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AESTHETIC AND
RECONSTRUCTIVE

SURGERY OF THE
BREAST

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SAUNDERS
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Adjustable Breast
Implants for Asymmetry
and Ptosis*Hilton Becker***Summary/Key Points**

1. Breast asymmetry is usually present in most patients. Due to the difficulty in selecting the appropriate size and shape of implant, asymmetry is inevitably seen postoperatively. Adjustable implants offer a means of addressing this problem.
2. Adjustable breast implants are available in single and double lumen containing 0%, 25%, 35%, 50% and 100% silicone gel.
3. The new Spectra Becker adjustable gel implant is a unique implant offering the ability to use a gel implant containing no saline or with a small volume of saline – up to 20% to adjust volume and projection.
4. The fill tube² injection dome in adjustable implants may be pulled on the operating table, buried under the skin or exteriorized.
5. The same techniques used with gel implants are applicable to adjustable gel implants.

Introduction

For the experienced surgeon, breast augmentation would appear to be a fairly simple operation. However, beware simple solutions to complex tasks: analyzing the dynamics of the procedure yields a markedly different perspective. Consider that we are charged with implanting a soft synthetic material into the body, then assuring that the implant remains soft and, at the same time, retains its shape over a period of many years. Furthermore the breasts should be symmetrical in volume, shape, and projection, and remain so over time – even though our

surgical experiences and anatomical knowledge base have shown us that an individual's breasts vary in all of these dimensions. And we have so far only spoken of normally shaped breasts. Patients with breast ptosis, or with base constriction, also referred to as tubular breast, and patients with severe asymmetry (Poland's syndrome: absence of the sternal portion of the pectoralis major with ipsilateral upper extremity anomalies) only deepen the complexities for a procedure that clearly is not 'simple.'

Patient Selection

When selecting an implant, the surgeon has to consider several factors. What is the patient's desire for volume enlargement? What outward projection does she envision? Does she have breast ptosis? What is the base diameter of the breast? What is the nipple–inframammary crease distance? Are the breasts symmetrical or asymmetrical? Does the patient have chest wall asymmetry or scoliosis? All of these and other questions influence implant selection.

The vast array of implants available, varying in shape, projection, diameter, and volume, bear testimony to the fact that achievement of symmetry and meeting patient expectations is extremely challenging with the available implants. It is not surprising that surgeons have great difficulty understanding the computations of these parameters and selecting the appropriate implant.

Fortunately, today's surgeons have adjustable implants available to them. Adjustable implants offer the surgeon the ability to select the implant based primarily on base

diameter and then alter the volume and projection intraoperatively or postoperatively. Adjustable implants include single-lumen saline, double-lumen saline-gel, and adjustable gel. These implants offer considerable benefit to surgeons by simplifying implant selection and allowing for subsequent alteration for the treatment of asymmetry noted here.¹⁻³

Asymmetry and other conditions for which adjustable implants may be best suited are discussed in the paragraphs that follow. Descriptions of the various models of adjustable implants follow the discussion of conditions. The last section of the chapter is devoted to techniques for insertion.

Indications

Asymmetry

Debate continues about the incidence of breast asymmetry. One estimate suggests that asymmetry presents in 80% of the population, to the trained eye, and increases to 100% when measured with the appropriate tools.⁴ In this line of thought, surgeons often counsel patients that some degree of asymmetry is an inevitable. Moreover, attempts to correct the asymmetry after the first operation often lead to further complications. Use of the adjustable implant offers the surgeon the ability to more effectively manage asymmetry correction.

Some physicians may argue that asymmetry cannot be fully corrected. We would argue that this argument may be valid when using fixed volume implants. However, with adjustable implants asymmetry can be accurately corrected. The adjustable implant can be increased or decreased post implantation, leading to high degrees of correction of asymmetry. Figs 35.1–35.5 illustrate the presence of asymmetry and scoliosis, followed by installation of an adjustable implant, adjustment of volume, after surgery, and satisfactory correction of the breast defects.

Mastopexy-augmentation

Mastopexy augmentation (breast lift surgery) is a complicated surgery, so much so that some surgeons perform it in two stages. The challenge with mastopexy augmentation is this: as the mastopexy procedure tightens and elevates the tissues, the augmentation results in implant tension in the direction exactly opposite to that of the mastopexy. As a consequence, excessive tension is

generated on the incision. The adjustable implant can be placed underfilled, thus decreasing tension on the incision. As a result, the patient and surgeon alike can expect less wound breakdown and improved scarring.

