Plastic Surgery and the Teenage Patient

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Abstract. Over the past year, the media have reported an increase in the number of teenagers undergoing plastic surgery, and with a tone of faint alarm have suggested that this merits some cultural self-scrutiny. This paper presents the statistics on the number and types of plastic surgery operations done in teenagers over the last eight years and discusses these in the context of cultural influences and societal concepts of beauty.

The reason to have plastic surgery is psychological and involves body image, which is defined as the subjective perception of the body as it is seen through the mind’s eye. To explain why changing the external appearance affects personality and behavior, the complex psychological reactions that occur after an operation that alters the size or shape of a body part are reviewed. Body image development occurs in stages, and puberty stands out as a particularly sensitive time as the teenager undergoes major changes in his or her physical appearance and does this at a time of heightened vulnerability to the opinion of others. Plastic surgery to correct a truly unattractive feature is enormously successful and remarkably free of conflict in this population. Teenagers undergo a rapid reorganization of their self-image after plastic surgery with subsequent positive changes in behavior and interpersonal interactions.

The key to achieving success with plastic surgery is patient selection. The core value of the surgery lies not in the objective beauty of the visible result, but in the patient’s opinion of and response to the change. Good patient management includes selecting candidates with clear and realistic expectations who are free of psychopathology. There must be true informed consent and attention to psychological issues must continue into the postoperative period. It is the responsibility of the patient’s physician and plastic surgeon to recognize a need for psychiatric evaluation and to help the patient get this as needed.

The eight operations most commonly done in the teenage population are rhinoplasty, ear surgery, reduction mammoplasty, surgery for asymmetric breasts, excision of gynecomastia, augmentation mammoplasty, chin augmentation, and suction assisted lipoplasty. Each of these is reviewed with regard to techniques, expectations, risks, and logistics. Guidelines for timing the referral of teenage patients for plastic surgery evaluation are given.

Key Words. Plastic surgery—Body image—Facial surgery—Breast surgery—Psychiatry, adolescent—Psychiatry, and surgery

Attitudes about plastic surgery have changed over the last ten years, and the demand for it has increased. There are several reasons for this. First, the surgery is safe; there are very few significant complications. Second, our society places a high premium on physical attractiveness and rewards those who are slender, youthful, and handsome. Third, we live in a culture that emphasizes competition and legitimizes self-improvement as a way to gain a competitive edge. And lastly, plastic surgery lives up to expectations. The overwhelming majority of the one million patients who had cosmetic surgery last year are satisfied and say the surgery helped them.

My intention today is to look at teenagers as a subsegment of the plastic surgery population and discuss issues peculiar to them from the standpoint of patient motivation, patient selection, and the judgment and guidance required of their physicians and plastic surgeons. To manage the care of these patients, and all plastic surgery patients, requires an appreciation of the psychologic as well as the physiologic dimensions of the surgical intervention. In the final analysis, the purpose of plastic surgery is to change the patient’s psyche in a positive way. By making what the patient sees as an improvement in appearance, his or her self-perception of the body is changed, and this has an impact on well-being and the conduct of his or her life.
Table 1. No. Cosmetic Operations Performed on Patients Age 18 or Less

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
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<tbody>
<tr>
<td>1992</td>
<td>13,314</td>
</tr>
<tr>
<td>1998</td>
<td>24,623</td>
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</tbody>
</table>

Statistics courtesy of The American Society of Plastic Surgeons.

Table 2. Percentage of National Cosmetic Surgery Cases Involving Patients Age 18 or Less

<table>
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<th>%</th>
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<td>1992</td>
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<tr>
<td>1998</td>
<td>2</td>
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Statistics Courtesy of the American Society of Plastic Surgeons.

Table 3. Most Common Operations Performed on Patients Age 18 or Less (1998)

<table>
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<tr>
<th>Procedure</th>
<th>Total</th>
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<tbody>
<tr>
<td>Rhinoplasty</td>
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</tr>
<tr>
<td>Ear surgery</td>
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<tr>
<td>Acne scarring</td>
<td>2,322</td>
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<tr>
<td>Retin-A*</td>
<td>2,224</td>
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<tr>
<td>Male breast reduction</td>
<td>1,862</td>
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<tr>
<td>Breast augmentation</td>
<td>1,840</td>
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<tr>
<td>Liposuction</td>
<td>1,645</td>
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</tbody>
</table>

Statistics Courtesy of The American Society of Plastic Surgeons.

Procedural Statistics

The media has made much of the increase in the number of patients having plastic surgery, and indeed statistics gathered by the American Society of Plastic Surgeons (ASPS) confirm this. During the year 1992, about 400,000 patients had surgery done by plastic surgeons certified by the American Board of Plastic Surgery. By 1998, this had risen to over one million patients, a 153% increase. The media also reports movement toward a younger population of plastic surgery patients, but this is not strictly accurate. The number of patients aged 18 or less having plastic surgery did rise from 13,314 in 1992 to 24,623 in 1998 (Table 1). However, as a percentage of all patients having cosmetic surgery, the age-18-and-less population dropped from 4% to 2% during the same time period (Table 2).

