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Innovations and Advances in Cosmetic Breast Augmentation - the Endoscopic Approach

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Breast augmentation remains one of the most gratifying cosmetic operations from the standpoint of both the patient and the surgeon. Over the past 35 years approximately three million women have had cosmetic breast enlargement. Since 1992, with exceptions for investigative studies and for certain replacement cases, American surgeons have been limited to the use of saline filled implants.

This has certainly required changes in technique, but our experience based on a study of 500 consecutive patients who underwent augmentation with saline filled implants has confirmed the impression that overall satisfaction with surgery is as high as was formerly seen with gel filled devices. The preferred technique at the Facial Plastic & Cosmetic Surgical Center for the past eight years has been a transaxillary endoscopic submuscular approach and 65% of our last 500 cases have utilized this technique. Currently it is used in over 90% of cases. While difficult to master, once learned it offers great advantages in precision through its enhanced visibility and virtual lack of bleeding.

Recognizing that there is a high degree of safety with gel filled implants, one cannot avoid the fact that there is some added risk if leakage occurs. While unlikely, it is possible for the gel to diffuse into surrounding tissues causing inflammatory reactions, lymph node enlargement or nerve injury.

Prior to 1992, at the Facial Plastic & Cosmetic Surgical Center, the breast implant of choice was the Replicon, a polyurethane covered implant filled with a highly viscous gel. The implant was placed through a periareolar approach in the submammary posi-

tion. This implant had the advantage of an extremely high resistance to capsular contracture. The only disadvantages were the difficulty of insertion related to the porous surface and the tendency to produce some rippling on the surface of the skin over the implant when there was a lack of soft tissue padding.

RIPPLING WITH BREASTS IMPLANTS

Rippling, or surface irregularities over the implant, is a potential problem with any type of breast implant. It occurs more frequently with saline filled implants because the fluid in the implant is less viscous than the older silicone gel. The added risk of rippling is the trade-off for the increased safety of the saline filled device. Because of this potential problem there is a definite trend toward submuscular placement of implants, which affords more soft tissue coverage over the implant. Rarely can rippling be seen or felt through the muscle.

Since the muscle only covers the upper portion of the implant rippling can still occur where there is inadequate coverage. The bulk and size of the pectoralis muscle varies from individual to individual, and so there is no set rule as to how much of the implant will be protected. A definite factor influencing the possibility of rippling is implant size. Larger implants tend to stretch and thin out the overlying tissue resulting in less natural coverage over the im-

plant. For that reason, rippling is more common in patients who select larger implants sizes. This is a factor to be taken into consideration selecting implants size.

Our study revealed that 35% of patients were aware of some rippling, either to observation or touch. However, relatively few find it of sufficient magnitude to be objectionable and since patients had been forewarned about the problem, we received few postoperative complaints. If it is a problem, a possible treatment consists of over filling of the implant. By over filling, the ripples are smoothed out to a certain degree by the added pressure of the fluid placed within the implant. We have had experience with a small number of patients who have elected to have this secondary procedure. The result of the operation is a much firmer implant, but, so far, our patients have generally been pleased with the result

ABOVE OR BELOW THE MUSCLE

The breast overlies the pectoralis major and minor muscles. When implants are placed below the muscle they are usually placed



A rigid retractor holding the 1 cm endoscope is introduced through the small axillary incision.

above the pectoralis minor but beneath the pectoralis major. Obviously, placement beneath the pectoralis major results in only partial muscle coverage of the implant, since the muscle rarely covers the lower part of the implant. While it is possible to develop a plane beneath the serratus muscle resulting in a total submuscular placement, this technique is more commonly reserved for post mastectomy reconstruction and is quite unusual for cosmetic cases. Additionally, the subserratus plane is quite difficult to establish and can lead to additional bleeding which



Appearance of the axilla one year following surgery. Note virtual absence of visible scar.

is highly undesirable in augmentation surgery.

There are other advantages to submuscular placement. One is that it allows better mammography. The pectoralis muscle tends to hold the implant against the chest wall during mammography.

It is also widely felt that when implants are put beneath the muscle, there is less likelihood of firmness developing. Perhaps this is the result of the pressure of the muscle stretching the scar tissue around the implant. While this has not been proven, it is our feel-

ing that patients have less capsular contracture when implants are placed submuscular. In our series, 18% of our patients reported some firmness in their breasts when specifically asked in their questionnaire. However, only 7% reported discomfort associated with their firmness. Interestingly, of the patients that developed firmness, 80% developed it within two years, indicating that with saline filled implants, firmness is not very likely if it doesn't occur within two years.

Another possible advantage of submuscular placement, when carried out through the transaxillary approach is that the dissection never violates breast tissue, thus decreasing the risk of interference with breast function or possible infection from bacteria within the breast.

