Contemporary Management of Gynecomastia

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KEYWORDS

• Gynecomastia • Bipolar radiofrequency • Skin tightening • Simon classification of gynecomastia • Breast ptosis • Liposuction • Boomerang pattern correction of gynecomastia • Lipoaugmentation of pectoralis muscle

KEY POINTS

- Contemporary management often uses advanced technology of therapeutic ultrasound (VASER) and bipolar radiofrequency (BodyTite and Morpheus8 Body) to reduce morbidity and improve quality of results.
- New skin reduction patterns, such as the boomerang, have reduced skin laxity and the scar burden.
- Masculinization using high-definition liposuction and lipoaugmentation of the pectoralis and deltoid muscles should be offered to appropriate candidates.
- Areolaroplasty reshapes and positions masculine nipple areolas.

Video content accompanies this article at http://www.plasticsurgery.theclinics.com.

INTRODUCTION/HISTORY/DEFINITIONS/BACKGROUND

Gynecomastia is common benign enlargement of the breast occurring in more than one-third of males.[1] Although the deformity can be fleeting, for those that it persists many are so distressed by poor self-image, depression, anxiety, and social phobia that they seek surgical removal.[2,3] Contemporary management enables smoother correction of deformity with fewer complications and optimally extends to masculinization of the torso with results captured by photodocumentation of chest mobility and dynamics.

Once pathologic increases in systemic estrogen and malignancy are ruled out, plastic surgeons most often operate on idiopathic gynecomastia arising from hormonal imbalance acting on a supersensitive glandular bud or caused by increased endogenous or exogenous administered circulating estrogen or estrogenlike hormones. Associated with a variable degree of fat usually related to body adiposity, glandular gynecomastia varies from slight to considerable firm masses emanating from the areolas. Minimal adiposity gynecomastia, commonly seen in low body mass index (BMI) body builders, is an obliquely oriented, easily isolated firm tube with more mass lateral than medial.[4] Adipose-laden gynecomastia is more spherical with less defined borders. Pseudogynecomastia exhibits sparse gland interspersed in adipose, presenting in obese and older patients, and after massive weight loss. As the breast increases in size so may the areola and breast skin envelope, which needs reduction.

Initially, the magnitude of deformity and its psychosocial impact is assessed. Minimal procedures are easily accepted, whereas complex operations

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that may entail significant pain, scarring, and risk must be matched by patient antipathy. Because of its simplicity based on breast size and tissue laxity, the Simon classification[5] was slightly modified to sort out most treatment options (**Table 1**). Grade I is minor enlargement without skin redundancy. Grade IIa is moderate enlargement without skin redundancy. Grade IIb is moderate enlargement with nipple ptosis/deformity and/or minor skin redundancy. Grade IIIa is marked enlargement with nipple ptosis/deformity with skin redundancy. Grade IIIb is marked enlargement with sagging breasts and upper torso skin redundancy. Beyond social inhibitions, if there is a concern of masculinity, we introduce surgical enhancement. Patients either limit their operation to the offending gynecomastia or embrace further surgery for masculinization. As more requests for male body contouring occur, correction of gynecomastia becomes a secondary consideration, so a comprehensive approach is expected.

Because contemporary management offers masculinization of the chest and remaining torso through high-definition liposculpture and excisional surgery, basic masculine aesthetics are introduced. For a more comprehensive 360° torso review that relates sculpture techniques to presenting body type read in this Clinics issue "The Male Abdominoplasty," by Michael Stein and Alan Matarasso; Gynecomastia and Male Chest Wall Contouring by Douglas Steinbrech and Eduardo Gonzalez; and "High-Definition Liposculpture in Men" by Hoyos and coworkers.[6] For our aesthetic purposes, skin tightly wraps to reveal the broad muscles of a dominant upper body. A barrel-like rib cage is draped by large, thick, and flat Pectoralis Major, Trapezius, and Latissimus Dorsi muscles. The lateral edges of these muscles are defined with further pectoral prominence of its midportion and along the lateral border of the sternum. Broad shoulders extend further by apple-like deltoids. Anterior chest definition is completed with inferior Pectoralis fullness superior to a short horizontal flattened adherence near the fifth rib.

The aesthetic goals of the treatment of gynecomastia has traditionally been limited to near total glandular resection, smooth contour transition to surrounding subcutaneous tissue, and removal of loose skin, leaving proper nipple areolar complex (NAC) position and shape with as few scars as possible. Because of pubescent onset of gynecomastia and potential for gender ambiguity this focused approach may leave a sense of inadequate masculinity. With the advent of improved, reliable, and safe male-specific operations and liposculpture, selected patients should be offered more thorough body contouring surgery. Hence, in addition to obliteration of the gynecomastia, contemporary management offers tight-skinned upper torso that reflects underlying musculature enhanced by perimeter etching and lipoaugmentation that should extend surgically throughout the torso.[7] Critically, the inframammary fold (IMF), which lies about one interspace below the inferior pectoral border, needs to be obliterated. Conversely, accentuating the IMF through an inferior chest transverse excision is disastrously feminizing. Although not always obvious standing erect, when leaning residual lax skin drapes over the constructed IMF, revealing a deflated but still sagging breast. The ideal nipple projects several millimeters and is surrounded by a flat, transversely oriented 1.5 to 2.0 cm × 2.5 to 3.0 cm oval areola, lying several centimeters medial and superior to the inferior/lateral junction of the Pectoralis Major muscle. Repositioning of a ptotic nipple relates to dynamic Pectoralis Major muscles rather than skeletal landmarks or absolute numbers or ratios. Large, rounded, and protruding areolas need reshaping.

