

Mastopexy

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Learning Objectives: After reading this article, the participant should be able to: 1. Assess patient physical characteristics to determine candidacy for mastopexy and select the most appropriate technique. 2. Understand current methods, their relative effectiveness, and key technical elements. 3. Become conversant with methods to fixate, redistribute, and autoaugment the parenchyma. 4. Understand the benefits and pitfalls of combining augmentation and mastopexy, and how to best design and execute these procedures. 5. Become cognizant of mastopexy complications and how to both avoid and treat them.

Summary: Mastopexy includes multiple skin incision design and parenchymal manipulation options. Patient evaluation includes assessment of goals, degree of ptosis, tissue volume, skin quality, and breast position on the chest wall. There are critical technical details for each of the three incision options, the various methods of parenchymal manipulation, and implant placement. The potential for complications is greatest for combined augmentation and mastopexy. Although they are effective, mastopexy procedures have the greatest incidence of litigation among aesthetic breast procedures. (*Plast. Reconstr. Surg.* 132: 642e, 2013.)

Mastopexy is by nature problematic because it trades significant scars for limited lift capability on arguably the most aesthetically sensitive female body part. The incidence of untoward results, revisions, and litigation is high despite mastopexy being ranked well behind augmentation and reduction in the number of procedures performed annually.^{1,2} Nevertheless, it is effective when the right technique is matched to favorable indications.

There are three basic incision types, with several variants. There are multiple options for parenchymal fixation, redistribution, and autoaugmentation. Combining breast augmentation with mastopexy increases the risk for complications but may be necessary to achieve the best result (reference 5: **Therapeutic, Level III Evidence**).³⁻⁵

Mastopexy spans a spectrum of procedures from mastopexy with modest reduction; to mastopexy alone when tissue volume is adequate; to augmentation combined with mastopexy when there is a tissue deficiency, marked skin excess, or both. The scope of surgery, the recovery, and the potential for complications are least for skin-only

procedures, minimal for mastopexy with modest reduction, and greatest with combined augmentation and mastopexy.

ESSENTIALS OF PREOPERATIVE ASSESSMENT AND MANAGEMENT

Patient Evaluation

Relevant patient history includes age; goals; pregnancies and breast feeding history; medications including psychotropic agents, birth control, and hormone replacement therapy; history of weight fluctuations, bleeding, or clotting problems; and previous surgery.⁶ Physical evaluation includes height and weight measurement, assessment of breast position on the chest wall, nipple distance from the clavicle, areolar diameter, tissue volume, skin quality and amount, and asymmetry.

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Table 1. Ptosis Classification*

Type	Degree	Description
Grade I	Mild	Nipple position at the level of the inframammary fold
Grade II	Moderate	Nipple position below the inframammary fold but above the lower breast contour
Grade III	Severe	Nipple position below the inframammary fold at the lower contour of the breast
Glandular ptosis	—	Nipple position above the fold but the breast is below the fold

*According to Regnault P. Breast ptosis: Definition and treatment. *Clin Plast Surg*. 1976;3:193–203.

Nipple position relative to the inframammary crease determines the degree of ptosis (Table 1).⁷

Patients primarily exhibiting low breast position but without significant ptosis do not benefit from mastopexy. Those with normal position and only minimal ptosis do not benefit enough to justify the scar burden entailed.

Patient Education

Patients often expect that mastopexy will provide upper pole fullness, raise the breast completely above the inframammary crease level, and leave either minimal or no scars. They do not realize that the breasts are not lifted from above, as they frequently simulate, but instead are pushed up from below, an inherently less powerful approach necessary for scar concealment. Descriptions of mastopexy scar patterns, particularly when a vertical component is necessary, often produce dismay. Photographs of representative results typically allay fears in those who are realistic, however.

Patients primarily seeking breast augmentation but have low nipple position, enlarged areolar diameters, or nipple position asymmetry may require mastopexy only as a limited adjunct. Although conservative circumareolar mastopexy usually suffices in these cases, a vertical component may be required on one side if significant nipple position asymmetry exists (Fig. 1).

Volume-deficient mastopexy candidates often require breast implants. The additional risks must be explained and include implant malposition, capsular contracture, and the need for periodic replacement. Combining augmentation with mastopexy has a much higher incidence of complications than either procedure alone.^{3,8}

Augmentation and mastopexy can be performed as staged procedures, but this approach is less efficient from both cost and recovery perspectives. Proper preoperative analysis and sufficient discussion with the patient can avoid ultimately needing two procedures.^{4,5}



Fig. 1. Breast augmentation with right circumareolar mastopexy and left vertical mastopexy. (Left) Preoperative view showing postpartum atrophy, nipple position asymmetry, and volume asymmetry. (Right) Postoperative view with 225-g round silicone implant on the right and 250-g implant on the left.

ADVANTAGES AND DISADVANTAGES OF TREATMENT OPTIONS

Crescent Mastopexy

Crescent mastopexy was originally described as an eccentric circumareolar skin excision without areolar mobilization and no purse-string suture.⁹ Problems with scar widening and oval areolar deformity were reported. A more recent description advocates excising a wedge of breast tissue down to the pectoralis muscle to prevent these problems.¹⁰ Crescent mastopexy is not widely used today.

Circumareolar Mastopexy

Circumareolar mastopexy was originally described as a “donut” mastopexy because of the shape of the skin excision design.¹¹ The best indication was for protuberant areolas. Since then, variants with eccentric skin excision design and wide undermining have been described, with some including inferior suture invagination of the parenchyma.^{12,13} Circumareolar mastopexy by itself does not elevate nipple position enough or remove sufficient skin to be very effective.

