3 Clinical Evaluation and Surgical Planning for Aesthetic Breast Surgery

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3.1 Introduction

Besides its noble and divine lactation function, the female breast is an essential characteristic of identity and an important symbol of femininity on the sexual sphere. Also, it is responsible for significant expression of the harmony of the body contours. The embryological origin of the breasts is on the cutaneous integument presenting several stages from the birth until the adult life of the woman. All newborn children (female and male) present a small volume of mammary gland owing to the remaining effects of the mother's hormone. A few days after birth, that remnant volume presents total involution because of the absence of the maternal hormone. During puberty, a great physical change occurs caused by hormonal and metabolic effects on female body when the breasts start to grow, assuming enormous importance for the shape of the body. Nevertheless, abnormal development may also occur in males during puberty and in adults and is caused by a hormonal disturbance named gynecomastia, which outside the scope of this chapter.

The size, shape, and consistency of the breasts are not definitive as they may present deep alterations, secondarily to several circumstances that may happen to women throughout their lives. Initially, just after puberty, every month during the period of menstruation, the breasts present cyclical alterations with swelling due to vascular improvement followed by regression a few days later. During such natural phenomena, the breasts may feel painful. Pregnancies, obesity, massive weight loss, flabby skin, striae, and occasionally alterations of the function of the breast may have great repercussions for their appearance that requires aesthetic correction. Attention has been focused on this region of the anatomy; thus, there is a constant challenge for plastic surgeons to reinstate the shape and size of the breast itself and in the harmony with the body. Also, beauty, advertising, and fashion media affect the woman's desires, motivating her to look for aesthetic surgery.

Looking back at fashion some decades ago, it is possible to identify tremendous modifications of women's sense of aesthetic judgment. The models used to be slim with small breasts, which corresponded to the standard idea of beauty. Nowadays, the magazines and televisions show girls and women with large breasts due to implants as symbols of beauty. Therefore, there is no a pattern of beauty concerning the size and shape of the breast, as they have varied from a period to another. Several patients who underwent reduction mastoplasty during the 1970s and 1980s would certainly nowadays look for breast augmentation because of the constant advertising in the media showing the exaggerated results of too large volumes of silicone

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prosthesis. Our patients see themselves in the mirrors, draw conclusions about their physical changes, and indicate that they want the operation. Thus, they come to our offices with their own decisions looking for plastic surgery. On the other hand, in other specialties, the surgeons usually analyze the health problems and they indicate the need for a surgical procedure. Quite often, a patient goes to several physicians with the hope of finding clinical treatment, expecting to avoid any operation.

3.1.1 Psychological Problems of the Patients

Sometimes a plastic surgeon should not perform an operation if he or she concludes that a patient's psychological problems should be treated instead of undergoing a mastoplasty procedure (Avelar 1986, 1988). There are several circumstances regarding psychological problems of patients that demonstrate that they are not candidates for breast surgery. So far, there have been two types of patient in whom a surgeon must be careful before performing an operation: those who do not know anything about the surgery and those who know too much.

1. When a patient doesn't know anything concerning the operation she is looking for, she even believes that there will be no scars afterward, and several other circumstances during and after intervention.
2. Those patients who believe that they know so much about mastoplasty and other procedures as well, that the surgeon is obliged to do what they want. These people are so used to hearing about plastic surgery in the media, on the internet, and in conversation with friends that they think they know all the surgical details.

Each plastic surgeon should analyze his or her patient's complaints not only concerning the physical problems, but the psychological point of view as well. All members of the staff must pay attention to the reaction of the patients before consultation and to inform the plastic surgeon so that he or she is prepared and cautious about all situations (Avelar 1988, 1989).

There may be a woman with matrimonial problems not related to her breasts, who thinks that if she undergoes a mastoplasty operation the situation can be solved. Usually, it is not a matter of a conversation between the surgeon and the patient about the relationship with her family. However, sometimes someone may talk say something to the nurses or secretaries that is related to the unstable matrimonial situation. It is useful for the member of the staff to inform the plastic surgeon so that he or she can be prepared before performing the operation.

Therefore, a patient has the opportunity to choose her surgeon to perform plastic surgery following indications from friends, other patients, and through other ways. But also, each surgeon may select his or her patient by analyzing her complaints, through dialogue during consultation, according to her reactions while she is in the office. Such selection is a matter of experience during long-term practice, in addition to the surgeon's sensitivity.

