

## **Central Core Reduction Mammoplasties and Marlex Suspension of Breast Tissue**

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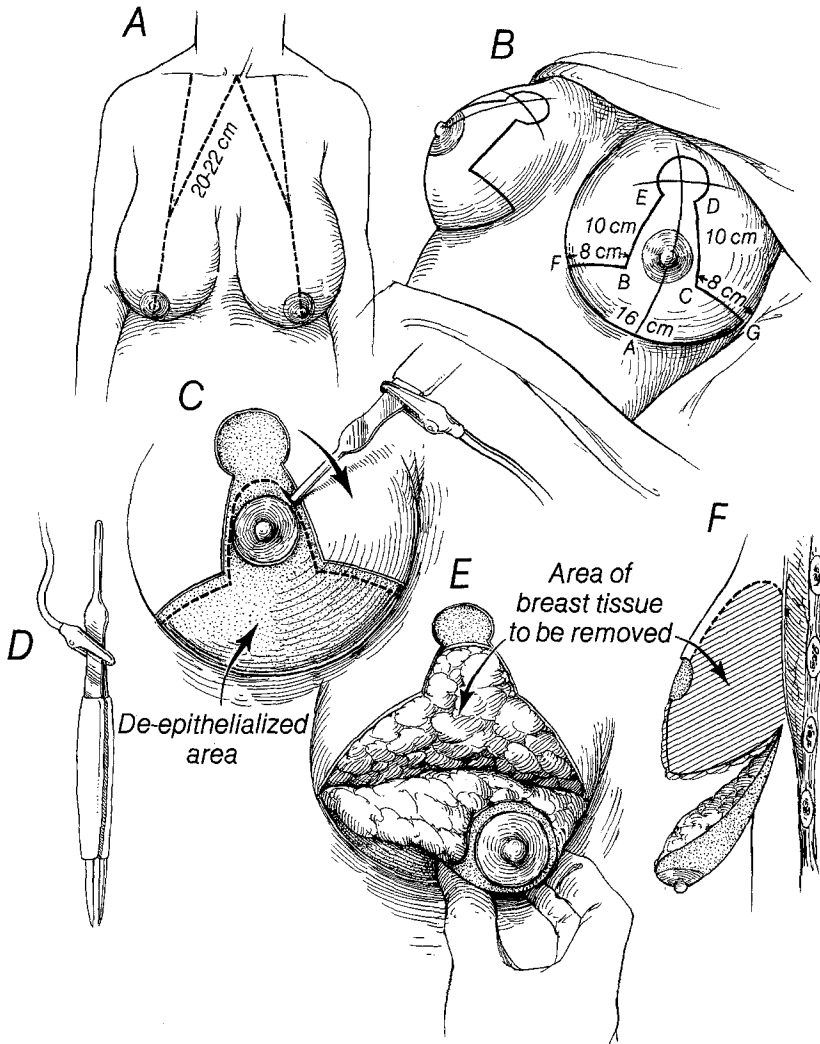
**Abstract.** The author describes a technique for central core reduction mammoplasty with the same technique being utilized for a mastopexy. By transposition of the nipple areolar complex, the nerve supply as well as the vascular supply is maintained on an inferiorly based dermal pedicle. This technique does not require the recall of a multitude of points or locations or other maneuvers necessary to do the markings to obtain a symmetric, aesthetically pleasing reduction. The author has also developed a technique for the use of Marlex Mesh to support the remaining breast tissue and, by attaching the mesh to the area of the second rib, the support of the breast tissue is converted from cutaneous origin to skeletal origin, giving an internal support of breast tissue and preventing subsequent early ptosis and loss in fullness of the upper portion of the breast. The mesh has been used in 43 patients over the past two years with no serious complications.

**Key words:** Mammoplasty — Mastopexy — Marlex Mesh — Breast reduction

Numerous articles have been written and techniques described regarding reduction mammoplasties and mastopexies, many of them requiring complicated measurements in order to derive an aesthetically pleasing postoperative result. Perhaps one of the best reviews of the history of reduction mammoplasties is by Letterman and Schurter [3] in the *Symposium on Aesthetic Surgery of the Breast*, in which they list 324 references.

