Anthem

Clinical UM Guideline

Subject: Reduction Mammaplasty
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Description

This document addresses reduction mammaplasty (plastic surgery of the breast intended to reduce volume by excision of tissue and often to improve shape and position), and does not apply to reconstructive procedures performed after surgery for breast cancer or other clinical indications, including removal of implants.

Note: This document does not address gender affirming surgery or procedures. Criteria for gender affirming surgery or procedures are found in applicable guidelines used by the plan.

Note: For other information related to breast procedures refer to:

- ANC.00009 Cosmetic and Reconstructive Services of the Trunk, Groin, and Extremities
- CG-SURG-88 Mastectomy for Gynecomastia
- SURG.00023 Breast Procedures; including Reconstructive Surgery, Implants and Other Breast Procedures

Medically Necessary: In this document, procedures are considered medically necessary if there is a significant functional impairment, AND the procedure can be reasonably expected to improve the functional impairment.

Cosmetic: In this document, procedures are considered cosmetic when intended to change a physical appearance that would be considered within normal human anatomic variation. Cosmetic services are often described as those that are primarily intended to preserve or improve appearance.

Clinical Indications

Medically Necessary:

Reduction mammaplasty is considered **medically necessary** when either of the following criteria (I or II) are met:

I. Individuals meeting BOTH of the following criteria (A and B):
   A. Presence of one or more of the following:
      1. A cervical or thoracic pain syndrome (upper back and shoulder pain), in which interference with daily activities or work has been documented. The pain is clearly related to the excess weight of the breast tissue and there has been at least 3 months of adequate conservative treatment with one or more of the following: special support garments (for example, special support bras, bras with wide straps), NSAIDs, physical therapy, or similar modalities; **or**
      2. Submammary intertrigo that is refractory to conventional medications and measures used to treat intertrigo, or shoulder grooving with ulceration unresponsive to conventional therapy; **or**
      3. Thoracic outlet syndrome (to include ulnar paresthesias from breast size) that has not responded to at least 3 months of adequate conservative treatment.

      and
   B. The preoperative evaluation by the surgeon concludes that an appropriate amount of breast tissue, from at least one breast, will be removed, based upon body surface area or total mass to be removed and that there is a reasonable prognosis of symptomatic relief. The request for surgery must include: the individual's height and weight; the size and shape of the breast(s) causing symptoms; the anticipated amount of breast tissue to be removed. Pictures may be requested to document medical necessity.

Note: Medical records from the primary care physician and other providers (for example, physiatrist, orthopedic surgeon, etc.) who have diagnosed or treated the symptoms prompting this request may also be required.

The appropriate amounts (in grams) of breast tissue must be anticipated for removal from at least one breast, which is based on the individual's total body surface area (BSA) in meters squared. **See Appendix** for a table relating BSA values to the minimum amount (weight) of breast tissue to be removed per breast.

Note: To calculate body surface area see:https://www.calculator.net/body-surface-area-calculator.html. Please use the Du Bois formula, with BSA represented in meters squared.

or

II. Individuals, regardless of BSA, who are anticipated to have at least 1 kg. of breast tissue removed from each breast and who meet the following criteria:
   A. Presence of one or more of the following :
      1. A cervical or thoracic pain syndrome (upper back and shoulder pain), in which interference with daily activities or work has been documented. The pain is clearly related to the excess weight of the breast tissue and there has been at least 3 months of adequate conservative treatment with one or more of the following: special support garments (for example, special support bras, bras with wide straps), NSAIDs, physical therapy, or similar modalities; **or**
      2. Submammary intertrigo that is refractory to conventional medications and measures used to treat intertrigo, or shoulder grooving with ulceration unresponsive to conventional therapy; **or**
      3. Thoracic outlet syndrome (to include ulnar paresthesias from breast size) that has not responded to at least 3 months of adequate conservative treatment.

Note: Medical records from the primary care physician and other providers (for example, physiatrist, orthopedic surgeon, etc.) who have diagnosed or treated the symptoms prompting this request may also be required.

Not Medically Necessary:

Breast reduction surgery is considered **not medically necessary** when the criteria above are not met including for breast cancer risk reduction.

The use of liposuction to perform breast reduction is considered**not medically necessary.**

Cosmetic and Not Medically Necessary:

Breast reduction surgery is considered **cosmetic and not medically necessary** for the following conditions: poor posture, breast asymmetry, pendulousness, problems with clothes fitting properly and nipple-areola distortion.