If breast elevation is asymmetrical or insufficient, adding saline can cause further elevation and thus improve symmetry. In cases of breast base constriction such as tubular breast deformity, overexpansion and volume reduction can be of benefit in improving the shape of the breast.⁵⁻¹⁰

Figures 35.3 and 35.4 illustrate preoperative presence of breast ptosis and asymmetry, followed by successful mastopexy and implantation with an adjustable implant.

Operative Technique

Types of adjustable implants

Single-lumen saline implant (Spectrum®)

The adjustable saline implant functions exactly like a normal saline implant, with the added advantage of volume increase and decrease capabilities. The Spectrum valve has a significantly lower leakage rate compared to the diaphragm valve in the regular saline implant.⁷

Perioperative versus postoperative volume adjustment. Some physicians prefer to adjust the volume of the implant at the time of surgery. Postoperative adjustability has the added advantage of reducing implant rippling, with a saline adjustable implant, should the surgeon wish to delay filling the implant until after surgical procedures have been completed (Fig. 35.6).

Ordinarily, the Spectrum is placed submuscularly. The implant can also function as a temporary expander, to decrease capsular contracture. It can be placed in the patient virtually empty, for example, when the surgeon is treating resistant synmastia (absence of cleavage). It may be placed above the muscle to expand and shape of the subglandular pocket, for example with a short inframammary crease or with a case of severe asymmetry, and then later replaced with a gel implant if necessary.⁶

Double-lumen saline-gel implant (Becker-Mentor)

Model implant names of the double-lumen saline-gel implant are as follows: Becker 50/50, Becker 25/75 and

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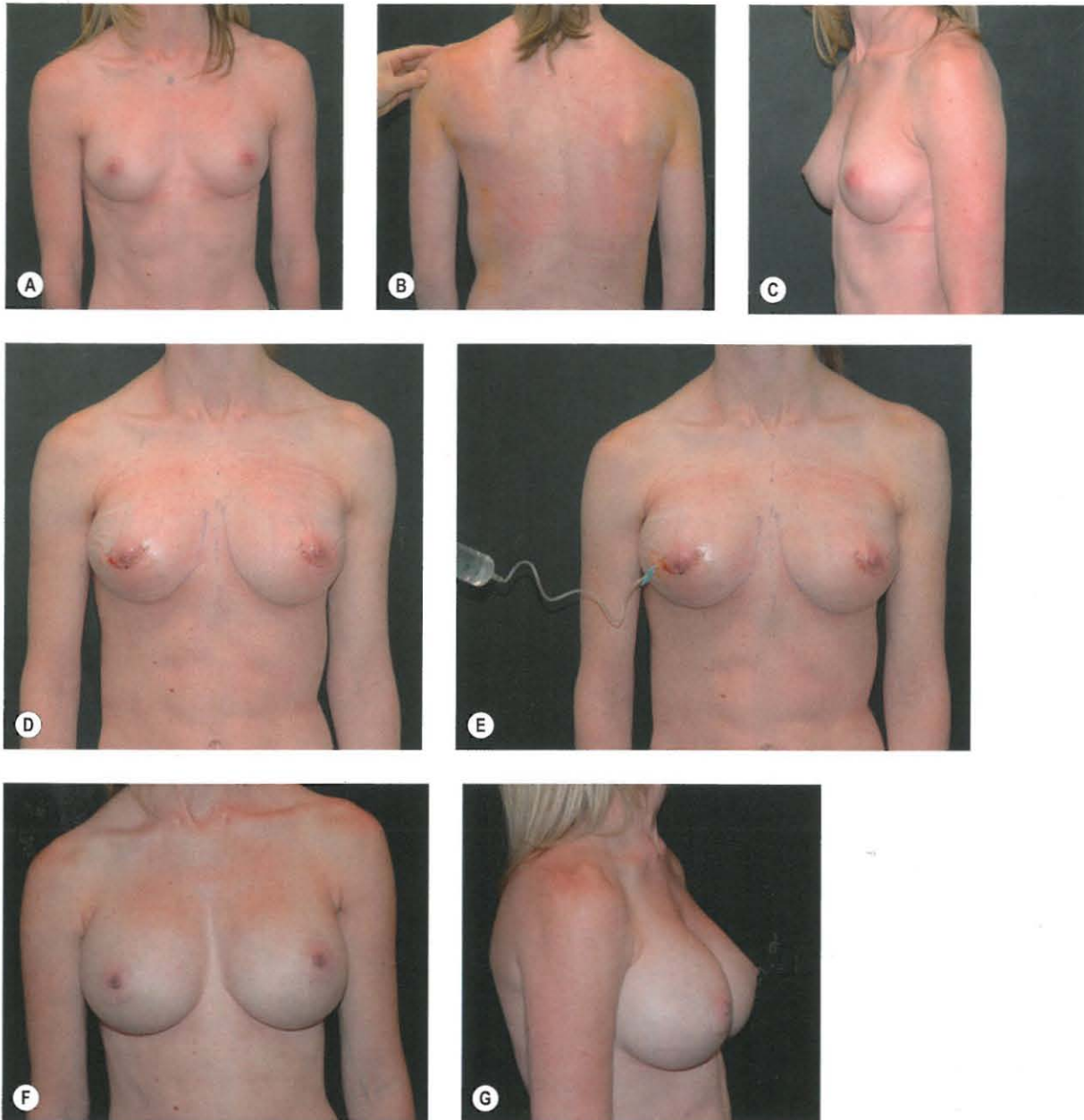