Ignored by most plastic surgeons, but not by the body-conscious patient, are dynamic shape changes of the chest as the Pectoralis Major

Table 1
Treatment options for Simon grade deformity

Grade	Pull Through	VASERlipo	BodyTite	Pectoralis Lipoaugmentation	Boomerang Pattern	J-Torsoplasty/ Hockey Stick	Double Mastectomy with Free NAC Graft
I	X						
IIa	X	X		X			
IIb	X	X	X	X	X		
IIIa		X	X	X	X	X	
IIIb		X		X	X	X	X

morphs from relaxation to full contraction, and with different positions of the arms and body. Demonstrating and photographing these subtle relationships are appreciated by the patient, aid in treatment planning, and thoroughly document outcomes. For example, Case 1 is a 49-year-old man with BMI of 26, moderate enlargement, nipple ptosis, and moderate skin redundancy, grade IIb (**Figs. 1** and **2**). Descending deep and inferior to the NAC, relaxed Pectoralis muscles are visually inseparable from the gynecomastia (see **Fig 1**, top). The contracted Pectoralis major rises and bulges toward the clavicles isolating the periareolar rounded gynecomastia (see **Fig 1**, bottom). Raising the arms stretches, elevates, and flattens the Pectoralis muscle to isolate the breast mound visually and palpably (**Fig 2**, left). On leaning, the gland with excess skin that is loosely adherent to the Pectoralis muscle disturbingly droops (see **Fig 2**, left). Because the contracted Pectoralis muscle or raised arms leaves no muscle fill deep and inferior to the areola, gynecomastia correction should be planned accordingly. For a thorough visual appraisal of results, comprehensive photographic documentation of gynecomastia and its treatment should include arms to the side, contracted Pectoralis muscle, extended arms, and diving position. Using VASERlipo (Solta Medical, Bothell, WA) and BodyTite (InMode, Irving, CA) (discussed later), total correction is documented in these various positions (**Figs. 3** and **4**).

Fig. 1. Grade IIb gynecomastia in a 45-year-old 6-ft, 3-in 200-lb man. Frontal view. (*Top*) With pectoralis muscle relaxed the postareolar skin and inferior is smoothly filled with breast and muscle. The midpectoralis has slight convexity. (*Bottom*) With pectoralis contracted, the muscle is elevated to broadly round the midchest, leaving only rounded and more defined gynecomastia fullness behind and inferior to NAC.

TECHNIQUES

Improved technology, skin resection patterns, and masculinization procedures have evolved since the senior author (DJH) started practice in 1977. In lean bodybuilding males, transareolar excision of gynecomastia followed by internal suture plication to avoid hematoma has not changed since published in 1989 by Aiache.[8] When there is excess adipose, a broad expanse of full-thickness liposuction has resulted in less bleeding, smoother contours, and limited skin contraction.[9] Since the late 1990s, ultrasonic-assisted lipoplasty partial evacuation of gynecomastia and surrounding excess adipose has been an essential technology for correction of gynecomastia.[10] VASER, a third-generation ultrasonic technology, is popular with surgeons performing high-definition liposuction, citing lower blood loss and smoother results.[6,7,11,12] Compared with traditional and power-assisted lipoplasty, VASERlipo with VenTx cannula aspiration removes more adipose cells with less disruption of neurovasculature and supporting connective tissue, thereby optimizing safety and innate skin shrinkage. Typically, ultrasonic assisted lipoplasty (UAL) leaves behind a reduced mass of firm glandular tissue, expediting less extensive, near bloodless pull-through excision through an infra-areolar incision.[13] Perimeter liposuction tapers the contour leaving behind broad connective tissue adherences from dermis to the muscular facia to abet large area contraction, while reducing the incidence of hematomas or seromas.

Nevertheless, critics lump VASER with other high-energy delivery systems, such as laserlipo causing skin contraction through thermal injury.[14] To the contrary, proper use of VASER causes no destructive heat.[15] Use room temperature infusion fluid. Inject more than the amount of anticipated extraction. Use VASER vibratory mode at 80% or less, with constant probe motion. Continuous mode is reserved for deep fat fragmentation. Withdraw the probe on gaining minimal resistance, which is less than a minute for each anticipated 100 mL of extraction. Skin shrinkage follows preservation of elastic connective tissue and dermis,