Looking at the seven most common operations in the 18 and younger age group shows that rhinoplasty and otoplasty (ear surgery) are the most frequently performed, in about 8000 and 5000 patients respectively during one year (Table 3). The next most common interventions are for the treatment of acne and acne scarring with the use of topical retinoid and laser resurfacing of the facial skin. Male breast reduction is next, done in 1862 young men with gynecomastia. About 1800 breast augmentations are done in the under-19 female population; a large proportion of these are unilateral to treat asymmetric development. Suction assisted lipectomy to reduce fatty deposits on the trunc or under the chin was done in 1645 patients.

Comparing the statistics for these seven most commonly done operations with statistics from 1992 shows that the greatest growth is in the number of interventions treating acne and acne scarring (Table 4). This reflects the progress made with new technology such as the laser, which is easier, safer, and more effective for facial resurfacing than were previous operative procedures. Similarly, the increased numbers for suction assisted lipectomy reflect refinements in the technique and parallel what is seen in the adult population, where it is the most commonly performed cosmetic surgery procedure. The increase in the number of breast augmentations may be explained by the extremely low numbers of these operations done in 1992 after silicone breast implants were withdrawn from the market in 1991 amid much sensational press coverage. As studies of saline-filled silicone implants completed over the last eight years have shown few associated systemic problems, the number of augmentation mammoplasties done in the United States has more than quadrupled. This increase is most modest in the teenage group.

Cultural Influences

The public is assaulted continually with a barrage of articles in newspapers, fashion magazines, and self-improvement books about plastic surgery and the “miracles” that can be achieved by the physical reworking of one’s body. Health columnists in community and national newspapers publicize any new procedure possible on faces, hips, and breasts—no matter how incremental or untested. Advertisements for colored contact lenses, permanent eyeliner, colla-


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<tbody>
<tr>
<td>Rhinoplasty</td>
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<td>Ear surgery</td>
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Statistics Courtesy of The American Society of Plastic Surgeons.
gen injections, leg veins, and liposuction fill the back pages of Sunday newspaper magazine sections. While one may shake his or her head ruefully and dismiss all of this as postmodern folly, we cannot ignore the antiquity and ubiquitous nature of invasive procedures done for personal beautification.

The art of body enhancement by making physical change is described in most primitive groups and essentially all of the higher cultures. Tribesmen in Brazil wear disks and plugs as jewelry in perforated and progressively stretched lips and earlobes. Scarification of the skin as a method of beautification or a mark of distinction is commonplace in African tribes. In ancient Athens, women bound their chests tightly to produce atrophy of the breasts since the small, firm breast was associated with poise and grace. In Chaucer's day, the voluptuous breast was found only on peasants, and women of the upper class resorted to continuous chest binding to produce breast wasting. From this small sampling of hundreds of instances of manipulation of the appearance, it becomes clear that not only are people prepared to embark on physical interventions but also this is not done to meet an objective standard of beauty. Beauty is in the eye of the beholder, and man's concept of ideal beauty seems to be relative and heavily influenced by his cultural environment.

In addition to varying from culture to culture, and from society to society, concepts of beauty are dynamic and change over time. In America, the idealized female face has changed from the soft, round, baby-doll features of the 1930's to the more angular and strong face we see in today's attractive woman. The idealized male face has gone from the chiseled-looking, pencil-mustached matinee-idol regularity of Tyrone Power or Clark Gable to the far-from-classic unkempt looks of Brad Pitt or Johnny Depp. And even as society at large changes its perceptions of its “ideal” or most attractive members, so do the individual members adjust the context in which they see themselves.

### Defining Body Image

For each of us, our own appearance becomes part of a complex psychological abstraction called body image. To explain why changing the external appearance affects personality and behavior, we need to define body image and review the complex psychological reactions that occur after an operation that alters the size or shape of a body part.

Body image has been defined as the mind-body relationship; the subjective perception of the body as seen through the mind’s eye; or the psychological effects of what a person looks like. In 1935, Schilder, the first major student of body image, described it as a tridimensional scheme of one's own body involving interpersonal, environmental, and temporal factors. He talked about the influences that contribute to body image development. These include what our bodies look like. They also include what people say about how we look, our reactions to these inputs, where and how we grew up, and when certain key events happened. As an example, consider a young woman with a large, prominent nose. If she is a Jewish or Armenian girl from a close-knit, positive thinking, ethically proud family, her feelings about her nose may be quite different from those of a Swedish girl of the same age who is the only female in her family not to have an attractive, refined, feminine nose. Or consider that within a certain family, certain characteristics may be valued or despised. Being told that you look just like your grandmother is an image booster if your grandmother was a legendary favorite known for her warmth and charm. Your feelings might be quite different if she was a wretched, ill-tempered woman disliked and avoided by her children. People's reactions to having familial, ethically normative, or even a celebrity's features are colored in this way by feelings about the individual in question. Because of this, body image is, by definition, subjective. We cannot know how someone else feels about his or her body based on an evaluation of his or her objective appearance. Similarly, changes in appearance are “improvements” only if a patient evaluates them as such.

