Ideas and Innovations

Breast Capsulorrhaphy

Scott L. Spear, M.D., and John W. Little, III, M.D.
Washington, D.C.

Although scant attention has been paid to the diagnosis and treatment of malpositioned breast implants without capsular contracture, spherical capsular contracture and its correction by open or closed capsulotomy have been well described after both augmentation mammoplasty and breast reconstruction.1-4 Meanwhile, the incidence of overly firm breasts from spherical contracture has been reduced by several measures, including improved mammary implants, local steroids, subpectoral dissection, early postoperative massage, prophylactic antibiotics, and creation of oversized implant pockets.1-8

During the same period, the discussion of malpositioned breast implants without capsular contracture has centered on steroid-related ptosis or superior displacement of implants after subpectoral placement.4,7 Excessive ptosis from local steroids appears to be uncommon when doses of less than 20 mg Solumedrol are used.2,4 Such ptosis is also rare with subpectoral placement of implants. When steroid-related ptosis does occur, this does not represent actual implant malposition, since the base of the implant pocket remains in position on the chest wall and only the anterior capsule and skin are inferiorly displaced by stretching.

Adequate treatment of steroid-related ptosis often requires only the removal of the steroid solution from the implant, although in severe cases the implant must be removed or repositioned as well. Superior displacement of mammary implants after subpectoral placement is related to inadequate dissection below the border of the pectoralis major muscle. This is readily corrected by open capsulotomy to the appropriate level inferiorly.7

Although true malposition of a mammary prosthesis in an inferior, medial, or lateral direction has rarely been described, it is becoming more common due to the same factors leading to fewer capsular contractures: increased use of tissue expanders, local steroids, submuscular dissection, and bigger pockets (Figs. 1 to 3). The correction of this type of malpositioning is quite difficult, provoking some surgeons to use additional external incisions and others to perform capsulectomies to obliterate the aberrant capsular space.9-12 In our initial experience with this problem, tie-over mattress sutures, external compression, and simple internal suturing were all tried, with poor results. External compression may help inferior displacement in the first postoperative weeks, but it is of no value in established situations or when an implant is malpositioned from side to side.

Tie-over mattress sutures including both layers of capsule and tied over bolsters at the skin level were totally ineffective and tended to leave marks on the skin as well. Simple internal sutures approximating anterior and posterior capsular sheets were of some value, but they proved difficult to perform accurately and had an unfortunate tendency toward undercorrection. Because of our increasing experience with this problem, we have finally arrived at a method that is relatively simple, safe, and effective.

METHOD

The patient is examined in the sitting position. The midline and idealized borders of the breast are indelibly marked on the skin using a Magic Marker and faint scratching with an 18-gauge needle. Special emphasis is placed on achieving symmetry of the inframammary crease and medial border of the breast. Markings are also made

From the Division of Plastic and Reconstructive Surgery at Georgetown University Medical Center. Received for publication April 22, 1986; revised July 25, 1986.

274
Fig. 1. (Left) Appearance of inferior malposition of mammary prosthesis. (Right) Proposed correction.

Fig. 2. (Left) Medial malposition. (Right) Proposed correction.

Fig. 3. (Left) Lateral malposition. (Right) Proposed correction.

for simultaneous nipple reconstruction, breast augmentation, or other breast-matching procedure. The ideal lateral breast border should be re-marked when the patient is lying down, since lateral dislocation of the implant is often only apparent in the supine position when the implant may actually rest against the table. Although local anesthesia with intercostal blocks is our
preference, we will use general anesthesia to accommodate patient preference or allow simultaneous contralateral breast reduction.

The mammary prosthesis and internal capsular space are approached through existing incisions. When possible, this includes revising poor scars from previous surgery, repositioning the nipple, or touching up whatever features of the breast require attention. When nipple-areola reconstruction is planned, that portion of the breast skin should not be included in the incision for exposure of the breast capsule.

Once the implant is removed, the anterior capsule sheet is tattooed percutaneously with a needle and methylene blue at the level of the desired correction, whether medial, lateral, or inferior. It is often useful to estimate the corresponding level on the posterior capsule and mark that as well. In those areas of the pocket where the breast capsule does not extend adequately to desired margins, selective capsulotomy is performed first to enlarge the deficient areas of the pocket before capsulorrhaphy is performed elsewhere.

Single-layer closure of the excess capsular space may be effective in mild cases, but it is generally not effective for more severe problems. In these cases, a running suture line of sturdy material (2-0 or 3-0) is begun purposely well outside the site of ultimate final correction, although not necessarily at the extreme margin of the excess space (Fig. 4). At the completion of each row, the implant pocket is tested by finger palpation to determine where further correction is needed.

Sutures on the anterior capsular surface are relatively easy to place, while those on the posterior surface are more difficult due to the shortage of tissue on the surface of the ribs (after true submuscular implant placement) and the relative thinness of the intercostal layer. Although sutures may be placed anterior to the ribs, we prefer to use the intercostal tissues as much as possible, using as many as eight rows of sutures to obtain the desired final correction.

