Practice Parameters

Reduction Mammaplasty

I. BACKGROUND/RESEARCH

Female breast hypertrophy, or macromastia, is characterized by an increase in the volume and weight of breast tissue beyond normal proportions.[1,2] Although usually seen as symmetric involvement of both breasts, unilateral hypertrophy occasionally occurs. Breast hypertrophy may also become symptomatic after mastectomy on the opposite breast. A rare patient may experience rapidly progressive, massive breast enlargement (virginal mammary hypertrophy) producing disabling symptoms that may respond only to mastectomy-type procedures rather than standard breast reduction.

Female breast hypertrophy can have both physical and psychosocial manifestations. These include headache; pain in the neck, back, shoulder or breast region; bra strap grooving; pain; intertrigo; and pain or numbness in the hands.[1,3-5] In addition, many patients report impairment in lifting or participating in exercise and other physical activities. Patients may also report dissatisfaction with body image.[6,7] In recent decades female breast hypertrophy has been recognized as a medical condition that requires treatment.

The diagnosis of female breast hypertrophy involves a comparison of overall body stature with breast size as determined by the relative volume of breast tissue. There is a wide variation in female breast size with a transition from normal breast volume to symptomatic breast hypertrophy. Schnur[8] has provided a logarithmic chart comparison of body surface area and excess breast tissue removed at surgery. Regnault[9] uses a comparison of chest girth with bra-supported nipple-level girth to estimate the weight of excess breast tissue. With excess breast volume, the nipple descends to a lower position than the ideal, described by Penn[10]. As the heavy breast descends to a lower position, secondary effects occur on the skeletal system that can produce a variety of symptoms.[11]

Obese patients may suffer symptoms of mammary hypertrophy. However, it has not been demonstrated that weight loss will improve these symptoms. While weight reduction alone may have an effect on the breast, it will not change body proportion or breast position and cannot therefore be expected to relieve symptoms of breast hypertrophy. While it is recognized that weight reduction may be beneficial to the patient's overall physical health, it is not a pre-requisite for this surgery.

There is no lasting non-operative treatment for female breast hypertrophy. Orthotic brassieres may offer some relief but often substitute increased discomfort in the shoulders through pressure created by the straps. Female breast hypertrophy is most often treated by reduction mammaplasty.

Various surgical techniques for treating this condition have been reported in the literature.[12-16] These techniques reduce excess breast volume and reposition the nipple. The choice of technique is dependent on many factors, including the estimated amount of tissue to be removed, the training of the surgeon, the desire to minimize scars and the safety of the procedure. As several different procedures are currently used for reduction mammaplasty, the choice of procedure should be determined by the surgeon.

Recent research on female breast hypertrophy has focused on both the physical and psychological outcomes of surgery. Studies of this type have consistently shown overall improvement in physical symptoms and quality of life.[2] Indeed, a recent meta-analysis of the literature on reduction mammaplasty has verified these results.[17]

While research strongly supports the physical and psychological benefits of breast reduction surgery for patients with female breast hypertrophy, issues have arisen regarding reimbursement for these procedures—whether they are reconstructive or cosmetic in nature. Although this distinction has been clearly defined by the AMA, third-party payers have applied various criteria of their own in determining medical necessity, most frequently by establishing a minimal amount of breast tissue that must be removed to establish eligibility. Other imposed criteria include such requirements that the patient be no more than 10% over ideal body weight, regardless of the size of the breast relative to body proportion. Schnur, et. al. defined medical necessity in terms of the relationship between body surface area and breast resection weight. This study and its resultant "Schnur scale" has been adopted by many third-party payers and are now widely used in the industry as the standard for determination of medical necessity.[8]

Other recent research examines symptomatology, correlating relief of symptoms with surgery.[1,18-23] Most recently, a multicenter study in diverse practice settings used validated self-report questionnaires to evaluate the burden of breast hypertrophy and the impact and medical necessity of reduction mammaplasty.[24-26] This study, Breast Reduction: Assessment of Value and Outcomes (BRAVO), comparatively assessed both women presenting for breast reduction and a control group of large-breasted women. The main study findings were that:

1) Women presenting for surgery experienced more breast-related symptoms, especially pain, relative to the control group;
2) Conservative treatments were ineffective at providing long-term relief of symptoms; and
3) Breast reduction provided substantial pain relief, essentially returning women to normal functioning.

In analyzing these results, the medical necessity of breast reduction was defined among women presenting for surgery. Those women reporting two or more of the key physical symptoms all or most of the time had the most substantial health burden and were the most likely to benefit from surgery. The

benefits were most apparent in the relief of pain and restoration of physical functioning.