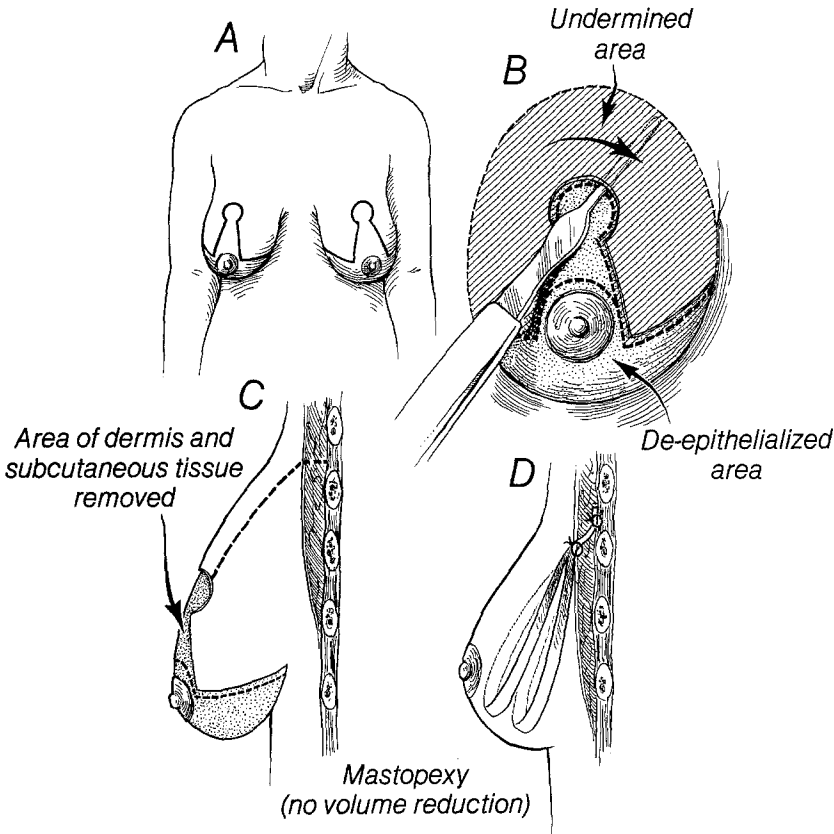
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**Fig. 1.** Technique of central core reduction for mammoplasty. **A.** Only one preoperative marking is necessary, the distance from the suprasternal notch to the new location of the nipple. This should measure about 20 cm for the average patient, in order to produce a postoperative "C" cup. **B.** The Wise keyhole technique is used. For a postoperative "C" cup, the distance of the nipple to the inframammary crease should be about 8-10 cm. **C.** After the flap has been deepithelialized, incisions are made through the dermis, leaving about 1 cm of dermis attached to the skin edge of the medial and lateral flaps. **D.** A cord with a clamp on it attaches the active lead of the electrocautery unit to the Johnson cutter/coagulator forceps used in the dissection. **E** and **F.** Sufficient breast tissue is removed from the central core to accomplish reduction

