

# Breast Augmentation

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CHAPTER 28

## Breast Augmentation: Axillary Approach

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Principles  
and Practice

 Springer

# Breast Augmentation: Axillary Approach

28

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## 28.1

### Introduction

Breast augmentation has become a very popular procedure with a variety of techniques with which it is performed. The literature describes the evolution of various techniques of breast implant placement in the submuscular versus the subglandular plane; silicone versus saline implants; and transaxillary versus transumbilical, inframammary, or periareolar placement of the incision [1–3]. Within each technique itself is a myriad of nuances and variations among surgeons. As with everything in cosmetic surgery, a surgeon has to choose an operation that works well in his or her hands, makes the patient happy, and has a relatively low complication rate. There is no such thing as the perfect breast augmentation technique; thus, opinions differ, and debates are heated among plastic surgeons as to the best way to perform a breast augmentation. The author believes that the transaxillary breast augmentation with saline implants via a blind dissection technique—i.e., without an endoscope—is a simple procedure with a high level of satisfaction and a low rate of complications. This chapter will focus on this particular procedure and how the surgeon can avoid pitfalls.

## 28.2

### Initial Consultation

An initial consultation is set up to discuss the breast augmentation procedure and to decide whether the prospective patient is a good candidate for the surgery. The medical history is reviewed, a physical exam is performed, and the patient is asked to get medical clearance from her own physician as well as basic labs to ensure that she will undergo the procedure safely. The patient has the opportunity to discuss the procedure with an experienced nurse and the plastic surgeon who will perform the procedure, and she is given the opportunity to talk to patients who have had the same procedure performed by the same surgeon.

It is important for a patient to understand what a breast augmentation will accomplish for her. Limitations, risks, benefits, and postoperative expectations

should be discussed in detail. Because a patient will have a long-term prosthesis in her breast, it is even more important to discuss long-term consequences.

In the initial consult, the patient is asked to place known-size silicone breast implants in her bra and wear a shirt that will reveal her silhouette clearly. The patient tries on different sizes of implants until she finds the size she likes. Patients are offered the option to try sizes again on their second consultation. Usually they pick either the same size or a very close size to the one chosen at the initial consultation. Patients are encouraged to choose implants in the range of 150–400 ml, with exceptions in certain situations.

## 28.2.1

### Silicone or Saline Breast Implants

The choice of implant type affects the type of surgery to be performed. It is difficult to perform a silicone breast augmentation through an axillary approach. The incision has to be 5 cm with a silicone implant [4] instead of 2 cm with a saline implant. The technique discussed in this chapter is limited to saline implants inserted through an axillary incision.

Silicone implants are advantageous in certain situations. They feel more natural than saline implants when a woman has had many breast procedures and has very little breast tissue or muscle remaining in the breast. Silicone implants may also be preferable when a woman is very thin, in which case the silicone implants may feel more natural. In these two situations, the patients are offered silicone breast augmentations.

If a woman's breasts are a small B-cup or bigger and the saline implants are submuscular, the feel of the breast is very natural, so the argument that "silicone implants feel more natural" is not a valid reason to have silicone implants.

## 28.2.2

### Saline Versus Silicone Gel Implants

1. Safety: Saline implants are safer. If they rupture, saline is spilled as opposed to silicone, which may



cause local silicone granulomas, egg-shell-like calcification, or hardening of the breast.

2. Scar location: Saline implants are more easily inserted from the transaxillary incision.
3. Scar length: The scar is about 2 cm for saline implants, whereas a silicone implant scar is about 5 cm.
4. Cost: Silicone implants are significantly more expensive in the short and long term than saline implants.
5. Long-term follow-up: There is no need for biannual magnetic resonant imaging (MRI) scans to determine whether there is a silicone rupture, as the U.S. Food and Drug Administration (FDA) recommends with silicone implants. MRI costs \$2,000–\$3,000.