Reduction mammaplasty has been shown to be an effective treatment for the physical and psychological manifestations of female breast hypertrophy. The overall improvement in the health and well being of these patients directly enhances their ability to perform daily activities in the home, at work and in the community.

Unilateral breast reduction for an otherwise asymptomatic, but large, breast may be necessary to achieve symmetry in patients with acquired and congenital deformities

II. DIAGNOSTIC CRITERIA

Women with breast hypertrophy usually date the onset to the time of puberty. Sometimes pregnancy produces breast hypertrophy that may persist and not resolve spontaneously. Some women experience breast enlargement along with general weight gain but are unsuccessful at achieving weight loss or reduced breast size despite repeated efforts. In very rare instances, there may be rapidly progressive unremitting breast enlargement.

SYMPTOMATOLOGY
The symptoms of female breast hypertrophy involve the following areas:

- Related to muscle strain and postural change, such as backache, neck pain, shoulder pain, and less frequently headache or ulnar nerve paresthesia.
- Related to breast weight and brassiere support, such as shoulder grooves.
- Related to hygiene problems, such as intertrigo or exacerbation of acne and hidradenitis suppurativa.
- Related to problems in human relations, such as embarrassment, sexual harassment, and sexual inadequacy.
- Related to problems of normal activity, such as inability to participate in exercise and sports.
- Related to conspicuous appearance and poor fit of clothing.

The symptoms of female breast hypertrophy and their frequency can be quantified by use of a validated and structured questionnaire. The questionnaire encompasses both physical and psychosocial symptoms.[25] Of women presenting for surgical correction of breast hypertrophy, 87.6% list at least two out of seven physical symptoms occurring all or most of the time. Two percent of women with normal breast size (C or smaller) experience two or more breast related physical symptoms all or most of the time.[26] A small percentage of women presenting for surgery have few or infrequent physical symptoms and are requesting surgery primarily for psychosocial reasons. Women who have few physical symptoms may still benefit from surgery to address issues of a psychosocial nature.

PHYSICAL EXAMINATION
The breast should be free of dominant nodularity or secondary signs of breast cancer. The physical examination should document the diagnosis of breast hypertrophy using the following criteria:

INDICATIONS
1. Estimate of breast volume greater than 750 cc's (90th percentile of the U.S. population)[27] or bra cup size of D or greater.
2. Additional information that can be helpful in confirming the diagnosis include:
    a. Secondary skeletal effects including:
        i. Postural change with tendency to dorsal kyphosis
        ii. Clavicular bra strap grooves
        iii. Upper extremity numbness and paresthesia
    b. Hygiene problems including intertrigo

3. The following information may be found useful for surgical planning:
    a. Body mass index
    b. Sternal notch-to-nipple distance
    c. Nipple-to-inframammary fold distance
    d. Photographic documentation of preoperative breast condition
    e. Breast volume

4. The diagnosis of breast hypertrophy is most accurately based on breast volume and not bra cup size, as there is considerable variability in cup size relative to absolute breast size. Women often shift a full cup size up or down by increasing or decreasing the circumference of the brassiere. For example, a woman who wears a 36D-cup bra may also wear a 38C-cup with equal comfort.

5. The American Society of Plastic Surgeons also recommends following the guidelines of the American Cancer Society relative to recommendations for mammography. For asymptomatic women, they are:

    - Women 20 years of age and older should perform breast self-examination every month.
    - Women 20-39 years of age should have a physical examination of the breast every three years, performed by a health care professional such as a physician, physician assistant, nurse or nurse practitioner.
    - Women 40 years of age and older should have a physical examination of the breast every year, performed by a health care professional, such as a physician, physician assistant, nurse or nurse practitioner.
    - Women 40 years of age and older should have a mammogram every year.

These guidelines apply only to women at usual risk for breast cancer who have no symptoms of breast cancer. Women with certain risk factors, such as a family history of breast cancer, should discuss their risk factors with their doctor. In some cases, mammography may be started before age 40, and a more vigilant schedule of early detection tests may be appropriate. For example, doctors suggest starting mammography before age 40 for women whose genetic testing results show changes in breast cancer susceptibility genes (BRCA1 and/or BRCA2).

III. TREATMENT

PROVIDER QUALIFICATIONS

The individual performing this procedure, regardless of the location of the surgical facility, should have fully approved hospital privileges for this procedure and be qualified for examination or be certified by a surgical Board recognized by the American Board of Medical Specialties, such as The American Board of Plastic Surgery.

