Breast Implant Rippling and Palpability

30

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Introduction

The rate of patient satisfaction with breast augmentation is very high. Even though patients will experience mild or severe complications and possible need for revision, patients generally do not question their original decision to pursue augmentation. With the advent of newer devices and techniques, capsular contraction rates have fallen, and it has perhaps become more important to consider strategies to minimize implant rippling and palpability. Boswick [1] does not address the rippling and palpability as an aesthetic issue in his 1983 text.

While a natural appearance of the surface of the breast and a minimal palpability are both important goals, the surgeon must weigh other issues as well. While the surgeon is thoughtful of all other possible major and minor complications, it is the patient who sometimes will redirect the surgeon based on history or personal preferences. A competition kayak racer might not be a candidate for a subpectoral placement. A relatively thin patient whose primary concern is scar size and location might dictate a small incision with a saline implant choice rather than the prefilled silicone gel device. While there is some disagreement among qualified surgeons regarding the strategies to minimize implant palpability, all agree that this issue demands ongoing consideration. There are three categories of factors that determine implant rippling and palpability: (1) tissue quality, (2) device characteristics, and (3) surgical technique.

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Tissue Quality

The skin quality of the patient is an aggregate of thickness and quality of the dermis, subdermal fat, and breast parenchyma. It is affected by age-related compromise of skin quality. Parous women commonly undergo attenuation of skin quality. The tissue is commonly evaluated with a pinch test in the upper pole at the midclavicular line. Less than 1 cm is considered poor tissue coverage and greater than 2 cm is considered excellent coverage. It is perhaps the patients who fall between 1 and 2 cm who command the most complex decision making. Effective strategies to improve tissue coverage include autologous fat grafting (Deal C., personal communication) or patient weight gain. One factor often not considered is the reduction of the risk of rippling with a Baker class II or class III encapsulation.

T.T. Mugea, M.A. Shiffman (eds.), *Aesthetic Surgery of the Breast*,
DOI 10.1007/978-3-662-43407-9_30,

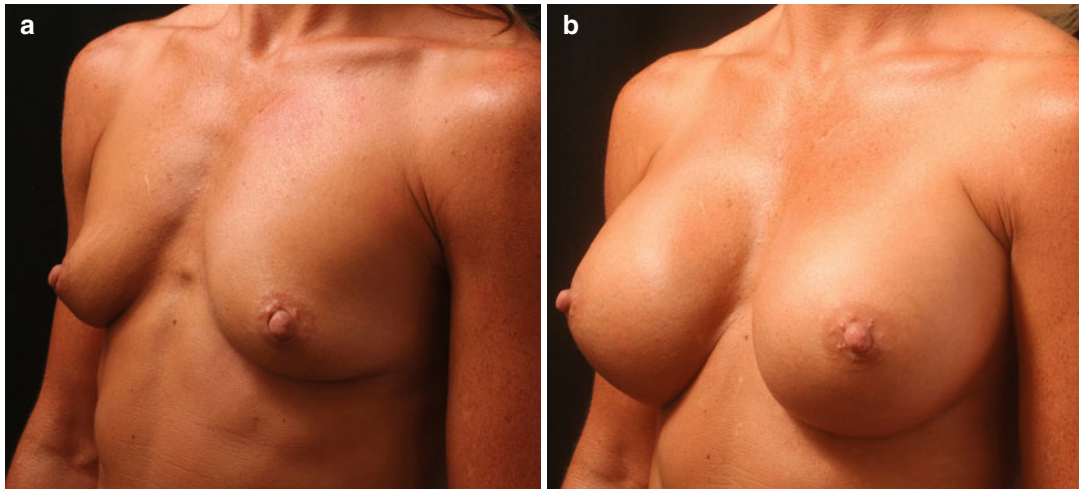

Fig. 30.1 (**a**) Bodybuilder who is concerned about both rippling and unnatural breast movement. (**b**) Two years post-operative with smooth high-profile silicone gel placed transaxillary subfascial without rippling

Device Characteristics

Implant Fill Material

At this point in time, choices are limited to saline or silicone gel fill material. Saline has a higher rate of rippling and palpability. With all other factors being equal, the newer high-cohesive-viscosity implants are even less likely to ripple (Fig. 30.1). Trade-offs might include a higher rate of capsular contracture with gel implants. Higher viscosity gel is less likely to ripple than lower viscosity.