Circumareolar mastopexy is best used as an adjunct in breast augmentation. It can reduce areolar diameter and simultaneously raise nipple position modestly (<2 cm) by using an eccentric shaped excision pattern that includes intra-areolar skin (Table 2). It can also increase infra-areolar skin show in ptotic breasts and can correct nipple position asymmetry when used unilaterally (Fig. 2).

Although outside incision diameters up to 12 cm have been advocated, those not exceeding 7 cm will reliably avoid problems with pleating, central flattening, wide scars, areolar spreading, and the loss of skin texture inherent in this technique. An alternative recommendation is that the ratio of outside diameter to areolar diameter should not exceed 2:1.^{14,15}

A purse-string suture of permanent material reduces scar tension in circumareolar mastopexy. Placement only along the outside circumference is less effective than the “wagon-wheel” method that also incorporates the areola. The latter better distributes and reduces wound tension.¹⁶

The Benelli procedure is a true circumareolar mastopexy without augmentation. Extensive skin undermining exposes the parenchyma, which is then split to create flaps that are overlapped to provide coning and lift.¹⁷ This method is not recommended because the large central skin excision advocated causes the aesthetic problems described previously.

Vertical Mastopexy

Vertical mastopexy removes more skin than circumareolar techniques. It effectively raises nipple position and reduces circumareolar skin tension (Fig. 3). Both the splay angle between the vertical limbs and limb length will increase with increasing amounts of lower pole skin. The greater these measurements, the higher the nipple position is elevated based on geometry (Fig. 4). Vertical mastopexy without simultaneous reduction does not significantly narrow the breast base.

Vertical mastopexy can be used for grade I to III ptosis, but the scar burden may not be justified in mild cases. Adequate mobilization for nipple transposition can prove challenging when applied to patients with severe grade III ptosis.

Y-Scar Vertical Mastopexy

Y-scar vertical mastopexy deletes the superior portion of the circumareolar incision but is otherwise similar to vertical mastopexy.¹⁸ The requirements for its use are nearly normal areolar diameter and nipple position (Table 2).

Table 2. Mastopexy Options and Indications

With augmentation	
Circumareolar	Areolar diameter asymmetry (unilateral procedure) Nipple position asymmetry (unilateral procedure) Enlarged areolar diameter (>5 cm) Grade I ptosis and no visible infra-areolar skin
With or without augmentation	
Circumvertical	Grade I–II ptosis, large areolar diameter, short areola-crease distance
Y-scar	Glandular ptosis (normal nipple position), normal areolar diameter, excess lower pole skin
Vertical mastopexy	Grade I–III ptosis Previous circumareolar mastopexy with persistent large areolar diameter, with or without pleats, and wide scars (areolar circumference reduction)
Inverted-T	Grade II–III ptosis with severe atrophy and skin excess (massive weight loss)

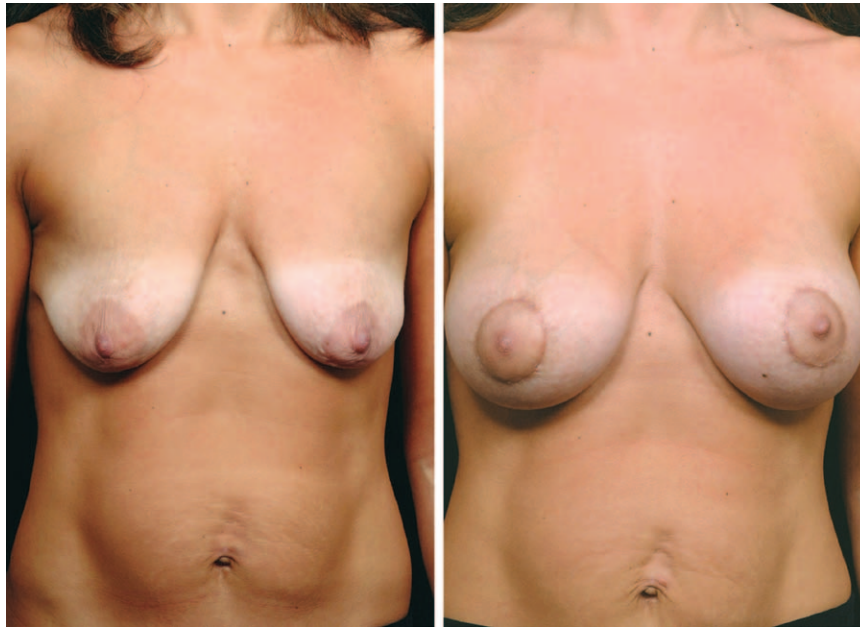


Fig. 2. Breast augmentation with circumareolar mastopexy. (Left) Preoperative view showing severe postpartum atrophy and grade II ptosis. (Right) Postoperative view; 300-g round silicone implants were placed in a subpectoral plane.

Sufficient nipple elevation accompanies vertical incision design geometry without the need for a superior periareolar incision component. The scar burden is perceptibly less with this technique (Fig. 5).

Circumvertical Mastopexy

Patients with significant ptosis, large areolas, and little skin between the areola and inframammary crease are poor candidates for standard vertical mastopexy. The paucity of lower pole skin dictates short vertical limbs that diverge at a narrow angle. This minimizes the amount of nipple elevation possible. In addition, the vertical limbs may not diverge wide enough to skirt outside the areolar margin. Continuing the vertical limbs within the areolar skin results in patches of retained areolar skin along the vertical incision, something poorly tolerated by patients even when forewarned.

Patients with this anatomy are candidates for a circumvertical mastopexy that combines elements of vertical and circumareolar mastopexy. The vertical limbs extend to the areolar margin to join a circumareolar excision pattern designed to either raise the nipple position, reduce the areolar diameter by intra-areolar skin excision, or both. The amount of nipple elevation with this method is limited but better than that of circumareolar mastopexy alone.

