Breast Deformities and Mastopexy

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Learning Objectives: After reviewing this article, the participant should be able to: 1. Appreciate the diversity of approaches for the correction of breast deformities and mastopexy. 2. Review the salient literature. 3. Understand patient selection criteria and indications.

Summary: Breast deformities and mastopexy continue to challenge plastic surgeons. Deformities such as Poland syndrome, tuberous breast, gynecomastia, and other congenital conditions are uncommon; therefore, management experience is often limited. Various techniques have been described, with no general consensus regarding optimal management. Mastopexy has become more common and is performed both with and without augmentation mammoplasty. However, a variety of techniques are available, and a thorough understanding of the indications, patient selection criteria, and techniques is important to optimize outcomes. This article will review these and other conditions to provide a better understanding of the current available data and evidence for these operations. (Plast. Reconstr. Surg. 127: 91e, 2011.)

When considering all types of breast surgery, the category of breast deformity is perhaps the least prevalent and in some ways the most challenging. The conditions that make up this category include tuberous breast, Poland syndrome, and gynecomastia, as well as congenital and developmental breast asymmetries. Many of these anomalies have embryologic origins and manifest during puberty.1 These conditions have all been described in variable detail both in textbooks and in the scientific literature; however, because these conditions are less common, associated with variable degrees of complexity, and are sometimes difficult to treat, there is a lack of consensus on optimal management. This section will focus on and emphasize the various evaluation and management strategies that have been described.

A separate topic in this category is mastopexy. Although mastopexy is used to correct an overly ptotic breast and may be unrelated to the correction of a classic breast deformity, the principles and concepts of repair are best suited for this section, as there is some degree of overlap with the correction of breast deformities. The subcategory of augmentation mastopexy will also be covered in this section.

TUBEROUS BREAST DEFORMITY

There are several features of the tuberous breast that are important to identify before management. These include a constricted base, contraction of the skin envelope, relative micromastia, enlarged diameter of the nipple-areola complex, and herniation of breast parenchyma through the nipple-areola complex2 (Fig. 1). Although the exact etiology has not been elucidated, it is generally accepted that this disorder has an embryologic origin.3 Most reports have speculated that the superficial investing fascia of the breast is abnormal and constricted at the base of the breast. This constriction at the base and deficiency at the areola is responsible for the reduced base diameter and areolar herniation.3 A competing theory states that there is no constrictive band at the base of the breast and that the only abnormality is a deficiency of areolar support, giving rise to the herniation.4

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Related Video content is available for this article. The videos can be found under the “Related Videos” section of the full-text article, or, for Ovid users, using the URL citations printed in the article.
Several surgical approaches have been described to correct the tuberous breast deformity.\textsuperscript{2–11} Rees and Aston first described the correction of the tuberous breast in 1976 and advocated expanding the base diameter of the breast with radial scoring.\textsuperscript{2} Dinner and Dowden believed that the constriction was the result of a cutaneous band and advocated a skin incision.\textsuperscript{5} Ribeiro et al. identified a constrictive ring and advocated dividing it horizontally.\textsuperscript{6,7} Mandrekas et al. have performed a similar operation to Ribeiro, except that the constrictive band was divided vertically (Fig. 2). Pacifico and Kang have described an alternative approach in which areola reduction, subdermal undermining, and subglandular implant placement are used.\textsuperscript{4} Their belief is that the deformity is due solely to an areolar abnormality and not to a constrictive band at the base. Coleman and Saboeiro have reported on the benefits of liposuction by injecting autologous fat into the subcutaneous tissues and pectoral muscle.\textsuperscript{8} In a single patient, two sessions were required, with injection volumes of 370 cc on the right and 380 cc on the left. This was followed 4 years later with 300 cc on the left and 340 cc on the right (Fig. 1).