Texturing of the Implant Shell

The introduction of implant texturing was an effective capsule formation reduction strategy for silicone gel implants, but was not effective for saline implants. Texturing allows the shell to integrate with the patient tissue and increases the chance of rippling with both silicone gel and saline implants [2]. A thicker smooth shell may also be associated with less chance of rippling.

Profile of Implant

A high-profile implant has more projection for a given base diameter and is less likely to ripple or to have palpable edges. As a strategy to prevent device failure, saline implants are often filled to (or above) the maximum fill limit. This overfill of a saline implant might make the operative result firmer to palpation but will decrease the risk of ripple. As a moderate-profile implant is overfilled, it will scallop on the edges, whereas a high-profile implant will not produce these palpable ridges.

Implant Overfill

Many surgeons have found that filling beyond the nominal fill rating to at least the maximum fill volume is helpful to prevent rippling in saline implants (Fig. 30.2). Surgeons sometimes fill the larger implants as much as 20 % beyond the maximum fill volume. The concept of an overstretch or "implant fatigue" has been considered as a risk factor for rippling [2], but that concern could be balanced with the observation that the risk of deflation decreases with overfill (Eisenberg T., personal communication). Although overfilling may be effective for both the moderate- and high-profile saline implants, in vitro overfilling of a higher-profile implant clearly demonstrates less "edge scalloping" during the overfill. Surgeons differ on treating the implant fill as a matter of surgical judgment as opposed to an issue of informed consent [3].

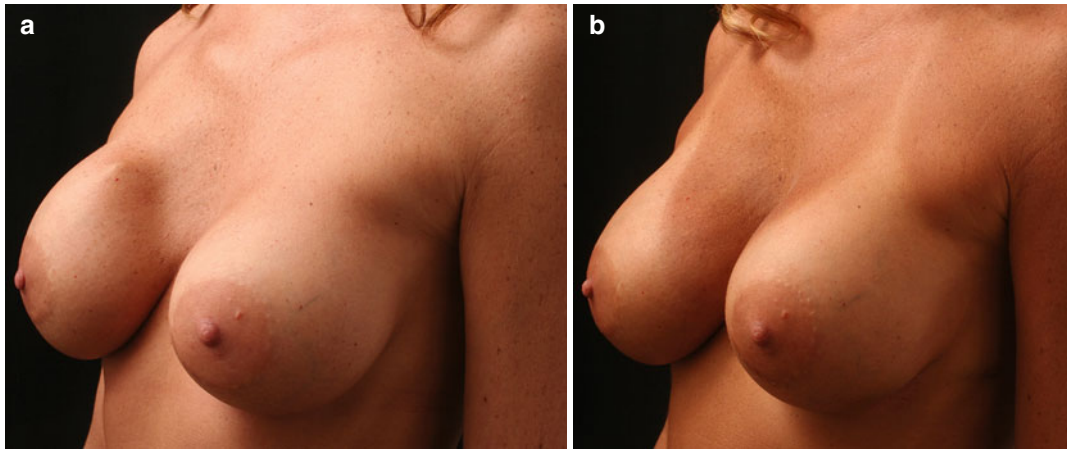

Fig. 30.2 (**a**) Patient with smooth moderate-profile subglandular saline implants with complaint of right medial breast ripple and palpability. (**b**) Patient declined silicone gel in favor of high-profile smooth saline subglandular placement. She remained ripple-free at 4-year follow-up