Coding

The following codes for treatments and procedures applicable to this guideline are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

When services may be Medically Necessary when criteria are met:

CPT	
19318	Breast reduction
ICD-10 Procedure	
	For the following, when specified as breast reduction:
0HBT0ZZ	Excision of right breast, open approach
0HBU0ZZ	Excision of left breast, open approach
0HBV0ZZ	Excision of bilateral breast, open approach
0H0T0ZZ	Alteration of right breast, open approach
0H0U0ZZ	Alteration of left breast, open approach
0H0V0ZZ	Alteration of bilateral breast, open approach
0J060ZZ	Alteration of chest subcutaneous tissue and fascia, open approach
ICD-10 Diagnosis	
G54.0	Brachial plexus lesions (thoracic outlet syndrome)
L30.4	Erythema intertrigo
M54.2	Cervicalgia
M54.6	Pain in thoracic spine
N62	Hypertrophy of breast
N64.81	Ptosis of breast

When services are Not Medically Necessary:
For the procedure and diagnosis codes listed above when criteria are not met, and for the following diagnosis codes

ICD-10 Diagnosis	
Z15.01	Genetic susceptibility to malignant neoplasm of breast
Z40.01	Encounter for prophylactic removal of breast
Z80.3	Family history of malignant neoplasm of breast

When services are also Not Medically Necessary:
For the following procedure and diagnosis codes

CPT	
15877	Suction assisted lipectomy; trunk [when used to report breast reduction performed by liposuction method]
ICD-10 Procedure	
0J063ZZ	Alteration of chest subcutaneous tissue and fascia, percutaneous approach
0JD60ZZ	Extraction of chest subcutaneous tissue and fascia, open approach
0JD63ZZ	Extraction of chest subcutaneous tissue and fascia, percutaneous approach
ICD-10 Diagnosis	
N62	Hypertrophy of breast
N64.81	Ptosis of breast
N65.1	Disproportion of reconstructed breast
Z15.01	Genetic susceptibility to malignant neoplasm of breast
Z40.01	Encounter for prophylactic removal of breast
Z80.3	Family history of malignant neoplasm of breast

When services are Cosmetic and Not Medically Necessary:
For the procedure codes listed above for situations designated in the Clinical Indications section as cosmetic and not medically necessary.

Discussion/General Information

Breast reduction surgery involves removal of skin, fat and breast tissue to reduce breast mass. Liposuction removes only fatty tissue. When symptoms exist and cannot be alleviated by conservative methods (examples include pain medication, physical therapy, and skin ointments or powders), surgical intervention to reduce the size of the breasts may be indicated.Breast reduction surgery is performed when excess breast mass and weight causes medical problems such as submammary intertrigo (an inflammatory condition causing redness, burning, itching, skin disintegration and cracking underneath the breast), back, neck and shoulder pain, or thoracic outlet syndrome, which can lead to pain and loss of feeling in the arms or hands. Removal of excess breast tissue results in a decrease in breast mass and weight with the goal of relieving symptoms. In the absence of symptoms or associated conditions, breast reduction may be performed for cosmetic purposes to enhance appearance.

Studies have found that breast reduction can lead to symptom relief. Collins and colleagues (2002) conducted a prospective, controlled study designed to evaluate the efficacy of breast reduction in alleviating symptoms of macromastia by comparing baseline and postoperative health status. Standard outcome instruments were utilized in the study and consisted of the SF-36, the EuroQol, the Multidimensional Body-Self Relations Questionnaire (MBSRQ), and the McGill Pain Questionnaire (MPQ). The study involved 179 subjects with matched preoperative and postoperative data sets, 96 controls, and 88 hypertrophy controls. The women were mainly Caucasian, middle-aged, well-educated, and employed. Data from completed questionnaires were gathered preoperatively and at approximately 6 to 9 months post-surgery. Outcomes demonstrated that subjects preoperatively had lower scores ($p<0.05$) in all health domains of the SF-36 and in the mental and physical component summary scores. After surgery, the same group of subjects measured higher than national norms in seven of eight health domains. Preoperative pain scores measured with a Pain Rating Index (PRI) score from the MPQ were reported to be 26.6, and after surgery pain was stated to be lower with a score of 11.7. Study limitations included a lack of randomization and the possibility that women may have overstated their symptoms or lack of effectiveness of nonsurgical treatments. In addition, the study was not designed to determine a threshold for weight of tissue to be removed to produce symptom relief, and there was no comparison of resection weight and extent of symptom relief.

Saariniemi and colleagues (2008) reported on a study assessing quality of life and pain in 82 women randomized to either reduction mammaplasty or a nonoperative group. Evaluations were performed at the onset of the study and 6 months later. The authors reported the mammaplasty group had significant improvements in quality of life as measured by the physical summary score of the Short Form (SF)-36 quality-of-life questionnaire (change of + 9.7 vs. + 0.7, $p<0.0001$), the utility index score (SF-6D) (+ 17.5 vs. + 0.6), the index score of quality of life (SF-15D) (+ 8.6 vs. + 0.06, $p<0.0001$), and the SF-36 mental summary score (+ 7.8 vs. – 1.0, $p<0.002$). There were also improvements in breast-related symptoms as measured by the Finnish Breast-Associated Symptoms questionnaire score (– 7.9 vs. – 3.5, $p<0.0001$) and the Finnish Pain Questionnaire score (– 21.5 vs. – 1.0, $p<0.0001$). This study was limited by a small sample size and lack of long-term follow-up.