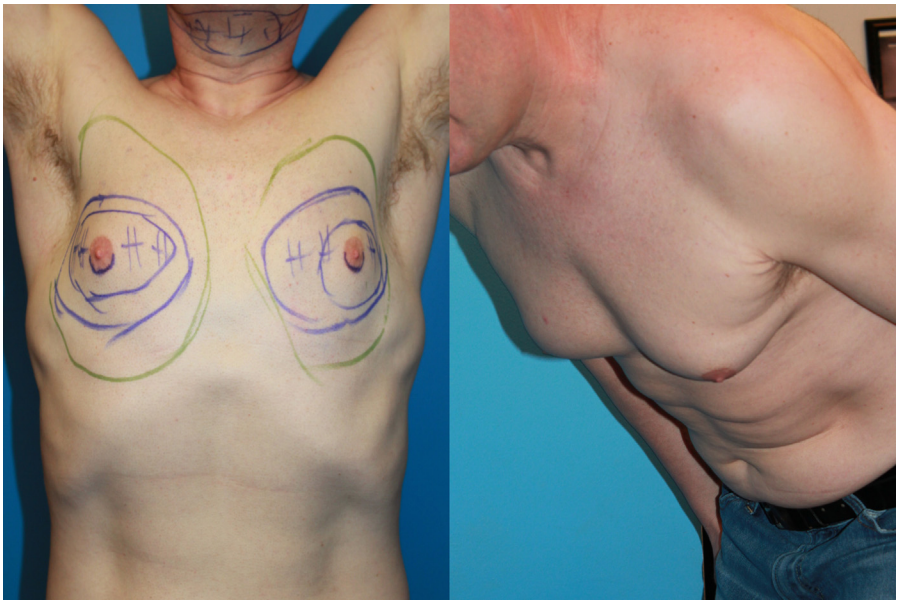

Fig. 2. Arm extension and leaning views of patient in **Fig. 1**. (*Left*) Raising the arms displaces the lateral pectoralis muscle superomedial to isolate the gynecomastia, which is encircled in *blue*. The *small blue circle* represents the perimeter of the palpable gynecomastia. The *outer blue circle* is the extent of excess fat needing tapered removal with VASERlipo. The *green circle* encompasses the area for application of 30 kJ with surface temperature 40°C and deep 70°C bipolar frequency BodyTite. (*Right*) Left anterior oblique diving view shows hanging lax skin.

Fig. 3. The same patient in **Figs. 1** and **2**, 7 months following VASERlipo and BodyTite. (*Left*) With the arms extended the pectoralis raises above the areolas revealing no residual breast gland. (*Right*) As the patient leans the areola and inferior is filled with muscle but the skin does not sag.

Fig. 4. The same patient in **Figs. 1** and **2**. (*Top*) Seven months postoperatively without gynecomastia his relaxed pectoralis muscle is uniformly flat and fills the lateral and inferior muscle margins. (*Bottom*) With full contraction the pectoralis bulges like an oblique football, to empty the NAC, which slightly tilts inward.

Fig. 5. Black man with preoperative grade IIa gynecomastia. The preoperative markings are *yellow* for infra-areolar incision, *blue* for the areolarplasty, *green* for extent of the palpable gynecomastia, and *white* for the extent of the UAL.

which is free to shorten after evacuation of superficial fat. To verify that high temperature is not part of VASERlipo, subcutaneous tissue temperature was taken in four abdominal locations after completing each VASERlipo stage. Initial tissue temperature averaged 37°C, after room temperature saline infusion temperature averaged 35°C, after VASER application temperature averaged 40°C, and after BodyTite temperature was as high as the goal of 70°C. When the aim is to remove as much fibroglandular tissue as possible, VASER has a gynecomastia probe or consider LySonix 3000 with inline suction (Byron Mentor, Irvine, CA). Using the golf tee tip and power at six, energy is focused on the end, and leads to greater plow through glandular and dense fibrofatty tissue. Emulsified fat streams through the inline probe and tubing.

Grade IIa is a common presentation, which is treated expeditiously under local anesthesia with low risk. Case 2 is a 32-year-old muscular man, BMI of 29.4, with grade IIa gynecomastia, which appeared during adolescence and enlarged with growth and excess weight gain (**Fig. 5**). He dislikes the feminine mass of breast and the enlarged and hemispherical NACs. Both athletic and a body builder, he will not expose his chest in public. A large mass of firm fat has a central core of firm nodular tissue. Video 1 shows the planning and correction of gynecomastia using LySonix UAL over the entire chest and a pull through of residual gland under regional xylocaine infiltration and oral sedation. UAL removed 180 mL of emulsion and left a honeycomb pattern of dense connective tissue and reduced mass of glandular tissue that was bloodlessly excised (**Fig. 6**). His enlarged and rounded NACs, on superior pedicles, are reduced and shaped to horizontal ellipses allowing for barbed suture purse string closure to flat horizontal ellipses (**Fig. 7**). These high-tech sutures, now with 12 barbs to a centimeter, are sinched after every two bites. Thus, the suture holds alignment and elliptical form. Not pulling the ends of a smooth suture that avoids a purse string new circular areola. This rim excision of NAC skin is called an areolaroplasty, which slightly tightens chest

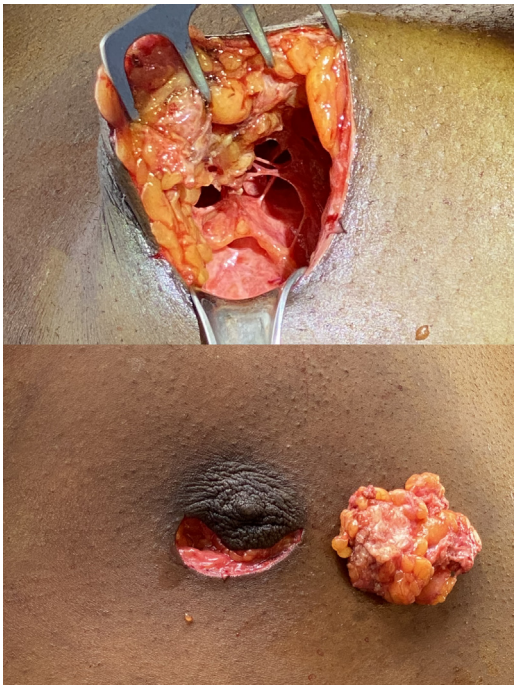

Fig. 6. Gynecomastia resection. (*Top*) A dry field after UAL, which leaves a dense honeycomb patterned of connective tissue with most of the residual gynecomastia under the rake retractor. (*Bottom*) The small residual gland resection lies next to the NAC.