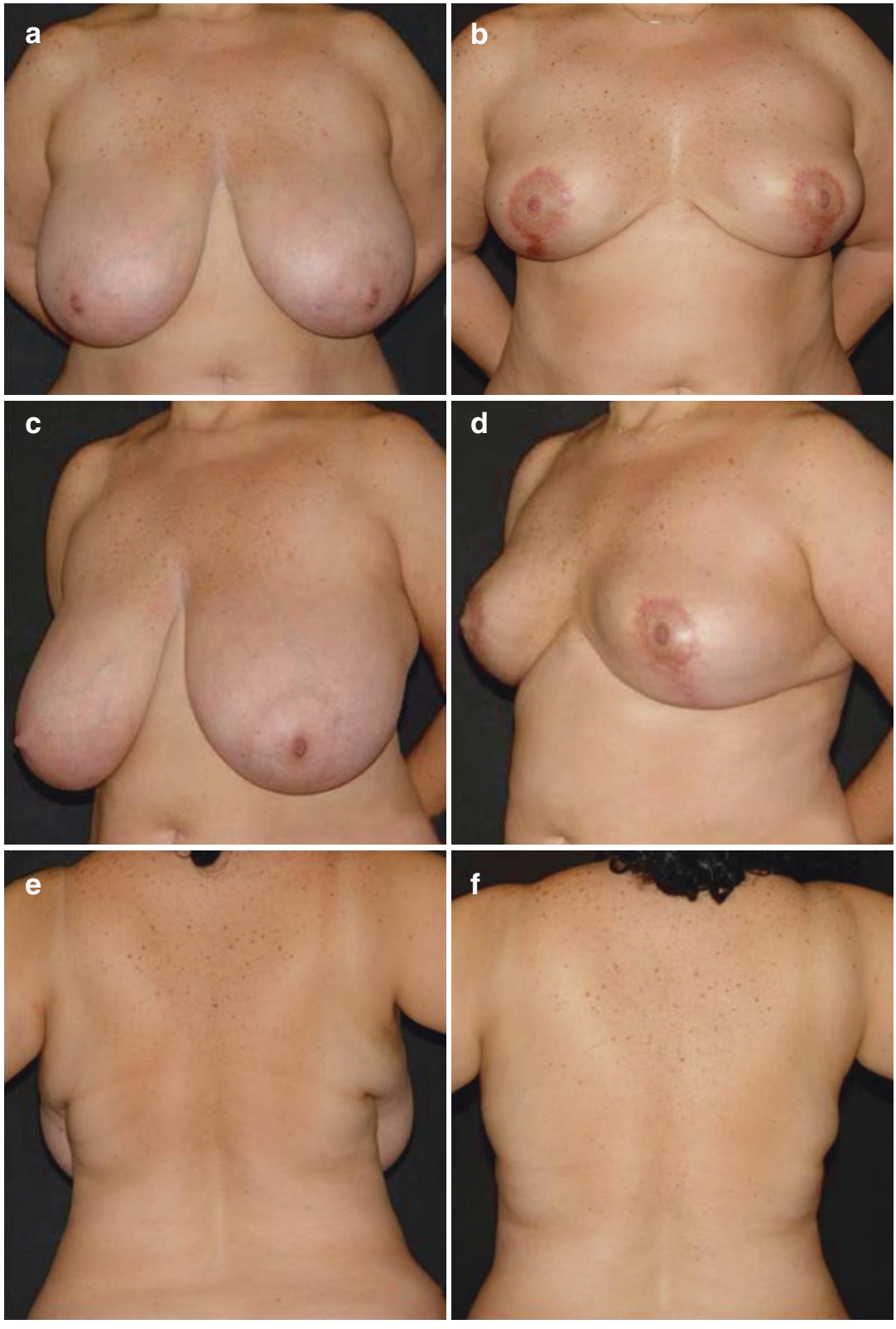
Psychological problems caused by physical alterations of the body must be well identified preoperatively. If her expectations are much higher than the operation can provide she is not a good candidate for mastoplasty.

In addition, any abnormalities of the breast may be responsible for dissatisfaction of the woman, with great psychological repercussions that motivate her to request aesthetic surgery so as to improve her body contours.

3.1.1.1 Patient's Evaluation

When a patient comes to our office she should be an ideal candidate for a breast operation: she must have complaints about its size, shape, weight, asymmetry, physical effects, or bad posture. I have noticed that when breasts are too heavy, a patient's shoulders may be projected forward because of two unconscious circumstances: the weight of the breasts affects traction to the shoulders, with consequences for the vertebral column (Fig. 3.1); and owing to a psychological

Fig. 3.1 Physical deformities caused by hypertrophic breasts. (**a**), (**c**) In the frontal and oblique view asymmetry with ptotic breasts that are too heavy and near the navel can be seen. (**b**), (**d**) Postoperative photos. (**e**) In the back view the breasts projected laterally and alterations on the torso can be seen. (**f**) The same patient after reduction mastoplasty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reaction, the patient tries to hide her deformity. Also, she must present well-balanced weight, stature, and height. However, some patients requesting surgery vary from slightly to significantly obese, associated with a distorted self-image. Obese patients should be required to lose excess weight preoperatively. If a woman complains about the size, shape, and weight of the breasts, she may expect to solve the abnormality of the body through reduction mastoplasty, which is incongruous, as it may well not be achieved (Avelar 1988, 1989). Young patients may complain of premenstrual pain, physical discomfort, back pain, deep striae on the skin of the sternal region caused by constant traction owing to the weight of the breasts, and even an inferiority complex, in addition to problems with her intimate relationship with her boyfriend (Fig. 3.2).