Fig. 35.1 **A** Preoperative patient with asymmetry and scoliosis. **B** Showing scoliosis. **C** Lateral. **D** Following bilateral breast augmentation with Spectrum® implants. **E** Volume adjusted postoperatively. **F, G** Final result.

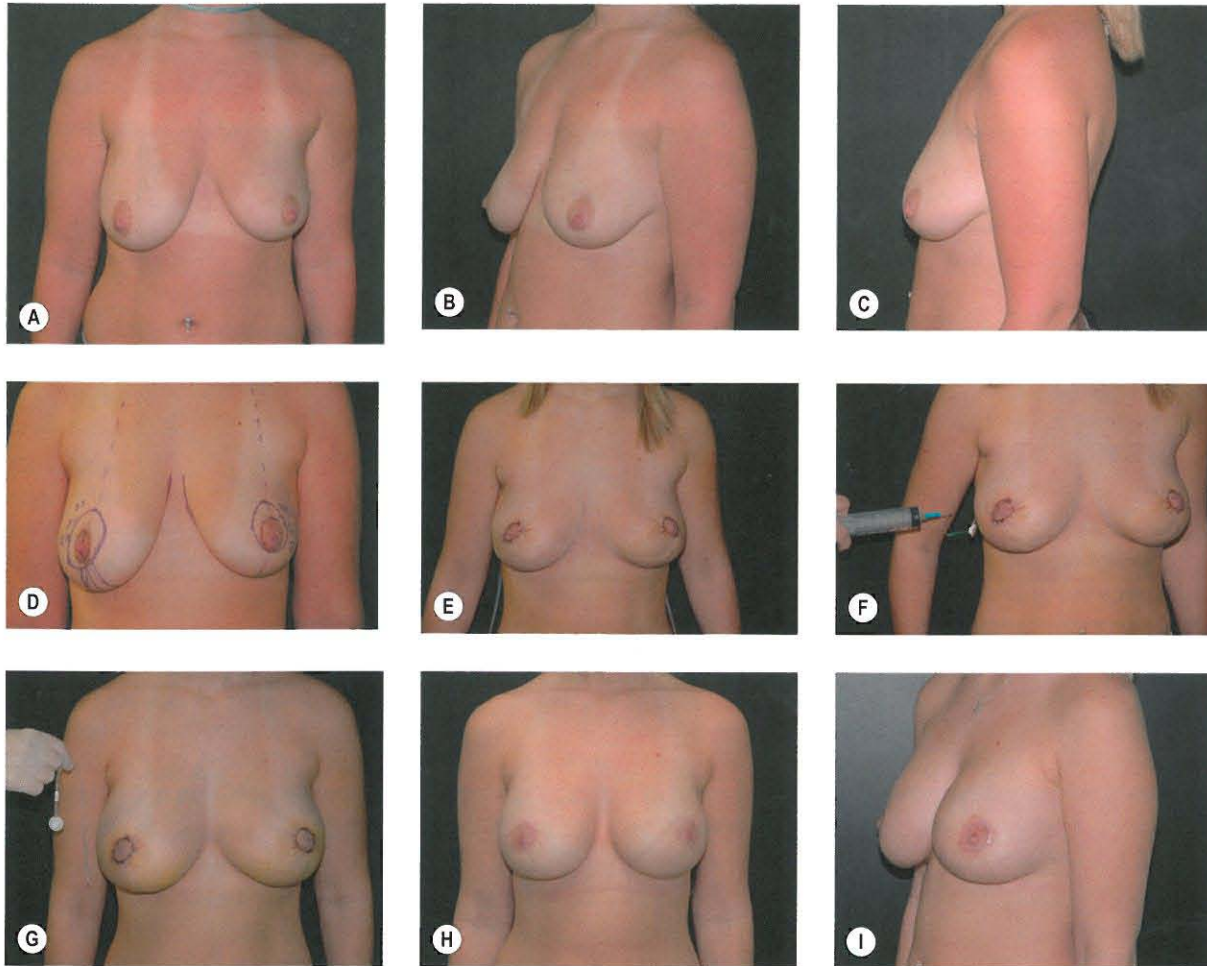


Fig. 35.2 **A** Patient with breast asymmetry and ptosis. **B** Preoperative oblique view. **C** Preoperative lateral view. **D** Skin marking for mastopexy and Spectrum® implant insertion. **E** Two days postoperative following subareolar mastopexy and submuscular Spectrum® placement. **F** Implant filled via external injection dome. **G** External injection dome removed. **H** Final result. **I** Final result oblique view.