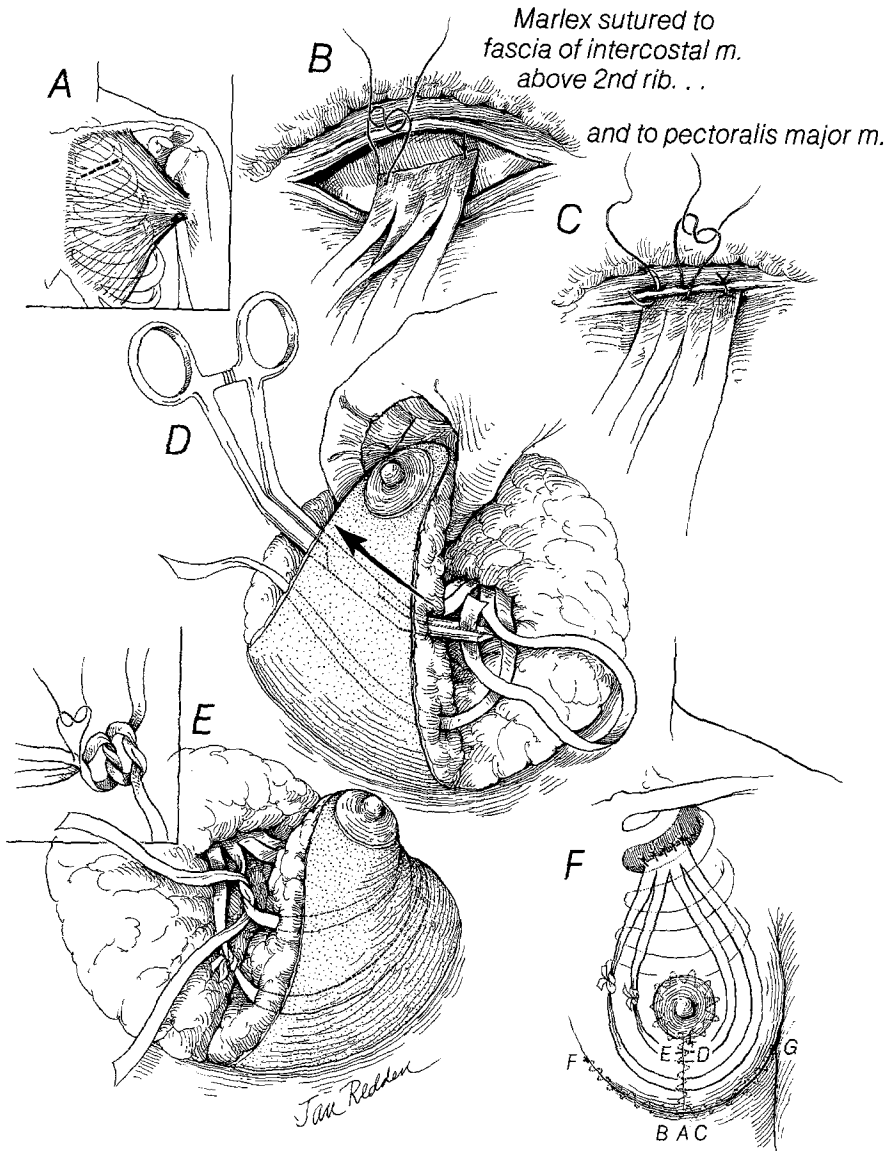
In most of the articles we reviewed, we found no expressions of concern regarding the nerve supply or sensations to the nipple areolar complex. The nipple areolar complex is the most sensitive area of the breast and therefore, the sensory innervation to this area should be of equal concern as its blood supply in the development of a procedure to reduce the volume of the female



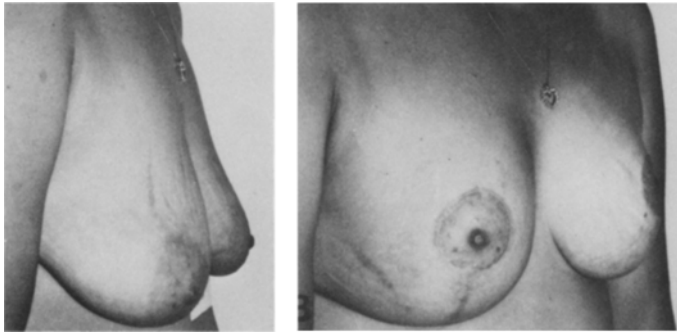
**Fig. 2.** Technique for central core reduction for mastopexy. **A.** Markings are done as in Fig. 1, preparatory for use of the Wise keyhole technique. **B.** The delineated area around the nipple is deepithelialized and Johnson cutter/coagulator forceps are used to undermine the remaining epithelial tissue. **C.** Sufficient dermis and subcutaneous tissue are removed. **D.** Marlex Mesh is used to provide skeletal support postoperatively to avoid return of ptosis

breast and/or to elevate the ptotic female breast. The nerve supply to the nipple areolar complex comes from the lateral and anterior cutaneous branches of the third, fourth, and fifth intercostal nerves. In 1840, Cooper described this distribution of the innervation. He also found that the blood supply to the nipple areolar complex came from the external mammary artery and the long thoracic artery, which are both derived from the axillary artery, and that medially the two principal branches originate from the internal mammary artery.