In those women presenting for surgical correction, conservative measures have not been shown to be efficacious in providing permanent relief of breast-related symptoms, whereas surgery is both safe and highly successful. Patients presenting for surgery in the BRAVO study were asked about prior nonsurgical attempts aimed at relieving their breast-related symptoms. [24] Specifically, they were asked if they had tried one or more of the following: weight loss, aerobic exercise, support bras, stretching, strength exercises, postural training, relaxation, heat application, hydrotherapy, back brace, physical therapy, chiropractic treatment, medications and acupuncture. Less than 1% of women found full permanent relief with medications and heat applications and none reported full permanent relief with other nonsurgical treatments. Over half of those who tried several common treatments, including weight loss, support bras, strengthening exercises and postural training, reported these treatments provided no relief. In contrast, both pain and overall health status were markedly improved by breast reduction, essentially restoring functional status to that of age-matched norms.[24]

The BRAVO Study[24-26] has demonstrated striking improvements in pain and other breast-related symptoms following reduction mammaplasty in women with symptomatic macromastia. Importantly, these benefits were not significantly associated with weights of resection. While the amount of resected tissue may vary in reduction mammaplasty, the surgical procedure will typically remove at least one-third of estimated preoperative breast volume and a minimum volume of 250 cc. These findings are supported by the BRAVO Study data: among the 179 BRAVO patients, 90% underwent resections of at least one-third of their total breast volumes and 99% of women had greater than 250 cc resected.

PREOPERATIVE

In addition to routine consultation and review of risks and complications, preoperative preparation for breast surgery should include a physical examination, appropriate laboratory work and a mammogram, as detailed under “Diagnostic Criteria”.

Patients are instructed to adjust their medications prior to surgery, as directed by their physician. Active smokers are instructed to stop smoking. Since this is an elective procedure, the patient should otherwise be a good surgical candidate without undue risks related to other body systems.

OPERATIVE

Because breast hypertrophy is customarily a bilateral condition, a bilateral procedure is usually required. Exceptions to this may include cases of significant breast asymmetry or reduction of the contralateral side when the patient has had a mastectomy and is undergoing reconstruction.

The location where the surgical procedure is performed is at the discretion of the surgeon, assuming an otherwise healthy patient. The surgery can be performed in a hospital operating room, an outpatient surgical facility or a physician’s office. The facility must be accredited and fully equipped to provide adequate monitoring and life-support techniques.

The surgery is almost always performed under general anesthesia, although smaller reduction mammaplasty procedures can be performed under local anesthesia with sedation. Prophylactic intravenous antibiotics are given at the discretion of the surgeon. Depending on the method used and the surgeon’s average time, a Foley catheter may or may not be used. Appropriate deep-vein thrombosis prophylaxis is used during and after surgery to prevent thrombophlebitis and pulmonary embolus.

The arms are padded and secured. Breast tissue removed on each side should be weighed separately and examined by a pathologist. Wound drains may or may not be used, depending on the volume of breast tissue removed and surgeon preference. Dressings, brassieres, and wraps are used according to surgeon preference.

A variety of reduction mammaplasty techniques have been described, including free nipple-areola graft, a variety of nipple-pedicle techniques, and adjunctive liposuction. A technique should be chosen which is appropriate for the patient and in which the surgeon has appropriate training and expertise. All techniques leave scars on the breast, usually in either an “anchor” or vertical design, both leaving scars around the nipple-areola complex. All techniques are designed to accomplish the dual objectives of (1) removal of an adequate volume of breast tissue and skin and (2) reshaping and elevating the remaining breast into a cosmetically pleasing appearance.

POSTOPERATIVE

The patient is usually seen in the early postoperative course for drain removal and/or suture removal and for inspection of the wounds. Some surgeons may elect to use a silicone or mineral oil gel covering of the wounds in an effort to inhibit hypertrophic scar formation.

Patients are instructed to sleep in a slightly upright position with pillows. Drains, if used, are removed within a few of days after surgery. However, if liposuction is used during the procedure, drainage may be extended for several days. After removal of the drains, women may shower and resume normal hygiene. If the nipple-areola complex is grafted, the dressing is left in place for five to seven days and should only be removed by the physician or designated appointee. A support bra may be worn. Sedentary activity and work can be resumed when the woman is no longer using a narcotic and can move her arms without discomfort. Vigorous activities, such as jogging or heavy weight-lifting are restricted for 4-6 weeks on average. A moisturizer over the scars can be started once drains, dressings, sutures or steri-strips have been removed. Any wound complications are managed as deemed appropriate by the surgeon.