During the examination, alterations of the posture are evident. Some patients present deep grooves on the shoulders caused by straps of the brassiere (Fig. 3.3). Women with hypertrophic breasts can present cutaneous irritation on the submammary folds caused by direct contact of the skin of the breast with the cutaneous surface of the upper abdominal wall. This problem is

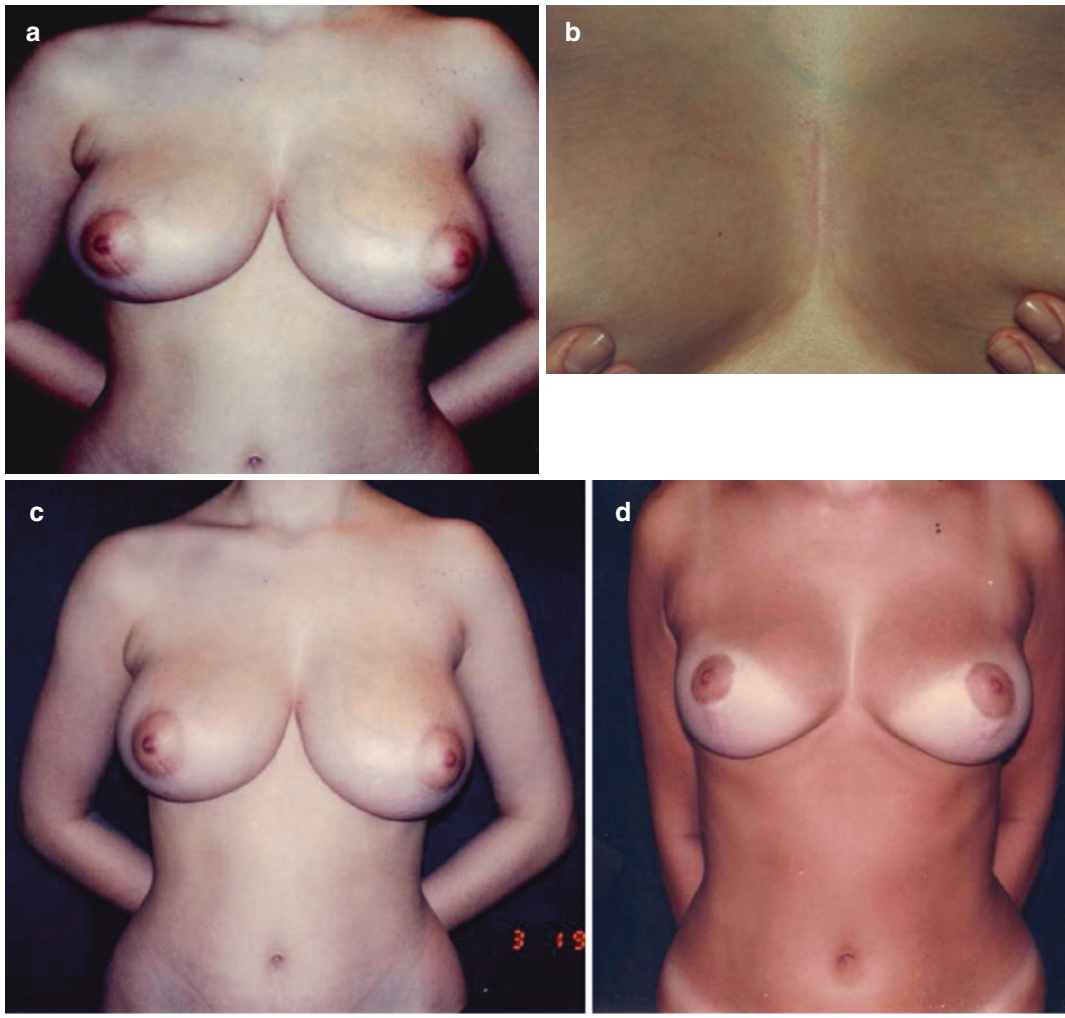

Fig. 3.2 Alterations of the skin on the external region due to traction of the heaviness of the breasts. (**a**) Photo of a 20-year-old patient showing alterations similar to a scar. (**b**) Photo in close-up of the same patient showing a deep scar on the external region. (**c**), (**e**) Photos before operation. (**d**), (**f**) Photos after reduction mastoplasty

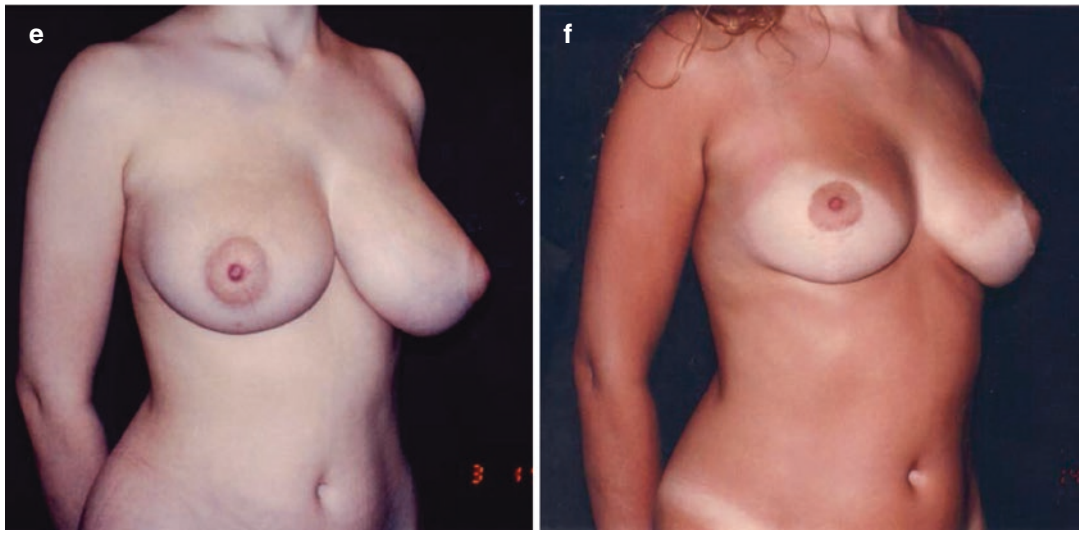

Fig. 3.2 (continued)

Fig. 3.3 Deformity on the shoulder caused by the brassiere strap making a deep groove

common in patients in tropical countries with warm temperatures (Fig. 3.4). If submammary intertrigo, or any other dermatological abnormalities, is present, it should be treated and eradicated before surgery. Also, edema, turgescence, and thoracic pain are seen and are caused by stretching of the skin over the breast (Figs. 3.1, 3.2, and 3.5).