It is generally believed that correction of tuberous breast deformity requires attention to several salient points. The approach that is advocated

\begin{figure}[h]
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\includegraphics[width=\textwidth]{Fig_1.png}
\caption{Preoperative and postoperative views of a patient with tuberous breast deformity. (Left) The nipple-areola complex is enlarged with a herniated appearance, and the base diameter of the breast is constricted. In this case, the breast was corrected with autologous fat grafting. (Center) Results following first session of fat grafting. (Right) Results following second session of fat grafting. (Reprinted from Coleman SR, Saboeiro AP. Fat grafting to the breast revisited: Safety and efficacy. Plast Reconstr Surg. 2007;119:775–785.)}
\end{figure}
by most is to outline a circumareolar pattern around the perimeter of the desired nipple-areola complex. A donut-type mastopexy pattern is outlined. After skin excision, the circumference of the surrounding tissues is undermined; however, the inferior subcutaneous plane is undermined to the level of the inframammary fold and chest wall. The inferior breast parenchyma is undermined and ultimately divided centrally or scored to disrupt or divide the fibrous constrictive ring. The lower pole of the breast can be contoured by utilizing an inferiorly based flap or the medial and lateral lower breast pillars to provide the parenchymal tissue needed to reconstruct the lower pole. A prosthetic device is usually inserted in the prepectoral plane and covered entirely by parenchymal tissue. In rare circumstances, a prosthetic device may not be necessary if there is enough parenchymal tissue to create a flap of tissue to enhance projection and contour.

Complications include recurrence, loss of sensation, asymmetry, scar, delayed healing, and implant-related complications. Mandrekas et al., in their review of 11 patients, and Pacifico and Kang, in their review of eight patients, reported no complications. Reported outcomes have ranged from good to excellent. Mandrekas et al. reported 100 percent patient satisfaction and 100 percent surgeon satisfaction. Pacifico and Kang reported outcomes on eight patients and 13 breasts following areola reduction and subglandular augmentation. An independent panel graded the outcomes as excellent in 75 percent and good in 25 percent; however, all patients reported that they were very satisfied with the outcome.

**MASTOPEXY**

See Video 1, in which Dr. Elizabeth Hall-Findlay shows the marking of the breast for mastopexy and reduction, available in the “Related Videos” section of the full-text article on PRSJournal.com. Video for Ovid users is available at [http://links.lww.com/PRS/A309](http://links.lww.com/PRS/A309).

See Video 2, in which Dr. Hall-Findlay shows the dissection for mastopexy, including inferior flap rearrangement, the superior pedicle, and vertical skin resection, available in the “Related Videos” section of the full-text article on PRSJournal.
Mastopexy is indicated in women who desire an improvement in breast contour without a volume change. Traditionally, mastopexy has been performed using primarily skin excision techniques; however, since the mid-1990s, there has been an emphasis on internal shaping of the parenchymal tissue as well. The classic skin excision patterns for mastopexy have included crescent, periareolar, circumvertical, and inverted-T designs. Internal shaping can be performed using various supportive materials or parenchymal pillars. This section will review the indications as well as various methods and techniques described.

The type of mastopexy performed will depend on the degree of breast ptosis. Breast ptosis is graded using Regnault’s classification (Table 1). An excellent review of the standard mastopexy techniques was compiled by Rohrich et al. A crescent mastopexy can be considered when the degree of nipple-areola complex elevation does not exceed 1 cm. A periareolar mastopexy can be