### 28.3

#### Indications for Breast Augmentation

The main indication for a breast augmentation is hypomastia or breast asymmetry. A woman's decision to have a breast augmentation should be explored in the initial consultation. A question as simple and as seemingly obvious as "Why do you want to have a breast augmentation?" can be very telling. Reasons that have been stated have ranged from pleasing someone else, to getting a job promotion, to competing with another woman with larger breasts. The best reason to accept a patient for breast augmentation is so the woman will feel better about herself through a decision that was well thought out and arrived at without external forces. Typically, a woman with this mindset will have the highest likelihood of success and happiness with the operation. Furthermore, she will be in the best position to handle a complication appropriately should there be one.

### 28.4

#### Preoperative Work-Up

A patient should get a routine medical clearance and a psychiatric clearance when needed. Medications that can interfere with a good outcome, such as those that increase the likelihood of bleeding, should be stopped before surgery. A pregnancy test should be ordered preoperatively, and a complete blood count and international normalized ratio (INR) give a general idea of the patient's hematological state. A urinalysis is important because a positive test may indicate that treatment is warranted before inserting a prosthesis into a patient with an ongoing infection. A mammogram should be obtained in women at higher risk for breast cancer, based on the recommendations of the American Cancer Society. Patients should also stop smoking for at least 2 weeks prior to the operation and 2 weeks after the operation to improve the surgical outcome.

Two specific circumstances are worth mentioning. If a woman seeking breast augmentation is planning on getting pregnant shortly after the procedure, the prospective patient should understand that pregnancy can create changes in breast shape and size. Also, there is a very small chance that a breast augmentation operation may have complications that can render a woman unable to breastfeed. A future operation, either to change the size of the breast implant, remove it, or perform a mastopexy, may be warranted, and a patient should be well aware of these possibilities. Another situation that is important to address is the history of breast cancer in the woman seeking a breast augmentation or in her family. Whether silicone or saline implants are placed, submuscular or subglandular, the issue of breast cancer detection should be discussed with the patient.

### 28.5

#### Augmentation, Mastopexy, or Both?

The decision to have a breast augmentation, mastopexy, or mastopexy-augmentation may not be as straightforward as would seem. Every plastic surgeon handles the situation a little differently. One way to address it is by asking the patient what bothers her about her breasts. If it is clearly the fact that the size is small, then an augmentation is sufficient. If she is not happy with the ptosis but is happy with the size, then a mastopexy is appropriate. If she is happy neither with the ptosis nor the size, then both a mastopexy and augmentation are in order.

Sometimes the lines are not clearly drawn. If a patient has mild ptosis but her main complaint is hypomastia, then it is a judgment call whether to perform a mastopexy with the augmentation or to wait a year and see if the breast will settle nicely, thereby avoiding a mastopexy. If a patient has ptosis and a decent size of breast, then she may be happy with just a mastopexy as opposed to a mastopexy and an implant. These options and the likelihood of requiring a second operation in the future should be discussed thoroughly with the patient.