Inverted-T Mastopexy

Inverted-T methods remove the most skin in exchange for the greatest scar burden among available techniques. Inverted-T mastopexy provides wide exposure that facilitates both nipple elevation and parenchymal redistribution, fixation, and autoaugmentation techniques. It is the most effective option for grade II to III ptosis associated with the severe skin excess typically seen in massive weight loss patients (Table 2).

There are other inverted-T designs besides the classic Wise pattern, but most are of historical interest only.^{19,20} There are also designs that fall between inverted-T and vertical designs, but these L-shaped techniques are not widely used either.^{21,22}

Parenchymal Fixation, Redistribution, and Autoaugmentation Techniques

Skin-only mastopexy has advantages of simplicity, quick healing, and low morbidity. However, the adequacy of upper pole fill and long-term stability with this method have been questioned.²³ Adjunctive techniques developed to address these concerns include parenchymal suture fixation, parenchymal redistribution methods, insertion of prosthetic mesh, and autoaugmentation. However, there are no controlled studies that validate the efficacy of any of these methods beyond skin-only mastopexy.²⁴

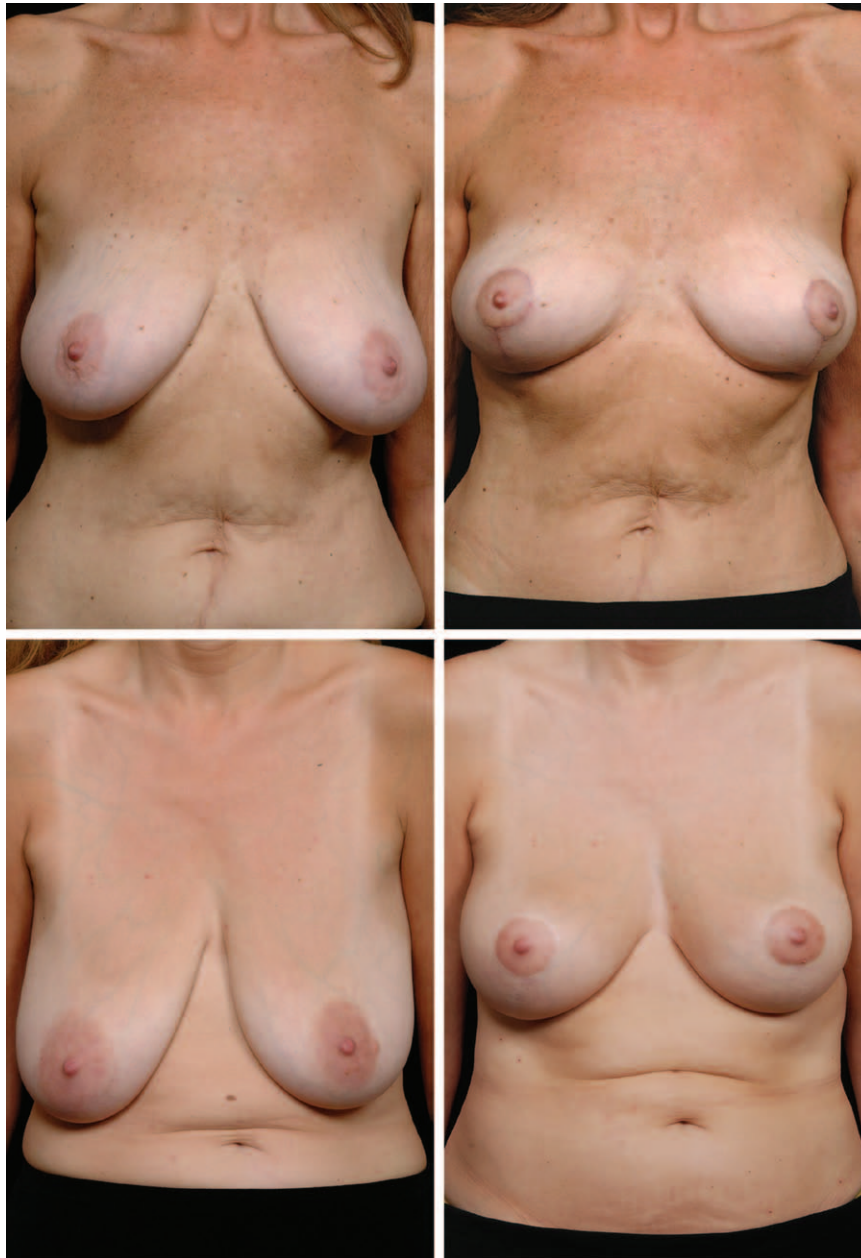


Fig. 3. Vertical mastopexy. (Above, left) Preoperative view showing low breast position and grade I ptosis. (Above, right) Postoperative view. Small amounts of tissue were resected from each side (left, 52 g; right, 94 g) but there was otherwise no parenchymal manipulation. (Below, left) Preoperative view showing grade II ptosis. (Below, right) Postoperative view following skin resection only. There was no parenchymal manipulation.