<table>
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<th>Scale</th>
<th>Criteria</th>
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<tr>
<td>Pseudoptosis</td>
<td>NAC is above the IMF</td>
</tr>
<tr>
<td>Type I (mild)</td>
<td>NAC is at or 1 cm below the IMF</td>
</tr>
<tr>
<td>Type II (moderate)</td>
<td>NAC is 1–3 cm below the IMF</td>
</tr>
<tr>
<td>Type III (severe)</td>
<td>NAC is at the lowest portion of the breast</td>
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NAC, nipple-areola complex; IMF, inframammary fold.
considered when the distance of nipple-areola complex elevation ranges from 1 to 2 cm, which would be classified as a Regnault I or II. After the skin excision, the outer perimeter of the dermis is scored, and the subcutaneous plane is undermined circumferentially to allow for adequate re-draping of the skin envelope over the parenchyma. The periareolar mastopexy can be performed as a “donut” and in an eccentric pattern (Fig. 3). A circumvertical mastopexy will lift the base of the breast as well as reposition the nipple-areola complex and is usually used for a Regnault II (Fig. 4). The inverted-T technique is useful for the moderate to severely ptotic breast classified as a Regnault II or III (Fig. 5). The horizontal incision will reduce the distance from the nipple-areola complex to the inframammary fold, while the vertical incision will reduce the base diameter. The L-shaped mastopexy will eliminate the medial portion of the inverted-T incision and is indicated for women with grade I to II breast ptosis (Fig. 6).

Recent innovations have expanded the options for traditional mastopexy. Traditional approaches for mastopexy have emphasized modification of the skin envelope only with minimal parenchymal manipulation. Goes was the first to demonstrate that skin-only excisions were not sufficient to maintain long-term benefits.\textsuperscript{13,14} He emphasized using a periareolar dermal flap in conjunction with mixed mesh to support the glandular structures. As these concepts have evolved, the benefits of internal parenchymal reshaping have been demonstrated. Foustanos and Zavrides have described the double-flap technique.\textsuperscript{15} The mastopexy outline utilizes the inverted-T pattern. An inferiorly based parenchymal flap based on chest wall perforating vessels is created, as well as a medial and lateral pillar. The upper breast is partially undermined off the pectoral fascia. The inferior parenchymal flap is sutured to the pectoral fascia, and the medial and lateral pillars are sutured together. Boehm et al. prefer the same operation, except that it is performed through a vertical incision.\textsuperscript{16} Ritz et al. have described the fascial suspension mastopexy in which a vertical or inverted-T pattern is delineated.\textsuperscript{17} The technique is similar to the Foustanos and Zavrides technique, except that the inferior parenchymal pedicle is tunneled under a 3 × 5-cm band of pectoralis fascia. The medial and lateral pillars are approximated. Graf and Biggs have popularized the pectoral loop technique in which the inferior parenchymal flap is passed through a loop of pectoral muscle to maintain the position of the flap.\textsuperscript{18} This operation can be performed through various incisional patterns that include J, inverted-T, vertical, and horizontal patterns. The use of an interlocking Gore-Tex suture to maintain the diameter of the nipple-areola complex can be considered.

Complications include delayed healing, skin necrosis, nipple necrosis, nipple asymmetry, fat necrosis, and unattractive scars.\textsuperscript{18} Mammographic changes can occur following glandular reshaping.

\textbf{Fig. 3.} Illustrations of (left) an eccentric mastopexy pattern and (right) a periareolar or donut mastopexy pattern. (Reprinted from Rohrich RJ, Thornton JF, Jakubietz RG, Jakubietz MG, Grünewirt JG. The limited scar mastopexy: Current concepts and approaches to correct breast ptosis. \textit{Plast Reconstr Surg.} 2004;114:1622–1630.)

\textbf{Fig. 4.} The pattern for a circumvertical mastopexy is illustrated. (Reprinted from Rohrich RJ, Thornton JF, Jakubietz RG, Jakubietz MG, Grünewirt JG. The limited scar mastopexy: Current concepts and approaches to correct breast ptosis. \textit{Plast Reconstr Surg.} 2004;114:1622–1630.)
and include microcalcifications. These can usually be distinguished from malignant transformation.

In a recent survey of U.S. plastic surgeons, the skin excision pattern utilizing the inverted-T incision was found to be the most common type of mastopexy performed.\textsuperscript{19} Physician satisfaction was highest with short-scar circumvertical techniques and lowest with periareolar techniques. Morbidities were assessed based on procedure type. Revisions were highest in the periareolar group ($p < 0.002$), bottoming out was greatest in the inverted-T group ($p < 0.043$), and asymmetry was highest in the short-scar group ($p < 0.008$).