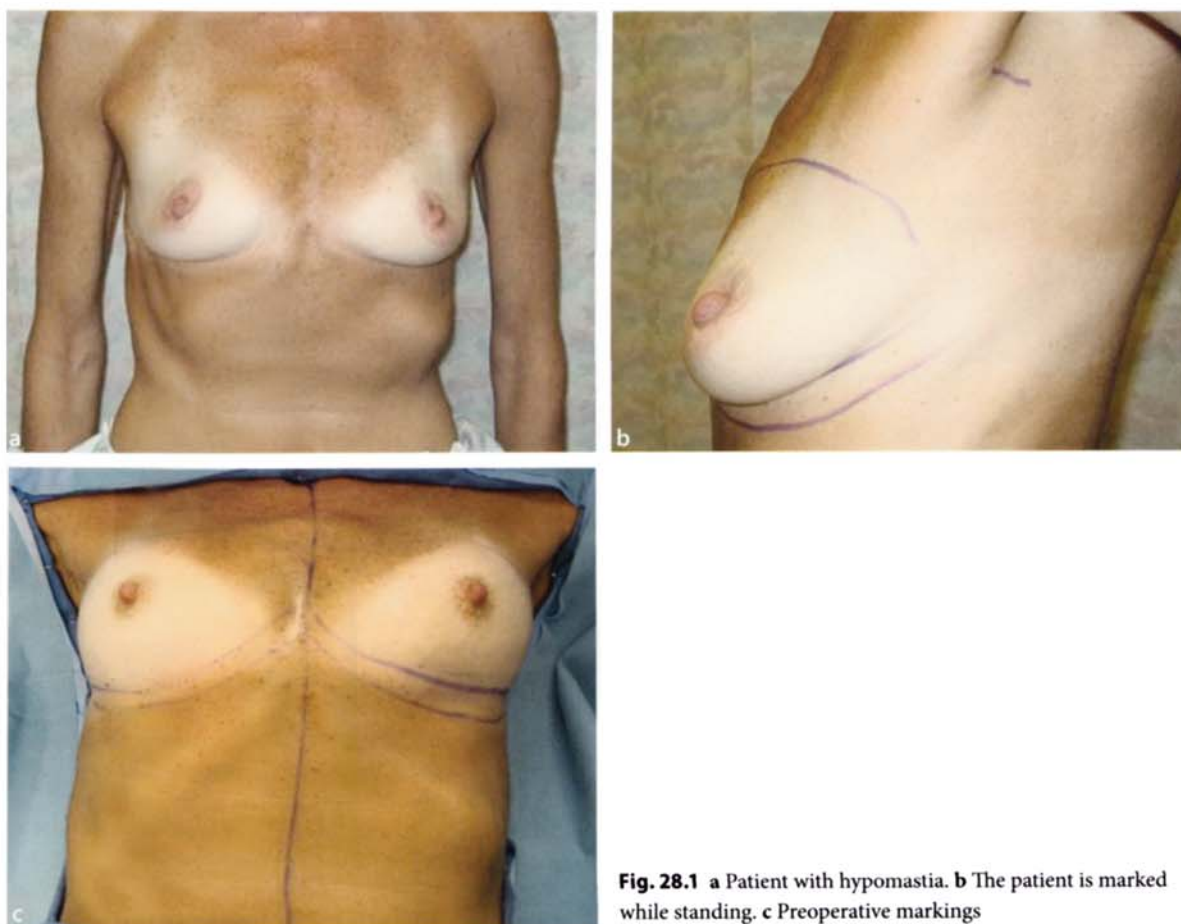
### 28.6

#### Technique

#### 28.6.1

##### Surgical Marking

The patient is marked while standing (Fig. 28.1). The inframammary folds are marked, the superior border of where the implant should lie is marked, and the midline is marked. A 2-cm line is drawn at the lower aspect of the hair-bearing area of the axilla.



**Fig. 28.1** a Patient with hypomastia. b The patient is marked while standing. c Preoperative markings

### 28.6.2 Surgical Prep

The patient is initially given prophylactic antibiotics and deep vein thrombosis prophylaxis. She is then intubated with general anesthesia, laryngeal mask anesthesia, or intravenous sedation given as the surgeon's choice. The patient's arms are at right angles to her body and wrapped around the armrest. The breasts are infiltrated in a fashion similar to a liposuction area with about 75–120 ml of tumescent solution on each side for a total of 150–240 ml (500 ml of saline, 50 ml of 1% plain lidocaine, and 1 ampule of epinephrine 1:10,000). The technique with which to inject is important so as to achieve two goals: hydrodissection in the submuscular plane and vasoconstriction of the area to be dissected. A pneumothorax is much less likely if the surgeon lifts the breast with the nondominant hand and injects the tumescent fluid with the dominant hand in a fashion parallel to the rib cage in the submuscular plane (Fig. 28.2). The patient is then prepped in the usual sterile fashion



**Fig. 28.2** Injection of the tumescent solution in the submuscular plane





**Fig. 28.3** Axillary incision (a) followed by dissection with Mayo scissors (b)

from the neck to below the umbilicus, including the axilla, while the tumescent fluid is allowed to take effect.

### 28.6.3

#### Surgical Technique

After the tumescent solution takes effect, a 2-cm incision is made in the lower pole of the hair-bearing area of the axilla. With a curved Mayo scissors, the pocket is created in the axilla (Fig. 28.3). Next, digital dissection is carried out to establish an intermuscular plane between the pectoralis major and pectoralis minor muscles (Fig. 28.4). Care is given to avoid trauma to vessels and musculature; however, the tumescent solution helps minimize bleeding to the point that electrocautery is seldom used with this technique, since it is almost a bloodless procedure.