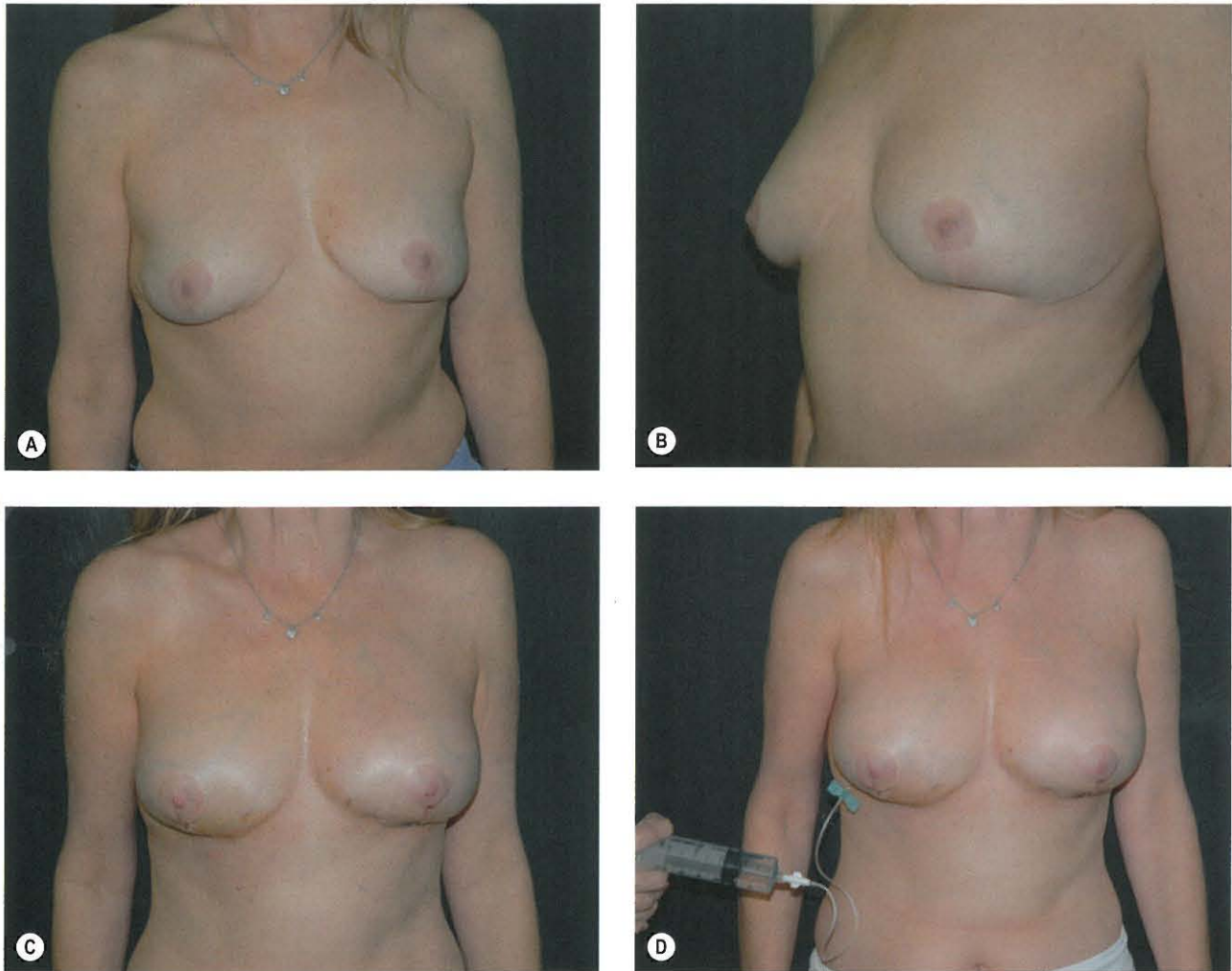


Fig. 35.3 **A** Patient following previous mastopexy with short nipple inframammary crease distance. **B** Oblique view. **C** Following insertion of Spectrum® implants in the subglandular position. **D** Subglandular pocket being expanded.



Fig. 35.3, cont'd **E** Overexpansion. **F** Implants overexpanded. Note elongation of nipple-inframammary distance. **G** Final result, implants replaced with silicone gel implants. **H** Final result.