The other critical fact overlooked by most surgeons is the postoperative support of the remaining breast. The breast is normally suspended by Cooper's ligaments, which are fibrous bands that arise from the fascia over the pectoralis major muscle and traverse as septa through the breast and attach to the overlying skin. Mammary ptosis is a result of stretching of the breast skin, and any reduction procedure which does not reconstruct the internal support of the breast mass will experience a much more rapid recurrence of the ptosis or loss of fullness in the superior portion of the breast. In 1977 Figallo [2] described a



**Fig. 3.** Technique for attachment of Marlex Mesh as postoperative support in mammoplasty or mastopexy. **A.** Incision approximately 4 cm long is made in the fascia of the pectoralis muscle along the medial portion of the second rib and through the muscle to the periosteum of the rib. **B.** A strip of Marlex Mesh 5-6 cm wide is attached to the fascia of the intercostal muscle above the second rib with two 0 Mersilene sutures. **C.** The Marlex is brought through the pectoralis muscle and fascia and secured with three 0 Mersilene sutures, which simultaneously closes the incision in the fascia. **D.** The Johnson Marlex Passer is used to pull one tail of Marlex through the lower portion of the pedicle, another through the upper portion. **E.** The tails are tied and each knot reinforced with a suture of 0 Mersilene, creating 2 internal slings. **F.** Closure is accomplished by pulling the medial and lateral flaps together with interrupted and running sutures of 4-0 Prolene and subcutaneous sutures of 4-0 Dexon



**Fig. 4** Preoperative (A) and postoperative (B) views of a patient who underwent skin reduction mastopexy by the central core technique with Marlex Mesh suspension

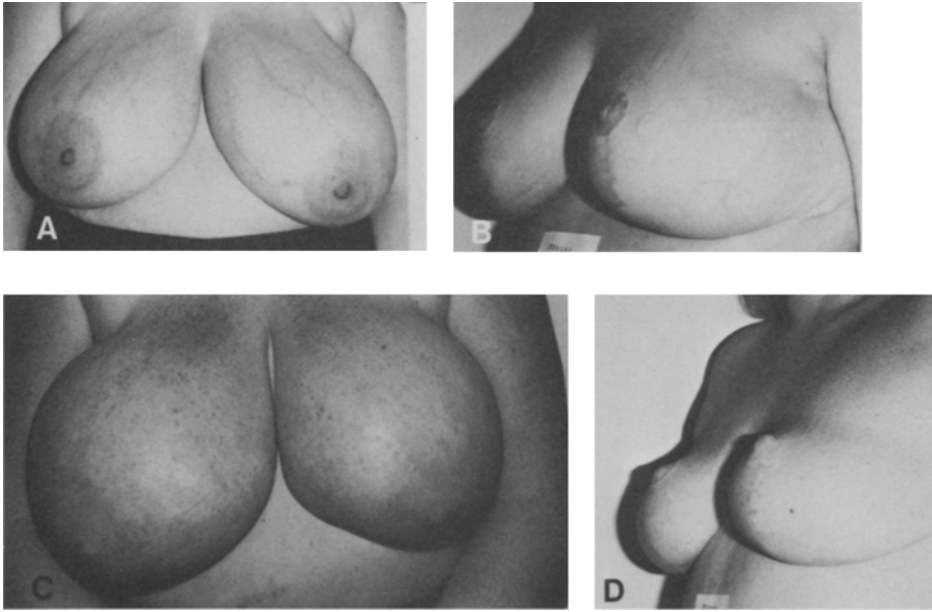
technique by which he dissected out Cooper's ligaments and used them to reconstruct internal support of the breast mass after mastopexy. We have developed a technique using Marlex Mesh to convert the internal support of the remaining breast mass from cutaneous to skeletal origin. Marlex is a high density polyethylene developed by Phillips Petroleum Company and used since 1958 primarily in hernia repairs. Usher [6-8] evaluated Marlex extensively in the late 1950s and found it stimulated less foreign body reaction than material such as nylon, Orlon, Dacron, and Teflon.

### **Surgical Technique**

To accomplish the reduction mammoplasty or mastopexy, we use the central core reduction technique. Courtiss and Goldwyn [1] have reported a similar procedure to the one we describe wherein they did demonstrate concern for the nerve supply to the nipple areolar complex, and wherein they reported the resulting breast sensation in their series of patients to be better than the sensation they obtained by any other method of reduction mammoplasty. The use of an inferiorly based dermal pedicle to support the nipple areolar complex was also described by Ribeiro [4] in 1975, Robbins [5] in 1977, and Figallo [2] in 1977.

Using the technique we describe, the surgeon needs to mark only one position. This is done with the patient in the erect position, prior to induction of anesthesia (Fig. 1A). To produce a postoperative "C" cup in the average female of average height, the distance from the suprasternal notch to the new location of the nipple should be marked at approximately 20 cm with the patient in the preoperative upright position on the midclavicular line. After induction of anesthesia, the operator needs to remember only one distance, the nipple to inframammary crease distance. The average "C" cup breast will have an inframammary distance of nipple to inframammary crease of approximately 8-10 cm (Fig. 1B).