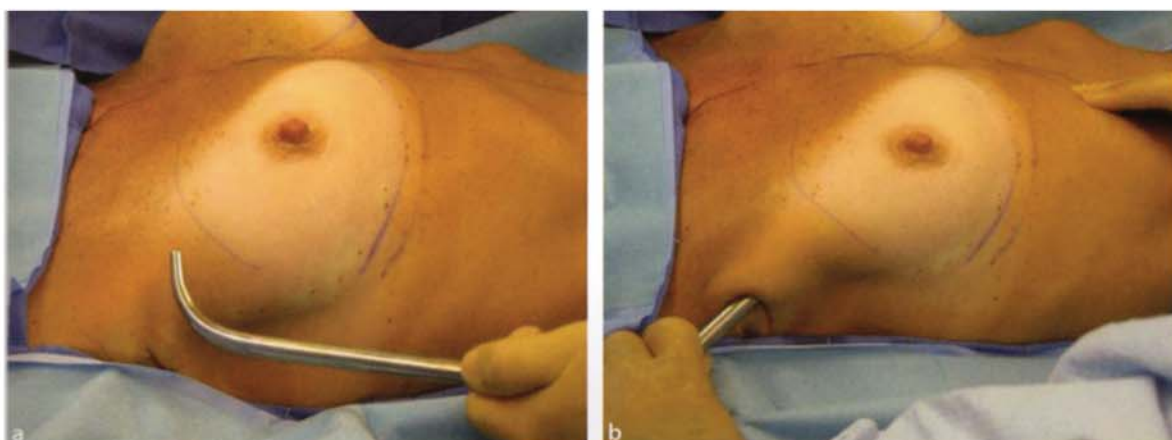
When the intermuscular plane has been established, a blunt curved dissector such as a Van Buren or a uterine sound dissector is used to complete the subpectoral pocket (Fig. 28.5). After the submuscular pocket is created, implant sizers are inserted through the axillary incision and are filled to the size on which the patient and surgeon have agreed. The back of the operative table is then elevated so that the patient can be assessed in the sitting position (Fig. 28.6). If the implant pocket needs adjustment, this can be accomplished by either finger dissection or blunt sound dissection until the surgeon is satisfied with the size and shape of the augmented breasts. This is probably the step in which experience helps the most. Medially, the muscle should be elevated enough to create nice cleavage, but not excessively to create symmastia. Inferiorly, insufficient dissection may lead to a “high-riding” implant, and aggressive dissec-

tion may lead to a “double-bubble” sign. Laterally, the breast should have a nice fullness, but if the dissection is too aggressive, then, in the future, the patient will complain that the implant ends up in the axilla when she lies down. Proper dissection of the breast pocket may initially be learned with direct visualization by the endoscopic-guided method, but once a surgeon feels comfortable with the boundaries of the dissection, a blind technique is less costly, more efficient, simpler, and with at least comparable results.

One sizer implant is removed, and the surgeon changes gloves; the axillary incision site is cleaned with Betadine, and the assistant places an Army-Navy retractor to open the pocket for the surgeon. The surgeon empties the air from the saline implant, rolls it, and inserts it through the incision without its touching the skin



**Fig. 28.4** Creation of intermuscular plane between pectoralis major and minor via digital dissection



**Fig. 28.5** Surgical use of a Van Buren dissector (a) to complete the subpectoral pocket (b)



**Fig. 28.6** Assessment of the sizers in the sitting position

and with the valve facing anteriorly. When the implant has been completely inserted, it is filled with saline to the desired amount with a one-way stopcock closed system to ensure the sterility of the saline (Fig. 28.7). The sizer in the contralateral breast is kept in place to ensure hemostasis until the time to place the real implant in the contralateral pocket. At that time, the sizer implant is removed, and the saline implant is placed in an identical fashion in the contralateral pocket. Then the implants and general shape of the breast are inspected as the patient is sitting up (Fig. 28.8). When the shape and size are deemed appropriate by the surgeon, the filling tubes are removed. The incisions are then closed with 3-0 Vicryl interrupted sutures for the dermis, and a 4-0 Vicryl subcuticular closure is performed (Fig. 28.9).