When using submuscular placement, the surgeon must properly detach the lower portion of the muscle origins as well as some of its medial attachments to allow proper settling of the implant. Failure to adequately detach the muscle can also result in a distortion of the implant when the patient contracts the muscle – a phenomenon that we refer to as a “flexion distortion.” This detachment is a critical element of submuscular surgery and it is here that the endoscopic approach is most valuable. Very precise detachment can be carried out under direct visualization. Blood vessels can be seen before they are severed, allowing the surgeon to clamp and coagulate the vessel before it bleeds. Equally important, endoscopic visualization helps the surgeon avoid inadvertent dissection below the rectus fascia when detaching the muscle. This is a problem more common than recognized and results in abnormal inferior displacement of the implant with what is commonly referred to as a “double bubble” appearance.

A disadvantage of submuscular placement is that it results in a more painful recovery than the subglandular approach. What is more, the transaxillary endoscopic approach results in even more postoperative pain because of the stretching of the endoscope in the small axillary incision.

Another disadvantage is that submuscular implants may seem abnormally high for a period of time after surgery, although eventually they should settle to a desirable position if muscle detachment has been adequate.

ENDOSCOPIC TRANSAXILLARY BREAST AUGMENTATION

Since blood around the implant can organize and eventually lead to thickened scar tissue, it is important to perform the surgery in as bloodless a field as possible. The use of endoscopic surgery has allowed us to carry out breast augmentation with more precision and less bleeding. Special instruments designed for this purpose allow us to work through very small incisions, monitoring the operation on a video screen. The dissection is done under close observation using a 1 cm 30° oblique endoscopic telescope with attached high resolution 3 chip video camera. The pocket is tailored under direct vision — a great improvement over the more traditional transaxillary approach that was essentially a blind dissection.

The operation is performed under general anesthesia. A 1.5 cm incision is marked in the axilla with the patient seated before entering the operating room. This allows the incision to be placed in an axillary crease or other inconspicuous site. Following an initial light prep, the breast is infiltrated with a modified tumescent solution consisting of 250 cc of saline, 1 mg of adrenalin and 25 cc of 2%

lidocaine. The entire periphery of the breast is infiltrated, but most of the solution is instilled within the submuscular plane. Great care is taken to avoid injecting perpendicular to the chest wall to avoid the risk of pleural perforation. This injection is a key component of the operation since it is essential for the bloodless field necessary for endoscopic surgery.

After a thorough prep, an incision is carried to the posterior border of the pectoralis major muscle, after which blunt dissection is carried to the submuscular plane. A standard Dingman-Agris dissector is used to gently lift the muscle off the ribcage avoiding disruption of the muscle attachments. Following tissue expansion which facilitates hemostasis and development of a potential optical cavity, the endoscope is introduced. Semi-sharp dissectors are then used to gently separate the muscle attachments thus creating the proper pocket for the implants. By coagulating vessels before they are separated, the field is kept relatively bloodless.

Surgical sizers are always used to confirm proper pocket development before inserting the desired implant. Our policy has always been to have our patients choose implant size through planned preoperative sizing exercises. Although we may vary a bit, we never stray far from the patient's choice. As a result, we rarely hear of dissatisfaction with final breast size.

Usually, no dressing other than a light bra is required. A layer of elastic tape will be used for 7 - 10 days to help support the breast. Patients can easily remove the tape at home at the recommended time. Recovery is

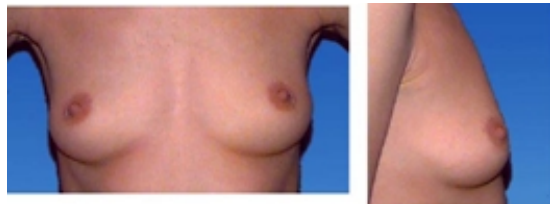
quite brief and patients usually return to light activity with two to three days after surgery. Full activity is resumed within two or three weeks. Although the breasts usually look good almost immediately after surgery, there is often an improvement in the shape over the following several months.

Sensory changes can occur resulting in numbness or discomfort, and while these symptoms are usually not long-standing or severe, they can be in some cases. When

initially utilizing the endoscopic approach, we were convinced that we would see a lower incidence of numbness because of our ability to actually see the nerves during surgery. However, 40% of our patients reported at least some loss of nipple sensation with half of them reporting it as permanent. This is similar to previous reports indicating that surgical approach may not influence sensory change as we had initially felt.

At our Center, we had long been advocates of textured implants. Based on recent evidence presented to the FDA by the implant manufacturers, we are now forced to re-evaluate that position. The data failed to indicate any benefit from the use of textured implants, and, in fact, showed a slightly higher rate of deflation with textured implants compared to smooth. For the past six months we have been recommending smooth implants, but it is too soon for us to be sure if this will significantly influence the incidence of capsular contracture, rippling or leakage. It has certainly made implant insertion much easier.

As in many other aspects of surgery, endoscopy has allowed refinement and precision in surgery with minimal scarring. Breast augmentation is one of many procedures that is enhanced by the use of endoscopic techniques. As in all endoscopy, there is a sharp learning curve, but the rewards gained by achieving the necessary skills make the effort well worthwhile.



Three patients who underwent the procedure all shown pre op and three months post op.