In a prospective, longitudinal study, Nuzzi and colleagues (2017) evaluated the effects of reduction mammaplasty on the quality of life. The criteria for the mammaplasty group included female individuals ages 12-21 with symptomatic bilateral macromastia and no previous history of breast surgery. The researchers compared results in individuals who had reduction mammaplasty (n=102) with a healthy control group that had no history of breast complaints (n=84). Macromastia was evaluated using a symptom profile, physical exam, and modified Schnur criteria. Participants completed four self-administered validated surveys: the Short-Form 36v2 (SF-36), the Rosenberg Self-Esteem Scale (RSES), the Breast-Related Symptoms Questionnaire (BRSQ), and the Eating Attitudes Test-26 (EAT-26). The surveys were completed at baseline, 6 months, 1 year, 3 years, and 5 years. After surgery, the mammaplasty group had significant score improvements in several domains, including physical functioning, role-physical, bodily pain, vitality, social functioning, role-emotional, and mental health ($p<0.001$). At 6 months, the mammaplasty group scored similarly to or better than the control group on the surveys, and the benefits continued at the 5 year follow-up. The researchers found that age and weight did not significantly affect the results.

Lin and colleagues (2020) published a meta-analysis of data from seven RCTs with a total of 285 participants comparing reduction mammoplasty with a control intervention for the treatment of breast hypertrophy, and reporting pain, physical function or psychological function. A pooled analysis of data from four studies found a statistically significant reduction in pain in the reduction mammoplasty compared with control group (standardized mean difference [SMD], -1.29; 95% confidence interval [CI], -1.63 to -0.96; $p<0.00001$). A pooled analysis of five studies found significantly greater improvement in physical function status after reduction mammoplasty versus control (SMD, 0.97; 95% CI, 0.69 to 1.25; $p<0.0001$). Data from three studies were suitable for the pooled analysis of psychological function. In this analysis, reduction mammoplasty had a significantly greater effect on psychological functioning compared with control (SMD, -0.79; 95% CI, -1.07 to -0.52; $p<0.0001$).

Amount of Tissue

The amount of breast tissue needed to achieve adequate symptomatic relief is not well understood. The limited medical literature addressing this question is largely based on estimating the amount to be removed based on body surface. One such approach is referred to as the Schnur scale. Schnur and colleagues (1991) reported the results of two surveys sent to 220 randomly selected, board certified plastic surgeons who performed reduction mammaplasties. A total of 92 plastic surgeons returned survey data of 600 women on whom reduction mammaplasty had been performed. Data obtained from the first survey included the height and weight of the individual, as well as the amount of breast tissue removed from each breast. The second survey resulted in an estimate of percentages of women who sought a reduction mammaplasty for purely cosmetic reasons, for purely medical reasons, and for mixed reasons. Based on the results obtained, the authors concluded that if the removed breast tissue weight was greater than the 22^{nd} percentile, a woman's motivation for the surgery was medical, and if the removed breast tissue weight was less than the 5^{th} percentile, the procedure was sought for cosmetic reasons. Those women whose removed breast tissue weight was between the 5^{th} and the 22^{nd} percentile reportedly had mixed reasons for requesting the procedure. In a subsequent outcome study, based on questionnaire responses from women who had undergone reduction mammaplasty, Schnur and colleagues (1997) reported that in properly selected individuals, reduction mammaplasty is a safe and effective procedure for relieving or improving symptoms related to symptomatic macromastia. Because breasts are paired organs, bilateral breast reduction mammaplasty may be considered appropriate if the amount of breast tissue anticipated for removal from at least one breast meets the minimum amount (weight) per the Schnur scale and all other criteria are met.

Other scales related to amount of breast tissue include the Galveston, Appel and Descamps scales. These scales are methods to estimate resection weight; they do not attempt to differentiate between medical and cosmetic breast reduction procedures. Descamps (2008) evaluated data from 214 individuals with macromastia who had undergone breast reductions. The investigators conducted regression analyses using breast weight as the dependent variable and sternal notch to nipple distance, nipple to inframammary crease distance, age and body mass index (BMI) as independent variables. Using regression analysis, the following formula for predicting resection weight was established: Breast weight = 5.4 (notch-to-nipple distance) + 60.66 (nipple to inframammary crease distance) – 1239.64.

Appel (2010) evaluated data on 348 individuals who underwent breast reduction; mean resection weight was 833g. Using multiple linear regression, the following formula to predict resection weight is as follows: 40 (sternal notch-to-nipple distance) + 24.7 (inframammary fold-to-nipple distance) + 17.7 (BMI) - 1443. The investigators noted the strongest correlation when all 3 of the above parameters were incorporated into the regression model.

Boukovalas and colleagues (2019) described the development of the Galveston scale and compared it to other scales, including the Schnur scale. The study was a retrospective analysis of data on 314 individuals who underwent reduction mammoplasty at a single institution. Individuals were divided into 2 groups, A and B; data from Group A (n=184) were used to develop the Galveston scale, and data from Group B (130) were used to validate the scale. The average breast tissue resection weight was 953g in Group A and 907g in Group B. Data on individuals in Group A were analyzed to identify independent predictors of resection weight. In multiple regression analysis, sternal notch-to-nipple distance, nipple-to-inframammary fold distance, BMI and age were independent predictors, and these were incorporated into the Galveston scale. The formula for the amount of tissue to remove was: 68.03 x nipple-to-inframammary fold

distance + 40.33 x sternal notch to-nipple distance + 31.75 x BMI – 4.27 x age - 2461.1. The authors then conducted regression models to evaluate the ability of each of the scales to predict actual resected values. They reported the statistic, R^2, which is a measure of regression model "fit"- the ability of the predictive scale to measure the actual resected amount of breast tissue. The adjusted R^2 values were 0.43 for the Schnur Scale, 0.66 for the Descamps Scale, 0.70 for the Appel Scale and 0.73 for the Galveston scale. In a similar analysis using data from Group B, adjusted R^2 values were 0.28 for the Schnur Scale, 0.68 for the Descamps scale, 0.69 for the Appel Scale and 0.71 for the Galveston scale.