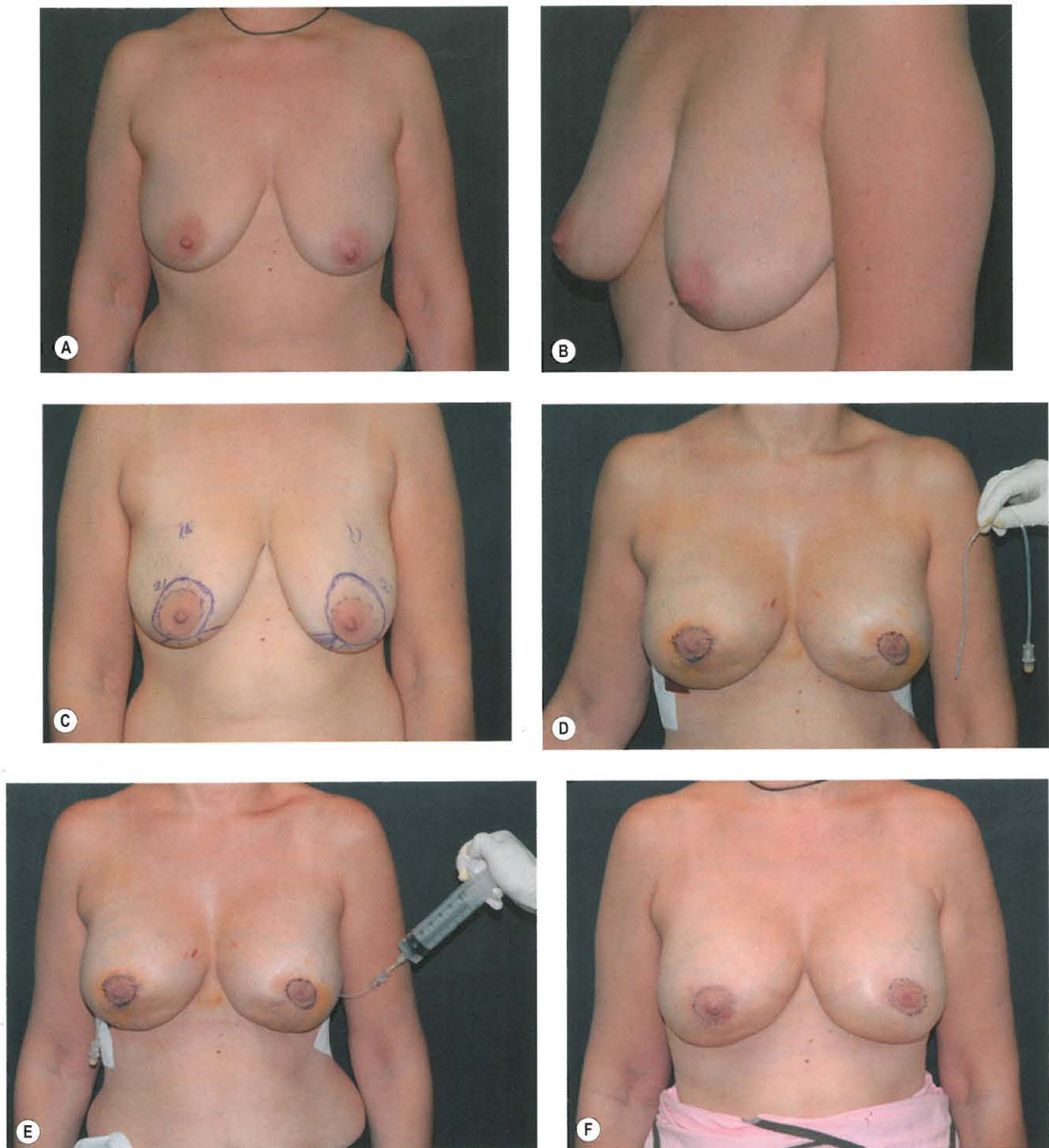


Fig. 35.4 **A** Preoperative ptosis and asymmetry. **B** Oblique view. **C** Preoperative skin marking. **D** Injection dome removed. **E** Following mastopexy augmentation with Spectrum® implant volume adjusted postoperatively. **F** Final result.

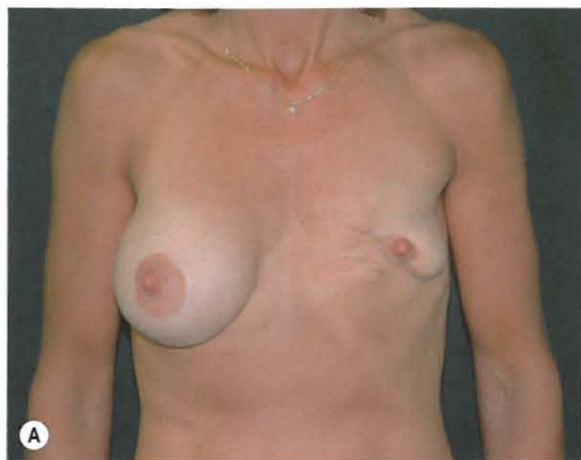


Fig. 35.5 **A** Patient following infection and removal of left implant. **B** Left oblique. **C** Right oblique. **D** Postoperative following insertion of a Spectrum® implant with buried injection domes. **E** Left oblique.



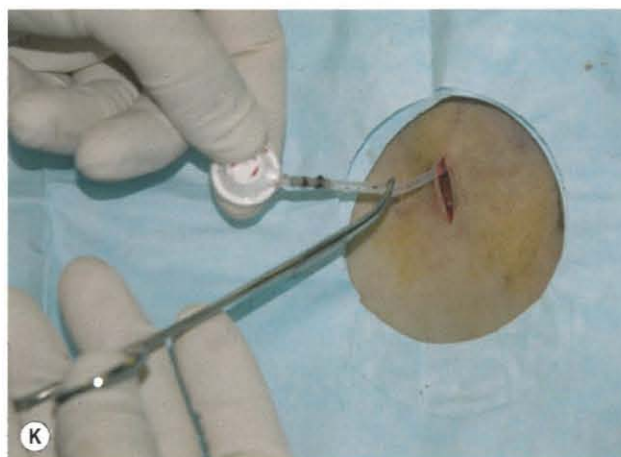
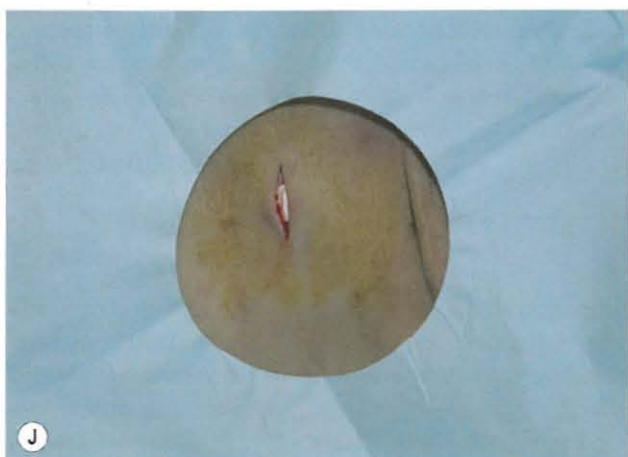


Fig. 35.5, cont'd **F** Left breast expanded postoperatively. **G** Final result. **H** Final result left oblique. **I** Final result right oblique. **J** Incision for removal of injection dome. **K** Injection dome removed.

the Contour Profile (CP) Becker implants. The Becker 50/50 is composed of 50% gel in the outer chamber and 50% saline in the inner chamber. The Becker 25/75 is a double-lumen implant with 25% gel in the outer chamber and 75% saline in the inner chamber. The CP Becker is an anatomically shaped implant with 35% gel in the outer chamber and 65% saline in the inner chamber. Figure 35.7A, B and also Figure 35.8F show these three double-lumen implants.