Simple parenchymal suture fixation to the pectoralis muscle has been described for both inverted-T and vertical techniques.^{20,25–27} Inverted-T methods deglove the gland to accomplish this. Vertical methods leave the gland attached to the skin, lift it off the muscle, fix it higher on the muscle, and plicate folds that form below to add further support.²⁸

A parenchymal redistribution method used with vertical mastopexy creates a superiorly based flap that is rotated deep and sutured high on the pectoralis fascia. Medial and lateral pillars are closed below it to narrow and further raise the breast (Fig. 6). This method displaces volume superiorly and creates a central hammock below for support.^{25,29} A different method creates

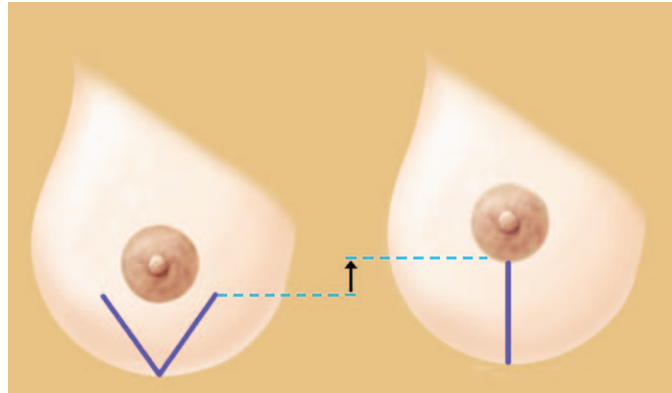


Fig. 4. (Left) The vertical limbs vary both in length and their angle of divergence depending on the amount of excess skin present. (Right) The nipple position is elevated based on simple geometry as the angle between the vertical limbs is closed.

a lateral pedicle that is rotated superiorly to enhance upper pole fullness.³⁰

A parenchymal redistribution method used with inverted-T mastopexy divides the parenchyma transversely down to the chest wall. This forms inferior and superior flaps, with the latter carrying the nipple-areola complex. The superior flap is partially raised to create a pocket over the pectoralis muscle. The inferior flap is sutured into this pocket to augment upper pole volume and eliminate lower pole laxity. The superior flap is then sutured over the inferior flap (Fig. 7).³¹

A more aggressive inverted-T method creates an inferiorly based central flap that is passed under a loop of pectoralis major muscle, folded over it, and sutured to the muscle fascia. Medial and lateral columns of tissue are then closed over it.^{32,33} There are oncologic concerns regarding violation of the deep plane barrier to the breast with this technique. A similar procedure secures the parenchymal flap under a band of pectoralis fascia instead of the muscle.²⁶

A combined parenchymal redistribution and suture fixation method uses a vertical incision design to expose an inferior pedicle (short-scar

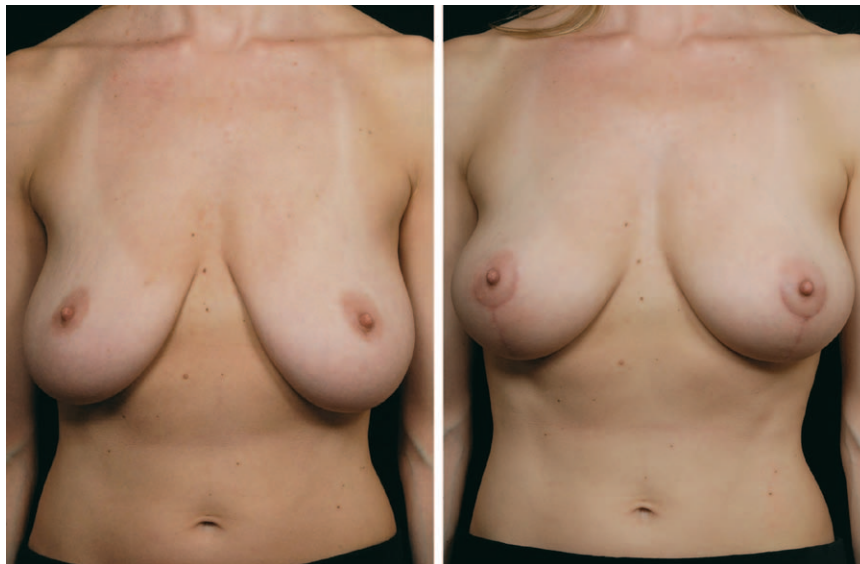


Fig. 5. Y-scar mastopexy. (Left) Preoperative view shows glandular ptosis and long lower pole with both normal nipple position and areolar diameter. (Right) Postoperative view following Y-scar pattern skin resection. No parenchymal manipulation was performed. The central chest nevi provide stable reference points for evaluating the degree of nipple position and lower pole elevation achieved.

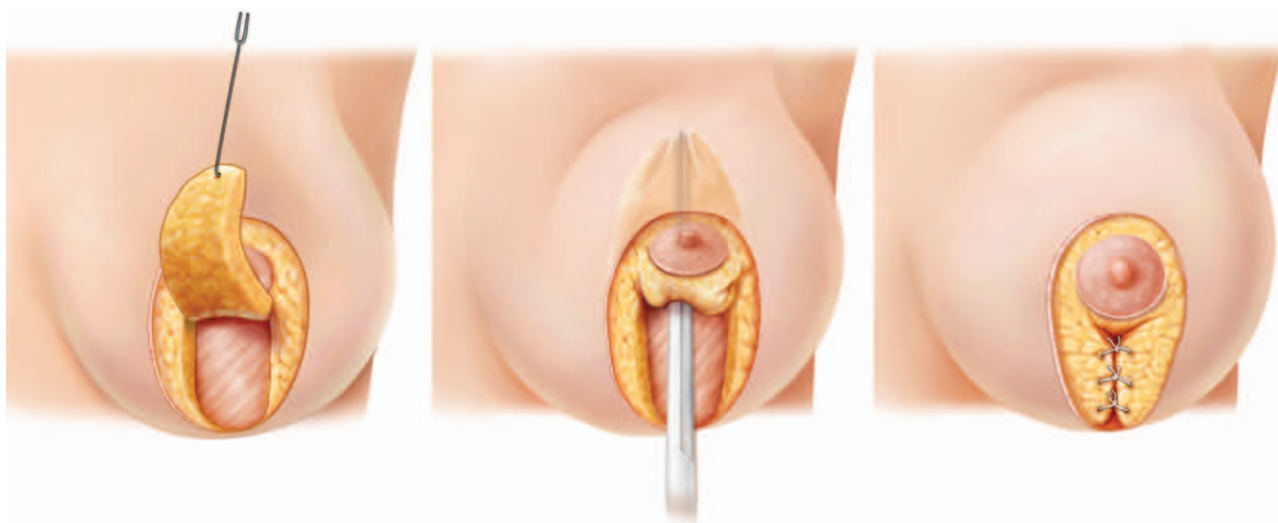


Fig. 6. Vertical mastopexy with parenchymal flaps. (*Left*) A superiorly based parenchymal flap is raised over the pectoralis fascia. (*Center*) The flap is rotated underneath and sutured high on the fascia to increase upper pole volume. (*Right*) The medial and lateral pillars below are sutured together to narrow the breast and add support.