skin and is adapted to treat tuberous breast and NAC hernia deformity. The 4-month result shows a complication-free and aesthetically pleasing correction (**Fig. 8**).

The grade IIb patient needs skin tightening through either broad skin excisions or through application of bipolar radiofrequency. Usually, first-stage VASER emulsification is followed by BodyTite and Morpheus8 Body (InMode, Irvine, CA) to reduce skin laxity and breast ptosis (see Case 1, **Figs 1-4**). Because VASER mode leaves intact most of the subcutaneous tissue supporting the connective network, which is the target for the radiofrequency energy, we usually complete fat emulsification before starting BodyTite. BodyTite uses a bipolar handpiece connected to a radiofrequency energy generating console.[16–18] A 3-mm diameter solid, slightly malleable 20-cm-long probe with a protective end plastic hub is inserted under the dermis through a stab wound incision. On the pull-back continuous probe focused radiofrequency energy is directed to the coupled 3-cm receiving disk gliding on the skin surface. Emanating continuous preset magnitude of radiofrequency energy, the probe slowly traverses, like one would a VASER probe, through all layers of saline-infused subcutaneous tissue, emanating a steady cadence of clangs. As the preset temperatures are reached, the clangs double sound and on reaching the preset temperatures of around 40°C for the surface and 70°C internal there is a triple clang signaling stoppage of power. At that time, a palm-sized region has absorbed from 5 to 7 kJ. Up to 20% tissue contraction is visualized. If not, then the treatment may be repeated after cooling. It is imperative to heat the tissues adequately and uniformly as indicated by setting 40°C external and 70°C internal limits. If internal limits are reached prematurely before external, slower motion of the probe may be required. Likewise, reaching external temperatures before proper internal heating may be a result of poor tumescent cooling, inappropriate depth of the probe or need faster motion of the probe. Early postoperative swelling masks the collagen injury and shortening, but with proper splinting and maturation of healing the final roughly 30% contracted state is evident 6 to 12 months later as seen in Case 1. Wrinkled skin is worsened by subdermal tightening and needs a multilayered approach with surface bipolar frequency microneedling using Morpheus8 Body, which can now penetrate the surface 7 mm. This results in dermal level smoothing, complementing the BodyTite subdermal tightening.

For most grade III deformity, innovative patterns for large skin resections have been effective and leave more acceptable scars and contours than the simple amputation style transverse excision. With the boomerang mastopexy, the lateral torso hockey stick, and the double mastectomy incision pattern one may apply similar base aesthetic principles. These patterns focus on obviating the IMF as critical and avoiding the incision line along the existing IMF, which feminizes the torso and leaves the scar in the incorrect shadows of the chest. The popularity of bariatric surgery has greatly increased demand for correction of gynecomastia in the context of coordinated total body contouring.[19,20] Massive weight loss can result in severely ptotic breasts with considerable residual gland and skin laxity that includes the entire torso. Combining the upper chest procedures with a J-torsoplasty, we then rely on oblique flankplasty with lipoabdominoplasty to treat the lower body.[21]

DISCUSSION

Since 2017, one or more combination of the following nine procedures corrects gynecomastia and further enhances masculinity:

1. Infra-areolar glandular excision
2. Barbed sutured areolarplasty
3. Inframammary fold disruption

Fig. 7. An areolaroplasty on an oversized hemispherical areola of patient in **Fig. 5**. Access to resection of gynecomastia is through infra-areolar incision. (*Top left*) After the inferior excess areola is excised, the superior excess is being deepithelialized. (*Top right*) An elliptical NAC is vascularized by a superiorly based deepithelialized flap. (*Bottom left*) Double armed 3–0 Monoderm barbed suture securely approximates the first third of the skin closure in an elliptical pattern by placing larer bites through the outer rim. (*Bottom right*) The completed closure leaves a flat horizontally oriented elliptical NAC.

4. UAL ablation and adipose evacuation of the chest
5. VASERlipo of the torso with muscular definition
6. Bipolar radiofrequency tissue tightening
7. Boomerang pattern excision, inferior pedicle areolaroplasty with/without J-torsoplasty
8. Lateral torso hockey stick with or without double incision mastectomy with pedicled or free graft areolaroplasty
9. Lipoaugmentation of the pectoralis and deltoid muscles

These therapeutic options are arrayed across the modified Simon classification (see **Table 1**).