**Fig. 28.7** a Implant placement. b One-way stopcock closed system





**Fig. 28.8** Inspection of the implants with the patient sitting up



**Fig. 28.9** Closed 2-cm incision

### 28.7 Mastopexy and Augmentation Performed Simultaneously:

If a patient wishes to have a mastopexy performed simultaneously with a breast augmentation, there is a simple and practical way to do this procedure. A breast augmentation is performed through an axillary approach, up to the step when the implant sizers are in place. The implant sizers are left in place, and a periareolar or Wise-pattern mastopexy is performed. When the mastopexy is completed, the sizers are removed, and the permanent implants are placed through the axillary incision.

In the author's opinion, the advantages of this technique outweigh traditional insertion of implants through a periareolar or anchor incision. The first advantage is that, with this technique, the pectoralis muscle is left intact, thus decreasing postoperative inflammation and pain as well as preserving intact muscle coverage for the implant in case of an infection of the incision. Second, the option to adjust the implant size based on tension on the nipple–areolar complex exists without difficulty, by inflating or deflating the sizer implants to achieve the desirable volume, before committing to the final implant size. Third, no suturing is done in the vicinity of the implant, so implant exposure and manipulation are minimized, and suturing of the breast incisions can proceed faster without the surgeon having to worry about puncturing the implant. Therefore, precious intraoperative time is saved. The major disadvantage of this approach is an additional axillary scar in addition to the periareolar or anchor incision performed, so the patient has to consent only after a thorough discussion of the available options.

### 28.8 Postoperative Care

The incisions are covered with Steri-Strips, and foam tape is placed around the breasts to ensure healing in the proper position. The patient is then placed in a bra, and dressings are placed to cover the axillary incisions (Fig. 28.10). The patient is recovered in the ambulatory surgery center or hospital for an hour or two and given antiemetic medicine if needed. She is asked to sleep supine with her head elevated and to take the appropriate antibiotic and analgesic medications.

The patient is seen the following day, and the incisions are inspected as well as the overall appearance of the patient and the breasts. Any early problems are addressed in a timely fashion. Most patients heal uneventfully and have minimal ecchymosis and minimal to moderate edema. The tape is removed after a week, and a breast binder is applied to the breasts to apply pressure and expedite the “settling” of the implants. Daily activity is resumed in a few days, work can be resumed in about a week, and exercise can be resumed after the third week in most cases.

### 28.9 Results

Patients who have had this procedure in the author's practice have ranged in age from 17 to 66 years old. Some have had simultaneous procedures with their breast augmentations, such as mastopexy, liposuction, abdominoplasty, or facial rejuvenation procedures. The overall satisfaction rate has been very high, with a very low rate of complications.



**Fig. 28.10** Postoperative placement of the foam tape (a) and bra (b)

With this technique, pain has been limited to the first few days and controlled with analgesic medications. Return to daily activity has occurred within a week to 10 days. Exercise is usually encouraged after the third week. The complications have been limited to hematomas (less than 1%), capsular contracture (1%), deep vein thrombosis (less than 1%), and implant deflation (less than 1%), and a few patients were dissatisfied for reasons of asymmetry. It is important to note that there were no implant infections, high-riding implants, double-bubble signs, pneumothorax, loss of ability to breastfeed, permanent loss of nipple sensation, major medical complications, or mortality.

## 28.10 Avoidance of Common Complications

### 28.10.1 Postoperative Hematoma

A small hematoma may be observed, but if it is significant or is enlarging, then operative drainage is necessary. The rate of hematomas or bleeding after a breast augmentation is reported to be about 2%. In 2006, Handel et al. [5] reported a 1.5–2.89% incidence of hematoma depending on the method of augmentation used. Before surgery, the author's patients are evaluated by their own physicians and blood tests are obtained, including an INR and a complete blood count. The author uses tumescent solution in breast augmentations. The key is to inject the tumescent solution and wait about 7 min to start the operation. This technique plus minimal dissection, gentle handling of the muscle during the pro-

cedure, and creation of an appropriate pocket size for the implant all contribute in keeping the postoperative hematoma rate low, less than 1%.