**Fig. 5.** The pattern for the inverted-T mastopexy is illustrated. (Reprinted from Rohrich RJ, Thornton JF, Jakubietz RG, Jakubietz MG, Grünert JG. The limited scar mastopexy: Current concepts and approaches to correct breast ptosis. \textit{Plast Reconstr Surg.} 2004;114:1622–1630.)

**Fig. 6.** The pattern for the L-shaped mastopexy is illustrated. (Reprinted from Rohrich RJ, Thornton JF, Jakubietz RG, Jakubietz MG, Grünert JG. The limited scar mastopexy: Current concepts and approaches to correct breast ptosis. \textit{Plast Reconstr Surg.} 2004;114:1622–1630.)

**AUGMENTATION MASTOPEXY**

Augmentation mastopexy is a complex operation that incorporates all of the elements of augmentation mammoplasty and mastopexy. Proper assessment includes the degree of nipple ptosis, degree of breast ptosis, distance from the nipple-areola complex to the inframammary fold, location of the nipple-areola complex relative to the breast, and the quality of the skin envelope and parenchymal tissue. Indications for an augmentation and mastopexy include a nipple-areola complex that is below the inframammary fold, Regnault’s grade II to III ptosis, excess breast skin relative to breast parenchyma, and breast ptosis that is more than 2 cm below the inframammary fold. The goals of this procedure are to elevate the position of the nipple-areola complex, enhance breast volume, and tighten the skin envelope to improve breast contour and position.

The decision making with regard to mastopexy alone, augmentation alone, and augmentation mastopexy can be complicated. The ideal position of the nipple-areola complex should be determined based on the inframammary fold and the midhumeral location (Fig. 7). If nipple elevation is not required, then augmentation alone should suffice. However, if there is some degree of breast ptosis, augmentation mastopexy may be considered. Mastopexy types include the crescent, circumiareolar, circumvertical, and Wise pattern.
For mild ptosis, a crescent or periareolar approach is considered. For moderate ptosis, a circumvertical approach is considered. For severe ptosis, an inverted-T incisional pattern is often performed.

All of these options will depend on the desires and expectations of the patient. If a woman is interested in mastopexy alone or augmentation alone, this should take priority, assuming that the patient understands the shortcomings, risks, and benefits. In a woman with mild to moderate breast ptosis, simultaneous augmentation and mastopexy can be considered. In a woman with severe breast ptosis, a staged procedure can be considered. In these patients, either mastopexy or augmentation can be performed first followed by the other. Prosthetic devices can be placed in the subpectoral or subglandular plane. These planes are usually accessed through the mastopexy incisions and do not require remote access.

When either a staged or simultaneous augmentation/mastopexy is planned, there are several technical points that should be considered to keep the operation safe and effective. Spear has reviewed the complexities associated with this operation when the mastopexy is performed following augmentation, including infection, implant exposure, loss of nipple-areola sensation, malposition of the nipple-areola complex, and malposition of the implant relative to the overlying breast. The complexities are compounded when simultaneous augmentation and mastopexy are planned, because of apposing vectors. Risks include devascularization of the central breast mound, skin necrosis, loss of nipple sensation, and nipple malposition. Friedman has outlined several preventative measures when considering simultaneous augmentation and mastopexy. These include subpectoral device placement, augmentation before mastopexy, tailor-tacking the skin envelope, avoidance of inverted-T incisions, and parenchymal resection as needed.