Glandular excision for grades I and IIa is typically performed through an infra-areolar incision.[8,22] Adipose free gynecomastia is usually slightly tender, but intermittent disturbing pain and tenderness can occur. Direct excision for grade I gynecomastia removes the tumor and relieves pain. A thin disk of 1 to 1.5 cm of subareolar gland is retained to avoid areolar saucer cup depression. For grade IIa with increased adiposity, the sausage-like firm mass and surrounding excess subcutaneous tissue used to be directly excised with tapering to the perimeter.[4,8] Because confined by a 3-cm incision, hematoma, seroma, delayed healing, and contour deformity were common, as was early postoperative surgical drainage of hematoma and seromas and secondary correction. Several decades ago, the introduction of UAL has reduced those sequelae. Case 2 demonstrates our current approach for grade IIa associated with chest adiposity.

The skin tightening role of bipolar radiofrequency was demonstrated in Case 1. Case 3 has larger grade IIb gynecomastia with a well-defined IMF in a 190-lb 29 year old, who lost 40 lb (**Figs. 9** left and **10** top). Defined IMFs have a condensation of fibrous adherences between the dermis and the muscular fascia through a reduced adipose area along the inferior portion of the breast. The IMF tends to lie about the sixth rib, whereas the adherences of skin in the male relate to the inferior and lateral borders of the pectoralis muscle, which are one interspace higher. To obtain that aesthetics, the fold is obliterated by stretching and advancing the tissues as happens with lipoabdominoplasty. Also, UAL and BodyTite disrupt the IMF but the fold can also be released directly. VASERlipo of the breasts is followed by superior areolar incision pull through of residual gland and

Fig. 8. Black man with grade IIa gynecomastia 4 months after UAL, pull through excision, and elliptical areolaroplasty with complete correction of his feminizing deformity.

30-kJ BodyTite treatment per breast. Nine months later the gynecomastia, its associate adiposity, defined IMF, and skin laxity have been corrected with minimal scars (see **Figs. 9** right, 11 bottom).

Improper use of either VASER or BodyTite can cause subdermal thermal injury leading to hyperpigmentation or hypertrophic scar. But because of the high degree of thermal energy produced during BodyTite, these injuries tend to be more severe. Emit the energy only on the pull back, and take care to avoid excessive pressure causing bowing of the probe or overheating about the entry site. In Case 4, overheated dermis at the entry site resulted in a broad streak of periareolar pigmentation and a depressed skin (**Fig. 11**). Secondary direct excision of the hyperpigmented skin left an acceptable appearance. Scattered abdominal hyperpigmentation caused by tape and dressings is indicative of his hypersensitive hyperpigmentation response even to external pressure. His horizontal elliptical areolas are a result of an barbed sutured areolarplasty. This single-stage total body lift includes oblique flankplasty with lipoabdominoplasty.

Dozens of cases of gynecomastia have been treated with BodyTite. There have been no seromas, skin necrosis, neuropathy, or infections. All patients recognized skin tightening but some had hoped for more and some may obtain further improvement with repeat in-office treatment.

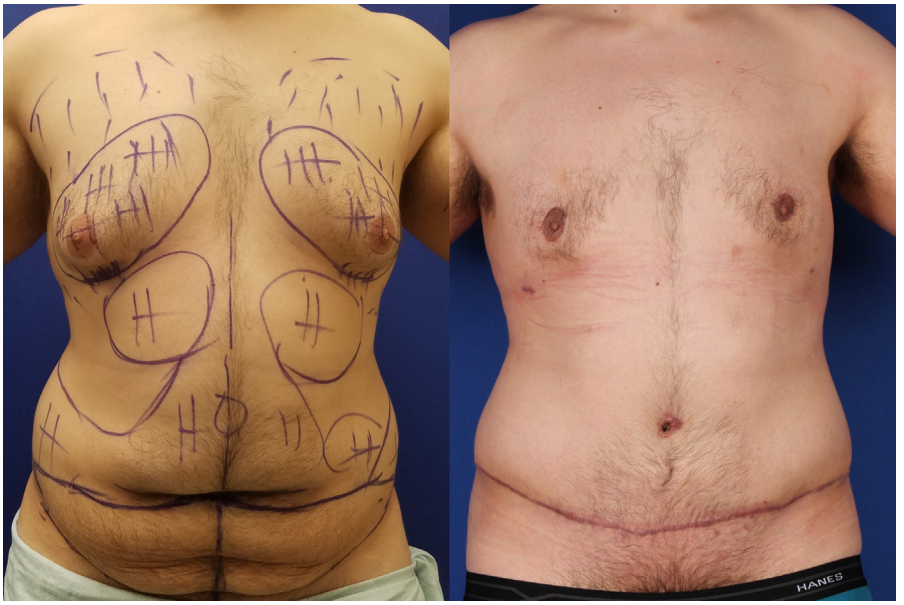

Fig. 9. Case 3. A 190-lb 29 year old with 40-lb weight loss seeks correction of his gynecomastia with minimal scars and abdominoplasty, and VASERlipo of the flanks. (*Left*) Preoperative markings for his 1350-mL VASERlipo evacuation of the breasts followed by 30-kJ BodyTite and lipoabdominoplasty/VASERlipo of the flanks. (*Right*) The 10-month result has correction of his gynecomastia, excellent torso contours, and no loose skin.