### Body Image Development

Perceptions of body image affect emotional life and ultimately change behavior. Let us look at how this happens. When we look or think about ourselves, we have a personal body image. When someone else looks at us, that person forms a body image of us in his own mind. So, for every encounter there are two body images for each person. It is from the interaction of these two images that behavior develops.

As a person appraises his abilities based on his image of his own physical and mental abilities and their success in the environment, a psychological effect is produced with varying amounts of confidence or anxiety. These feelings of self-confidence or inadequacy will then influence one's ability to perform. Thus, when dealing with challenges, one's individual body image affects the amount of success that can be achieved. By repeating this process over and over, one learns what can be accomplished and uses this information to develop patterns of goal oriented be-
behavior. One learns to avoid situations that bring failure. This behavior then informs others about your strengths and weaknesses and further determines the behavior of others towards us.

This process of developing body images begins in the child in his earliest years. Parental approval and attention, or parental criticism or neglect, will tell the infant how to think about himself. In a loving and secure environment he will learn that he is attractive and has value to others, and this feeling of self-worth will become the basis of a positive body image.

The second step in body image development occurs when the child encounters others outside the family—usually when entering school—and is tested in a competitive environment. The child who is attractive to others and able to project strong or desired qualities will be accepted by his peers. Their positive feedback will lead the child to invest further in the attributes that increase popularity and the child’s pattern of thinking about himself will be further established.

At puberty, the third step in the acquisition of body image takes place. For the first time in the child’s memory his physical appearance changes, and this happens at a time when the person is particularly sensitive to his need to find his own place in the world and vulnerable to the opinion of others. The physical changes may be shocking. A previously compact body may become bulky or fat, an attractive shapely nose may suddenly be large and dramatically prominent, smooth facial skin become broken out, and huge droopy breasts can appear. The adolescent’s body image will change in response to this and, again, the change will be mediated through the steps of cognition, emotion, and behavior. He or she will start with an opinion about the changes, such as “My nose is really ugly” or “My new breasts seem to be very attractive.” This thinking will include a picture the teenager has of self-appearance in his own mind, and this will be multiply tested for validation against the opinions of his peers. A negative thinking pattern, or alternatively a positive and adaptive one, can provoke strong emotions in this age group. From an image of oneself as ugly or disgusting may come feelings of depression, anger, anxiety, or hopelessness. If the emotional response is persistent, maladaptive behavior follows. Someone who thinks he is ugly and is depressed by feelings of shame will likely develop negative behavior such as social withdrawal. Social interaction can be affected by negative patterns of body image cognition and emotions on many levels ranging from nonverbal behavior during everyday communication to frank antisocial activity.

The final adjustment to body image occurs when the person begins to age. Competitors use age to diminish the authority of the physically older person, and a tired and worn out appearance tends to intensify this type of peer behavior. Although an older person may still be bright and competent, he may start to show weakening of body image in the face of group pressure.

Studies of Body Image

The presence of the feedback loop between personal appearance and external response as a key element in the development of body image is well documented. A number of studies have explored what is called a “strong physical attractiveness stereotype.” This means that observers endow attractive people with a wide variety of favorable attributes, assuming them to be a kinder, more genuine, sincere, warm, poised, sociable, sensitive, interesting, strong, and of better character. With all of these presumed qualities, it follows that attractive people are assumed to lead happier lives. Thus, subjects who see a man with a beautiful woman view him as more intelligent, exciting, and successful than a man with an unattractive partner. Other studies have shown that compared with unattractive individuals, attractive people are better liked and are more persuasive. A good looking job applicant is seen as a better candidate and work done by attractive pupils is viewed more favorably than that produced by ordinary or unattractive students.

There are differences between the features that our society ascribes to the ideal male and the ideal female. For males, proportioned largeness of size, strength, and intelligence are desirable attributes, presumably because they increase the chances of dominance and success. In contrast, beauty and its ability to attract people are prized in the female. It is interesting that it is not for its own sake that aesthetic beauty is valued, but for the reaction it stimulates in others, namely, the ability to attract people and influence their behavior.

How Plastic Surgery Changes Body Image

The ultimate role of plastic surgery is to alter the patient’s body image, and thus to improve the patient’s quality of life. It is relevant that plastic surgery tends to be done at the time of one of the four stages of body image development. First, plastic surgery is done in the child with a congenital defect or physical deformity that might cause early rejection, even if this is only of trivial proportions. The second period when a child enters school is the usual time for correction of protruding ears, webbed fingers, and other problems that will catch the attention and draw the
criticism of the child’s peers. The teenager years are a time for correction of newly developed unattractive features, and the aging person seeks plastic surgery to correct the drooping and wrinkling that produce a worn, tired appearance.