Clinical experience with augmentation/mastopexy has been generally favorable. Stevens et al. have reported a 10.9 percent implant revision rate and a 5.7 percent tissue revision rate. Complications included saline implant deflation, recurrent ptosis, poor scarring, and areolar asymmetry. The majority of women had silicone gel implants (69 percent) placed in the submuscular position (87 percent). The type of mastopexy included the inverted-T (60 percent), periareolar (21 percent), circumvertical (15 percent), and crescent (4 percent). Spear et al. have reported on 166 women who had various combinations of augmentation, mastopexy, and augmentation mastopexy. There were 97 primary procedures and 69 secondary procedures. Complications following primary augmentation occurred in 1.7 percent compared with 17.4 percent following primary augmentation mastopexy. The revision rate following primary augmentation was 1.7 percent compared with 8.7 percent following primary augmentation mastopexy. Comparing the complication and revision rate in women following secondary augmentation and augmentation/mastopexy procedures demonstrated no difference.

**POLAND SYNDROME**

Poland syndrome is an uncommon condition with a reported incidence that is less than 0.1 percent. It is characterized by hypoplasia or aplasia of the breast and nipple-areola complex, absence of the pectoralis minor muscle, absence of the sternal head of the pectoralis major muscle, and a subcutaneous soft-tissue deficiency. The typical appearance of a patient with Poland syn-
drome includes severe asymmetry of the affected and nonaffected chest wall, with a pathognemonic groove at the junction of the superior anterior axillary line and chest wall because of the absent sternal head of the pectoralis major. Brachydactyly and syndactyly are sometimes associated with this syndrome.

The goals of treatment are to correct the bone deformity when necessary, address the soft-tissue deficiency, and to reconstruct the breast. Correction of Poland deformity may require stages. In young children with a severe chest wall deformity, early reconstruction of the thoracic cage may be necessary before breast reconstruction, which would be considered in late adolescence or adulthood when breast development is complete.24

Reconstructive options include remodeling of the thoracic cage, use of autologous tissue with free or pedicled flaps, prosthetic devices, and autologous fat transfer using injection techniques. Fokin and Robicsek have described an option for chest wall reconstruction utilizing contralateral split-rib grafts that are secured to the defective rib margins and sternal edge.24 This is resurfaced with prosthetic mesh for support. During the second stage, latissimus dorsi flap reconstruction is considered. Dingeldein et al. have described a similar procedure that spares the costal cartilage and utilizes the latissimus dorsi muscle immediately rather than prosthetic mesh.25 Borschel et al. had stratified the various types of Poland deformities reconstructed with prosthetic devices with and without the addition of a latissimus dorsi flap.26 The prosthetic devices included tissue expanders, customized solid silicone implants, and standard saline and silicone gel implants. In men, a custom silicone implant is preferred rather than a latissimus dorsi flap. In women, a two-stage reconstruction is preferred, starting with a tissue expander and followed by either a latissimus dorsi flap with or without an implant or a prosthetic device without flap coverage. Kelly et al.27 have successfully used the contralateral latissimus dorsi free flap in a 2-year-old girl, and Laio et al.28 have used the deep inferior epigastric perforator flap in a 52-year-old woman with severe ipsilateral chest wall abnormalities associated with Poland syndrome. Coleman and Saboeiro have described and popularized lipoaugmentation for breast deformities, including Poland breast.8 Pinsolle et al. have used lipoaugmentation alone in one patient and in combination with prosthetic devices and/or autologous tissue in seven patients with Poland syndrome.29

Complications following correction of Poland breast deformity are primarily related to the reconstruction itself. Prosthetic devices may be compromised because of capsular contracture, implant rupture, implant distortion, implant migration, and seroma formation.26,30,31 Flap reconstruction may fail due to perfusion problems, resulting in partial or total flap failure. Breast asymmetry is almost always a certainty following unilateral reconstruction; however, secondary procedures may improve the imbalance. Rocha et al. have described the phenomena of costal resorption and mediastinal shift following prosthetic reconstruction.31

Outcomes following correction have generally been good. Seyfer et al. reported long-term results following correction in 27 patients.30 The majority of women had soft prosthetic devices with or without a latissimus dorsi flap and did well. Custom-made devices fared worse requiring premature removal in 75 percent. Contralateral procedures for balance and symmetry were necessary in 13 of 21 women (62 percent).

