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Discussion

Dr. John J. Coleman, III (Atlanta, Georgia): I appreciate the opportunity to participate in this meeting as a guest and to discuss Dr. Morgan's paper.

(Slide) During the last ten years at the Emory University Affiliated Hospitals, we have had the opportunity to deal with a number of complex thoracic defects caused either by trauma, tumor resection, or infected thoracotomy and sternotomy. Our approach has included the latissimus dorsi as an important part of this overall reconstructive plan, but we have developed, by necessity, a slightly different approach for encompassing the possibility of either reoperation secondary to tumor recurrence that might involve the previous reconstruction, or partial or complete failure of the reconstruction effort.

This approach is primarily a Plan A with a Plan B, and occasionally a Plan C, and it has been facilitated by the realization that most of these large flat muscles of the chest wall, either anterior or posterior, have an axial long blood supply, as Dr. Morgan demonstrated, the thoracodorsal pedicle in the latissimus dorsi, and also a segmental blood supply; and in the case of the latissimus, there is the paravertebral perforators of the intercostals.

This is also true of the pectoralis, and, to a lesser degree, the rectus abdominis and the trapezius. The following patient demonstrates this approach:

This is a 44-year-old woman with a three times-recurrent cystosarcoma phylloides, the resection of which required removal of four ribs, repair with Proline, and soft tissue coverage, which was accomplished by a rotation flap of the abdominal wall, based on the perforators from the anterior intercostals.

This approach allowed preservation of the contralateral internal mammary vessels, and also allowed a good repair. Preserving the vessels was, as it turned out, important because about 9 months later, the patient had a large recurrence, as might be suspected with a tumor such as this. This recurrence was addressed by a second resection and transfer of the entire abdominal wall based on the internal mammary vessels.

This approach has been used in ten major anterior chest wall resections, with the inferior epigastric kept in reserve for a possible microvascular anastomosis. So understanding the anatomy in this area allows us considerable flexibility. Our plan has generally been to start with a local musculocutaneous flap and then move, if necessary, to a regional musculocutaneous flap, and finally, to use the omentum or free tissue transfer as a last resort.

I have several questions. First, have you been limited at all by the body habitus of the patient? We have occasionally seen that the latissimus is excellent in a tall, thin patient, but in a short patient or a patient with a large barrel chest, the arc of rotation is limited. What is the safe fasciocutaneous extension of the latissimus flap, and is this limited at all by previous axillary radiation? As you mention in your manuscript, five of the patients had previous breast cancer. We have had some problems with the fasciocutaneous extension of the latissimus, and would appreciate your insight into this.

Dr. Raleigh R. White (Temple, Texas): I think the authors of this paper are to be greatly congratulated. It is a pleasure and a true benefit for me to see a paper that will help me directly in my practice when I return home. I truly appreciate the wonderful demonstration of that extended flap.

I rise to ask one specific question regarding the material that we have been using recently to repair these larger defects with a more solid material, Gortex sheeting.

It seemed good to isolate the abdominal and the thoracic cavities in these larger defects with a more solid piece of material rather than porous mesh. I wonder if you have any recent experience with that and if you would have any advice for us on its use.

Dr. P. G. Arnold (Rochester, Minnesota): I congratulate the authors on a paper that is both well presented and well written. I also appreciate having the chance to review it earlier.

In my own practice, I am in a special situation working with Dr. Peter Pairolero, who is a busy thoracic and vascular surgeon. We do a great deal of work together.

During the last ten years, we have had the opportunity to work together on about 152 of these chest wall tumors. In a third of this group we simply took the tumor out and closed the skin again after dealing with the skeletal defect.

In the 112 that were closed with muscle flaps, half of these were latissimus dorsi muscle. (In seven instances we used another muscle in addition to the latissimus dorsi muscle). Primarily we used the pectoralis muscle or another local muscle in the other half. We used a mesh if, in 84 patients, it was a clean wound (Prolene was used in 53 patients and Gortex in 32). Gortex is nice when you need a watertight closure. It costs more, but they both have advantages.

My question to Dr. Morgan is: Is the latissimus dorsi muscle flap your first choice for a chest wall reconstruction, regardless of where the tumor is located? If it is an anterior tumor, is that still your first choice?

I realize that, geometrically speaking, as long as the axis and arc is present, we can move muscles and skin from any part of the chest to any other part of the chest. Do you have a "recipe" that you go through in your own mind in deciding what to use in your reconstruction? Obviously, this presentation is about just one particular muscle flap, and I would be interested in what your other options were, and if for some reason they failed as a flap.

Dr. William D. Spotnitz (Closing discussion). I would like to thank the discussants for their excellent questions and Dr. Morgan for the opportunity of closing this paper at the 100th anniversary meeting of the Southern Surgical Association.

In response to Dr. White's question, we have not had a great deal of experience with Gortex, but we have read of its use and agree with Dr. Arnold that it is a very pliable, good material. It certainly restricts the flow of air and fluid, although it is semipermeable, and it would be the material of choice if one were trying to perform a diaphragmatic repair.

In response to Dr. Coleman, we agree that the patient's body habitus needs to be considered in the choice of this type of flap, and we agree that patients who are excessively obese and short or barrel chested may require additional consideration in use of the latissimus dorsi flap.

We have not had experience in using this flap in patients who have had axillary irradiation. As illustrated by Dr. Morgan, we have used this flap in patients who needed postoperative radiotherapy, and when the ports were specifically designed to take into account the use of the muscle flap, those patients have not had problems. However, I can't comment on those patients who have had preoperative irradiation to the axilla.

We agree with Dr. Arnold that patients who have limited rib resections on the order of 1 to 2 ribs can certainly have their skin closed and don't need these dramatic, beautiful flaps that Dr. Morgan has shown.

In closing I would like to comment that in terms of our choice of flaps, we do agree that with small anterior defects high up on the chest, we would attempt to use pectoralis major flaps first, and that inferiorly we might very well use rectus abdominus flaps. Also, as Dr. Arnold has previously recommended, we keep the omentum as an alternative and secondary means of closing defects that are not successfully treated with musculocutaneous flaps.