These implants are mostly used in reconstructive surgery. However, in selected cases they are useful in treating complications of the breast following breast implant surgery.

Adjustable gel implant (Mentor Spectra Becker)

The Spectra Becker adjustable gel implant is a dual-lumen gel implant, similar to the double-lumen models described earlier. However, it has a small *inner* chamber that can be filled with saline. Gel percentage in the Spectra Becker can range from 100 to 80% of total volume. The implant can be placed in the patient with

or without any saline in the inner chamber. If the size is satisfactory, then the fill tube is removed. The implant for all intents and purposes is then a gel filled implant. If, however, further volume is needed, the inner lumen can be filled to the desired volume before the fill tube is removed. If increased projection is desired, the inner lumen can be overfilled. Projection can thus be increased without decreasing the base diameter. The firmer pressure of the overfilled inner chamber aids in projection but without creating undue firmness, due to the presence of the soft gel.

The ability to alter implant size and projection at the time of surgery eliminates the need to discard an implant that does not have the correct dimension. In addition, in the event that the desired gel implant is not available, the Spectra adjustable gel implant can be an ideal alternative because of its flexibility. Figure 35.8 illustrates various gel volumes in the Spectra.

Technique

The volume of the adjustable implant may be fine tuned at the time of surgery and the fill tube pulled on the

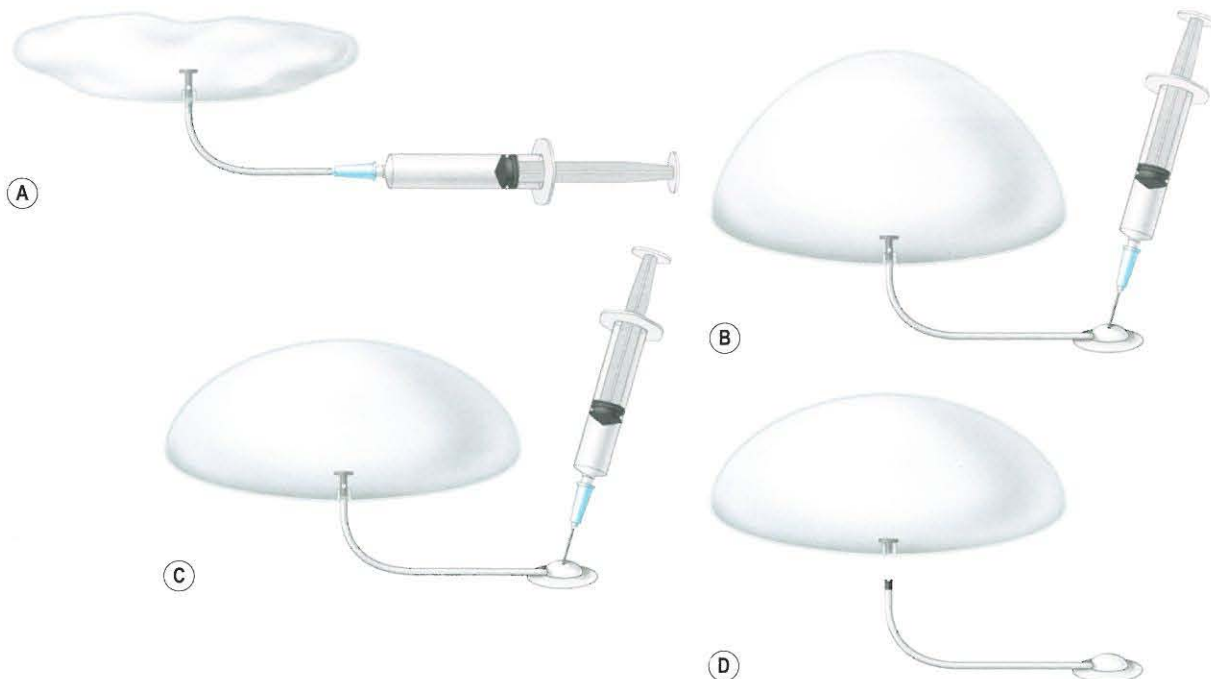


Fig. 35.6 A Spectrum implant. B Overexpanded spectrum implant. C Reduced to desired volume. D Implant fill tube removed.



