al. found a 70 percent reduction in the risk of venous thromboembolism without excessive bleeding when the first dose of enoxaparin was given 12 to 24 hours postoperatively following hip replacement.[2] Thus, plastic surgeons must still rely on the literature in other areas or on personal experience, as opposed to empirical evidence, to base their clinical decisions regarding the choice of agent, dosage, and timing of administration.

Ultimately, decisions with respect to thromboprophylaxis in microsurgical breast reconstruction should be guided by considerations such as drug availability in a given institution, cost, ease of administration, and patient comfort, in addition to the clinically relevant outcomes of thromboprophylaxis. A multicenter prospective trial powered to detect differences in venous thromboembolism events with different regimens of low-molecular-weight heparin prophylaxis, controlling for various dosages and timing of administration in women undergoing microsurgical breast reconstruction, would be welcome. Such a trial would be able to highlight significant increases in the incidence of major bleeding associated with various low-molecular-weight heparin agents, variable doses, and frequency of administration. Such evidence could provide definitive information in a population where bleeding can have devastating consequences.

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DISCLOSURE

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Total Muscular Implant Coverage in Alloplastic Breast Reconstruction

Sir:

It was with great pleasure that we read the interesting article by Elliott et al.,[1] recently published in this *Journal*, and we would like to congratulate the authors on their study. The authors described the use of the "scarless" latissimus dorsi flap to provide total well-vascularized coverage to implant or tissue expander in conjunction with pectoralis major muscle.

The traditional tissue expander or implant placement requires complete muscular coverage by elevating both the pectoralis major and the serratus anterior. We agree with the authors that it is important to have vascularized and adequate coverage when implanting devices, but we believe that sacrifice of a large muscle such as the latissimus dorsi is not always justified, especially if radiotherapy has not been performed. The latissimus dorsi should be used for implant coverage in case of previous radiotherapy to reduce the risk of capsular contracture[2]; otherwise, the serratus anterior combined with the pectoralis major muscle usually provides full muscular coverage to the device, especially in the event of a partially inflated tissue expander (Fig. 1). Partial coverage with the pectoralis only is not recommended because of the possibility of expander exposure or migration. Excellent results in nonirradiated and thin patients can be achieved with complete muscular pocket by means of the pectoralis major and serratus anterior muscles (Fig. 2). Furthermore, dissecting the serratus can be performed more easily and more quickly than the latissimus dorsi muscle. While raising the serratus, care should be taken at the junction between the pectoralis and serratus musculature, where there are only tiny muscular fibers and sheath. Use of the serratus anterior muscle also has less impact on daily activities and is associated with lower morbidity than sacrifice of the latissimus dorsi muscle.

An option gaining popularity is anteromedial coverage with the pectoralis and lateral coverage with acellular dermal matrix.[3,4] This obviates the need for serratus elevation and might make subsequent expansion less painful. Concerning the use of acellular dermal matrix instead of muscle for implant coverage, we believe that we should take into account the biological cost of the latissimus dorsi muscle sacrifice and the economic cost of acellular dermal matrix. In any event, despite an increased rate of infection and seroma with use of acellular dermal matrix,[5,6] there is an increasing

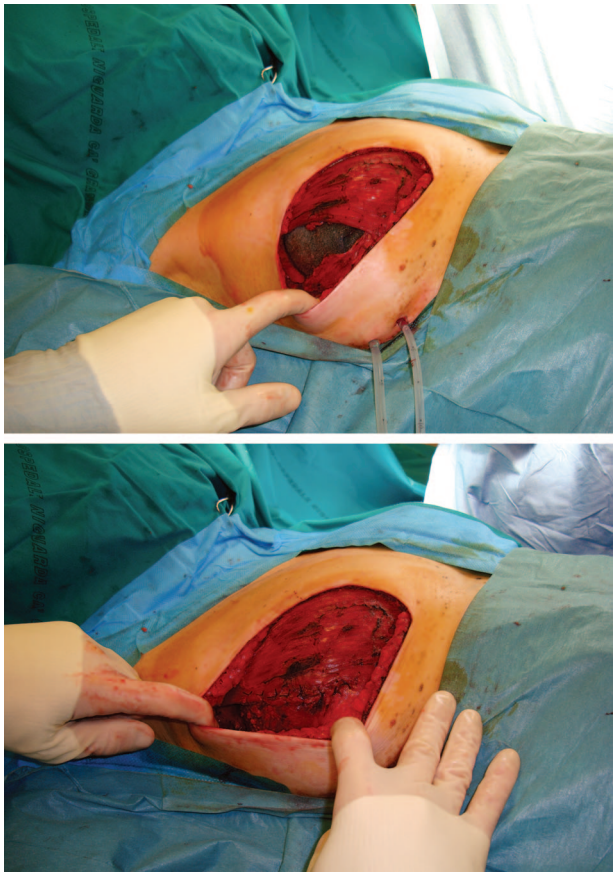

Fig. 1. The pectoralis major muscle is elevated to establish part of the pocket for tissue expander insertion. The serratus anterior is elevated to allow for inferolateral coverage of the device. The partially inflated tissue expander is placed in the pocket with the serratus approximated to the lateral edge of the pectoralis major muscle.