Focusing on the adolescent puts us squarely at the period of development when there is the greatest concern about becoming attractive, competent, and acceptable to other people. For this reason, perhaps it is not at all surprising that invasive procedures to improve appearance, when condoned by parents, are remarkably free of emotional turmoil and sequelae. Whether it is surgery to prepare for orthodontia, which is almost a rite of passage for middle-class preteens, or surgery to correct a nasal hump, there is little or none of the anxiety and emotional conflict that accompany intra-abdominal surgery, sinus operations, or repair of facial injuries in adolescents.

Several studies have been done to investigate the apparent lack of conflict about teenage rhinoplasty. It has been suggested that this event may stand out as an area of tacit agreement between parent and child at a time when almost every other issue has become a focus of intense struggle. The parent and child seem to agree almost without discussion that the operation is desirable. It is unclear how much of this is the parents’ wish to fulfill their own aspirations or relieve feelings of guilt by making their child more perfect. For the youngsters, rhinoplasty is seen as a gift; and it is an unearned gift, requiring none of the effort required for good grades, popularity, making the sports team, after-school lessons, or watching diet and weight. There also are undertones of magical transformation, as when the ugly duckling becomes a swan, or the frog a prince—metamorphoses that also were effortless.

Teenage patients seem to undergo very rapid reorganization of their self-image after rhinoplasty. Many state that within several weeks they cannot remember what they used to look like, express surprise when shown their preoperative photographs, and harbor very little sense of invasion. In most cases, a preoperative preoccupation with the nose disappears, and the patients in general are more pleased and satisfied than are older patients having the same surgery. Feelings of inferiority may be replaced with self-confidence, and anxiety and awkwardness in social situations tend to diminish.

Now, how does a rhinoplasty actually produce these beneficial effects? There is little doubt that the nose first has to be made objectively more attractive. The changes in the nose are real (Fig. 1). The patient can see them in a mirror, and just as importantly, other people can see them and give the verbal and nonverbal feedback that changes the patient’s self-image. Obviously, a rhinoplasty cannot change basic life conflicts nor can it offer solutions for them. However, changes within a patient resulting from the rhinoplasty may change the way in which he or she deals with conflicts.

A case history may help to illustrate these observations. A slender 16-year-old boy felt that his beak nose made him ugly and he articulated that he felt it made others think he was unathletic, mean, and humorless. His family tried to discourage him, telling him that he looked fine, but he continued to complain and felt that he was not attractive to the girls in his class. He had some social contacts but was a typical insecure adolescent who was not scape-goated but also was not part of a warm circle of friends. After much discussion, his pediatrician found him a plastic surgeon and a rhinoplasty was done. The surgeon told him and his family that there would not be a drastic change in his appearance, and indeed there was not. However, the patient and his family were very happy with the result. He went off to college at age 18 and felt he had an advantage; he felt he looked attractive and enjoyed his social life in college and graduate school. After finishing school he married. Ten years later he was studied with in-depth psychiatric interviews and expressed delight that he had taken the surgical step and given himself an “edge.” He saw the surgery as a positive and useful experience that freed him from over-awareness of his appearance and let him devote more energy to constructively working out other adjustments in life.

For this patient, as for the vast majority of adolescent plastic surgery patients, the surgery was successful—not because the plastic surgeon did a nice job on the nose, but because the surgery was done on a patient who then felt more positive about himself and his life. The surgery treated a body image discomfort that lay at the heart of the young man’s sense of identity.

Skills for Patient Selection

Since the psychologic concerns of patients are the motivation for plastic surgery, it is essential to understand them if the surgery is going to work. Understanding them also is necessary to avoid problems with patient dissatisfaction or psychopathology.

Preoperative assessment starts with inquiring about patients’ expectations about the physical change to be made, what they think their own emotional response to the change will be, and their estimate of how others will respond to it. Good surgical candidates will have clear and realistic expectations, be able to articulate what they are seeking, and describe why they are motivated to have the surgery.
Most plastic surgery patients do not evidence psychopathology, but this reflects a selection process that has eliminated those with psychologic disorders that will not be helped with surgery. Patients with psychiatric disorders who present to plastic surgeons requesting surgery include, among others, those with body dysmorphic disorder, personality disorders, and eating disorders.

Body dysmorphic disorder is well recognized by most plastic surgeons. These patients have an excessively strong negative response to some aspect of their appearance despite the fact that there is little or no objective deformity. They often exhibit the classic contraindications to plastic surgery, which are minimal deformity, multiple consultations with plastic surgeons, obsessive focus on appearance, and emotional volatility. These patients require psychiatric evaluation and treatment. Doing surgery on them is problematic since they may not be competent to make medical decisions and give informed consent.

Personality disorders commonly seen in plastic surgery practice include those with narcissistic, dependent, and borderline features. Most plastic surgeons learn to recognize these traits and decide how comfortable they are caring for these patients.

