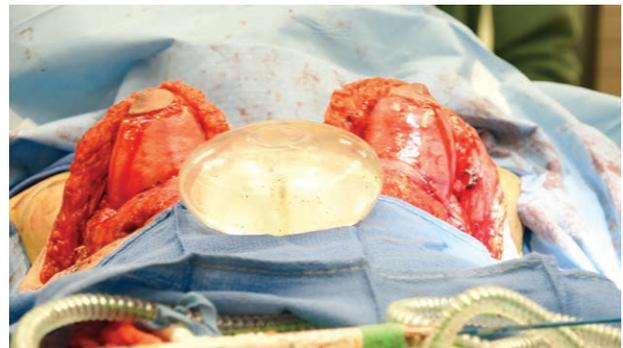


Fig. 4. Intraoperative photograph of a 47-year-old woman during explantation and no vertical scar breast weight transfer. The projection/width ratio of the cone is greater than her 420 cm³ saline implants over filled to 458 cm³. The narrow base width allows the breast volume to be repositioned medially, maximizing anterior projection by minimizing the volume in the posteriorly curved lateral chest.

3-0 Vicryl subcutaneous and 3-0 PDS running subcuticular. Tissue is excised; then the nipple-areola complex is delivered and closed with 4-0 PDS interrupted and running.

RESULTS

From January 1, 2015 to December 31, 2015, 65 women underwent no vertical scar breast weight transfer. This technique was universally applied to all primary mastopexies or reductions. Self-evaluation questionnaires were obtained from 36 women (55%) at a mean of 15 months. When asked why they chose this technique, 89% stated “no vertical scar.” Breast position was as desired in 92%, low in 5%, and high in 3%. Upper pole fullness was increased in 86% and unchanged in 14%. Nipple sensation was increased in 37%, unchanged in 44%, decreased in 17%, and 5% had complete numbness. Weight removal was less than 300g in 70%, 300–500g in 23%, and more than 500g in 7%. Twenty-six women (74%) had neck, shoulder, or back pain. Of these, 54% had complete relief of pain, 38% had decreased pain, and 8% have the same pain. The most frequent complications were minor dog-ears, which were revised in 36%. Periareolar infection occurred in 3% and fat necrosis occurred in 3%. Overall results were excellent in 50% (Figs. 2, 3), good in 36%, and fair in 14%.

DISCUSSION

Aesthetics and function are critical factors influencing a women's decision to undergo surgery and the tech-

nique selected.³ Aesthetics dominated with 89% selecting no vertical scar as the motivating factor, despite 74% having pain. In this review, none became pregnant; however, women have successfully breast fed postoperatively. The transverse incision is cephalad to the areola, which avoids injury to the major lactiferous ducts. The straps transfer cephalad-medial forces that translocate the central mound toward its origin. This shortens the stretched neurovascular supply improving sensation and preventing fat necrosis.

Multiple techniques for mastopexy or reductions have been described, but none are universal. An alternative to empirical techniques is to approach breast surgery as an engineering problem that requires an individualized solution. The surgical blueprint is the mathematically derived optimal solution. The breast is engineered to change position, shape, and feel. Parenchyma is the best tissue to resist compression and generate anterior projection; unfortunately little parenchyma is available. An alternate technique uses de-epithelialized skin to construct a cone, which encloses fat and parenchyma in a semiclosed space. The muscle compresses the cone, increases projection, increases breast firmness, maintains the elevated position, and provides energy to maintain the new shape. These biomechanical properties are superior to passive mastopexies or reductions and implants (Fig. 4).

Breast implants are frequently offered as an adjunct or alternative for mastopexies or reductions. Implants are used to create upper pole fullness or to lift the breast without the unacceptable scars. If upper pole fullness is needed, transposition of living tissue is biomechanically preferable to implants. Because implants cannot lift breast tissue, the inframammary fold is lowered to align the nipple to the center mass of the implanted breast. Women prefer breast and inframammary fold elevation for a youthful, perky appearance. Implants are subjected to the same forces as breast tissue and require implantpexy to maintain position and shape. Because of these and all the other implant complications, they are best avoided.

The oncologic implications of a new surgical technique must be considered. Neither breast implants nor foreign materials are required. Breast imaging and physical examination are not compromised. This technique can be used to calculate the incisions for mastectomy, provide autogenous dermis for implant reconstruction, and lift the opposite breast to achieve symmetry. Women are more likely to accept surgery on the noncancerous breast if they can avoid the vertical scars and loss of nipple sensation.

CONCLUSIONS

Women do not want vertical breast scars. Weight transfer relieves pain. Implants are undesirable and not required. Science, technology, engineering, and mathematics are combined with plastic surgery principles to create beautiful, functional, stable breasts. No vertical scar breast weight transfer is a new universal procedure that satisfies women's esthetic and functional desires.

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