periareolar–inferior pedicle reduction technique [SPAIR technique]).¹⁶ The deep surface of the flap raised over the pedicle superiorly is sutured high

on the pectoralis fascia to increase upper pole volume. The inferior pedicle is then advanced upward and also sutured to the fascia. Use of any

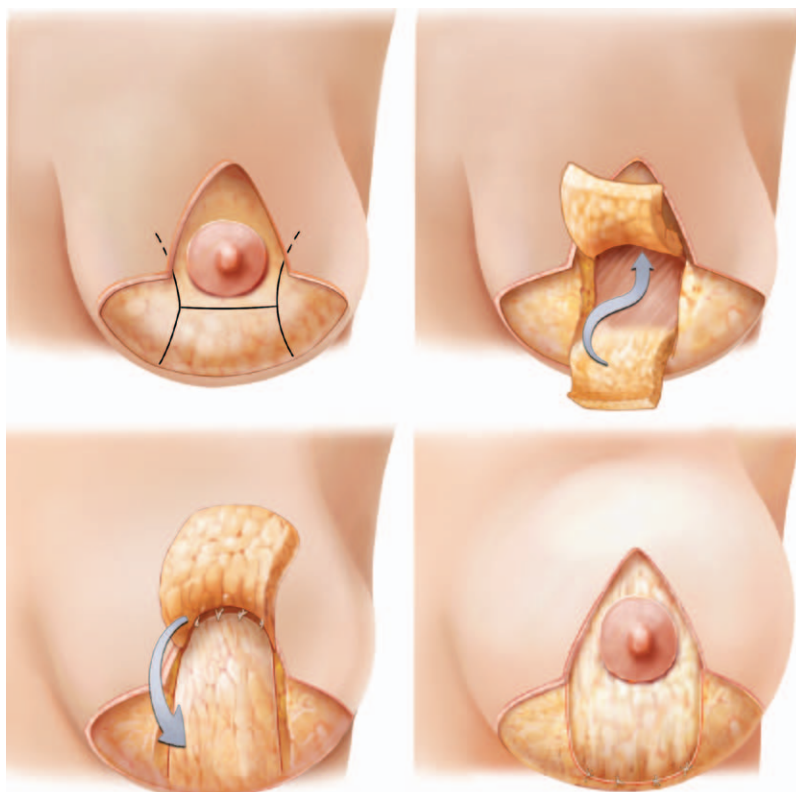


Fig. 7. Inverted-T mastopexy with parenchymal flaps. (*Above, left*) After skin excision, the gland is marked for division into superior and inferior flaps. (*Above, right*) The superior flap is undermined over the fascia and the inferior flap is advanced upward into the space created. (*Below, left*) The inferior flap is sutured high on the pectoralis fascia to create upper pole fullness. (*Below, right*) The superior flap is then sutured over the inferior flap.

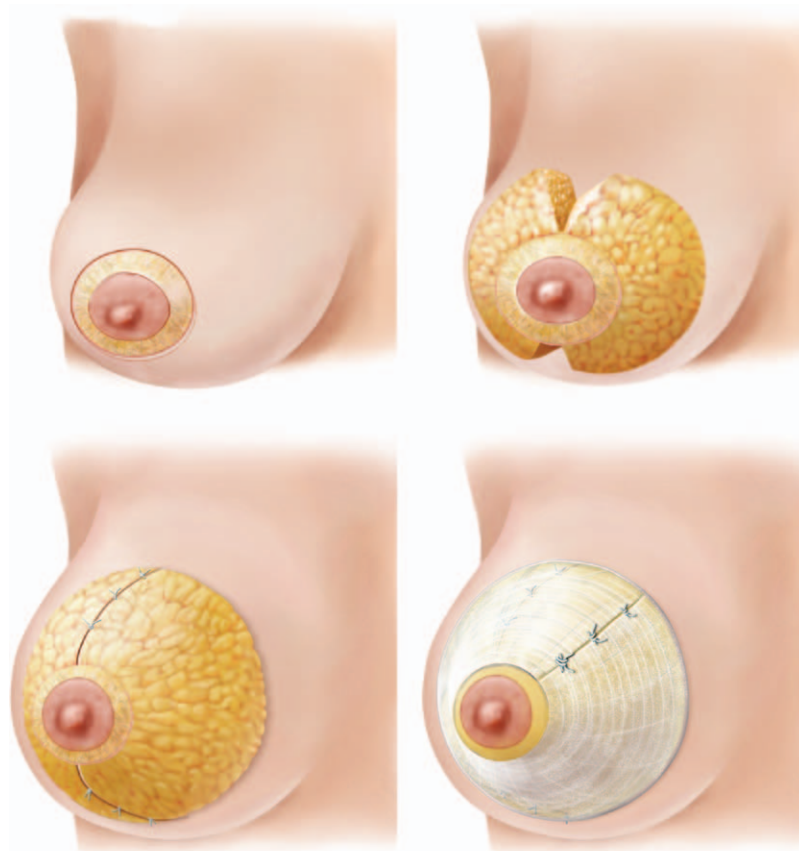


Fig. 8. Circumareolar mastopexy with mesh support. (*Above, left*) After a circumareolar skin excision, the gland is degloved. (*Above, right*) Superior and inferior wedge excisions of the gland are performed. (*Below, left*) The excision defects are closed to cone the gland and improve projection. (*Below, right*) The gland is wrapped in a synthetic mesh to reinforce the shape and add support.

of these more complex parenchymal redistribution techniques subjects the patient to other complications such as fat necrosis.