After obliterating much of the aberrant capsular space, the mammary prosthesis is reinserted and a final check is made of all breast margins; if required, the prosthesis may be removed and additional sutures placed before replacing the implant again. The wound is closed in three layers: muscle/capsule, dermis, and skin. When possible, pressure is maintained over the obliterated excess capsular space through the use of an underwire bra worn day and night for 3 to 4 weeks. Massaging, on the other hand, is begun within 72 hours of surgery, selectively pushing the implant into safe areas.

**Results**

This technique was used on 40 patients between 1981 and 1986, with an average follow-up of 2 years. The results have been remarkably good (Figs. 5 to 7). There have been few complications, the most common being mild undercorrection or overcorrection of the original problem. While there was one infection which resolved with antibiotic treatment alone, there were no episodes of hematoma, pneumothorax, or implant extrusion. Our single case of failed capsulorrhaphy occurred in a 240-pound patient, early in our experience, when a 1400-cc inferiorly displaced implant was unsuccessfully repositioned by a single row of absorbable sutures.

![Fig. 4. (Left) Technique of correction using serial rows of running sutures between two layers of aberrant implant capsule. (Right) Oblique view of repair technique.](image-url)
Fig. 5. (Left) A 34-year-old woman who 2 years previously had undergone submuscular breast augmentation with concentric mastopexy by another surgeon. Although her breasts were soft, she had distortion in three directions with excessive inferior and medial migration of the implants and inadequate lateral extension. Note apparent malposition of the nipple secondary to subluxation of the implants. (Right) Same patient 1 year after bilateral capsulorrhaphies and bilateral lateral capsulotomies were done through medial periareolar incisions.

Fig. 6. (Left) A 32-year-old woman 6 months after secondary augmentation mammoplasty when firm subglandular implants were replaced by larger subpectoral prostheses. Note inferior displacement of left implant at this stage. (Right) Same patient 1 year after revision with capsulorrhaphy on left and bilateral implant exchanges for a larger size.

Fig. 7. (Left) A 42-year-old woman 1 year after left immediate submuscular breast reconstruction with progressive inferior displacement of implant despite attempts at external compression. (Right) Same patient 3 months after right augmentation mammoplasty with left inferior capsulorrhaphy and left nipple-areola reconstruction.
This was later successfully repaired with nonabsorbable sutures done in multiple rows. One patient developed a postoperative Baker class III capsular contracture, but this occurred in the same patient who acquired the postoperative wound infection.

**DISCUSSION**

Breast reconstruction and, to a lesser extent, breast augmentation may require two or more stages until completion. The roles of nipple reconstruction, mastopexy, augmentation, breast reduction, and open capsulotomy are well known. Repositioning of the displaced breast, on the other hand, has received little mention and has been described as doomed to failure. Although capsular contracture remains the most common undesirable side effect of mammary prostheses, the recent decrease in the frequency of such contracture has been paralleled, to a lesser extent, by an increase in the frequency of implant malposition, making the simple and reliable correction of malposition an important technique.

Although single-layer internal correction of a displaced capsule may work, we find that the multiple-layer approach has definite advantages. Multiple-row, partial obliteration of the aberrant capsular space alleviates the need for capsulectomy, thus reducing operating time, bleeding, and risk. The increased reliability of multiple rows is matched by their precision, since the desired correction is achieved in increments rather than in one stitch. Correction by a single row of sutures is at best difficult guesswork and usually requires multiple errant attempts before achieving a reasonable effect. A multilayered closure also places less reliance on the flimsy portion of the capsule found on the surface of the adjacent ribs. In each row of running sutures, as many bites as possible are placed in the intercostal space, suturing in between, on the ribs, only when necessary. Thus fewer sutures are anchored over ribs, and these fewer bites must withstand correspondingly less stress than would similar sutures in an interrupted single-layer closure. We have used both absorbable (3-0 Vicryl) and nonabsorbable (2-0 Ethibond) sutures in this technique and have found no discernible difference, although at present we prefer nonabsorbable sutures for their theoretical advantage of increased longevity. The fate of the obliterated ectopic capsular space is not definitely known, although we assume that it normally is obliterated with time, much as when a subglandular implant is moved to a submuscular space, leaving the previous capsular cavity to involute spontaneously.

Technically, this procedure may be difficult and requires both acrobatic ability and fiberoptic lighting, especially when operating through small incisions at some distance from the site requiring repair. Currently, our experience with capsulorrhexy is so favorable that we no longer feel that it is harder to raise the prosthetic breast than it is to lower it with inferior capsulotomy. Furthermore, our complication rate with capsulorrhexy compares favorably with capsulotomy, where recurrent capsules, inadequate correction, and rare hematomas still plague us on occasion.

**SUMMARY**

The malposition of breast prostheses without capsular contracture has become an increasingly frequent event. In our experience with 40 patients over the last 5 years, we have found multiple-layer breast capsulorrhexy to be a simple, safe, and reliable technique. With this method, repositioning of the breast is easier, more accurate, and more permanent than single-layer closures, which attempt ideal correction of the malpositioned implant on the first try.

**Scott L. Spear, M.D.**

**Division of Plastic and Reconstructive Surgery**

**Georgetown University Medical Center**

**3800 Reservoir Road, NW**

**Washington, D.C. 20007**

**REFERENCES**