Discomfort with breathing may occur because of the great effort of the muscles of the chest to elevate the large volume of glandular tissue during inspiration and expiration (Pitanguy 1960, 1961). Often multiple veins can be seen underneath the skin due to alteration of the venous circulation (Fig. 3.5). The gravity is a normal phenomenon to aid mammary venous and

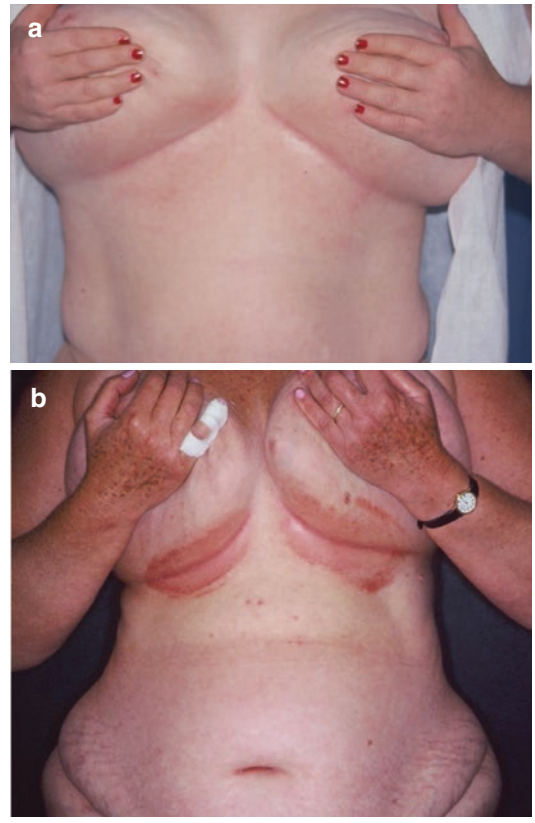

Fig. 3.4 Irritation of the submammary crease caused by constant contact of the skin of the breasts with the skin of the upper abdominal wall. (**a**) Photo of a 48-year-old patient with large breasts shows slight irritation. (**b**) Photo of a 59-year-old patient with severe dermatitis