Patients with an eating disorder are somewhat different. As many as 8% of the female adolescent population in the United States have some symptoms of anorexia nervosa and/or bulimia nervosa. These young women have body image distortions and extreme dissatisfaction with their appearance. In addition to excessive dieting and other measures for appetite and weight control, some pursue plastic surgery, usually for liposuction and breast related operations. The problem with doing surgery in these patients is that operations address only the symptom, not the grave underlying problem of significant body image distortion. These patients generally are pleased with the surgical outcome, but reducing the size of their body part does not alleviate their fundamental dissatisfaction with their bodies. When a plastic surgeon detects an eating disorder in a young patient, direct attention should be given to the underlying disorder.

**Informed Consent**

We have said that the primary reason to do plastic surgery is the psychological benefit of the operation. Once it is determined that the patient has realistic expectations and is psychologically healthy, the next step is helping the patient make a good decision about the risk-benefit ratio of the surgery. Deciding what level of risk is acceptable for elective cosmetic surgery is very subjective judgment. Even as the patient must have realistic expectations about the planned improvement, so must he or she know, understand, and weigh the potential risks. Without informed consent, a patient for whom any setback is a catastrophe of immense proportions will proceed with surgery he or she would not have undertaken if he or she had really considered the likelihood of small complications. When the patient is a teenager, the informed consent process must include the patient and the parents; and the surgeon must be convinced that all parties are prepared to accept the pertinent degree of risk. In adolescents this means recognizing their
psychological vulnerability, tendency to wishful thinking, and lack of maturity and experience.

**The Dissatisfied Patient**

The attention devoted to psychological issues extends into the postoperative period. There are a certain percentage of plastic surgery patients who are dissatisfied with an operation that did not turn out well. There are also patients who are dissatisfied with operations that turned out perfectly.9

For the former, the suboptimal result should be addressed openly and frankly, a plan should be articulated, and with the patient’s support, a revision or correction is done. For the patient who is dissatisfied with the results of surgery that is highly successful by objective standards, retrospective analysis often reveals one of the factors discussed earlier. Perhaps there was a violation of the patient’s expectations, or a facet of psychopathology was missed. These can be very difficult problems and it is customary for plastic surgeons to spend a great deal of time with these patients discussing the problem and providing encouragement. Sometimes the patient will respond with increasing acceptance of the result; in other cases, the patient may become seriously depressed and discouraged, and it is critical for the plastic surgeon to watch for this and enlist the aid of the patient’s other physicians and a psychiatry consultant as needed.

Referring a patient for psychiatric consultation is not uncommon in plastic surgery—more often as a preoperative rather than a postoperative evaluation. For most plastic surgeons, this type of referral is as matter-of-fact and straightforward as referral to a medical specialist for a cardiac murmur. Depending on the particular situation, the surgeon explains to the patient that he wants him or her to have a higher level of psychologic support, or treatment for the symptoms of emotional distress, or help with adapting to a physical feature that is a particular problem for the patient. Ideally, a plastic surgeon can find a psychiatrist with a particular interest in body image or adolescent surgery with whom a collaborative relationship can be established.

With regard to dissatisfied patients, the watchword is prevention rather than treatment. This means that the criteria for patient selection must be followed carefully and sensitively. It is well recognized that a competent plastic surgeon turns away a significant number of the patients who present themselves for cosmetic surgery consultations.

**Operations Performed for Teenage Patients**

**Rhinoplasty**

Patients who are candidates for rhinoplasty (Fig. 2) are those with noses with humps, bumps, or hooks; too big or too high; or with a poor angle between the nose and upper lip. A black or Asian person who wants a “Caucasian” nose is not a good candidate, nor are those with minor imperfections, because they have unrealistic expectations. In order to allow the nose to be fully grown, the patient should be older than 14 to 15 for a girl and 15 for a boy.10 Contraindications to surgery are a bleeding disorder and allergic rhinitis, which may be aggravated by the procedure.

As part of the preoperative workup, the surgery is individualized for each patient, depending upon their deformity and their goals. Preoperative plan-

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**Fig. 2.** (a) Girl, 17 years old, with a high, long nose and a short upper lip. (b) Postoperative appearance following rhinoplasty to lower the dorsum, shorten the length, and elevate the tip of the nose. Note the improved angle of the nose with the upper lip producing a more balanced profile.
ниг can involve using a mirror, photographs, drawings, and computer images. An external and internal nasal examination is performed.

For patients with nasal deformities due to congenital defects, e.g., nasal deformities associated with a cleft lip or palate, or posttraumatic nasal deformity, insurance companies may provide reimbursement. Patients without defects or injury seeking rhinoplasty to improve their appearance are undergoing cosmetic surgery, and this is not covered by health insurance.

Rhinoplasty may be done under local or general anesthesia, and some surgeons prefer a hospital setting to perform the procedure.

