Subpectoral Breast Augmentation Emphasizing Muscle Preservation

“Surgical Strategies” focuses on refinements in aesthetic surgical techniques. Contributors are Aesthetic Society members or other recognized experts.

Although several authors have presented excellent results with subpectoral breast augmentation, most have transected or avulsed the sternal origin of the pectoralis major muscle to gain adequate space for implant placement. In addition, many surgeons use a pathway through the muscle belly to reach the subpectoral space.

In contrast, I prefer to keep the sternal origin of the pectoralis major muscle largely intact and gain adequate space for the implant by stretching the entire muscle belly, dividing only the costal insertions of the muscle. Moreover, I avoid incisions through the muscle belly and access the subpectoral space by dissecting around the free or unattached inferior-lateral border of the muscle. This approach maintains muscle strength, minimizes bleeding, and eliminates the possibility of visible folding or rippling in the medial portion of the breast (adjacent to the sternal border). It also enables the surgeon to exert a strong upward force on the main muscle belly without tearing the muscle. In contrast, if the muscle is split en route to the subpectoral space, strong upward lifting will cause the muscle opening to enlarge, thereby creating not only a defect that is difficult to repair securely but also a potential area of weakness through which the implant may subsequently bulge. Combining adequate muscle stretching with appropriate lowering of the inframammary crease virtually eliminates the high-riding implant. In addition, unattractive change in breast contour with muscle contraction is minimized.

Experience with hand injuries makes it clear that a muscle cannot exert its power effectively when its origin has been transected. Moreover, we know that abdominal muscles that stretch during pregnancy retain strength because they are anatomically intact. It is logical to conclude, therefore, that muscle stretching is preferable to muscle transection or avulsion when performing subpectoral breast augmentation.

The greatest risk of active bleeding during subpectoral augmentation occurs when intercostal vessels are cut or torn near the sternal border. Muscle stretching in lieu of muscle transection allows these vessels to remain intact, which reduces bleeding and risk of hematoma.

I perform all breast augmentations with the patients under general anesthesia and I utilize smooth, round, saline-filled implants. Nearly all of these implants are placed subpectoral except in the case of an occasional body builder or obese patient. I believe that textured implants are less mobile, more prone to ripple or fold, and are often firmer than smooth surfaced implants. The thickest capsules I have observed were adjacent to and frequently adherent to textured implants. For these reasons, I do not use textured implants, whether round or anatomically shaped.

Surgical Technique

At the office consultation visit, the patient’s approximate implant size is determined by examining different pre-filled sizing implants in a bra. On the day of surgery, the inframammary crease (IMC) is marked before the operation while the patient is awake and either standing or sitting (Figure 1). Intravenous antibiotics are then administered. Additional skin markings are made, with provision for lowering the IMC an average of 2 cm. (Provisions are made for lowering the IMC more than 2 cm if the patient has prosis or a high IMC, and less than 2 cm if the crease is already low or the implant is small [Figure 2].) The approximate location of the free or unattached edge of the pectoralis major muscle is also marked on the skin surface.

The injection of local anesthetic (Figure 3) is made at a 45-degree angle, toward the free border of the pectoralis major muscle. The breast is lifted with the opposite hand during infiltration to avoid penetration into the pleural cavity. After vasoconstriction, scissors dissection follows the 45-degree path of the needle, from the areolar inci-
Figure 1. The level of the inframammary crease was marked earlier when the patient was sitting up.

Figure 2. Existing or “old” inframammary crease is blue. “New” inframammary crease (solid green) is 2 cm below the old inframammary crease. Free or unattached edge of the pectoralis major muscle is shown by oblique dotted green line.

Figure 3. Injection through the breast is angled at 45 degrees inferiorly and laterally. Breast is lifted with the opposite hand (not shown) to avoid penetration into pleural cavity.

Figure 4. After vasoconstriction (blanching) has occurred, the path of the scissors follows the 45-degree path of the needle, thereby avoiding the larger ducts and heading directly for the free muscle edge.

Figure 5. Lifting on both retractors helps to identify the free or unattached muscle edge.

Figure 6. After initial finger dissection, strong lifting on the Reynolds breast dissector stretches the main muscle belly, thereby providing space for the implant without avulsing or cutting the sternal origin of the pectoralis.
sion through the breast gland (Figure 4), thereby avoiding the larger ducts and headng directly for the free muscle edge. The muscle edge can be identified by lifting on two McBurney retractors while spreading the scissors parallel to the direction of muscle fibers (Figure 5).

After initial finger dissection, the space for the implant is prepared by strong upward lifting on a urethral sound or Reynolds breast dissector. The goal is to stretch the main muscle belly, thereby providing a space for the implant without avulsing or cutting the sternal origin of the pectoralis major muscle (Figures 6 and 7). Significant bleeding is rarely encountered along the sternal border, and it is almost never necessary to cauterize intercostal perforating vessels. Both palpation and transillumination confirm that the sternal attachment is thick and not attenuated.

As described by Mladick, the implant is folded and inserted using a “no-touch” technique to minimize contact with the adjacent tissue. After inflation of the implant, additional stretching of the muscle can be performed if necessary by slipping a moistened urethral sound or breast dissector between the implant and the undersurface of the muscle; this ensures a smooth natural contour (Figure 8). If an inframammary incision is selected it is made above the IMC, in the lateral portion of the breast, to provide direct access to the free border of the muscle.

**Summary**

I believe it is desirable to maintain continuity of the pectoralis major muscle to the maximal extent when performing subpectoral breast augmentation. Strong, upward lifting and stretching of the muscle belly facilitates a smooth, natural contour and eliminates the need to cut or avulse the sternal origin of the muscle, thereby preserving strength and reducing bleeding.

**References**


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