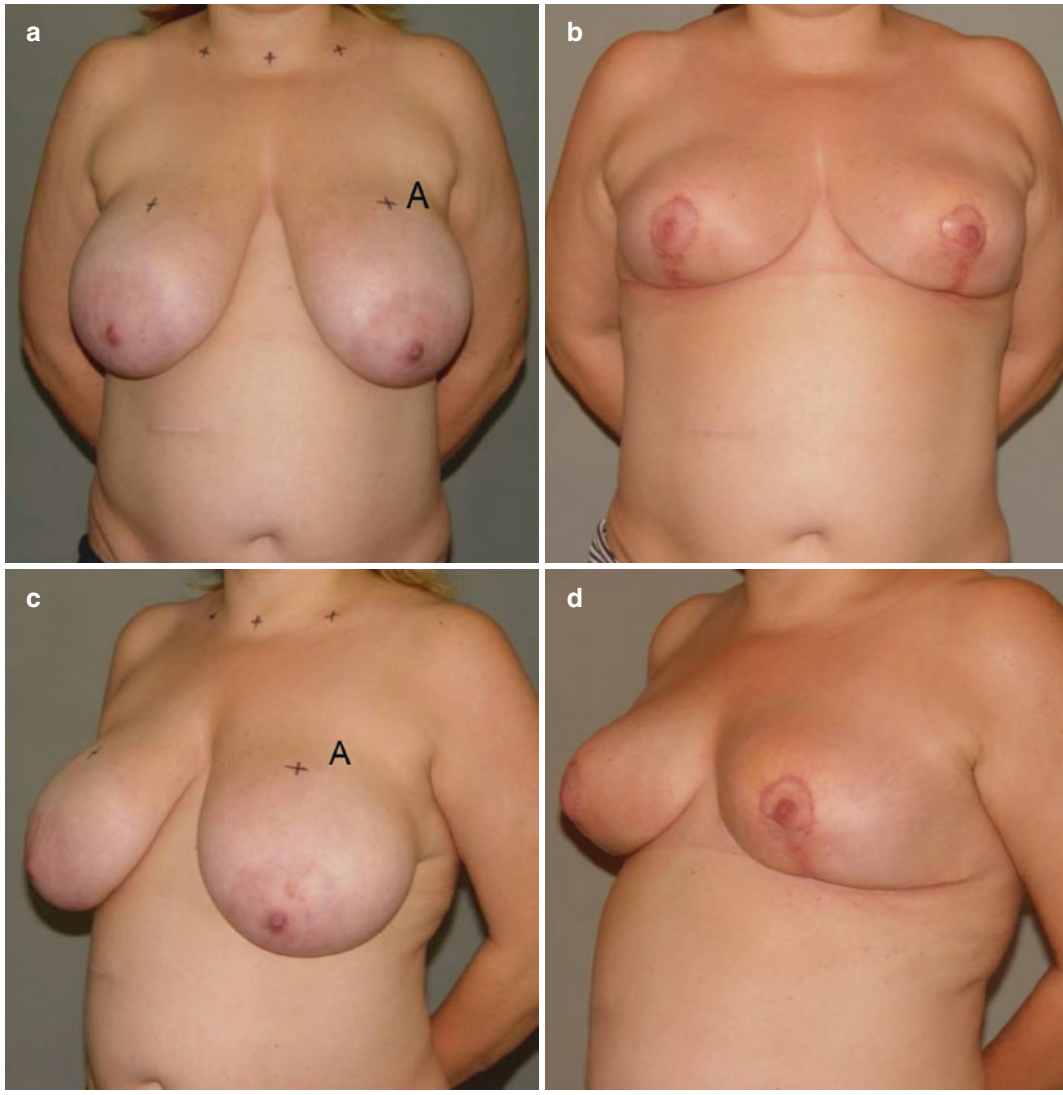

Fig. 3.5 A 44-year-old patient with large hypertrophic breasts. (**a**) and (**c**) Preoperative photos showing premarking with Pitanguy's point A; (**b**) and (**d**) Postoperative photos 1 year after reduction mastoplasty with resection of 850 g on the right breast and 1,080 g on the left side

lymphatic drainage, which may be jeopardized owing to ptosis with hypertrophy of the breast causing some alteration of the circulation.

3.1.1.2 Surgical Planning

During physical examination, the plastic surgeon may explain to patient how the operation may be performed. My preference is to carry out surgical planning with the patient in the standing position between two vertical mirrors placed one in front of the other with my nurse in the examination room (Figs. 3.6, 3.7, and 3.8). Thus, a patient can see her body from the front and back at the same time. Often, patients with large and heavy breasts present severe physical alterations that they had not yet noticed (Fig. 3.1). Each surgeon must be well trained in the technique he or she is performing. It is useful to show the patient the location and to estimate the extent of the scars around the areola, on the submammary folds, and the vertical distance from it to the nipple–areola complex (NAC) (Avelar 1990, 1993).

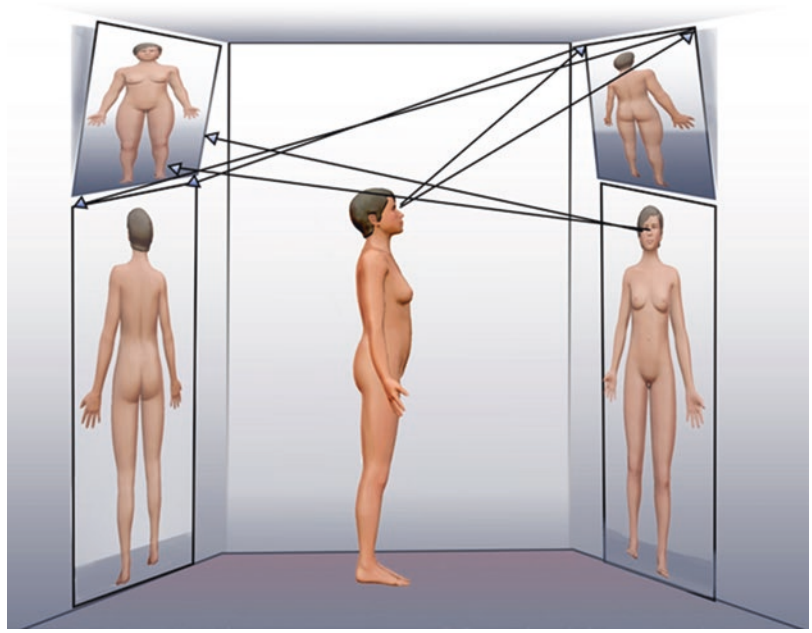

Fig. 3.6 Diagram of the examining room at my clinic. A patient in a standing position in front of two vertical mirrors placed one in front of the other combined with two small mirrors strategically located on top of the vertical ones, making a 45° inclination with the others