COMPLICATIONS

Complications specific to breast reduction are often related to obesity, smoking and the volume of the reduction. They include the following:

- Infection - Antibiotics are given at the surgeon's discretion in the perioperative period. Occasionally, reaction to subcutaneous sutures can mimic a breast infection. Both of these problems may lead to greater scarring.

- Hematoma

- Skin or nipple-areola necrosis - This may be a function of patient age, smoking history, large-volume reduction, and the distance of nipple repositioning.

- Fat necrosis - This can be the result of circulatory compromise to the fatty tissues of the breast, leading to saponification and development of a hard, tender, calcified nodule.

- Cosmetic deformity - This can result from a discrepancy in the size of the two breasts or a malposition of the nipple-areola complex. The amount of breast tissue removed may be more or less than that anticipated by the patient, leading to patient dissatisfaction.

- Unfavorable scarring - This occasionally results when scars, spread, or acquired hypertrophic, or rarely, keloidal nature. Long-term treatment of the scars with steroid injections, topical treatments, or surgical revisions may be necessary.

- Alteration of nipple sensation - This may be unilateral or bilateral and can occur with any technique.

- Thromboembolic complications - Pneumatic compression devices and prophylactic anticoagulation may be indicated.

- Inability to breast-feed - Because of the separation of the nipple-areola complex from the breast duct system with free nipple graft techniques, the likelihood of being able to breast feed a baby postoperatively should not be expected. On the other hand, more than 50% of the women who attempt breast feeding after undergoing pedicle techniques could breast feed. [13,28-31]

- Need for revision surgery - Secondary procedures may be indicated in order to adjust the position of the nipple-areola complex, to revise scars, or to adjust breast volume.

- Need for physical therapy - In rare circumstances, patients with extremely large breasts may need a period of postoperative physical therapy for optimal rehabilitation from nerve-compression syndromes.

Follow-up appointments are made at the discretion of the surgeon to monitor the healing process, the surgical result and the patient's overall progress. Screening mammography can be resumed according to the American Cancer Society guidelines after six months have elapsed. This will allow for the acute changes of surgery to resolve. Earlier mammographic studies may be misleading because of acute surgical changes. [32]

IV. DISCLAIMER

Patient Care Parameters are strategies for patient management, developed to assist physicians in clinical decision-making. This Patient Care Parameter, based on a thorough evaluation of scientific literature and relevant clinical experience, describes a range of generally acceptable approaches to diagnose, manage, or prevent specific diseases or conditions. This Patient Care Parameter attempts to define principles of practice that should generally meet the needs of most patients in most circumstances.

However, this Patient Care Parameter should not be construed as a rule, nor should it be deemed inclusive of all proper methods of care or exclusive of other methods of care reasonably directed at obtaining the appropriate results. It is anticipated that it will be necessary to approach some patients' needs in different ways. The ultimate judgment regarding the care of a particular patient must be made by the physician in light of all the circumstances presented by the patient, the diagnostic and treatment options available, and available resources.

This Patient Care Parameter is not intended to define or serve as the standard of medical care. Standards of medical care are determined on the basis of all of the facts or circumstances involved in an individual case and are subject to change as scientific knowledge and technology advance and as practice patterns evolve. This Patient Care Parameter reflects the state of knowledge current at the time of publication. Given the inevitable changes in the state of scientific information and technology, periodic review, updating and revision will be done.

V. CODING

This coding is provided as a guideline for the physician and is not meant to be exclusive of other possible codes. Other codes may be acceptable depending on the nature of any given procedure.

Diagnosis	**ICD-9**
Hypertrophy of the breast	611.1
Mastodynia (pain in breast)	611.71
Headache	784.0
Unspecified musculoskeletal disorders and symptoms referable to neck	723.9
Cervicalgia	723.1
Pain in thoracic spine	724.1
Lumbago	724.2
Other specified erythematous conditions (intertrigo)	695.89
Disturbance of skin sensation @ Paresthesia	782.0
Backache, unspecified	724.5
Kyphosis (acquired) postural	737.10
Mastodynia	611.71

Diagnosis	**ICD-9**
Acquired deformity of chest and rib (Shoulder grooving from the bra strap)	738.3
Congenital breast deformity	757.6

Procedure	**CPT Code**
Unilateral	19318
Opposite breast	19318-50
Unilateral (Liposuction only)	19318-52

VI. References

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