In a retrospective review of data from 579 individuals who underwent bilateral reduction mammoplasty, Wampler (2019) compared the accuracy of surgeons' resection estimates using clinical estimation with the actual resected weight. As a group, the 7 surgeons in the sample had a median error of 105 grams per breast between the presurgical estimate of resection weight and the actual resection weight. Overestimation occurred for 55.7% of breasts and underestimation with 40.4% of breasts. The positive predictive value (PPV) of the surgeons' resection estimate being at least 500g was 91.2% and the negative predictive value (NPV) was 82.9%. The PPV of an estimate that was greater than the Schnur requirement was 86.6% and the NPV was 64.0%. In 19.2% of breasts, the surgeons' estimate of resected weight was less than the Schnur requirement. When comparing the surgeons' estimates with estimates derived from the Descamps and Appel formulas for 579 individuals, all of the 3 methods were moderately correlated with true resection weight. Correlation was 0.62 for surgeons' estimates, 0.64 for the Descamps estimate and 0.70 for the Appel estimate. The surgeons' estimates were less than the Schnur requirement for 19.2% of breasts, compared with 18.4% of breasts with the Descamps formula and 20.2% of breasts with the Appel formula.

A 2022 retrospective cohort analysis by Yan and colleagues reported on 154 individuals who had bilateral reduction mammaplasty. The study included female individuals with a clinical diagnosis of macromastia. The study eligibility criteria did not require symptoms or functional impairment due to the macromastia, and the issue of whether or not the surgery was primarily cosmetic in nature was not discussed. The Schnur scale explained 38% of the variability in the actual resection weight. In contrast, the Appel, Descamps and Galveston scales predicted 64%, 57% and 67%, respectively, of the variability in the resection weight. For resection weights of 500g or more, differences between the estimated and actual resection weights were -211.4g for the Schnur scale, -17.5g for the Appel scale, -9.6 for the Descamps scale and -99.2g for the Galveston scale.

Gonzalez and colleagues (2012) reported on 178 women who had breast reduction surgery primarily for symptomatic macromastia. The Breast Q questionnaire was completed once after surgery, and retrospective chart reviews were also completed to assess individual outcomes and determine whether any correlation exists between outcomes and size or amount of breast tissue removed. Most of the women responded to the surgery satisfactorily with a mean response on the Breast Q questionnaire of 2.8 (2, somewhat agree; 3, definitely agree). The mean body mass index (BMI) reported was 28.3 kg/m and correlated significantly with the amount of breast tissue removed ($p<0.0001$). The mean combined total amount of breast tissue removed was 1221 g but did not correlate significantly with quality-of-life responses ($p=0.57$).

In 2015, Strong and Hall-Findlay reported results of a custom-designed questionnaire given to women at routine follow-up appointments, asking them to rate their preoperative and postoperative symptoms related to macromastia. All subjects had a reduction mammaplasty performed by the senior author of this paper, and the same surgical technique was used for all. Of an initial 661 eligible subjects, a total of 410 remained in the study after excluding questionnaires that were incomplete, had answers provided in an incorrect format, or were returned too early. A Schnur sliding scale percentile had been calculated for all participants. The subjects/questionnaires were divided into six groups based on the amount of tissue resected per breast. Information received was examined for a trend that would link a higher amount of tissue resected to a greater change in symptoms. Only subjects who had reported the particular symptom prior to surgery were included in this analysis. There was no statistically significant trend across the groups related to breast pain, shoulder grooves, rashes under the breast, headache, exercise intolerance, or lack of self-esteem. Statistically significant results were reported for symptoms related to back pain, neck pain and poor posture suggesting a potential relationship between greater amounts of tissue resected and increased symptom improvement. However, after post hoc tests were performed, there was no statistically significant difference reported between the groups for these three symptoms. The authors concluded their study demonstrated that for reduction mammaplasty "patients can experience significant symptomatic relief even when less than 250 g of tissue is resected from each breast." There were significant limitations of this study including the retrospective nature that relied on "patient recollection of preoperative symptoms" and the dependence upon one specific surgeon's techniques.

The American Society of Plastic Surgeons (ASPS) (2021) issued an updated document on criteria for third-party payers. This document states: " Based on the thorough evidence review leading to the strong recommendation in the revised clinical practice guideline, it is clear that reduction mammaplasty is extremely effective at reducing hypertophy related symptoms and improving postoperative quality of life".

In 2022, the ASPS published an updated clinical practice guideline on reduction mammoplasty that included the following recommendation: "The work group recommends that postmenarche female patients presentingwith breast hypertrophy should be offered reduction mammaplasty surgery as first-line therapy over nonoperative therapy based solely on the presence of multiple symptoms rather than resection weight". The document did not further specify the type or number of symptoms that would need to be present. No randomized or other prospective controlled trials were cited that compared outcomes in women wanting to have a relatively small amount of tissue removed (e.g., less than 1 kg) who were managed with conservative therapy versus reduction mammoplasty.