### 28.10.2 Infection

Breast implant infections generally occur in about 1–2% of cases. A study from 2005 reported a 2–2.5% incidence [6]. The most important step to avoid infections is to perform the surgery at a first-rate surgical facility where principles of sterility are applied regularly. Patients are given the appropriate intravenous antibiotic coverage throughout the actual surgery. The author changes gloves multiple times during the operation and is the only one who handles the implants in the operating room to ensure total sterility and avoidance of infection. After the procedure, patients are prescribed a 1-week course of antibiotics to minimize infection. There have been no infections with this technique.

### 28.10.3 Capsular Contracture

Capsular contracture occurs in 10–15% of women with breast implants, depending on which study is quoted. In 2004, the FDA reported a rate of 10–11% at 5 years for augmentation patients [7]. Capsular contractures may be caused by a subclinical infection, by significant bleeding during the operation, or by time and collagen remodeling alone. The rate of capsular contractures in the author's patient population has been less than 1%.



#### 28.10.4 Rippling

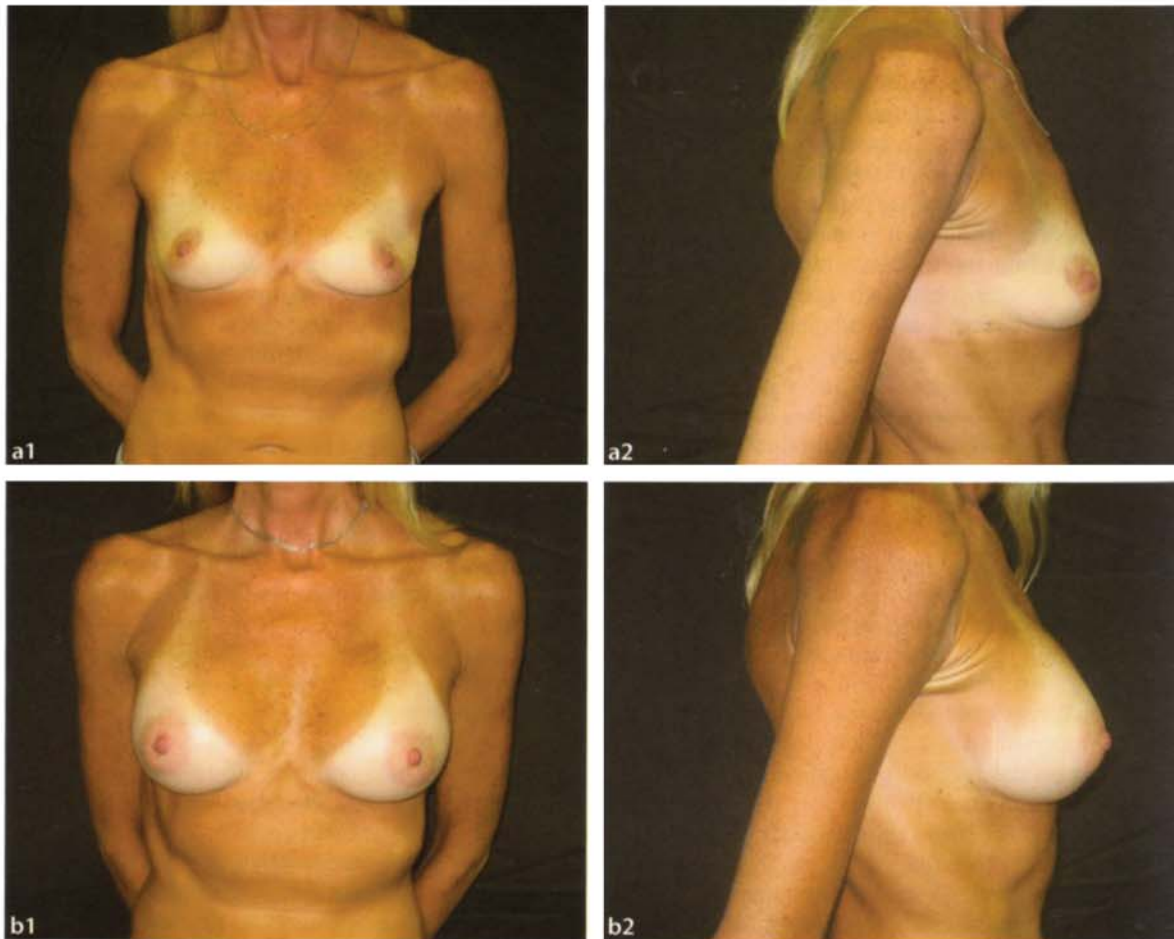
Rippling, especially with saline implants, can lead to patient dissatisfaction in up to 10% of breast augmentation patients. Handel et al. [5] reported the rate of rippling to be 5.7–14.15% depending on the technique and type of implant used. Rippling can be avoided or minimized by giving the breast implant maximum coverage with breast tissue and muscle. For that specific reason, rippling is minimized by placing an implant under the pectoralis major muscle and by selecting an implant size that would be covered almost completely by the muscle. As a result, the implant cannot be felt from the lateral edge of the breast. Because of these two guidelines, the rate of rippling among the author's patients is less than 2%.