An alternative approach using mesh support begins with degloving the breast following a circumareolar skin excision. Superior and inferior parenchymal wedge excisions are performed that cone the gland after closure of the defects. Either a mixed polyester/polyglactin (not available in the United States) or Vicryl or Vicryl/Prolene (both from Ethicon, Inc., Somerville, N.J.) mesh is then placed over the gland and sutured to the chest wall (Fig. 8). No interference with monitoring for breast cancer is claimed and the mesh is not radiologically evident after 1 year.³⁴ The mesh is well tolerated with minimal soft-tissue reaction to it, does not alter tissue consistency, and is easy to remove if necessary.³⁵

Mastopexy is particularly challenging in massive weight loss patients because of severe tissue atrophy and skin excess. An inverted-T design

permits maximum skin excision that includes redundant lateral chest wall skin. One method of treating the underlying gland first raises medial and lateral parenchymal flaps and then sutures the two flaps and the central gland high to the rib periosteum with permanent sutures. Gland imbrication to improve projection and narrow the breast then follows (Fig. 9).³⁶ The breast can also be autoaugmented using a flap of deepithelialized lateral chest wall tissue or upper abdominal tissue.³⁷

KEY ELEMENTS OF SURGERY

Technical Elements of Surgery

Breast surgery should be performed with the capability of sitting the patient completely upright as needed during the course of the procedure. This requires proper positioning on the operating table and stabilization of the head and arms. (See **Video, Supplemental Digital Content 1,**

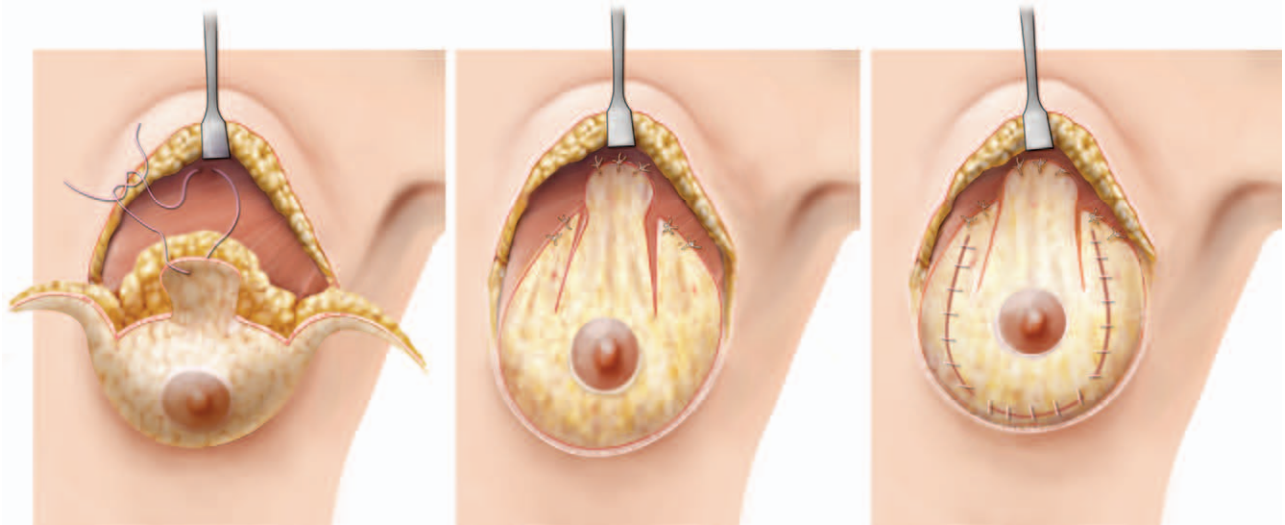


Fig. 9. Mastopexy in the massive weight loss patient. (*Left*) The gland is deepithelialized following inverted-T incisions. Medial and lateral flaps are created and the central parenchyma is sutured high on the second rib periosteum. (*Center*) The medial and lateral flaps are then sutured to the ribs at lower levels. (*Right*) The gland is then suture plicated along several lines to cone the breast and tighten the lower pole.

which demonstrates this technique, available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A849>.)

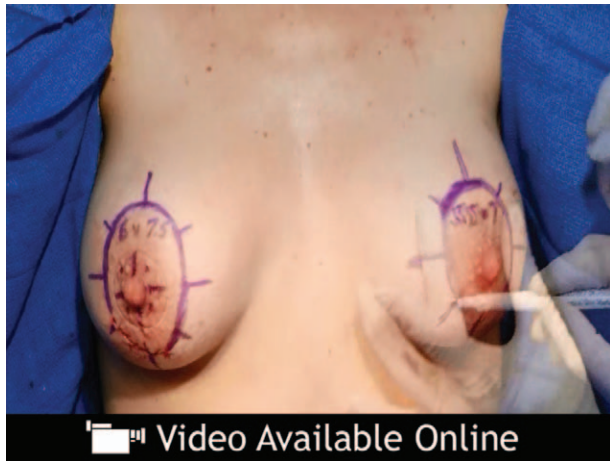
Circumareolar Mastopexy

After implant placement through a periareolar incision, the mastopexy is designed. Outer diameters of 7 cm or less will avoid the aesthetic problems described previously. The inner diameter may be at the areolar margin or within it depending on the final areolar diameter desired. Tailor-tacking with the patient upright is useful to preview the benefits of circumareolar mastopexy

and to confirm the dimensions and shape of the skin excision pattern. The design typically has a greater vertical than horizontal diameter to maximize lift while minimizing circumareolar skin tension. It is not necessary to undermine the outer incision edge. A wagon-wheel purse-string suture using 2-0 polytetrafluoroethylene (Surgiform Technology, Lugoff, S.C.) is placed before final skin closure. (See **Video, Supplemental Digital Content 2**, which demonstrates breast augmentation with circumareolar mastopexy, available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A850>.)