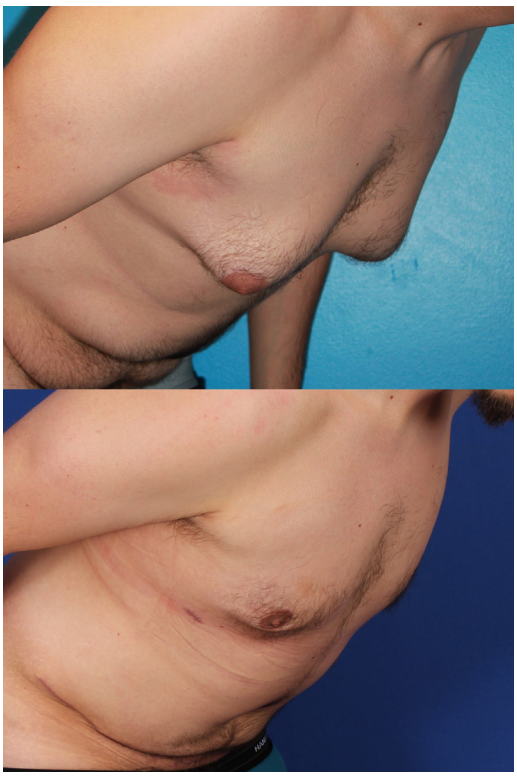

Fig. 10. Right anterior oblique diving view before (*top*) and 10 months after (*bottom*) in the patient presented in **Fig. 9**. The sagging breasts are absent and the inferior chest fold now relates to the lower border of the pectoralis muscle.

Patients with several hundred pounds of weight loss and advanced age do not adequately respond to BodyTite. A cardiac pacemaker is a contraindication.

Grade III demands broad patterns of skin resection. For this grade, a transverse mastectomy, with either a deepithelialized inferior pedicle for the NAC with a free nipple graft or inferior pedicle, is the customary procedure.[19] The unsightly long inferior scar tends to accentuate the IMF and when an inferior deepithelialized pedicle is used, there is undesirable infra-areolar fullness.

For older men with involutional gynecomastia, skin laxity, and mild nipple ptosis, a lateral chest hockey stick skin excision toward the axilla tightens the skin and rests in the shadow of the lateral pectoral border. Case 5 is a 68-year-old man with a lateral torsoplasty (**Fig. 12**). Lateral deviation of the areola is countered with a medial crescent advancement of the NAC. Some residual skin laxity is expected, but a long anterior chest scar is avoided.

Boomerang pattern correction of gynecomastia corrects the nipple ptosis, glandular hypertrophy, and excess anterolateral chest skin.[20,23] The procedure removes two unequal obliquely oriented ellipses, that superiorly straddle the areolas, resembling an Australian boomerang. Considerable tissue in the horizontal and vertical planes is removed with the long closure across the chest visually interrupted by the areola. For grade IIIb, which exhibits circumferential upper body skin laxity, the boomerang pattern was originally extended by a transverse posterior upper body lift. For the past 10 years, the back scar has been avoided and the anterior chest skin further tightened by a lateral thoracic J-torsoplasty.[24] The Boomerang excision pattern for gynecomastia includes extensive indirect inferior chest undermining of the skin to disrupt the IMF.

Case 6 is a 6-ft, 1-in, 240-lb man who sought correction of grade IIIb gynecomastia. However, he was receptive to total body masculinization via a TULUA[25] (transverse plication, no undermining, full liposuction, neoumbilicoplasty, and low transverse abdominal scar) with etching liposuction, oblique flankplasties, and boomerang pattern correction of gynecomastia with J-torsoplasty and muscular lipoaugmentation (**Figs. 13–15**, Video 2). The boomerang design leaves the NAC attached atop a triangular, broad-based, nondeepithelialized inferior pedicle, which is defatted and indirectly undermined through VASERlipo. A C-shaped extension of the lateral chest elliptical excisions then extends vertically to the axilla, allowing the J-torsoplasty to further tighten the midback and the chest. The scar lies under the relaxed arm and not across the back.

The operation began prone with simultaneous oblique flankplasties and fat harvested from the excision sites (Video 3). On turning supine three operations were performed simultaneously: each boomerang/J-torsoplasty combination and the minimally undermined TULUA with infraumbilical transverse plication followed by VASERlipo etching of the rectus abdominus.

The resection of gynecomastia and excess skin over the Pectoralis muscle was essentially bloodless but not so with the lateral chest wall, which is expeditious after early identification of Latissimus Dorsi muscle. Then the dissection proceeds anteriorly across the serratus muscle. On elevation of the descended NAC to its proper location, inferior pole breast and upper abdominal skin laxity are corrected. The weight of tissue removal was 4900 g. With broad exposure of the Pectoralis Major muscles precise injection of processed liposuction fat is placed submuscular and intramuscular. His 300-mL augmentation enhances the muscles and further reduces skin laxity. Closure with #1 barbed Quill sutures of the different length limbs