#### 28.10.5 Deflation or Rupture

It is difficult to quote rates of breast implant rupture or deflation because this is a function of time. The best way to minimize this risk is by paying attention to each step in the patient's preoperative evaluation, the actual surgical procedure, and the follow-up care. If an implant ruptures or deflates, it needs to be exchanged.

#### 28.10.6 High-Riding Implants

The shape and look of the augmented breasts should be very natural. Critics have cited high-riding implants as a result of the technique used by the author [8]. With



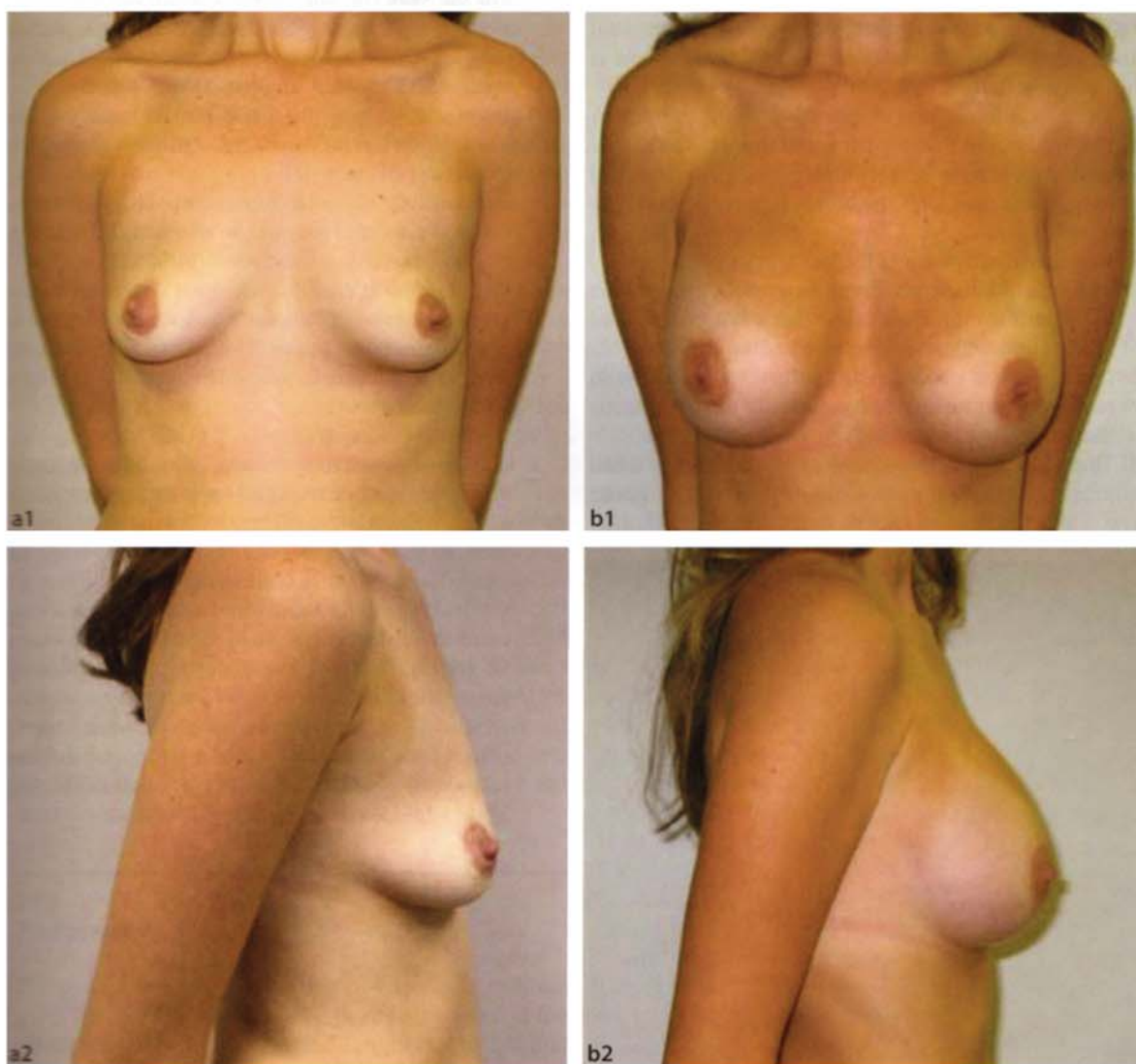
**Fig. 28.11** a 1 Preoperative 2 Lateral view. b 1 After transaxillary breast augmentation. 2 Lateral view