Age

A 2017 committee opinion from the American College of Obstetricians and Gynecologists (ACOG) addresses breast reduction surgery in adolescents. The opinion was reaffirmed in 2020. ACOG did not issue specific recommendations on age and breast reduction surgery, but the document states:

> Recommendations for timing of surgery including postponing surgery until breast maturity is reached, waiting until there is stability in cup size over 6 months, and waiting until the age of 18 years. Although there is no one consensus on timing, it may reasonably be determined by the severity of symptoms. An assessment of the adolescent's emotional, physiologic, and physical maturity is recommended…

In 2021, Hudson and colleagues published a systematic review of studies on breastfeeding and complications associated with breast reduction, with the aim of applying conclusions to conducting the procedure in adolescents. The authors identified 23 single-arm studies on female individuals less than 25 years old who underwent bilateral breast reduction, and reported post-surgery breastfeeding or surgery-related complications. In the studies, the mean age at the time of surgery ranged from 16 to 21 years, and all studies included at least some individuals younger than 18 years old. Complication rates were reported in 17 (74%) studies. The overall rate of any complication was 27.3%, and the rate of major complications was 4.2%. A total of 17.8% of individuals reported noticeable breast regrowth postoperatively and 2.7% underwent a second revision reduction mammaplasty. Eight studies (35%) reported breast feeding outcomes. In a pooled analysis of these studies, 35.1% of individuals in the studies became pregnant and, of

the women who attempted breastfeeding, 55.1% were successful and 39% experienced difficulties.

Complications

Cunningham and colleagues (2005) analyzed complication data from the Breast Reduction Assessment: Value and Outcomes (BRAVO) study by Collins and colleagues (2002). Study data from 179 subjects post breast reduction surgery were analyzed, and results demonstrated an overall complication rate of 43% (77 individuals). The most common complication was delayed wound healing. Other complications included splitting sutures, hematoma, nipple necrosis, hypertrophic scars, fat necrosis, seroma, and infection. The authors noted that average preoperative breast volume, a vertical incision, and preoperative shoulder grooving were associated with an increased incidence of complications while age, smoking status, body mass index, weight of breast tissue resected, pedicle type, keyhole incision, free nipple grafting, operative time, use of epinephrine, drains, and liposuction were not associated with an increased incidence of complications. The major weaknesses of the study included the small sample size, possible inconsistencies in defining and reporting complications, and the introduction of a new technique (vertical scar) during the study period.

Gust and colleagues (2013) performed a retrospective analysis of all reduction mammaplasties recorded in the National Surgical Quality Improvement Program database for 2006-2010. Complication rates across multiple institutions were stratified by BMI. In addition, data on demographics, comorbidities, medical and surgical complications, reoperation, and mortality were collected through 30 days post-surgery. Of 2492 women included in the study, 55% were considered obese (BMI > 30). The overall surgical complication rate was 4.0%, increasing from 2.4% for BMI < 25 to 7.1% for BMI > 45 (p=0.006), with an adjusted odds ratio of 2.97 for BMI > 45 versus BMI < 25. The most common surgical complication was superficial surgical site infection found in 2.9% of the women. Superficial surgical site infection increased from 2.1% for BMI < 25 to 5.1% for BMI > 45 (p=0.03). The medical complication rate was 0.6%, and the reoperation rate was 2.1%. There were no deaths reported. Analysis showed that BMI ≥ 39 was associated with a significantly higher complication rate, with an odds ratio of 2.38. The authors concluded that reduction mammaplasty is a safe surgical procedure, even when performed on those with a high BMI. However, those with higher BMI have a greater risk of surgical site complications, and the risk should be discussed preoperatively with obese individuals.

Manahan and colleagues (2015) conducted a large, retrospective review of consecutive breast reduction procedures performed at a single institution. Medical records were assessed for demographics, medical history, physical examination, intraoperative data, and postoperative complications. Seventeen surgeons performed 2152 consecutive breast reductions on 1148 subjects using a variety of common breast reduction techniques. Average age was 36 years, average follow-up was 6.3 months, and average BMI was 33.5 kg/m^2. Complications included scars (14.5%), nonsurgical wounds (13.5%), fat necrosis (8.2%), infection (7.3%), wounds requiring negative pressure wound therapy or reoperation (1.4%), and seroma (1.2%). A body mass index (BMI) greater than or equal to 35 kg/m increased risk of infections, seromas, fat necrosis, and minor wounds. Cardiac disease increased risk for reoperation for scars and fat necrosis. Tobacco use and age over 50 years increased the infection risk. Secondary surgery increased rates of seromas. Previous hysterectomy/oophorectomy increased risk of wound reoperations and exogenous hormone supplementation trended toward decreasing infections. The authors concluded that a number of risks were predictors of complications after reduction mammaplasty. Also, they highlighted a need for “large studies with rigorous statistical methods.”