Rhinoplasty may involve bone, cartilage, or both, and may be accompanied by work on the septum and sometimes the turbinates. It may be done via either an open or a closed route, leaving inconspicuous or no external scars. Cartilage grafts may be harvested from the septum, or occasionally from the posterior aspect of the ear, which would require an additional incision.

After rhinoplasty, the surgeon packs the nose, and the patient wears a support for 5 to 10 days. Bone reshaping causes bruising around the eyes. The patient can resume most activities within 3 to 4 days, though strenuous activities should be deferred for 3 to 4 weeks. Bruising usually is visible for 2 weeks, and signs of surgery may linger for 6 to 9 months. The patient is followed up at gradually increasing intervals until the postoperative swelling has resolved and the final contour of the nose has been obtained.

Bleeding is the most common early postoperative complication in 2%±3% of patients. If bleeding occurs in the septum, with a hematoma formation, secondary infection may result in septal perforation or saddle deformity. Patient dissatisfaction is another possible complication and may require corrections.11

Informed consent includes discussion of the scar-ning associated with the surgery, a 20% chance of nipple numbness after surgery, and the probability that the young woman will be unable to breastfeed. Incisions used are circumareolar, and vertical and horizontal incisions to define the skin envelope that will shape the recontoured breast.17 Excess skin and tissue are removed from the lower part of the breast. The nipple and areola, usually still attached to the underlying tissue, are then repositioned upward to

**Reduction Mammoplasty**

For a young woman with extremely large breasts, reduction mammoplasty (Fig. 3) can improve both her appearance and her functional status.14,15 Women seek reduction mammoplasty for alleviation of symptoms, which may include upper back and neck pain, shoulder groove pain, and rashes between and below the breasts.16 Plastic surgery surveys always have shown a very high degree of patient satisfaction with this procedure, with over 94%–95% of patients stating that they would have their surgery again. It is usually done in the hospital, and usually requires a postoperative overnight stay. General anesthesia is used. Some patients choose autologous donation of their blood before surgery, but blood transfusion is often unnecessary.

Depending on the weight of breast tissue removed, in association with the woman’s build, and associated problems with very large breasts, reduction mammoplasty is often covered by health insurance.

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postoperative infection is 2%. A small number of patients experience fat necrosis, which may result in asymmetry. Visible scars in the form of an inverted T are unavoidable. They are located below the nipple and will not be seen with low-cut clothing, but in some patients, the scars are so noticeable that they may need surgical revision. In some cases, the scars may widen, or the suture material and stitches may appear through the skin 2 to 3 months postoperatively. Loss of nipple or skin tissue is a rarer complication.

While all patients experience a change in nipple sensation, it generally improves with time. However, if the nipple needs to be grafted, loss of sensibility may be more profound, and these patients also will be unable to breastfeed.

**Surgery for Asymmetric Breasts**

Patients with marked breast asymmetry (more than one cup size) (Fig. 4) may require either unilateral breast augmentation, unilateral breast reduction, or a combination of both. Occasionally, recontouring or sculpturing of any underlying abnormal costal cartilages can be done to correct or improve an underlying chest-wall deformity and thus enhance the final aesthetic result. Insurance companies occasionally will reimburse for a severe asymmetry, treating it as a deformity rather than cosmetic surgery.

In a series of 49 female patients with severe developmental breast asymmetry, Poland’s syndrome and isolated unilateral hypoplasia were the most frequent etiological factor (69%). If the asymmetry is due to Poland’s syndrome, additional deformities may be present including absence of the sternal head of the pectoralis major muscle and hand deformities. Surgery is postponed until the late teenage years, to allow full development of the contralateral, unaffected breast. When augmentation of a hypoplastic breast is required, prosthetic augmentation alone, transfer of the latissimus dorsi muscle, or an expander prosthesis are potential choices depending on the case. In order to achieve symmetry, the opposite drooping/hypertrophic breast can be corrected in some patients.

Temporary discomfort following breast reduction rarely lasts more than a few weeks. There is swelling and discoloration, but minimal pain. The patient wears a surgical bra or dressing for 2 to 3 weeks, and then a regular bra for the next month. She can return to full activities in 3 to 4 weeks. Minor wound drainage or scabbing is common and treated with local care.

Possible complications include those related to anesthesia, bleeding, and hematoma. The incidence of complications of the procedures will be similar to those for breast augmentation, or breast reduction, as applicable. In addition, any thoracic wall surgery will carry its own morbidity.
Excision of Gynecomastia

Gynecomastia (Fig. 5) is a medical term that comes from the Greek words for “women-like breasts.” Gynecomastia is quite common, affecting an estimated 40 to 50 percent of young men. It may affect only one breast or both. Though certain drugs and medical problems have been linked with male breast overdevelopment, there is no known cause in the vast majority of cases. For most adolescent males, the process resolves spontaneously, and for this reason surgery is not done until the gynecomastia has been persistent for at least two years.