Fig. 35.7 Becker implants. **A** 25–75 implant. **B** 50–50 implant.

operating table. Alternatively, the desired amount of saline may be added at the time of surgery and postoperative adjustment made via the injection dome. Jackson Pratt drains are routinely used. The injection dome may be exteriorized or buried.^{11,12}

Exteriorized injection dome

The injection dome is exteriorized by attaching the fill tube to a trochar and bringing it out through a long subcutaneous tunnel. The fill tube is then attached to the injection port or to an Interlimit injection site (Baxter Deerfield, IL). The port can be exteriorized for 7–10 days, after which it is removed. Although surgeons are always mindful of infection control, they can have confidence in use of the exteriorized injection dome. In over 100 cases, no retrograde infections have been reported.^{13,14}

Buried injection dome

The fill tube is cut to the appropriate length and attached to the injection dome with the metal connector secured with 3-0 silk ties. The dome is buried in a subcutaneous pocket, usually lateral to the incision, so that the dome can be removed through the same incision. Care should be taken not to place the dome too superficially. On the other hand, the dome should not be placed too deeply; it must be easily palpable.

The domes are buried in cases of severe asymmetry, in Poland's syndrome, or with tubular breasts where postoperative expansion will likely be necessary. Burying the injection domes has an obvious advantage in mastopexy augmentation, where concern about skin flaps is a consideration, in revision surgery, and in patients with major concerns about size and symmetry. Figure 35.4 shows implantation and removal of injection dome.

Figure 35.5J, K and Figure 35.5H show incision site for removal of injection dome after treatment of defect of left breast.

Pitfalls and How to Correct

It should be recognized that there are two basic types of implants each having inherent characteristics – saline and gel implants. The main difference between saline and gel implants is:

1. Saline implants ripple and scallop more than gel implants. Rippling and scalloping is more common in textured than smooth saline implants.
2. Textured saline implants should be filled to the exact recommended fill volumes in order to diminish rippling and scalloping.
3. Smooth saline implants may be filled beyond the recommended fill volumes as the shell is more elastic and has less tendency to ripple and scallop.
4. Adjustable implants that are single lumen or double lumen gel/saline 25%, 35%, and 50% gel are considered 'saline' implants in terms of functionality.
5. Adjustable gel implants containing 80% gel (Spectra) are considered 'gel' implants. There is virtually no scalloping or rippling seen in these implants (smooth or textured) even when overfilled.



Fig. 35.8 **A** Adjustable gel Spectra. **B** Adjustable gel Spectra filled to desired volume, fill tube removed. **C** Spectra filling. **D** Spectra reducing. **E** Spectra tube removed. **F** Becker CP.

Postoperative Care

Postoperative filling is done using a 23-gauge butterfly needle. Using sterile technique, 25–100 ml of saline may be added. Implants may be placed underfilled if necessary. However, the filling volumes recommended by the manufacturer are quite limiting. In our practice, we have added a paragraph to our consent form stating that exceeding these volumes may be necessary. Implants have been temporarily overfilled for several weeks and even left at a volume above the recommended when necessary. In a study done on the Smooth Spectrum® implant, there was no increased leakage in overfilled implants. In fact, the only leakage found was in an underfilled implant. Exteriorized injection domes are removed a few days after surgery (up to 10 days). Buried injection domes are removed 3–12 months after surgery.

The patient is placed on prophylactic antibiotics and the injection dome removed under local anesthetic. The original incision is usually used for access.^{9,10}

Figure 35.3A–H shows deliberate overinflation of an adjustable implant for temporary correction, followed by insertion of silicone gel implants.

Conclusion

From our perspective, the most important message that surgeons can provide to patients is the message that alternatives for their breast anomalies are available. We believe that adjustable implants offer the widest range of options. These implants offer expansion capabilities and volume adjustability. As a result, they can be most helpful in helping patients decrease the incidence of breast asymmetry.

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