In a systematic review and meta-analysis, Myung and colleagues (2017) evaluated the relationship between obesity and surgery complications after reduction mammaplasty. Surgical complications that were analyzed included infection, delayed wound healing, wound dehiscence, hematoma, seroma, and tissue necrosis. A total of 26 studies, mostly retrospective, were included in the review. The researchers compared obese (n=3752) and non-obese (n=3152) subjects and found that surgical complications were collectively higher in the obese group (relative risk [RR] 1.45; 95% CI, 1.21 to 1.75), with skin and fat necrosis especially prevalent (RR 2.01; 95% CI, 1.54 to 2.63). In addition, the researchers found that the risk of surgical complications gradually increases with the severity of obesity. They concluded that obesity risk is not high when compared to other types of surgeries, but "every surgeon should consider the risks and benefits of reduction mammaplasty carefully during patient selection and should appropriately plan the surgery."

Payton (2023) evaluated complications in 277 women who underwent bilateral mammaplasty between 2014 and 2018. The mean age was 35.7 years, mean BMI was 30.2 and mean length of follow-up was 133 days. The authors found that the rate of minor complications (defined as superficial wounds, non-operative hematomas or seromas, minor fat necrosis, and superficial infections or cellulitis) was 49.3%. The most common minor complication was superficial wounds (42.1%). The rate of major complications (defined as “emergent intervention in the operating room for hematoma, wounds requiring sharp debridement, infection requiring drainage or intravenous antibiotics, and symptomatic or large fat necrosis”) was 4.3%. There were no reported deaths. Eight (3%) of individuals required reoperation within 30 days and 11 (4%) of individuals had unexpected admissions to the hospital for postoperative complications (i.e. expanding hematoma or infected seroma) or medical management. Thirty-three (11.9%) individuals had wounds that required more than 2 months to heal. In multivariate analysis, age, BMI, and resection weight were not significant predictors of major complications. When controlling for age and resection weight, BMI was a significant predictor of wounds requiring greater than 2 months to heal.

Breast cancer risk reduction

The National Comprehensive Cancer Network (NCCN) Breast Cancer Risk Reduction guideline (V1.2023) does not mention reduction mammoplasty as a strategy for reducing risk of breast cancer. For individuals with a genetic mutation indicating a high-risk of breast cancer, the NCCN guideline recommends considering risk-reducing mastectomy and bilateral oophorectomy.

No RCTs evaluating reduction mammoplasty as a strategy for breast cancer risk reduction were identified.

A large epidemiological study followed 30,457 Swedish women who had breast reduction surgery for a mean of 16 years (range 0.1 to 37.8 years) (Fryzek, 2006). A total of 443 breast cancers were observed during follow-up. Compared with the expected numbers of breast cancers calculated from rates in the general population of Swedish women, there were significantly fewer breast cancers among the women who had undergone breast reduction (standardized incidence ratio [SIR], 0.71, 95% CI, 0.65 to 0.78). Individuals were not randomized to intervention group and there may have been differences between women who had breast reduction surgery and the general population of women in ways that affected outcome, such as in breast cancer risk. The study did not have information on risk factors for breast cancer.

A 2022 cohort study by Niepel and colleagues followed 637 women in Austria who underwent breast reduction surgery. A total of 513 participants (81%) had data available on breast cancer rates after the procedure. The expected age-adjusted incidence of breast cancer was 5.66 cases, and, in the study population, onee participant reported having been diagnosed with breast cancer. This resulted in an SIR of 0.177, 95% CI, 005 to 0.983. In addition to not being a randomized trial, the study had a relatively small sample size and nearly 20% loss to follow-up.

Liposuction

The use of liposuction, as the primary tool or as an adjunct for reduction mammaplasty, has not been demonstrated to improve health outcomes in the medical literature. While there have been case series reported (Abboud, 2020; Habbema, 2009; Sadove, 2005), a clinical trial comparing the use of liposuction to standard surgical reduction mammaplasty has not been conducted, and the procedure

has not been accepted as a standard of care.

Definitions

Intertrigo: A skin condition that occurs in locations where two opposing skin surfaces meet, such as beneath pendulous breasts. Redness, burning, itching, infections, and occasionally skin disintegration and cracking characterize this condition.

Thoracic outlet syndrome: A condition resulting from constant pressure on the area between the neck and shoulder where many nerves and blood vessels are located. Symptoms may include pain, weakness, or numbness in the arm on the affected side.

References

Peer Reviewed Publications:

1. Abboud MH, El Hajj HN, Abboud NM. No-Scar breast reduction utilizing power-assisted liposuction mammaplasty, loops, and lipofilling. Aesthet Surg J. 2021; 41(5):563-565.
2. Appel JZ, Wendel JJ, Zellner EG et al. Association between preoperative measurements and resection weight in patients undergoing reduction mammaplasty. Ann Plast Surg. 2010; 64(5):512-515.
3. Boukovalas S, Padilla PL, Spratt H et al. Redefining the role of resection weight prediction in reduction mammoplasty and breaking the “One-Scale-Fits-All” paradigm. Plast Reconstr Surg 2019; 144 (1): 18e-27e.
4. Chao JD, Memmel HC, Redding JF, et al. Reduction mammaplasty is a functional operation, improving quality of life in symptomatic women: a prospective, single-center breast reduction outcome study. Plast Reconstr Surg. 2002; 110(7):1644-1652.
5. Collins ED, Kerrigan CL, Kim M, et al. The effectiveness of surgical and nonsurgical interventions in relieving the symptoms of macromastia. Plast Reconstr Surg. 2002; 109(5):1556-1566.
6. Cunningham BL, Gear AJ, Kerrigan CL, Collins ED. Analysis of breast reduction complications derived from the BRAVO study. Plast Reconstr Surg. 2005; 115(6):1597-1604.
7. Descamps MJL, Landau AG, Lazarus D et al. A formula determining resection weights for reduction mammaplasty. Plast Reconstr Surg. 2008; 121(2):397-400.
8. Di Giuseppe A. Breast reduction with ultrasound-assisted lipectomy. Plast Reconstr Surg. 2003; 112(1):71-82.
9. Fryzek JP, Ye W, Nyrén O et al. A nationwide epidemiologic study of breast cancer incidence following breast reduction surgery in a large cohort of Swedish women. Breast Cancer Res Treat. 2006; 97(2):131-134.
10. Glatt BS, Sarwer DB, O’Hara DE, et al. A retrospective study of changes in physical symptoms and body image after reduction mammaplasty. Plast Reconstr Surg. 1999; 103(1):76-82.
11. Gonzalez MA, Glickman LT, Aladegbami B, Simpson RL. Quality of life after breast reduction surgery: a 10-year retrospective analysis using the Breast Q questionnaire: does breast size matter? Ann Plast Surg. 2012; 69(4):361-363.
12. Gray LN. Update on experience with liposuction breast reduction. Plast Reconstr Surg. 2001; 108(4):1006-1010.
13. Gust MJ, Smetona JT, Persing JS, et al. The impact of body mass index on reduction mammaplasty: a multicenter analysis of 2492 patients. Aesthet Surg J. 2013; 33(8):1140-1147.
14. Habbema L. Breast reduction using liposuction with tumescent local anesthesia and powered cannulas. Dermatol Surg. 2009; 35(1):41-50; discussion 50-52.
15. Hudson AS, Morzycki AD, Guilfoyle R. Reduction mammaplasty for macromastia in adolescents: A systematic review and pooled analysis. Plast Reconstr Surg. 2021;148(1):31-43.
16. Kaminer MS, Tan MH, Hsu TS. Limited breast reduction by liposuction. Skin Therapy Lett. 2002; 7(10):6-8.
17. Kerrigan CL, Collins ED, Kim HM, et al. Reduction mammaplasty: defining medical necessity. Med Decis Making. 2002; 22(3):208-217.
18. Kerrigan CL, Collins ED, Kneeland TS, et al. Measuring health state preferences in women with breast hypertrophy. Plast Reconstr Surg. 2000; 106(2):280-288.
19. Kompatscher P, von Planta A, Spicher I, et al. Comparison of the incidence and predicted risk of early surgical site infections after breast reduction. Aesthetic Plast Surg. 2003; 27(4):308-314.
20. Lin Y, Yang Y, Zhang X et al. Postoperative health-related quality of life in reduction mammaplasty: A systematic review and meta-analysis. Ann Plast Surg. 2021;87(1):107-112.
21. Manahan MA, Buretta KJ, Chang D, et al. An outcomes analysis of 2142 breast reduction procedures. Ann Plast Surg. 2015; 74(3):289-292.
22. Matarasso A. Suction mammaplasty: the use of suction lipectomy to reduce large breasts. Plast Reconstr Surg. 2000; 105(7):2604-2607.
23. Matarasso SL. Liposuction of chest and back. Dermatol Clin. 1999; 17(4):799-804.
24. Miller BJ, Morris SF, Sigurdson LL, et al. Prospective study of outcomes after reduction mammaplasty. Plast Reconstr Surg. 2005; 115(4):1025-1031.
25. Mosteller RD. Simplified calculation of body-surface area. N Engl J Med. 1987; 317(17):1098.
26. Myung Y, Heo CY. Relationship between obesity and surgical complications after reduction mammaplasty: a systematic literature review and meta-analysis. Aesthet Surg J. 2017; 37(3):308-315.
27. Netscher DT, Meade RA, Goodman CM, et al. Physical and psychosocial symptoms among 88 volunteer subjects compared with patients seeking plastic surgery procedures to the breast. Plast Reconstr Surg. 2000; 105(7):2366-2373.
28. Niepel A, Schwake S, Zeichmann M et al. Influence of breast reduction surgery on long-term breast cancer risk in Austria. Breast Care (Basel). 2022 Jun;17:244-248.
29. Nuzzi LC, Firriolo JM, Pike CM, et al. The effect of reduction mammaplasty on quality of life in adolescents with macromastia. Pediatrics. 2017; 140(5). pii: e20171103.
30. Payton JI, Abraham JT, Novak MD et al. The impact of age, BMI and resection weight on post-operative complications in reduction mammaplasty. Plast Reconstr Surg. 2022 Dec 5. Epub ahead of print.
31. Saariniemi KM, Keranen UH, Salminen-Peltola PK, Kuokkanen HO. Reduction mammaplasty is effective treatment according to two quality of life instruments. A prospective randomised clinical trial. J Plast Reconstr Aesthet Surg. 2008; 61(12):1472-1478.
32. Sadove R. New observations in liposuction-only breast reduction. Aesthetic Plast Surg. 2005; 29(1):28-31.
33. Schnur PL, Hoehn JG, Ilstrup DM, et al. Reduction mammaplasty: cosmetic or reconstructive procedure? Ann Plast Surg. 1991; 27(3): 232-237.
34. Schnur PL, Schnur DP, Petty PM, et al. Reduction mammaplasty: an outcomes study. Plast Reconstr Surg. 1997; 100(4):875-883.
35. Sood R, Mount DL, Coleman JJ 3rd, et al. Effects of reduction mammaplasty on pulmonary function and symptoms of macromastia. Plast Reconstr Surg. 2003; 111(2):688-694.
36. Strong B, Hall-Findlay EJ. How does volume of resection relate to symptom relief for reduction mammaplasty patients? Ann Plast Surg. 2015; 75(4):376-382.