Video 1. Supplemental Digital Content 1, demonstrating the technique of proper positioning of the patient on the operating table and stabilization of the head and arms, is available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A849>.



Video 2. Supplemental Digital Content 2, demonstrating breast augmentation with circumareolar mastopexy, is available in the "Related Videos" section of the full-text article on PRSJournals.com, or, for Ovid users, at <http://links.lww.com/PRS/A850>.

Vertical Mastopexy

Markings are made by rotating the breast medially and laterally to determine vertical limb placement (Fig. 10). The need for an implant can be determined together with the patient by

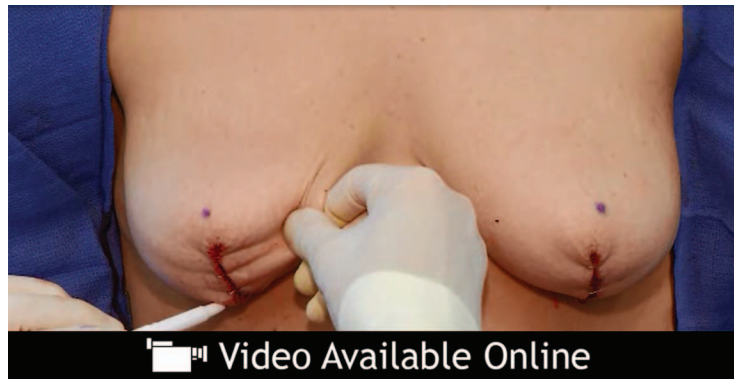
visualizing upper pole contour with the breast rotated to simulate mastopexy. A significant concavity suggests that an implant should be used.

The vertical limbs are approximated temporarily. The vertical incision can be further imbricated by tailor-tacking with the patient sitting at 90 degrees. (See **Video, Supplemental Digital Content 3**, which demonstrates marking and skin excision design concepts, available in the "Related Videos" section of the full-text article on PRSJournals.com, or, for Ovid users, at <http://links.lww.com/PRS/A851>.) This may enhance lift but, done excessively, will flatten lower pole contour.

When combined with augmentation, either portion can be performed first. Many patients seek maximum lift and somewhat reluctantly accept the need for an implant. Performing the mastopexy first allows the greatest amount of skin to be removed. This will achieve maximum lift. A size is then placed to determine the smallest implant needed to fill the upper pole concavity. Patients seeking both a significant size increase and a lift can have the augmentation portion performed first to satisfy the size requirement. However, this practice may limit the amount of skin that can be



Fig. 10. Markings for vertical mastopexy. (Above, left) The new nipple position is marked relative to the inframammary crease level. (Above, center) The central breast meridian is marked under the breast. (Above, right) The breast is manually rotated medially just enough to produce optimal lower pole contour. A vertical line is made along the axis determined by the new nipple position mark and the central meridian mark under the breast. (Below, left) The breast is then rotated laterally in a similar fashion and the second vertical line is made between the two reference points. (Below, center) The vertical lines are then either extended to the new nipple position (shown) or to the junction with the circumareolar design when a circumvertical method is used. (Below, right) The breast is then lifted and the vertical limbs drawn in a converging fashion to end at a point that lies along the central meridian but at least 1 cm above the inframammary crease.



Video 3. Supplemental Digital Content 3, which demonstrates marking and skin excision design concepts, is available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A851>.

removed, possibly compromising the amount of lift possible.

The implant pocket incision is best positioned transversely between the vertical incisions close to breast base. Avoiding parallel, overlying pocket and mastopexy incisions reduces the potential for scar contraction deformities and better isolates the implant pocket. The implants can be placed in a subpectoral plane and the muscle partially released as necessary from the overlying breast tissue to establish optimal contour (dual-plane technique) (Fig. 11).³⁸ (See Video, Supplemental Digital Content 4, which demonstrates implant considerations in augmentation-mastopexy, available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A852>.)

The new location of the nipple-areola complex is best determined after the implants are placed and with the patient in the sitting position. (See Video, Supplemental Digital Content 5, which demonstrates positioning and inseting of the nipple-areola complex, available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A853>.)

Y-Scar Vertical Mastopexy

When both nipple position and areolar diameter are normal, mastopexy does not require a circumareolar incision initially. After the vertical incision is closed, the patient is sat up and the nipple position and areolar diameter are assessed. If both are still optimal, a periareolar incision is made and small amounts of skin are excised to restore a round inferior areolar shape. Occasionally, small amounts of tissue deep to the lower

areola must be excised to avoid subareolar fullness just above the incision.

Inverted-T Mastopexy

The vertical limbs are designed by displacing the breast manually to each side, similar to vertical mastopexy, except that they diverge rather than converge inferiorly. They usually extend 7 cm from the planned new nipple position. A closed design where the limbs completely skirt the areolar margin is preferred whenever possible because it provides complete freedom in locating the nipple and choosing final areolar diameter.