We use the Wise [9] keyhole technique, and mark 8-10 cm from the pre-



**Fig. 5.** Two patients who underwent mammoplasty by the central core reduction technique. **A** and **C.** Preoperative views. **B.** View 2 years postoperatively of patient in whom Marlex Mesh suspension was used. **D.** Postoperative view 2 years after mammoplasty without Marlex Mesh suspension

operative mark to create the vertical closure edges of the medial and lateral flaps. We then mark the inframammary crease and measure its length. The lower margins of the medial and lateral flaps must be marked so that the total of their two lengths closely approximates the length of the inframammary crease. Thus, in 5–10 min the reduction of that breast has been designed in the operative condition with the operator having full confidence that he will be able to close the flaps without undue tension and produce pleasing, symmetric postoperative breasts. At this point, the entire flap is deepithelized leaving the nipple areolar complex intact. After the flap has been deepithelized, incisions are made through the dermis leaving about 1 cm of dermis attached to the skin edge of the medial and lateral flaps (Fig. 1C), and the amount of breast mass to be retained in the lower flap is determined. If the operator is dealing with a very large breast, he places his hand over the deepithelized flap of the lower portion and determines approximately how much volume of breast tissue is necessary to produce a desired “C” cup. A dissection is then made through the incisional area straight down to the pectoralis muscle fascia. We use the Johnson cutter/coagulator forceps, designed to eliminate the need to pick up and lay down 2 separate instruments. We also designed a cord with a clamp on it to replace the active lead to the electrocautery unit. The clamp attaches the active lead to the cutter/coagulator forceps (Fig. 1D). At this point the skin of the medial and lateral flaps and upper part of the breast is undermined, leaving an adequate soft tissue pedicle attached to the skin. The operator can now remove as much

of the central core of the breast as necessary (Fig. 1E, F), or in the case of a mastopexy only, no breast tissue is removed (Fig. 2).

The fascia of the pectoralis muscle up to and above the second rib is exposed. Along the medial portion of the second rib, an incision approximately 4 cm long is made in the fascia over the muscle using the electrocautery, and the muscle is likewise divided down to the periosteum of the second rib (Fig. 3A). The intercostal muscle above the second rib is exposed and a piece of Marlex approximately 5–6 cm wide is divided into four tails with the tails left attached at one end. Two 0 Mersilene sutures are passed through the fascia of the muscle immediately above the second rib, care being taken to avoid deep placement of the needle. The sutures are used to secure the Marlex to the fascia above the second rib (Fig. 3B). The Marlex tails are then brought through the pectoralis muscle and fascia and smoothed out. Using three sutures of 0 Mersilene, the tails of the Marlex are secured through the fascia of the pectoralis muscle and simultaneously the opening in the fascia of the muscle is closed (Fig. 3C). At this point using the Johnson Marlex Passer (Fig. 3D), the operator pulls one tail of Marlex through the lower portion of the pedicle and another tail of Marlex through the upper portion of the pedicle. Each one of these two tails is then tied to one of the remaining two tails of the Marlex, producing two internal slings of Marlex to support the remaining breast tissue (Fig. 3E). After the ties are made in the Marlex, these ties are reinforced with a separate suture of 0 Mersilene to prevent the Marlex from becoming untied prior to the formation of fibrous tissue. The closure of the breast (Fig. 3F) is then accomplished in the usual manner pulling the medial and lateral flaps together using interrupted and running sutures of 4-0 Prolene and subcutaneous sutures of 4-0 Dexon.

## Results

We have used Marlex Mesh in the support of breast tissue in 43 patients over the past two years (Figs. 4 and 5). We have not had a single complication related to the use of Marlex or to the placement of the Marlex through the pectoralis muscle at the level of the second rib. The only complication we observed was in our early experience with the use of Marlex. We sometimes placed it through the breast tissue too close to the skin, producing some dimpling or retraction of the skin in the postoperative state, which usually corrected itself within a short period of time. We also had an occasional patient with very large breasts in whom an excessive amount of breast tissue remained in the medial portion of the breast, and in two of those patients, we had to do a secondary excision of the “dog ear” in that area.

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