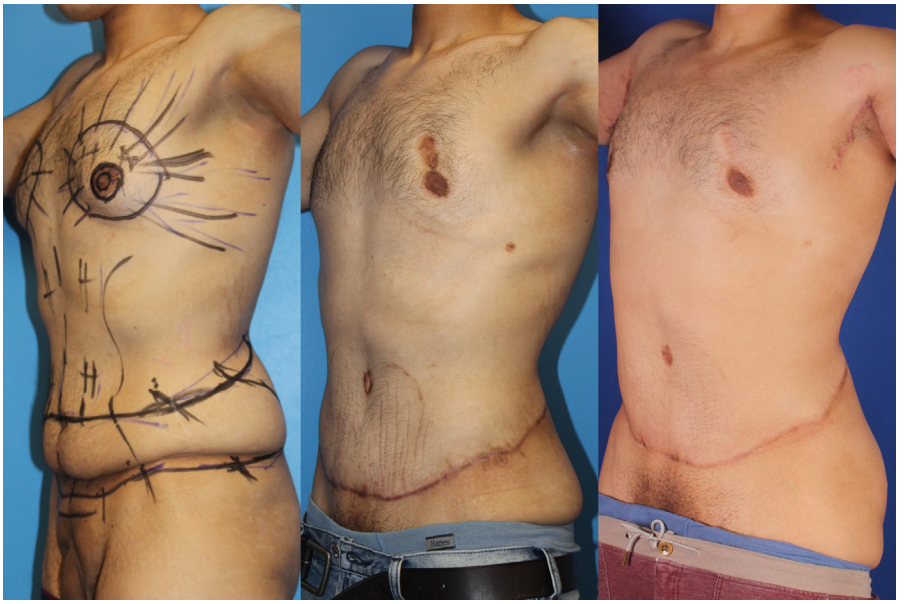

Fig. 11. Case 4. Grade IIb gynecomastia in a 23-year-old patient with massive weight loss who suffered hyperpigmentation injury secondary to excess radiofrequency heat to the dermis. (*Left*) Marking for lipoabdominoplasty with oblique flankplasty, barbed suture areolaroplasty, with glandular pull through after VASERlipo and BodyTite of the anterior chest. (*Middle*) Eighteen months postoperative with scattered hyperpigmentation of scars and from binder pressure on tubing. (*Right*) Six months after excision of depressed hyperpigmentation scar of left chest. The gynecomastia has been correct with well-shaped and positioned NACs. Torso contours and skin tension are excellent.

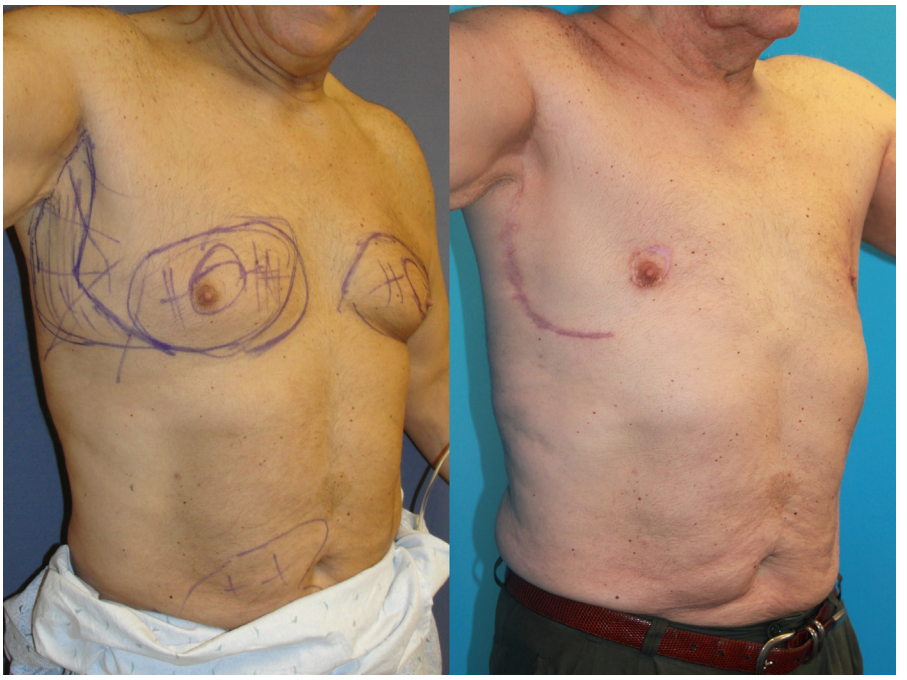

Fig. 12. Combination of a hockey stick–shaped lateral torsoplasty and anteromedian advancement of the nipple areolar complex in a 64-year-old man with 20-lb weight loss leaving grade IIb gynecomastia (*left*). Correction of gynecomastia and loose skin with a lateral chest and periareolar scars (*right*).