GYNECOMASTIA

See Video 4, in which Dr. Hall-Findlay shows the reduction surgery, including inferior wedge excision, medial pedicle, and vertical skin resection, available in the “Related Videos” section of the full-text article on PRSJournal.com. Video

Video 4. Video 4, in which Dr. Hall-Findlay shows the reduction surgery, including inferior wedge excision, medial pedicle, and vertical skin resection, is available in the “Related Videos” section of the full-text article on PRSJournal.com. Video for Ovid users is available at http://links.lww.com/PRS/A312. Presented with permission from Elizabeth Hall-Findlay, M.D. and Tracker Productions, Banff, Alberta, Canada.
Gynecomastia is a condition of benign proliferation of breast tissue in men. Although not commonly reported, it is present in 40 to 50 percent of men over 40 years of age. It can manifest in pubertal boys and in men of advanced years. The etiology is variable and may be due to excess circulating estrogen, decreased circulating androgens, or a deficiency of androgen receptors. In middle-aged and older men, it is thought to be due to the excessive aromatization of androgens to estrogens. Initial evaluation requires differentiation between fatty tissue, parenchymal enlargement, and tumor. Imaging studies, such as mammography, are useful. Biopsy may be indicated in some cases.

Classification of the gynecomastia will assist with treatment planning. Rohrich et al. have classified gynecomastia based on breast size and degree of ptosis. Grade I is minimal hypertrophy without ptosis. Grade II is moderate hypertrophy without ptosis. Grade III is severe hypertrophy with grade I ptosis. Grade IV is severe hypertrophy with grade II or III ptosis. Surgical management consists of removal of the excess fat and glandular tissue. This is achieved using direct excision or suction lipectomy. Various modalities to assist with these techniques have been recently described.

The goals of treatment are to determine the etiology of this condition and to control or reverse the process (Fig. 8). Gynecomastia may be due to the ingestion of certain medications, systemic disease, body habitus, or genetic predisposition. Medications that have been implicated in causing gynecomastia include, but are not limited to, antiandrogens, exogenous hormones, and cardiovascular medications, such as digoxin and spironolactone, as well as antiulcer medications, such as cimetidine and ranitidine. Systemic conditions include thyroid abnormalities, renal failure, and liver disorders. Control of the underlying condition or cessation of medication may improve the condition; however, if not, then surgical options are considered. The goal of surgery is to remove the excess breast tissue and skin, ensure adequate positioning of the nipple-areola complex, ensure symmetry between the breasts and chest wall, and to avoid significant scarring.

There have been several methods by which excess breast tissue is removed that range from direct excision to suction-assisted lipectomy. Current standards are to use liposuction and its derivatives unless the condition is so severe that direct skin excision is required. For when skin excision and free nipple grafting are necessary, Murphy et al. have described a method by which nipple-areola placement is optimized. Based on preoperative measurements, the vertical axis is located 0.33 times the distance of the sternal notch and pubis, and the horizontal axis or internipple distance is 0.21 times the chest circumference. An alternative to free-nipple grafting in cases of severe hypertrophy is described by Tashkandi et al. In these cases, a single-stage subcutaneous mastectomy and circumareolar concentric skin reduction is performed.

Traditional suction-assisted liposuction can be effective in mild cases of gynecomastia; however, in more advanced cases, enhancing the efficacy and strength of liposuction may be necessary. Hodgson has reported on the use of ultrasonic-assisted liposuction in conjunction with suction-assisted liposuction for gynecomastia. Thirteen patients with gynecomastia that ranged from grade I to III had successful treatment with aspirates that ranged from 100 to 300 cc using ultrasonic-assisted liposuction and 100 to 600 cc using suction-assisted liposuction. Lista and Ahmad have utilized power-assisted liposuction in conjunction with a pull-through technique to sever...
the subdermal attachments of the fibroglandular breast tissue. The mean aspirate from the power-assisted liposuction was 459 cc (range, 25 to 1400 cc), and the amount of additional tissue extracted with the pull-through technique ranged from 5 to 70 cc per breast. An alternative to the pull-through technique is to use a power-assisted arthroscopic-endoscopic cartilage shaver as described by Prado and Castillo. This was demonstrated to be effective in 20 patients in whom the fibrofatty and glandular tissues were removed without areolar incisions (Fig. 9).