use of proper surgical technique, good muscle dissection, and a breast binder for pushing the implants down after surgery, this problem has not been clinically significant.

### 28.11 Discussion

It is critical to address the controversy of performing transaxillary breast augmentations with the “blind approach” instead of the endoscopically-assisted ap-

proach. The results of the blind approach are excellent (Figs. 28.11, 28.12). The critics’ view that this technique will yield high-riding implants has not been true in the author’s breast augmentation patients. The advantages of this technique over the endoscopically-assisted technique is the shorter time in which the operation can be safely performed (the actual surgical time is 25–40 min), which is significantly less than with the endoscopic approach. The second advantage is the lack of reliance on endoscopic equipment, the costs involved, and potential added variables to an operation that is otherwise very simple.



**Fig. 28.12** **a 1** Preoperative 2 Lateral view. **b 1** After transaxillary breast augmentation. 2 Lateral view



The axillary incision has certain advantages:

1. The scar is about 2 cm long and heals very inconspicuously, appearing like an axillary crease (Fig. 28.13).
2. The implant can be inserted subpectorally with minimal muscle dissection, so the muscle is minimally manipulated, yielding many advantages: less time needed to perform the surgery, minimal bleeding, less trauma and scarring, less pain, less bruising, and a shorter recovery time with minimal complications.
3. The milk ducts are not manipulated, so the risk of losing the ability to breastfeed after a breast implant with this approach is negligible.
4. The breast tissue is not dissected, so there is no additional scarring that may affect mammogram readings.
5. The scar is relatively distant from the implant, so if there is a superficial scar infection, the implant is well protected.
6. There is a lower probability of injuring the 4th intercostal nerve that supplies sensation to the nipple, thus there is an extremely high probability of normal nipple sensation after the breast augmentation.

Some of the disadvantages include the following:

1. The scar, although small, can be evident in the axilla the first few months before it heals completely and fades, but it will never completely disappear.
2. If a revision is needed in the future, the difficulty in removing an implant from an axillary incision means that another approach may be used at that time.
3. There is a possibility of loss of sensation in a small area of the axilla if the costobrachial nerve is injured.



Fig. 28.13 The axillary scar is virtually imperceptible

## 28.12 Conclusions

The “blind” technique of transaxillary breast augmentation is a safe, effective, and simple way to perform this popular procedure. As with any procedure, a learning curve is always expected, but this is truly an elegant, simple, and highly effective procedure with a minimal rate of complications.

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