Surgical removal of excess breast tissue remains the primary method for correcting gynecomastia, and it is usually performed as an outpatient procedure under general anesthesia, or in some cases, under local anesthesia plus sedation.

Treatment of gynecomastia may be covered by medical insurance, but policies vary greatly.

Excess breast tissue is removed by surgical excision or by suction assisted lipectomy. An incision is made in an inconspicuous location—either on the edge of the areola or in the axilla. The surgeon removes the excess glandular tissue and fat from around the areola and from the sides and bottom of the breast. If suction assisted lipectomy is used to remove the tissue, the suction cannula is inserted through the same incision. If large amounts of fat or glandular tissue will have to be removed, the skin may not adjust well to the new smaller breast contour and will be wrinkled or droopy. In these cases, excess skin is removed to allow the remaining skin to adjust smoothly and firmly to the smaller breast contour.

Sometimes, a small drain is inserted through a separate incision to draw off excess fluids. Once closed, the incisions are covered with a dressing and the chest is wrapped circumferentially to keep the skin firmly in place.

There may be some discomfort for a few days after surgery and, in addition, some swelling and bruising for a few weeks. To help reduce swelling and prevent fluid collections, patients are instructed to wear an elastic pressure garment continuously for several weeks. It may be three months or more before the final results of the surgery are apparent.

The most common complications are seroma or hematoma collections under the skin flaps. Less frequent complications include infection, skin injury, noticeable scars, permanent pigment changes in the breast area, or slightly mismatched breasts or nipples. If asymmetry is significant, a second procedure may be performed to remove additional tissue. The temporary effects of breast reduction include loss of breast sensation or numbness, and it may take several months for this to return.

Augmentation Mammaplasty

Bilateral breast augmentation is not usually done in women under 18 to 20 years of age, as breast development may not be complete in a teenager. In addition,
the patient may not be mature enough to make this important decision. However, unilateral breast augmentation for asymmetry is done in younger women, again provided breast growth has stabilized.

Prior to 1991, silicone-filled breast implants were used for breast augmentation. However, with questions about their safety, they were withdrawn from the market. Now saline-filled silicone implants are the only ones available.\textsuperscript{25-27}

Breast augmentation can be done under local or general anesthesia, often on an outpatient basis. The incision is made in the inframammary fold, on the lower border of the areola, or less frequently, in the axilla. A pocket is then created under either the breast tissue or the pectoralis major muscle. The implant is placed in the pocket and the soft tissues and skin are closed around it. Postoperative discomfort lasts about 2 to 3 days. Sutures are removed within a week. The patient wears a surgical bra or supportive dressing for about 2 weeks and for 4 to 6 weeks she must avoid strenuous activities, especially those that use the arm or chest muscles. After about six months, the scar can be detected only on careful examination.

Fig. 5. (a) Boy, 16 years old, with mild to moderate gynecomastia of 3 years’ duration. (b) Postoperative appearance following excision of gynecomastia through a superior periareolar incision with excision of a crescent of skin and superior advancement of the nipple.

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Chin Augmentation
The three important facial promontories are the nose, the cheekbones, and the chin. Altering any one of

comes so thick and tight that the breast becomes hard and painful, and surgery may be required to break up or remove the capsule. Some surgeons tell their patients to massage the breasts during the first 3 to 6 months to help prevent this problem. Folds in the implant may be evident in the thin-skinned patient.

In about 1% of patients, infection develops around the implant. Postoperative bleeding, hematoma formation, and anesthetic complications also are postoperative complications. Although many patients experience some change in nipple sensation, it is usually temporary unless a nipple incision was used. Dislocation of the implant is rare.

Breast augmentation does not affect the ability to breastfeed. The implants do not impede the interpretation of chest X-rays, but they do create a hazy opacity on mammograms and special techniques are required when mammograms are done to displace the implant to better view the breast tissue. There is no evidence that breast implants increase the incidence of breast cancer, and no evidence that the stage at which breast cancers are detected is higher in women with implants.\textsuperscript{28,29} If a needle biopsy is ever required, care must be taken to avoid puncturing the prosthesis.
these changes the relative prominence of the others. Hence patients who have rhinoplasties may wish chin augmentation or vice versa, to establish facial balance. Chin augmentation can be done either by a sliding genioplasty, which involves making osteotomies in the mandible and advancing a segment of the bone, or using a synthetic chin implant, placed underneath the soft tissues over the most prominent part of the chin. Synthetic implant materials include solid silicone or porous blocks of polymer. There is no scientific evidence of systemic problems related to the use of these substances.

The operation is usually done in an outpatient facility. Sometimes, the surgeon may require that the patient stay overnight. Facial implant surgery may require only local anesthesia combined with a sedative; general anesthesia may be recommended.

A small incision is made inside the mouth (along the lower lip) or in the skin just under the chin area. The implant is placed in the pocket and secured by closing the soft tissues around it. Usually, the chin is taped after surgery to minimize swelling and discomfort. Sutures in the skin will be removed in 5 to 7 days. If an intra-oral incision is used, the sutures will dissolve.