Complications include inadequate resection, overresection, excess skin, complex scars, hematoma, seroma, partial nipple necrosis, suture line dehiscence, pain, loss of nipple sensation, and infection. Lanitis et al. have demonstrated that patient age, resection volume, grade of gynecomastia, and surgical approach was not predictive of a minor or major complication using direct excisional techniques. They reported an overall complication rate of 15.5 percent, with the majority of complications due to underresection (21.9 percent), overresection (18.7 percent), complex scars (18.7 percent), hematoma (16.1 percent), and seroma (9.1 percent). Gingrass and Shermak have reported no serious complications using ultrasound-assisted liposuction.

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**Fig. 8.** A preoperative algorithm for gynecomastia is illustrated based on the possible etiologies. (Reprinted from Rohrich RJ, Ha RY, Kenkel JM, Adams W. Classification and management of gynecomastia: Defining the role of ultrasound-assisted liposuction. *Plast Reconstr Surg.* 2003;111:909–923.)
risks of ultrasonic liposuction include thermal burns and skin necrosis, because one of the by-products of ultrasonic energy is heat. This is avoided by using cool towels over the skin and avoiding superficial planes near the skin surface.38 Outcomes following gynecomastia treatment have been generally regarded as good to excellent, regardless of the technique used. After ultrasound-assisted liposuction for gynecomastia, Hodgson et al. used a visual analogue score to assess patient satisfaction.38 Based on a scale of one to 10, the mean score for overall satisfaction, shape, appearance of scars, and self-confidence was nine. Rohrich et al. have demonstrated that no additional procedures were necessary in 86.9 percent (53 of 61) of men following ultrasound-assisted liposuction for gynecomastia.34 In eight men with grade III and IV gynecomastia, staged excision of skin and breast was necessary to achieve the desired outcome. Ridha et al. have recently reported on gynecomastia outcomes following a questionnaire evaluation in 72 men following gynecomastia surgery.43 Although postoperative scores were increased using a Likert score from zero to five following either liposuction alone, surgical excision alone, or a combination, the degree of increase was moderate. Only 62.5 percent of men were satisfied to very satisfied. Based on the variability of outcomes, patients must be carefully counseled regarding the risks and benefits of gynecomastia surgery.

Table 2 lists CPT codes commonly used in reconstruction of breast deformities and mastopexy.

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<tr>
<th>CPT Code</th>
<th>Description</th>
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<td>14040</td>
<td>Adjacent tissue transfer or rearrangement, trunk; defect 10 cm² or less</td>
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<tr>
<td>14041</td>
<td>Adjacent tissue transfer or rearrangement, trunk; defect 10.1 cm² to 30.0 cm²</td>
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<td>Muscle, myocutaneous, or fasciocutaneous flap; trunk</td>
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<td>19300</td>
<td>Mastectomy for gynecomastia</td>
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<tr>
<td>19316</td>
<td>Mastopexy</td>
</tr>
<tr>
<td>19325</td>
<td>Mammaplasty, augmentation; with prosthetic implant</td>
</tr>
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</table>

*This information prepared by Dr. Raymond Janevicius is intended to provide coding guidance.*

Fig. 9. Preoperative and postoperative views following gynecomastia surgery using the endoscopic cartilage shaving device. (Reprinted from Prado AC, Castillo PF. Minimal surgical access to treat gynecomastia with the use of a power-assisted arthroscopic-endoscopic cartilage shaver. Plast Reconstr Surg. 2005;115:939–942.)
REFERENCES