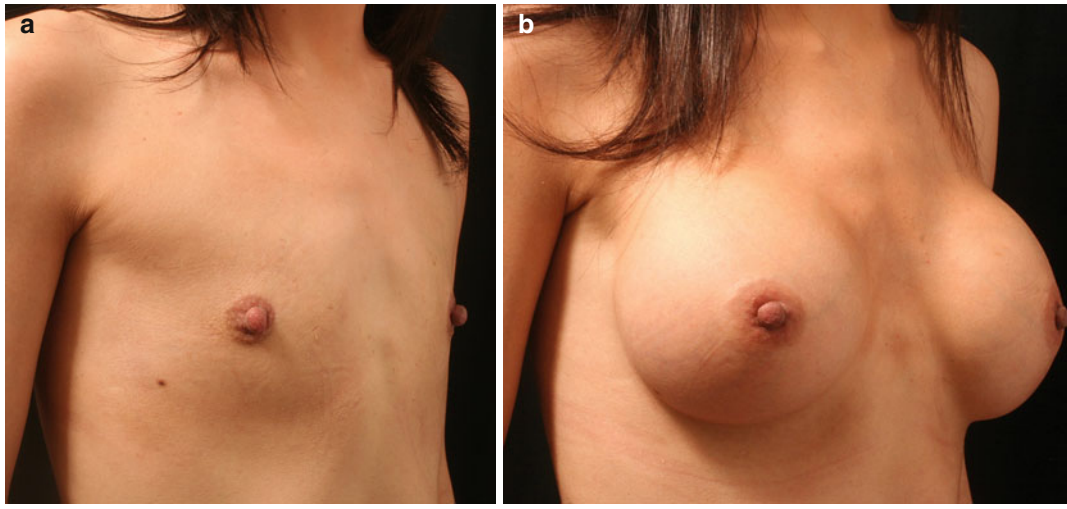

Fig. 30.3 (**a**) Patient is 4′11″ in height and weighing 89 lb who did not accept recommendation of silicone gel implants. (**b**) One year postoperative after partial subpectoral high-profile smooth round overfilled saline without rippling

Surgical Technique

If the only question were "how to handle rippling," then the answer would be "subpectoral placement," but the surgeon must weigh and consider a host of factors and possible outcomes. Subpectoral placement is perhaps the most powerful tool for the prevention of rippling in the medial upper breast pole (Fig. 30.3). In the tissue-compromised reconstruction patient, the use of muscular coverage is almost absolute; however, aesthetic surgeons do give strong consideration to other surgical pockets. The most common pockets are as follows.

Subglandular

Traditionally the subglandular placement was felt to have a more natural look and was not as susceptible to post-encapsulation displacement. It still may be an appropriate pocket in women

with generous tissue coverage or in those who are mildly ptotic. The risk of rippling and palpability is greatest with this pocket location.

Subpectoral

Currently the subpectoral pocket (or one of its modifications) is the most commonly used location. A low capsular contraction rate and the attenuation of rippling in the upper pole, is important because that breast area is often exposed with current fashion.

Partial Subpectoral

In order to maintain a critical area of tissue coverage and to concomitantly allow a more natural shape and medial location, the pectoralis major insertions at the 4th and 5th ribs can be surgically disrupted [4]. The dual-plane modification includes a specific disruption of inferior pectoralis origins and a specified disruption of the relationship between the breast parenchyma and the pectoralis muscle [5].

Total Submuscular

In order to provide a total muscular coverage, attempts have been made to cover the upper and lower pole with pectoralis and serratus muscles. Although some authors have been dubious of the benefits of "total" coverage [5], others have found it totally effective in selected patients [6]. The patient should be able to accept "high riding" implants, and the placement might be most appropriate in patients who are undergoing simultaneous augmentation mastopexy.

Subfascial

First reported in 2000 [7], the subfascial placement does not prevent upper pole rippling as effectively as the subpectoral pocket, but many surgeons have found it to be an effective compromise between the subglandular and the subpectoral planes [8, 9]. The plane is created between the pectoralis major muscle and the overlying (deep layer of the) superficial fascia, frequently from an axillary approach [10]. The fascia (Fig. 30.4) is much thicker in the upper pole and thins as it courses in a caudad direction.

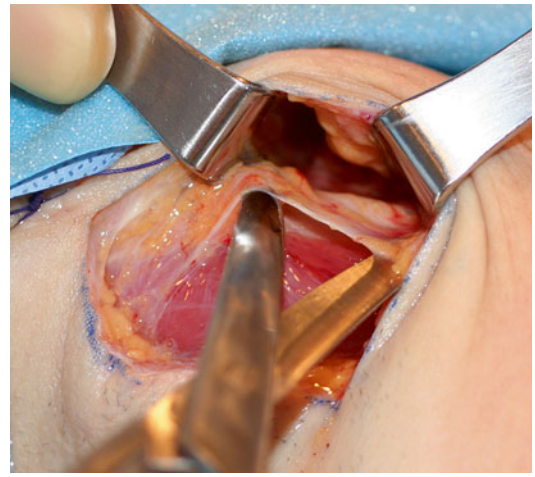

Fig. 30.4 Transaxillary view of the deep layer of superficial fascia overlying the pectoralis major muscle

Conclusions

Compared to all other common aesthetic procedures, the complexity of breast augmentation is the highest. Strategies to reduce implant rippling and palpability are one of many important considerations. Achieving the best result represents a challenge for both the surgeon and the patient, but it also offers the highest reward. This reward comes after the application of art, science, and technical skill, which is maximized within the context of excellent communication between the surgeon and patient.

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