Complications include asymmetry, malposition, hematoma, seroma, infection, and removal. There can be injury to the sensory nerves, causing numbness, and to the motor nerves, causing lip asymmetry. Usually this nerve dysfunction is temporary.

**Suction-assisted Lipoplasty**

The best candidate for suction assisted lipectomy is a person of normal or near-normal weight with good skin tone, who has unsightly deposits of fat despite diet and exercise. Because the technique depends on retraction, or tightening of the skin after the subcutaneous fat is removed, it is most successful in younger patients with elastic skin. It is not suitable for the obese patient because large areas cannot be suctioned. Suction assisted lipectomy may be used in several body areas, including the abdomen, buttocks, thighs, hips, knees, calves, ankles, and arms as well as the neck and chin.

When a small area is to be suctioned, it is done under local anesthesia on an outpatient basis. For areas that are more extensive, general anesthesia and overnight stays are necessary.

Liposuction is a procedure in which localized deposits of fat are removed to recontour one or more areas of the body. Through a tiny incision, a narrow tube or cannula is inserted and used to vacuum the fat layer that lies deep beneath the skin. If ultrasound is being used, the ultrasonic cannula is inserted through this incision and used to liquefy the fat. The cannula is passed through the fat layer, breaking up the fat cells and suctioning them out. The suction action is provided by a vacuum pump or a large syringe, depending on the surgeon's preference. Fluid is lost along with the fat, and it is crucial that this fluid be replaced during the procedure to maintain hemodynamic stability. For this reason, patients need to be carefully monitored and receive intravenous fluids during and immediately after surgery.

After the incisions are closed, the tunnels left by the removal of fat collapse and contract. The result is a reduction in contour and this change is permanent, because the removed fat cells never regenerate. If the patient gains weight, remaining fat cells will enlarge so it is likely to be evenly distributed over the entire body, rather than localized to one area.

Discomfort following suction assisted lipectomy consists primarily of itching, bruising, and swelling. The patient wears a compression garment for about one month to help prevent hematoma or seroma formation and aid the skin retraction process. Ecchymosis clears in 4 to 6 weeks. Complications include fluid accumulations such as hematoma or seroma, infection, and those related to the anesthetic. The incidence of infection is highest in patients who have liposuction of the inner thighs combined with skin removal because of proximity to the perineum. With ultrasound assisted lipo(tomy (UAL) technique, the heat from the ultrasound device used to liquefy the fat cells may cause injury to the skin or deeper tissues. In the tumescent technique, anesthetic fluid with epinephrine is injected to cause vasoconstriction and control postoperative pain. This could cause lidocaine toxicity if the solution's lidocaine content is too high, or pulmonary edema if too much fluid is administered. The scars from liposuction are small and placed so they are hidden from view.

Imperfections in the final appearance are not uncommon after lipectomy. The skin surface may be irregular, asymmetric, or even “baggy,” but this is rare in the younger patient. Numbness and pigmentation changes may occur. Sometimes, additional surgery may be recommended for contour defects.

**Conclusions**

Teenagers who seek plastic surgery are similar to adults in their motivations and goals. An unattractive feature and an individual’s subjective perception of his appearance reinforced by the response of others produces body image discomfort. Plastic surgery can change the feature. If the patient perceives the change as positive, his or her body image and patterns of thinking, emotion, and behavior will change.
Not every teenager who seeks surgery is well suited for an operation. Emotional maturity is required to understand the limitations of plastic surgery and the complications that can occur. In addition, the teenager needs to have reached certain growth milestones or physical maturity depending on the surgical procedure.

The American Society of Plastic Surgeons has developed a position statement about surgery in teenagers and this cites three important characteristics of the teenage patient. First, the adolescent must initiate and reiterate his or her own desire for the plastic surgical improvement. Second, there must be realistic goals and appreciation of the benefits and risks. Third, there must be sufficient maturity to tolerate the discomfort and temporary disfigurement of a surgical procedure. The position statement cautions against plastic surgery in teens who are prone to mood swings or erratic behavior, who are abusing drugs or alcohol, or who are being treated for clinical depression or other mental disease.

From the American Society for Aesthetic Plastic Surgery come guidelines about teens and the caution that the teenage patient must be appropriately selected. They recommend that the referring physician assess the physical maturity of the youngster since operating on a feature that is not yet fully developed could interfere with growth or undo over time the benefits of surgery. Second, the physician must explore the emotional maturity and expectations of the patient. Third, the credentials of the surgeon and the facility must be checked. The surgeon should be board certified and the facility should be accredited. Additionally, the surgeon should have operating privileges in an accredited hospital for the same procedure being considered. Lastly, the teen and the parents should be given some idea of the risks, postoperative restrictions, and typical recovery time.

With these precautions, the patient will be richly rewarded with a change in psyche in a positive way—the ultimate goal of plastic surgery.

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