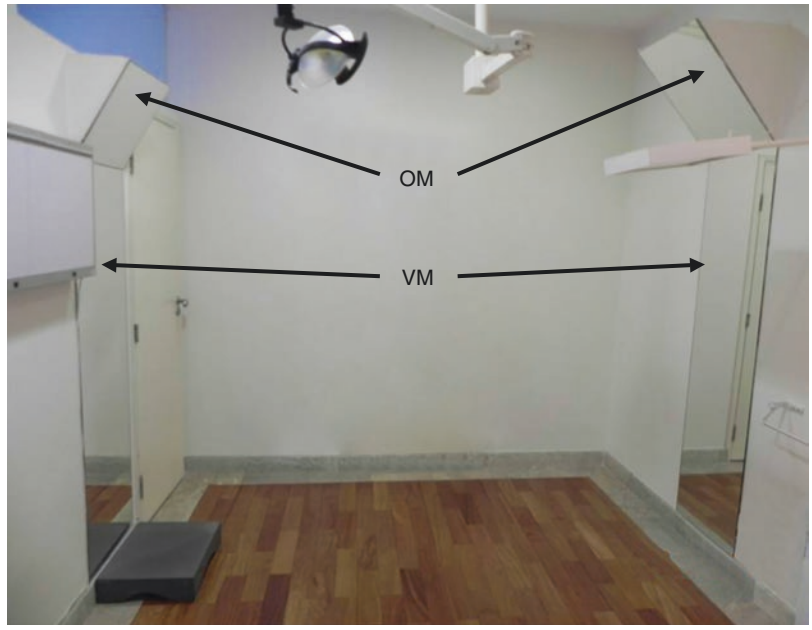

Fig. 3.7 Photo of the examining room at my clinic. Two vertical mirrors (*VM*) are placed one in front of the other combined with two oblique mirrors (*OM*) strategically located on top of the vertical ones making a 45° inclination with the others

The reference points for operation are made according to the technique employed. I usually measure the distance between both NACs and the distance to the midclavicular point. An imaginary location of the future NAC is marked. Preoperative photos are taken and blood tests, heart, and clinical evaluation must be requested according to the routine of each surgeon.

Surgical planning is a fundamental step before all operations in plastic surgery, as I have described previously for ear reconstruction and abdominoplasty (Avelar 2013, 2016).

Fig. 3.8 Photo of a patient in the examining room at my clinic during examination and pre-marking. (**a**) She is in a standing position in front of two parallel VM, and sees her body in the frontal view and in the back view simultaneously through the OM. (**b**) She follows the breast examination

3.1.1.3 Pre-marking

There are some techniques that utilize prefabricated patterns for surgical marking in reduction mastoplasty. As I had the privilege to be trained by Prof. Pitanguy, he did not employ such patterns; thus, I followed his surgical guidelines for marking of the breasts before an operation (Pitanguy and Garcia 1972; Pitanguy 1981).

Once the operation is scheduled, I prefer to see my patients again at my clinic 1 day before the date. It is another opportunity to check all preoperative examinations and to re-evaluate any problems. At this time, pre-marking is carried out on the breast and chest as well. A point is marked on the suprasternal notch, and another one on each side about 7 cm from the midclavicular point. From this point, an imaginary vertical line goes downward, passing the center of the nipple. On this line, the Pitanguy's point A is drawn on the projection of the submammary fold on each side. To determine this point, the index finger of the surgeon's left hand projects the submammary fold forward onto the ptotic breast (Fig. 3.9). In conclusion, the pre-marking is done to determine two points: Pitanguy's point A and point R, as an important reference for final surgical marking during reduction mastoplasty. The patient goes home with pre-marking and the next day those reference points are very useful for performing the definitive surgical marking in the operating room (Figs. 3.10, 3.11, and 3.12).

Measurement of the chest of patients for surgical marking, taking as reference points the sternal notch and the xyphoid process, as described by

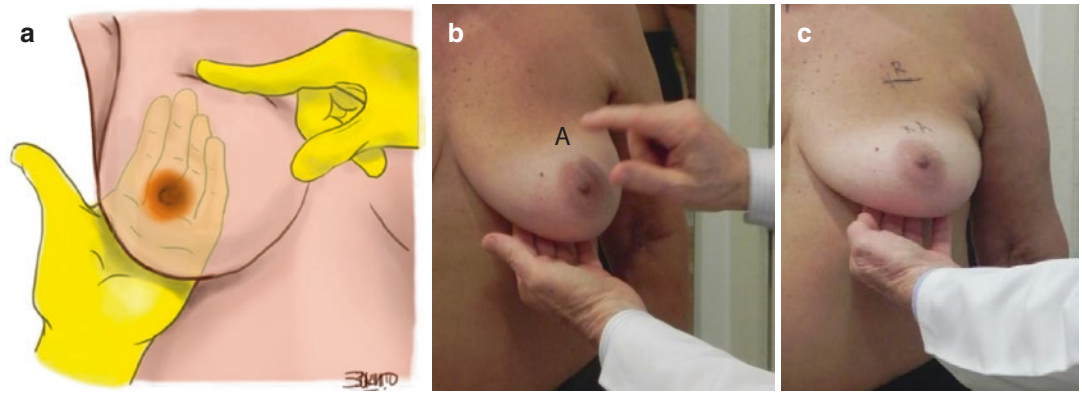

Fig. 3.9 Pre-marking of Pitanguy's point A. (**a**) Scheme to demonstrate the marking. (**b**) Photo of a patient showing the surgeon's position to determine point A. The index finger on the submammary fold shows projection of the point A, which is marked. (**c**) Point A is marked on the breast and the other point R is also marked above, as another reference