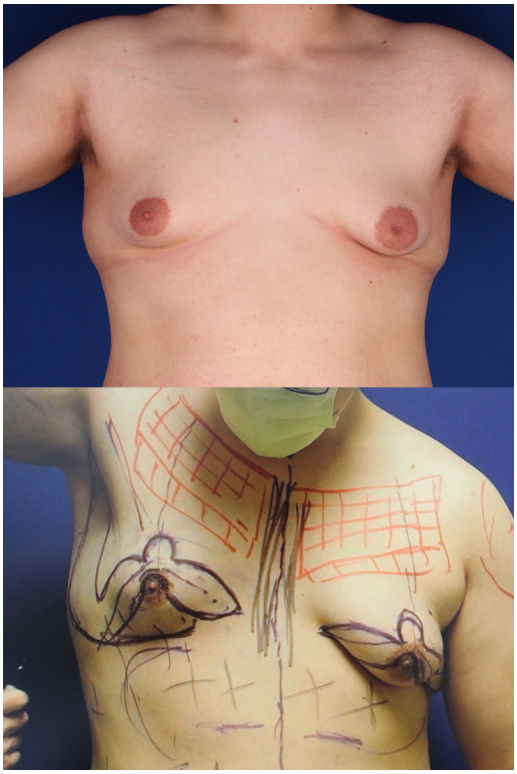

Fig. 13. A recent total body lift in a 33-year-old man who had the boomerang correction of gynecomastia with J-torsoplasty and lipoabdominoplasty with Oblique Flankplasty videotaped (Videos 2 and 3). (*Upper*) The preoperative condition and (*Lower*) marked for surgery frontal views show the deformity and the operative plan. The circumareolar Boomerang pattern is continuous with the J Torsoplasty, along with VASERlipo of the abdomen and lipoaugmentation of the Pectoralis and Deltoid muscles. The simultaneous two-team approach was under the direction of the senior author, who performed the upper body surgery while the junior author (DAA) performed the lower body oblique flankplasty and lipoabdominoplasty (not seen). (*Top*) Images are the frontal and right anterior oblique preoperative images. (*Bottom*) Completed preoperative surgical markings are shown. Video 2 shows the order of the markings for boomerang pattern with J-torsoplasty and the pectoralis muscle grafting. Video 3 shows a highly edited 4-hour operation. The superior incision first, for the proper location of the NAC, particularly when a concomitant abdominoplasty is done. The precise width of elliptical resection is made after the abdominoplasty closure is started. Then after indirect undermining of the lower chest with a LaRoe dissector (ASSI.com), areola is advanced up to the upper markings and they are adjusted as needed for the optional tension at closure. Once the boomerang has been closed, the width of the lateral chest skin excision of the J-torsoplasty is precisely measure and completed.

Fig. 14. A recent total body lift in a 33-year-old man who had the boomerang correction of gynecomastia with J-torsoplasty videotaped along with Oblique Fankplasty and TULUA . (**Fig. 13**, Videos 2 and 3). *Upper* image is the right anterior oblique preoperation. The *lower* right oblique shows the result 3 months postoperative, before he started his work-out routine.

is a challenge in wound edge justification. Because of the structural quality of chest wall skin, when the closure is tight, there is no delayed laxity as is seen commonly in the lower torso.

With tissue resections going in a variety of directions, when combined with lower body lift surgery the operation is technically demanding but usually works out that the tissue contours are all smooth and tight.[26,27] There have been a few instances of unevenness requiring further liposuction or lipoaugmentation. Generally, early boomerang scars are pigmented and thick, but fade and thin over several years. While performing more than 30 cases, only one entire nipple areolar complex sustained necrosis because of overthinning. The limitation of the boomerang pattern is that if after raising the NAC there is still too much infra-areolar skin some lax excess skin needs to be removed later. Otherwise in cases of severe hypertrophy and laxity an operation with a free nipple graft is needed. Evolutions of transverse excisions

Fig. 15. A recent total body lift in a 33-year-old man had the boomerang correction of gynecomastia with J-torsoplasty videotaped (**Figs 13**, **14** and Videos 2 and 3). Left lateral views show the deformities (*Left*) and the three month result that includes flankplasty with lipoabdominoplasty (*Right*).

have emphasized a dual incision approach, which complements the same principles we have stated previously: first addressing the upper chest laxity with an incision designed to rest at the inferior pectoral border, and the secondary inferior incision designed to match. Destruction of the connective bands at the IMF are once again essential to this technique, and J shaped extension can take up additional lateral laxity.

SUMMARY

We find healthy young men with minimal glandular tissue (grade I, IIa) respond incredibly well with no residual deformity through either transareolar direct excision and/or UAL. For patients grade IIb up to IIIa, VASERlipo is followed by BodyTite. If needed, glandular pull through excision completes the correction with or without barbed sutured areolarplasty. More severe cases require excisional skin tightening, with a variety of patterns suitable for each patient depending on their deformity. What sets plastic surgeons apart is recognizing, predicting, and executing tissue reconstructive procedures assisted by new technology and innovated techniques leaving a proper sculptured result under moderate skin tension that heals rapidly with the fewest and thinnest scars possible rather than a one-size-fits-all approach.

CLINICS CARE POINTS

- Traditional glandular excision of gynecomastia for grades I and IIa is typically performed through infra-areolar incision after UAL of the soft tissues across the chest.
- With skin laxity or following extensive volume aspiration through liposuction, chest skin tightening and elevation of the nipple are performed in selected cases by bipolar radiofrequency technology.
- New excision patterns, such as the boomerang and J-torsoplasty, most aesthetically correct grade III gynecomastia.
- Comprehensive approach to gynecomastia considers surgical masculinization of the entire torso.

DISCLOSURE

Dr D.J. Hurwitz receives annual royalties from Springer Verlag for 2016 textbook, *Comprehensive Management of Body Contouring Surgery*; and received stock options in InMode, Yoakum, Israel for 2 years of clinical studies performed for Food and Drug Administration oversight of bipolar radiofrequency instrument called BodyTite for the reduction of skin laxity. Dr A.A. Davila has no potential conflicts to disclose.

SUPPLEMENTARY DATA

Supplementary data to this article are found online at https://doi.org/10.1016/j.cps.2021.12.003.

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