37. Wagner DS, Alfonso DR. The influence of obesity and volume of resection on success in reduction mammaplasty: an outcomes study. Plast Reconstr Surg. 2005; 115(4):1034-1038.
38. Wampler A, Powelson I, Matthew MK et al. Comparative accuracy of clinical and formula-based estimation of resection weight in reduction mammoplasty and implications for insurance preapproval and payment. Ann Plast Surg. 2019; 82(4S Suppl 3):S259-S263.
39. Yan M, Bustos SS, Kuruoglu D et al. Breast resection weight prediction and insurance reimbursement in reduction mammaplasty: Which scale Is reliable? Plast Reconstr Surg. 2022;150(4):723e-730e.

Government Agency, Medical Society, and Other Authoritative Publications:

1. American Academy of Orthopaedic Surgeons. Thoracic Outlet Syndrome. Last reviewed March 2018. Available at: https://orthoinfo.aaos.org/en/diseases--conditions/thoracic-outlet-syndrome/. Accessed on March 6, 2023.
2. American College of Obstetricians and Gynecologists. Committee Opinion No. 686: Breast and Labial Surgery in Adolescents. Obstet Gynecol. 2017;129(1):e17-e19.
3. American Society of Plastic Surgeons. Reduction mammaplasty Recommended Criteria for Third–Party Payer Coverage from the American Society of Plastic Surgeons (ASPS). 2021. Available at: https://www.plasticsurgery.org/documents/Health-Policy/Reimbursement/insurance-2021-reduction-mammaplasty.pdf. Accessed on March 6, 2023.
4. Perdikis G, Dillingham C, Boukovalas S et al. American Society of Plastic Surgeons Evidence-based clinical practice guideline revision: reduction mammaplasty. Plast Reconstr Surg. 2022;149(3):392e-409e.

Websites for Additional Information

1. NCCN Clinical Practice Guidelines in Oncology™ (NCCN). © 2023 National Comprehensive Cancer Network, Inc. For additional information visit the NCCN website at: http://www.nccn.org/index.asp. Accessed on February 14, 2023.
    - Breast Cancer Risk Reduction (V1.2022). Revised October12, 2022.

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History

Status	Date	Action
Reviewed	05/11/2023	Medical Policy & Technology Assessment Committee (MPTAC) review. Discussion/General Information, References and Websites sections updated.
Revised	05/12/2022	MPTAC review. Modified bullet points in sections I and II of the MN statement related to pain and other diagnoses. Added Note on medical records following section II in MN statement. Description, Discussion/General Information, References and Websites sections updated.
	04/18/2022	Updated note with body surface area calculator in MN statement.
	04/14/2022	Updated link to body surface area calculator in MN statement.
Revised	05/13/2021	MPTAC review. Wording on reduction mammoplasty for breast cancer risk reduction added to Not Medically Necessary statement. Wording on psychological considerations removed from Cosmetic and Not Medically Necessary statement. Description, Discussion/General Information, Coding, References and Websites sections updated.
Revised	02/11/2021	MPTAC review. Removed 1 year requirement from criteria I. A and II. A in medically necessary statement.
Reviewed	11/05/2020	MPTAC review. References and Websites sections updated. Reformatted Coding section; added diagnosis codes and updated 19318 with 01/01/2021 descriptor change.
Reviewed	11/07/2019	MPTAC review. References and Websites sections updated.
Reviewed	01/24/2019	MPTAC review. Discussion/General Information, References, and Websites sections updated.
New	01/25/2018	MPTAC review. Initial document development. Moved content of SURG.00086 Reduction Mammaplasty to new clinical utilization management guideline document with the same title.

Appendix

Minimum Weight of Breast Tissue Removed, per Breast, as a Function of Body Surface Area
Schnur Sliding Scale

Body Surface Area (meters squared)	Minimum weight of tissue to be removed per breast (grams)
1.35	199
1.40	218
1.45	238
1.50	260
1.55	284
1.60	310
1.65	338
1.70	370
1.75	404
1.80	441
1.85	482
1.90	527

1.95	575
2.00	628
2.05	687
2.10	750
2.15	819
2.20	895
2.25	978
2.30 or greater	>= 1000