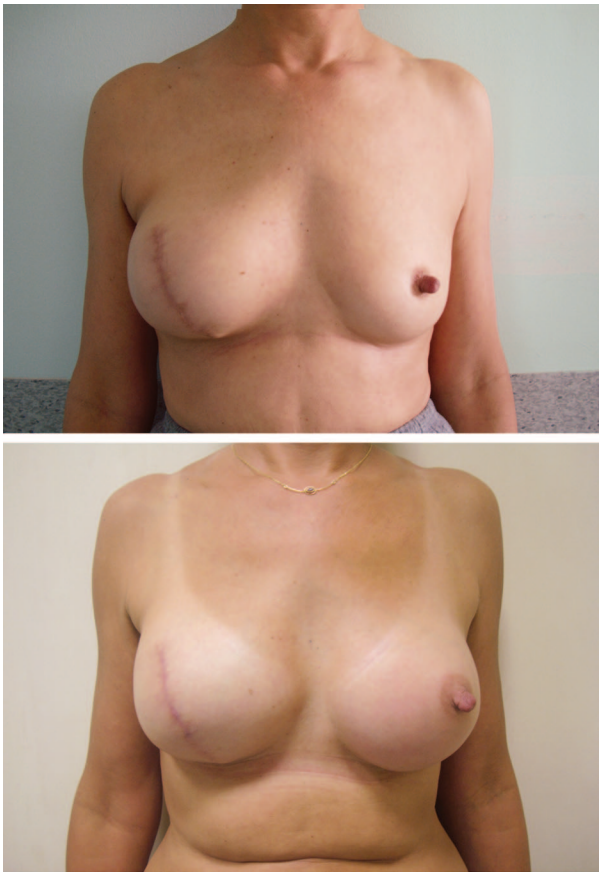

Fig. 2. Preoperative (*above*) and postoperative (*below*) appearance of a patient who underwent right expander replacement with anatomical cohesive silicone gel implant and contralateral augmentation mammaplasty.

interest in use of this material for alloplastic breast reconstruction.

Finally, we wonder whether the scarless latissimus dorsi might require wider undermining compared with the standard latissimus dorsi procedure, with the subsequent increased risk of donor-site seroma formation. Furthermore, as a large muscle has been elevated, providing total muscular device coverage, immediate permanent implant placement should be preferred rather than a tissue expander, particularly in cases of skin- or nipple-sparing mastectomies. This would bring effective reduced cost, sparing the patient the second step for tissue expander replacement.

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Reply: Total Muscular Implant Coverage in Alloplastic Breast Reconstruction

Sir:

I thank Dr. Salval and colleagues for their thoughtful comments in response to the article entitled "The Scarless Latissimus Dorsi Flap for Full Muscle Coverage in Device-Based Immediate Breast Reconstruction: An Autologous Alternative to Acellular Dermal Matrix." First, it is important to say that this technique is offered as another option for breast reconstruction using device-based techniques. Of course, it is not the only choice, but in our hands, it has proved very successful in the thinner patient.

Dr. Salval and colleagues comment that the latissimus dorsi flap is not always justified, especially if radiotherapy has not been performed. I agree completely and, indeed, there is no one technique that is best for all patients. However, with or without previous irradiation, I have found the latissimus/pectoralis combination to increase the naturalness of the result in the thinner patient who, after mastectomy, has very little cutaneous and subcutaneous tissue coverage. Reconstruction with implants after irradiation is often problematic; we try to avoid it.

The serratus anterior combined with the pectoralis major muscle has been advocated since the 1980s for full muscle coverage of an underlying device. However, our use of this technique in the 1980s revealed it to be deficient for various reasons—in fact, for the very reasons suggested by the respondents. The weakest part of this "coverage" is at the junction between the pectoralis and serratus musculature. There is truly no union of these two muscles in that location and, particularly in a thin patient, it is very difficult to get adequate coverage at that point. In addition, the serratus anterior muscle is chiefly located posterior to the posterior axillary line; thus, the portion of the muscle with which one is dealing to cover the anterior device is very thin and has terminating fibers as it approaches the pectoralis major muscle. This makes full muscle coverage of the device relatively deficient. As pointed out in their beautiful case, the serratus/pectoralis combination can be successful, and when it can be, it is an excellent choice. I have just found that in a large majority of cases it is not as reliable or as thick of a coverage as I would like. That is why my colleagues and I turned to the latissimus in combination with the pectoralis.

Numerous studies have documented the low morbidity associated with the latissimus muscle. Although studies are not as extensive for the scarless latissimus, I believe that this technique will have less morbidity than the myocutaneous technique. Indeed, the donor defect is barely detectable, and motor limitations have been very few. I suspect that the serratus can be dissected more quickly than the latissimus. I have found that the latissimus technique takes approximately 45 minutes on each side. This probably is a little longer than for the serratus, but there is guaranteed thick muscle coverage over the lower lateral device.

The authors correctly point out that acellular dermal matrix has become an increasingly popular choice for device coverage. As mentioned in the article, my colleagues and I have not yet been able to compare the biological and economic costs between the latissimus and acellular dermal matrix. However, as also mentioned in the article, we have not been able to clinically determine whether one technique is better than the other in terms of the postoperative result.

The scarless latissimus actually requires less undermining than that needed to harvest the full muscle of a myocutaneous flap. My colleagues and I harvest approximately 80 percent of the muscle and only need that much coupled with the pectoralis major to provide full muscle coverage. It is not our choice in general to choose a permanent implant at the time of the first operation but, instead, to use a tissue expander. The technique of tissue expander is, of course, preferred to ensure the safety of the skin, not because of deficient muscle coverage. Thus, our choice for a tissue expander is based on skin survival, not on issues with regard to the musculature. Nonetheless, there are, of course, patients with whom we are comfortable with regard to their skin and in whom an immediate implant is used.

The incidence of seroma in our series is less than 6 percent. This compares favorably with the reported range of 20 to 70 percent in a recent article concerning latissimus myocutaneous flaps.[1]

Once again, I thank Dr. Salval and his colleagues for their thoughtful comments. I continue to advocate the scarless latissimus for the appropriate patient.

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