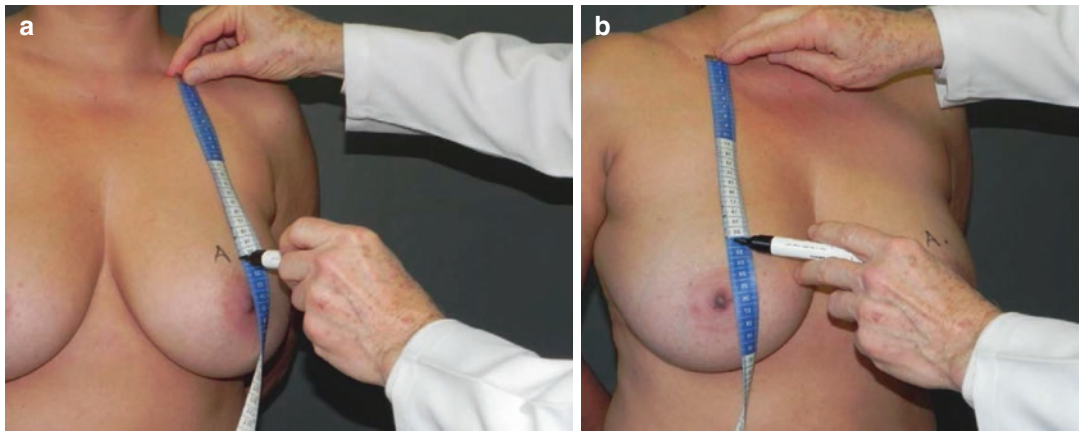

Fig. 3.10 Transposition of pre-marking on the left side to the right side. (**a**) Using a graduated tape to confirm point A and the distance from the midclavicular point. (**b**) The demarcated points are transposed to the right side

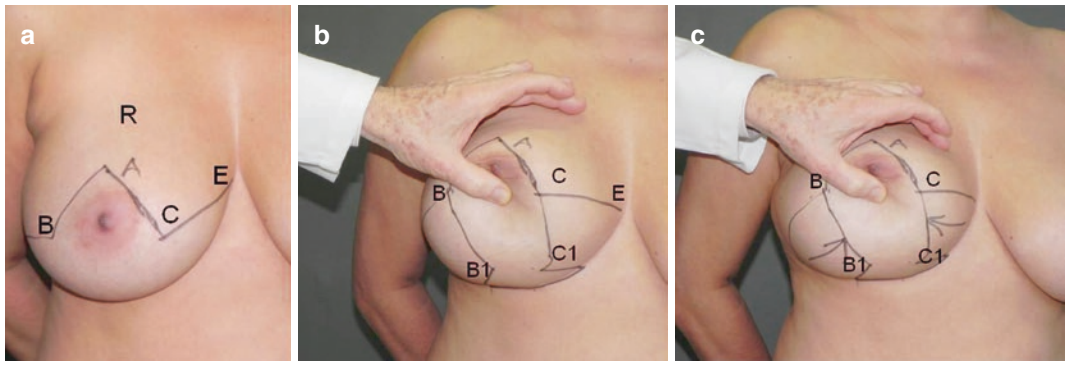

Fig. 3.11 Photos during pre-marking: Pitanguy's technique can be seen, and afterward my pre-marking was shown as an evolution of my approach. (**a**) Pitanguy's technique as a W-shaped marking (A, B, C, D, E). (**b**) After my marking, points B1 and C1 are much lower. (**c**) All pre-markings can be seen, and an arrow on each side showing the skin that will not be removed