The lateral horizontal limbs may extend as far as the axilla in massive weight loss patients. Extensive flap elevation over the gland is unnecessary unless a parenchymal stabilization or autoaugmentation procedure is included. (See Video, Supplemental Digital Content 6, which demonstrates inverted-T mastopexy in the massive weight loss patient, available in the "Related Videos" section of the full-text article on PRSJJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A854>.)

Implants can be placed through a breast base incision. Placing a sizer, stapling the incisions, and sitting the patient up helps determine optimal implant volume by incremental air insufflation. Adjustments to the incision pattern can be performed at the same time to optimize shape.

AVOIDANCE AND MANAGEMENT OF COMPLICATIONS

Areolar herniation may occur in circumareolar mastopexy because of an excess of areolar skin



Fig. 11. Breast augmentation with vertical mastopexy. (Above, left) Grade I ptosis with postpartum atrophy and enlarged areolar diameters. (Above, right) Vertical mastopexy with 175-g subpectoral round silicone implants. (Below, left) Grade II ptosis with postpartum atrophy and elongated nipples. (Below, right) Vertical mastopexy with 225-g subpectoral round silicone implants and nipple reduction.

in relation to the areolar circumference. This can be avoided either by reducing the areolar diameter further, not overtightening the purse-string suture, or both.

Purse-string suture breakage with areolar spreading can occur, as can knot exposure when not adequately buried. A palpable suture ring can occur with simple circumferential suture technique using nylon or polypropylene. This is

not generally seen with wagon-wheel purse-string technique using polytetrafluoroethylene.

Central flattening, wide scars, pleats, large areolar diameters, and loss of areolar skin texture can result from excessive circumareolar skin excision. Implant downsizing may ameliorate these problems. It may also produce sufficient skin laxity to convert to a vertical mastopexy. This will reduce the areolar circumference by the distance



Video 4. Supplemental Digital Content 4, demonstrating implant considerations in augmentation-mastopexy, is available in the “Related Videos” section of the full-text article on PRSJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A852>.



Video 5. Supplemental Digital Content 5, demonstrating the positioning and inset of the nipple-areola complex, is available in the “Related Videos” section of the full-text article on PRSJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A853>.



Video 6. Supplemental Digital Content 6, demonstrating inverted-T mastopexy in the massive weight loss patient, is available in the “Related Videos” section of the full-text article on PRSJournal.com, or, for Ovid users, at <http://links.lww.com/PRS/A854>.

between the vertical limbs, further improving all of the problems described.

Ptosis correction with an inverted-T mastopexy following subglandular augmentation risks nipple and areola necrosis. The combined factors of a subglandular pocket plane, a circumareolar incision, thinned tissues from implant compression, and a concomitant capsulectomy, if necessary, can severely compromise nipple and areolar blood supply. Skin flaps must be very conservatively elevated in these cases.¹⁰

Complications from skin-only mastopexy are rare beyond scar quality issues. Skin, nipple, or fat necrosis can occur with more invasive procedures. One study comparing circumareolar, vertical, and inverted-T techniques found suture “spitting” as the most common problem with all three, with excessive scarring next. Complication rates were 41.5 percent for circumareolar, 9.7 percent for vertical, and 14 percent for inverted-T techniques.³⁹

Seroma, capsular contracture, and implant malposition are among the added risks when simultaneous augmentation is performed. Complications in a study of 321 patients undergoing augmentation mastopexy included saline implant deflation (3.7 percent), capsular contracture (1.9 percent), poor scarring (2.5 percent), areolar asymmetry (2.2 percent), and recurrent ptosis (2.2 percent) (**Therapeutic, Level IV Evidence**).⁴⁰

Common indications for mastopexy revision include recurrent ptosis and scar problems. Circumareolar techniques have the highest revision rate, inverted-T methods have the highest incidence of bottoming out, and vertical techniques have the highest incidence of asymmetry.³⁹ Another study corroborated the highest incidence of revision occurring with circumareolar methods (27 percent) compared with all other methods (14.6 percent).⁴ When combined with augmentation, indications for revision include recurrent ptosis, capsular contracture, implant malposition, implant deflation, size change, poor scars, nipple malposition, or some combination thereof.^{3,4,40}

OUTCOMES

There are no available studies comparing different mastopexy methods, nor are there any that objectively report on long-term follow-up. Most reports are single-author level IV or V studies. There are no studies that compare the efficacy of more invasive parenchymal fixation, redistribution,

and autoaugmentation techniques with skin-only procedures. A recent meta-analysis study failed to demonstrate the superiority of any one method but did reveal previously unappreciated aesthetic issues such as areolar shape problems.²⁴

Physician satisfaction with mastopexy was rated as 4 (range, 1 to 5) by 78.4 percent in one study.³⁹ The greatest source of dissatisfaction stemmed from circumareolar technique. Patient satisfaction was rated as 4 (range, 1 to 5) in 49.2 percent and as 5 in another 40.9 percent. Newer instruments for evaluating patient satisfaction such as the BREAST-Q may improve assessment of current practices.

CONCLUSIONS

Mastopexy encompasses a diverse group of incision and parenchymal management options. Circumareolar, vertical, and inverted-T incision designs are the main incision types used. Mastopexy can either be a skin-only procedure or include parenchymal fixation, redistribution, or autoaugmentation. Parenchymal management options have not yet been objectively compared with each other for efficacy. Mastopexy can be an adjunct to breast augmentation using limited circumareolar skin excision, or implants can be an adjunct to mastopexy when used simply to fill out the upper pole. Combining implants and mastopexy is associated with higher complication rates. Revisions for mastopexy alone are fewer and most commonly performed for recurrent ptosis and scarring problems. Patient and surgeon satisfaction with mastopexy techniques is high. However, mastopexy and augmentation mastopexy, despite being performed far less often than breast augmentation and breast reduction, are associated with a disproportionately high incidence of litigation.

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