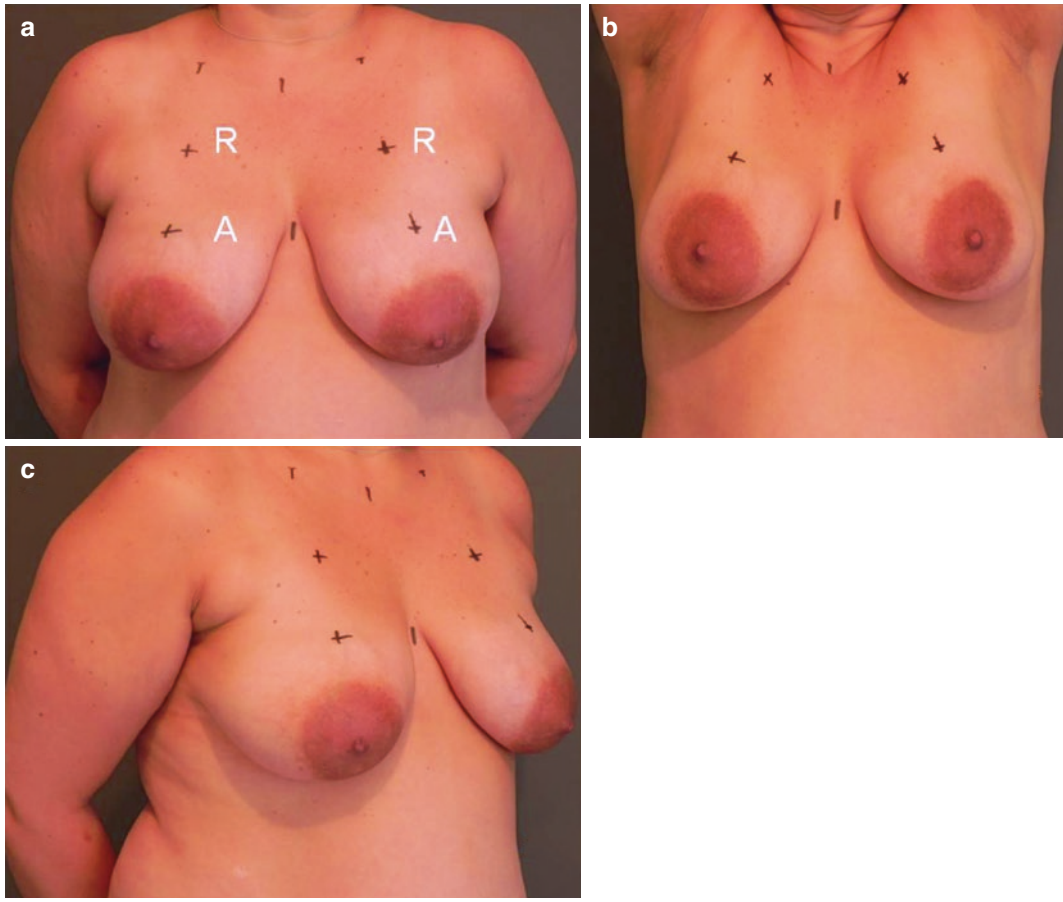

Fig. 3.12 Patient showing pre-marking. (**a**) Pitanguy's point A is on the projection of the submammary fold. The reference point R is on the midclavicular line for later orientation. (**b**) Patient with her arms up shows the alteration of the pre-marking points. (**c**) In the lateral view, the pre-marking shows the correct positions

Gillies and McIndoe (1939), and emphasized by Pitanguy (1960, 1981), and Pitanguy and Garcia (1972). Often, asymmetry of both breasts must be well identified and shown to the patient (Avelar and Anger 1989; Avelar 1989). A geometric method for surgical marking was proposed by Aufricht (1949) and has been employed by several authors, although a prefabricated pattern used to be the most frequent approach. Following similar methodology, Fernandez (1951) used to employ a ruler to measure the reference points on the chest and breast to achieve adequate projection of the breast after mastoplasty.

Once the patient is at the hospital, the premedication is carried out before she goes to the operating room, where the final surgical markings is done.

3.2 Discussion

Embryologically, the breasts originate from the cutaneous integument, presenting several modifications during female adult life. Patients with hypertrophic breasts may complaint about back pain, premenstrual pain, physical repercussions

for her shoulders, which may be projected forward and put extra weight on the column (Pitanguy 1960; Pitanguy and Garcia 1972). During examination, several alterations of the posture are evident (Fig. 3.1). Some patients present deep grooves on the shoulders caused by straps of the brassiere (Fig. 3.3). I prefer to examine my patients in the examination room in front of two vertical mirrors on the wall, which allow them to see the front and back views at the same time. Also, a patient may present psychological problems caused by physical alterations of the body and her expectations may be higher than the operation can fulfil; in that case, the patient is not a good candidate for mastoplasty.

During physical examination, it is the right moment to explain to patient about surgical planning and the operation. Each surgeon must be well trained with the technique he or she is used to performing. It is useful to show to patient the location and to estimate the extent of the scars on the submammary folds and the vertical distance from the NAC. Once the operation is scheduled I prefer to carry out pre-marking on the day before the operation. A point is marked on the suprasternal notch, and another one on each side about 7 cm from the midclavicular point. From this point an imaginary vertical line goes downward passing the center of the nipple. On this line, Pitanguy's point A is drawn on the projection of the submammary fold on each side, with the surgeon's left index finger projecting the submammary fold. With the patient at the hospital, the pre-medication is given before she goes to the operating room, where the final surgical marking is done. Mastoplasty may preserve the lactation function after surgery in addition to nipple sensitivity in breast reduction, as reported by Ragnell (1957).

Mastoplasty operations must be performed with patient in a semi-sitting position to evaluate an correct position of the NAC and the final scars. This important surgical detail is described by Gillies and McIndoe (1939), who elevated the patient's head on the operating table.

Conclusions

The breasts, and indeed the whole female body start significant development during puberty due to hormonal metabolic alterations. The size and shape of the breasts present significant growth with great importance for the silhouette of female body, and breast-feeding in adult life, which I am used to confirming among my patients, may be preserved after reduction mastoplasty (Fig. 3.13), which is described by Ragnell (1957).

Often, the breasts may present several anomalies, most frequently asymmetry (Avelar 1989). Also, other deformities such as hypertrophy, hypoplasia, secondary to obesity, massive weight loss, flabby skin, striae, the consequences of pregnancies, and several other abnormalities that may require aesthetic repair (Fig. 3.1).

Usually, patients come to the plastic surgeon's office looking for a solution to their physical deformities, as they see themselves in the mirrors and realize their problems. In fact, they make the diagnosis and give indications for operation; also, they come with the decision to look for plastic surgery. However, we must evaluate the deformities, to check if the patient is really concerned about the problem. Afterward, it is essential to carry out surgical planning and finally to indicate the operation. Therefore, during physical examination, it is the right moment for the plastic surgeon to explain to patient the operation that may be performed. Surgical planning may be done with the patient in the standing position to evaluate the breasts and the relationship between them, in addition to the chest and the torso. Often, patients with large and heavy breasts present severe physical alterations that sometimes they had not yet noticed (Figs. 3.6, 3.7, and 3.8). Finally, surgical marking must be done following the physical alterations during examination.

Fig. 3.13 Preservation of the lactation function after reduction mastoplasty. (**a**) A 24-year-old patient before surgery. (**b**) In the back view the breasts are projected laterally. (**c**) After reduction mastoplasty. (**d**) The same patient in the 9th month of pregnancy. (**e**) Milk on the nipple after delivery

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